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Artificial Intelligence Awareness, Utilization, Attitudes, Perceived Benefits and Risks, and Adoption Readiness Among Hospital Nurses in the Philippines: A Cross-Sectional Study

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Abstract

Artificial intelligence (AI) is increasingly used in healthcare education, communication, documentation, and clinical information retrieval. However, its responsible integration into nursing practice requires an understanding of nurses' awareness, experiences, perceived benefits, ethical concerns, willingness to adopt AI, and institutional support needs. This study examined AI awareness, utilization, attitudes, perceived benefits and risks, willingness to use AI, and support needs among registered nurses working in hospitals in the Philippines. A descriptive cross-sectional survey was conducted among 150 registered nurses with at least six months of hospital experience. Data were analyzed using frequencies, percentages, means, and standard deviations. Results revealed that 108 respondents (72.0%) had previously used an AI tool, although only 43 respondents (28.7%) had received AI-related training. ChatGPT was the most frequently used AI tool, while common purposes included searching for general health information, reviewing nursing concepts, improving written communication, and preparing presentations or reports. Respondents demonstrated high awareness of AI (M = 3.91, SD = 0.40), perceived benefits (M = 4.08, SD = 0.29), recognition of risks and ethical concerns (M = 4.17, SD = 0.19), willingness to use AI (M = 4.48, SD = 0.22), and need for organizational support and training (M = 4.32, SD = 0.19). Overall, 71.3% of the respondents reported positive or very positive attitudes toward AI, while 90.7% believed that hospitals should permit the use of approved AI tools either fully or under specific conditions. Inaccurate information and patient privacy and confidentiality were the leading concerns, whereas faster access to information and improved professional learning were the most frequently identified benefits. The findings indicate that hospital nurses are generally receptive to AI but recognize significant patient-safety, privacy, accountability, and competency-related risks. Healthcare institutions should establish clear AI governance policies, approve appropriate tools, provide practical training, and require professional verification of AI-generated information before incorporating AI into routine nursing practice.

Introduction

Artificial intelligence (AI) has become one of the most influential technological developments affecting contemporary healthcare. Broadly, AI refers to computer-based systems designed to perform tasks that ordinarily require human intelligence, including recognizing patterns, processing language, interpreting complex information, learning from data, generating recommendations, and supporting decision-making. Within healthcare, AI encompasses machine learning, deep learning, natural language processing, predictive analytics, intelligent monitoring systems, robotics, clinical decision-support applications, and generative AI platforms. These technologies are increasingly being incorporated into patient assessment, diagnostic support, treatment planning, risk prediction, clinical documentation, administrative processes, professional education, and healthcare research [1, 2]. Their expanding availability has created new opportunities for healthcare institutions to improve efficiency, manage large volumes of clinical information, and support healthcare professionals in delivering timely and evidence-informed care.

Nursing is particularly relevant to the development and implementation of AI because nurses constitute a major part of the healthcare workforce and maintain continuous contact with patients across different levels of care. Nurses collect and document substantial amounts of clinical information, monitor changes in patients' conditions, coordinate multidisciplinary care, administer treatments, communicate health information, educate patients and families, and identify potential safety concerns. Consequently, nursing-generated data are frequently used by digital health systems to recognize patterns, predict outcomes, and generate clinical alerts or recommendations. AI applications may assist nurses in patient monitoring, fall-risk detection, deterioration prediction, medication management, wound assessment, standardized documentation, staffing allocation, and clinical communication [1, 3]. These functions demonstrate that AI is not limited to medical diagnosis but may directly influence nursing workflows, professional responsibilities, and the quality of patient care.

One frequently discussed benefit of AI is its potential to reduce the amount of time healthcare professionals spend performing repetitive and administrative activities. Nursing documentation, information retrieval, routine monitoring, and communication processes can consume time that might otherwise be devoted to direct patient care. Speech-recognition tools, automated documentation systems, clinical information extraction, and intelligent decision-support applications may help organize patient data and identify clinically relevant patterns more efficiently [1]. In principle, time saved through responsible automation may allow nurses to devote greater attention to therapeutic communication, patient education, advocacy, individualized care planning, and the psychosocial dimensions of nursing. AI may also improve access to updated professional information, assist nurses in reviewing complex nursing concepts, and support continuing professional development.

The emergence of generative AI has further increased the accessibility of AI technologies. Unlike conventional predictive systems that classify information or estimate future outcomes, generative AI can produce new content in response to user instructions. It may generate text, summarize information, explain technical concepts, assist with professional writing, organize reports, translate information, and respond to healthcare-related questions. Platforms such as ChatGPT have therefore become accessible not only to technology specialists but also to healthcare professionals and the general public. Nurses may use such tools to clarify unfamiliar concepts, prepare educational materials, improve written communication, generate initial outlines, or locate potentially relevant information. However, general-purpose generative AI systems are not automatically validated clinical tools. Their accessibility may encourage use outside formal institutional systems, where governance, data protection, quality assurance, and professional oversight may be limited [8–10].

The successful integration of AI in nursing depends not only on technological capability but also on nurses' knowledge, awareness, attitudes, experiences, confidence, and willingness to use the technology. Healthcare institutions may invest in advanced systems, but the anticipated benefits may not be realized when intended users do not understand the systems, distrust their outputs, or lack sufficient training. Conversely, overly positive attitudes without adequate knowledge may encourage inappropriate reliance on AI-generated recommendations. Understanding nurses' perspectives is therefore essential before

introducing AI into routine nursing practice. Shinners and colleagues emphasized that examining healthcare professionals' perceptions can help identify potential implementation challenges and workforce preparation needs [2]. Nurses should not be treated merely as end users of systems developed without their participation; they should be actively involved in identifying clinical priorities, evaluating usability, examining patient-safety implications, and determining which nursing activities may appropriately be supported by AI [1].

Existing evidence suggests that nurses often perceive AI as potentially useful while simultaneously reporting limited knowledge and important concerns. In the United Arab Emirates, Abuzaid and colleagues found that nurses generally recognized the importance of AI and anticipated its increasing role in nursing practice. Nevertheless, the authors also identified the need for educational and training programs to improve nurses' understanding of AI and its clinical integration [3]. Similarly, a survey of nurses in Germany found that only a minority reported substantial knowledge of AI, while most described their understanding as limited. Nurses were more familiar with applications involving patient monitoring, route planning, and documentation than with applications involving nursing diagnosis, care prediction, and wound management [6]. These findings illustrate that familiarity with commonly visible AI applications does not necessarily indicate comprehensive AI literacy.

A study by Alruwaili and colleagues also examined nurses' awareness and attitudes toward AI and emphasized the importance of education, organizational readiness, and professional involvement in implementation [7]. Collectively, international findings suggest a pattern of cautious or guarded optimism. Nurses may appreciate AI's potential to improve access to information, simplify documentation, strengthen monitoring, and support decision-making, yet they may remain uncertain about reliability, data security, professional accountability, and the effect of AI on human-centered care [6, 7, 10]. Attitudes toward AI may therefore reflect a balance between perceived usefulness and perceived risk rather than complete acceptance or rejection.

Experience with AI is another important factor influencing acceptance. Individuals who have previously encountered AI technologies may be more capable of evaluating their benefits and limitations than those whose knowledge is based solely on media reports or general assumptions. Experience may reduce uncertainty and improve perceived self-efficacy, but the quality and context of that experience are important. Informal use of freely available AI platforms is different from supervised use of institutionally approved clinical technology. Nurses may use AI for education, writing, or information retrieval without knowing how the system was trained, whether patient information is retained, or whether its outputs are appropriate for clinical decision-making. For this reason, studies should distinguish between prior AI use, formal AI education, professional use, and personal or academic use.

Research on technology acceptance indicates that favorable attitudes, perceived usefulness, perceived ease of use, self-efficacy, and prior exposure may influence an individual's intention to adopt AI. Kwak and colleagues found that nursing students' ethical awareness, attitudes, anxiety, and self-efficacy were relevant to their behavioral intentions regarding AI-based healthcare technologies [4]. Their findings

reinforced the need for nursing education that addresses data literacy, technical literacy, systems thinking, AI principles, and the ethical implications of technology use. A systematic review of nursing students and practicing nurses similarly concluded that attitudes, AI literacy, readiness, anxiety, ethical awareness, and organizational support are important determinants of adoption intentions [10]. Accordingly, willingness to use AI should not be interpreted as an isolated personal preference. It may be shaped by knowledge, training, accessibility, perceived value, workplace culture, leadership support, institutional policies, and confidence in the technology.

Evidence from the Philippines is especially relevant because the country has a large nursing workforce and continues to expand its use of digital health technologies. A study involving Filipino student nurses found generally favorable perceptions of AI and a strong intention to adopt AI technology in future nursing practice [5]. The study suggested that students' perceptions of AI utilization were associated with their willingness to use the technology. Although this evidence provides an important foundation, student nurses and practicing hospital nurses differ in their professional responsibilities, exposure to actual clinical risks, accountability, workload, and access to patient information. Practicing nurses make decisions within real healthcare environments where inappropriate technology use may affect confidentiality, documentation accuracy, professional liability, and patient safety. It is therefore important to examine AI awareness and attitudes among registered nurses currently employed in hospitals.

Despite its potential benefits, AI introduces substantial clinical, ethical, legal, and professional concerns. AI-generated information may be inaccurate, incomplete, outdated, biased, misleading, or inappropriate for an individual patient's condition. A system may produce a confident response even when the information is unsupported. In clinical environments, failure to recognize such errors may contribute to incorrect patient education, unsafe recommendations, delayed intervention, or inappropriate documentation. AI must consequently be used as a supportive resource rather than as an unquestioned replacement for professional judgment. Nurses remain responsible for assessing whether information is consistent with the patient's clinical presentation, established evidence, institutional policies, and the applicable scope of nursing practice [1, 8, 9].

Patient privacy and confidentiality are also central concerns. AI systems may require large quantities of information to generate predictions or recommendations. When nurses enter identifiable patient information into an unapproved AI platform, the information may be stored, transmitted, or processed outside the healthcare institution's protected systems. This may expose patients to unauthorized disclosure or secondary use of their data. Ethical reviews of AI in healthcare consistently identify privacy, confidentiality, informed consent, transparency, accountability, data governance, fairness, and security as major concerns [8, 9]. These concerns are particularly important in nursing because patients often disclose sensitive information to nurses and expect that their personal and clinical details will be protected.

Algorithmic bias presents another challenge. AI systems learn from existing datasets, and their recommendations may reflect deficiencies or inequalities within those datasets. When certain

populations are underrepresented, the system may perform less accurately for those groups. Biased outputs may worsen existing disparities and conflict with nursing commitments to equity, advocacy, dignity, and individualized care [1, 8]. Limited transparency may further complicate professional accountability. Some AI systems operate as “black boxes,” meaning that users may receive a recommendation without being able to determine precisely how it was produced. Nurses may then face uncertainty regarding whether to follow the recommendation, how to explain it to patients, and who is responsible when it contributes to harm.

The interpersonal nature of nursing must also be protected. Nursing care involves empathy, presence, communication, cultural sensitivity, moral judgment, advocacy, and the ability to interpret subtle changes in a patient’s behavior or condition. These elements cannot be reduced entirely to automated calculations. AI may support nursing work, but it should not weaken meaningful nurse–patient relationships or reduce patients to collections of data. Human oversight is therefore necessary to ensure that AI augments rather than replaces professional judgment and compassionate care [1, 9, 10].

Healthcare institutions have a major responsibility in creating conditions for safe AI use. Organizational support should include clear policies identifying approved and prohibited AI applications, procedures for protecting patient information, requirements for verifying AI-generated content, mechanisms for reporting errors, and guidance regarding professional accountability. Institutions should also provide continuing education on AI principles, appropriate prompting, limitations, bias, privacy, cybersecurity, ethical decision-making, and human verification [4, 6, 9, 10]. Training should be practical and appropriate to nurses’ clinical roles. It should enable nurses not only to operate AI tools but also to question their outputs, recognize uncertainty, protect confidential information, and decide when human escalation is required.

Assessing nurses’ perceived support needs is therefore as important as determining whether they are willing to use AI. High willingness combined with inadequate organizational guidance may increase unsafe informal use, whereas restrictive policies without education may prevent nurses from benefiting from appropriate applications. Effective governance requires a balanced approach that supports innovation while preserving patient safety, privacy, professional accountability, and the fundamental values of nursing.

Against this background, the present study examined AI awareness, previous utilization, attitudes, perceived benefits, perceived risks and ethical concerns, willingness to use AI, and organizational support and training needs among registered nurses working in hospitals in the Philippines. Examining these dimensions provides a broader understanding of whether nurses are prepared for responsible AI adoption and which institutional measures are needed before AI is more widely integrated into nursing practice. The findings may assist hospital administrators, nurse leaders, educators, policymakers, and technology developers in designing AI policies, competency-based training programs, and governance mechanisms that respond to nurses’ actual experiences and concerns. Ultimately, the responsible

integration of AI should strengthen nurses' capabilities and improve patient care without compromising professional judgment, confidentiality, equity, accountability, or the human-centered character of nursing.

Materials and Methods

Study Design

This study used a quantitative, descriptive, cross-sectional survey design to examine registered nurses' awareness, experiences, attitudes, perceived benefits, perceived risks and ethical concerns, willingness to use artificial intelligence (AI), and perceived need for organizational support and training. A cross-sectional design was selected because the study aimed to describe the respondents' characteristics and AI-related perceptions during a defined period without manipulating variables or introducing an intervention.

This design is appropriate for examining the distribution of knowledge, experiences, attitudes, and behavioral intentions within a specified population. Similar cross-sectional approaches have been used in previous investigations of AI awareness, perceptions, readiness, and adoption among nurses and other healthcare professionals [2, 3, 6, 7]. The study was reported with reference to relevant recommendations from the Strengthening the Reporting of Observational Studies in Epidemiology statement [11]. Because the questionnaire was administered electronically, applicable principles from the Checklist for Reporting Results of Internet E-Surveys were also considered [12].

The study was descriptive in nature. It did not attempt to determine causation or evaluate the effectiveness of a particular AI intervention. Rather, it sought to provide a structured assessment of how hospital nurses understood, experienced, and evaluated AI in relation to their professional practice.

Study Setting and Data-Collection Period

The study was conducted among registered nurses employed in hospitals located in different parts of the Philippines. Participants worked in government hospitals, private hospitals, university or teaching hospitals, and specialty hospitals. They represented different clinical areas, including medical wards, surgical wards, pediatric units, intensive care units, emergency departments, operating rooms, outpatient departments, and other hospital-based nursing areas.

The inclusion of nurses from different hospital types and clinical settings was intended to capture a broad range of professional experiences. Nurses' exposure to AI and digital health systems may vary according to the technological capacity of the institution, availability of electronic health records, clinical specialization, hospital policies, access to training, and the nature of the nurse's responsibilities.

Data collection was undertaken from **May 29 to June 30, 2026**. During this period, the structured questionnaire was distributed electronically to eligible registered nurses through professional and hospital-based nursing networks. Participation was completed independently, and no interview, clinical intervention, or patient-record review was undertaken.

The questionnaire did not require respondents to access or disclose information from patients' medical records. Participants were specifically instructed not to provide patient names, hospital numbers, contact information, or any other patient-identifiable information.

Study Population

The target population consisted of registered nurses currently employed in hospitals in the Philippines. Registered nurses were selected because they are directly involved in patient assessment, monitoring, documentation, treatment implementation, communication, patient education, and coordination of care. These responsibilities place nurses in a significant position to encounter, evaluate, and potentially use AI-supported technologies in healthcare.

To be eligible for participation, respondents were required to meet the following inclusion criteria:

1. They were registered nurses currently employed in a hospital in the Philippines.
2. They had at least six months of hospital nursing experience.
3. They were willing to participate voluntarily in the study.
4. They completed the required sections of the questionnaire.

The minimum requirement of six months of hospital experience was applied to ensure that respondents had sufficient exposure to hospital workflows, documentation practices, institutional policies, patient-safety responsibilities, and professional communication. Nurses with less than six months of experience may still have been undergoing orientation or adjustment to their assigned units and might not yet have had adequate exposure to the organizational issues examined in the study.

Individuals who were not registered nurses, were not currently working in a Philippine hospital, or had less than six months of hospital experience were excluded. Responses with insufficient information for the primary study variables were also excluded from the analysis.

Sample and Sampling Procedure

A non-probability sampling approach was used to recruit eligible participants during the data-collection period. The questionnaire was circulated through professional nursing contacts and hospital-based networks to reach registered nurses who met the study criteria.

Potential participants were provided with information regarding the purpose of the study, eligibility requirements, voluntary nature of participation, confidentiality protections, and expected content of the questionnaire. The recruitment information clarified that participation was not associated with employment evaluation, professional appraisal, salary, promotion, clinical assignment, or continued employment.

Because the main objective was to describe the experiences and perceptions of participating hospital nurses, all eligible and sufficiently complete responses received during the designated collection period

were considered for inclusion. A total of **150 registered nurses** met the eligibility requirements and were included in the final analysis.

The sample included respondents with varying demographic and professional backgrounds, including different age groups, sexes, educational qualifications, lengths of nursing experience, hospital types, clinical assignments, and geographical locations. This variation enabled the study to describe AI-related awareness and perceptions across a range of hospital nursing contexts.

However, because a non-probability sampling strategy was used, the findings were interpreted as descriptive of the participating nurses. They were not treated as statistically representative of every registered nurse in the Philippines.

Research Instrument

Data were collected using a structured, self-administered questionnaire designed to assess nurses' awareness, use, attitudes, perceived benefits, concerns, willingness, and support needs regarding AI. The instrument was organized according to themes commonly examined in published research involving nurses' and healthcare professionals' perceptions of AI [2, 3, 6, 7, 10].

The questionnaire consisted of eligibility questions, demographic and professional questions, AI-related experience questions, five multi-item domains, global perception questions, and open-ended items.

Eligibility Questions

The first part of the questionnaire confirmed whether the respondent was a registered nurse currently employed in a Philippine hospital and whether the respondent had at least six months of hospital nursing experience. Only respondents who satisfied both eligibility requirements were included in the analytical dataset.

Demographic and Professional Characteristics

The demographic and professional section gathered information regarding the respondents':

- Age group
- Sex
- Highest educational attainment
- Number of years of nursing experience
- Current clinical area
- Type of hospital
- Hospital location

Age and work experience were collected using categories rather than exact values to reduce the collection of potentially identifying information. Hospital location was used to describe the geographical distribution of respondents and was not intended to identify individual hospitals.

Digital Access and AI-Related Experience

The next section assessed the respondents' digital access, self-reported digital ability, and previous experience with AI. Participants were asked whether they:

- Had previously received training related to AI
- Had regular access to the internet
- Had previously used an AI tool
- Considered themselves confident in using digital technologies
- Verified information obtained from AI using reliable sources
- Had entered patient-identifiable information into an AI platform

Participants who had previously used AI were asked to identify the tools they had encountered or used. The listed tools included ChatGPT, Google Gemini, Microsoft Copilot, Grammarly or other AI-assisted writing platforms, AI translation tools, and AI-enabled hospital or clinical software.

Respondents were permitted to select more than one AI tool because an individual nurse could have experience with several platforms. They were also asked about the frequency and purposes of their AI use.

Potential purposes included:

- Searching for general health information
- Reviewing nursing concepts
- Improving grammar and professional communication
- Preparing presentations or reports
- Reviewing medications or nursing procedures
- Preparing for examinations or professional training
- Developing patient-education materials
- Translating information
- Organizing nursing-related content
- Personal or non-work-related activities

Questions regarding the disclosure of patient information and verification of AI-provided health information were included because privacy, accuracy, professional accountability, and human oversight are major considerations in the responsible use of AI in healthcare [8–10].

Measurement Domains

The main questionnaire contained five domains: AI awareness, perceived benefits, risks and ethical concerns, willingness to use AI, and organizational support and training needs.

Items were answered using a five-point Likert scale:

1 – Strongly disagree

2 – Disagree

3 – Neither agree nor disagree

4 – Agree

5 – Strongly agree

A mean score was calculated for each domain. Higher mean scores represented stronger endorsement of the construct measured by that domain.

AI Awareness

The AI-awareness domain consisted of eight items. It evaluated the respondents' familiarity with AI, recognition of common AI applications, awareness of AI's possible role in healthcare and nursing, and understanding that AI outputs may require verification by a qualified healthcare professional.

The domain score was calculated by adding the responses to the eight items and dividing the result by eight. A higher score indicated greater self-reported awareness of AI concepts, functions, limitations, and possible applications in nursing.

Perceived Benefits of AI

The perceived-benefits domain consisted of eight items. It measured the extent to which respondents believed AI could contribute positively to nursing and healthcare.

The items addressed potential benefits such as:

- Faster access to professional information
- Improved learning and continuing education
- Assistance with documentation
- Support for clinical decision-making
- Improved communication
- Assistance with patient education

- More efficient organization of information
- Reduction of repetitive work

The responses to the eight items were averaged. Higher scores indicated stronger agreement that AI could provide benefits to nurses, healthcare institutions, or patient-care processes.

Risks and Ethical Concerns

The risks and ethical-concerns domain contained 10 items. It measured the respondents' recognition of possible clinical, ethical, legal, and professional problems associated with AI use.

The domain addressed concerns including:

- Inaccurate or misleading information
- Patient privacy and confidentiality
- Unauthorized disclosure of health information
- Algorithmic bias
- Reduced critical thinking
- Overdependence on technology
- Lack of transparency
- Unclear professional accountability
- Weakening of human-centered care
- Lack of policies and professional guidance

The mean of the 10 items was calculated as the domain score. A higher score represented stronger recognition of the risks and ethical issues related to AI.

The risk score was not reverse-coded. Recognition of AI-related risks was treated as a separate construct rather than as evidence of rejection of AI. A respondent could acknowledge significant risks while also recognizing benefits and expressing willingness to use AI under appropriate conditions.

Willingness to Use AI

The willingness domain consisted of eight items assessing the respondents' openness to using AI for appropriate professional purposes.

Items examined willingness to:

- Learn more about AI
- Attend AI-related training
- Use institutionally approved AI tools

- Apply AI in professional learning
- Use AI to support information retrieval
- Use AI when privacy safeguards were present
- Use AI when professional verification was required
- Adopt AI when clear hospital policies were available

The mean of the eight items was used as the willingness score. Higher scores indicated greater openness or intention to use AI in nursing-related activities.

Organizational Support and Training Needs

The organizational support and training-needs domain consisted of eight items. It assessed whether respondents believed hospitals should provide formal guidance and resources for the responsible use of AI.

The items addressed the need for:

- Clear hospital policies
- Identification of approved AI tools
- Practical training
- Data-privacy safeguards
- Technical assistance
- Human verification requirements
- Clarification of professional accountability
- Mechanisms for reporting incorrect or unsafe AI outputs

The domain score was obtained by averaging the eight items. Higher scores indicated a stronger perceived need for organizational policies, education, supervision, technical support, and governance.

Overall Attitude and Additional Questions

The questionnaire also included single-item questions assessing the respondents' overall attitude toward AI. Response options ranged from negative to very positive.

Participants were asked whether they believed AI was important to the future of nursing in the Philippines. They were also asked whether hospitals should permit the use of approved AI tools. Available responses included full approval, approval only under specified conditions, non-approval, and uncertainty.

Respondents selected what they considered the greatest concern associated with AI and the most important benefit AI could provide. These questions complemented the multi-item domains by

identifying the issues participants considered most important.

Open-ended questions provided respondents with an opportunity to describe their concerns, perceived benefits, recommended policies, and suggested training activities. These comments were used to provide contextual understanding. The primary analysis of the present study remained quantitative and descriptive.

Data-Collection Procedure

Before beginning the questionnaire, participants were shown an information and consent statement. The statement explained the study purpose, procedures, eligibility requirements, voluntary nature of participation, confidentiality measures, possible risks, potential benefits, and contact information of the researcher.

Respondents who voluntarily agreed to participate proceeded to the questionnaire. Completion and submission of the survey indicated informed consent.

The questionnaire was completed independently to minimize interviewer influence and social pressure. Participants were informed that there were no correct or incorrect answers and were encouraged to provide responses that reflected their actual knowledge, experiences, and opinions.

The survey did not request names, employee numbers, nursing-license numbers, personal contact information, or patient data. Participants were instructed not to write any identifying information in the open-ended response fields.

After the data-collection period ended, submitted responses were reviewed for compliance with the inclusion criteria and completeness of the principal study variables. Eligible responses were assigned unique identification codes, such as RN-001, to support data management while maintaining anonymity. A total of 150 eligible and sufficiently complete responses were retained.

Data Management and Quality Control

The collected data were transferred into a password-protected electronic database. Each participant was represented by a unique study code rather than a personal identifier.

The dataset was reviewed for:

- Duplicate entries
- Eligibility
- Missing responses
- Invalid Likert-scale values
- Inconsistent categorical responses
- Errors in coding

- Completeness of the principal domains

Categorical responses were standardized before analysis. Responses to multiple-selection questions were separated into individual categories so that the frequency of each selected AI tool and purpose of use could be calculated.

Likert-scale items were checked to confirm that all entries were within the valid range of 1 to 5. Domain scores were calculated only after confirming the appropriate number of items assigned to each construct.

The awareness, perceived-benefits, willingness, and organizational-support domains each contained eight items. The risks and ethical-concerns domain contained 10 items. For each participant, the responses within a domain were added and divided by the number of items in that domain.

The five domains were analyzed independently. An overall high score in perceived benefits or willingness did not cancel or reduce a high score for ethical concerns. This approach reflected the possibility that nurses could support AI adoption while simultaneously recognizing the need for strict clinical and ethical safeguards.

Statistical Analysis

Data were analyzed using descriptive statistical procedures. Frequencies and percentages were calculated for categorical variables, including:

- Demographic and professional characteristics
- Previous AI-related training
- Digital ability
- Internet access
- Previous AI use
- Types of AI tools used
- Frequency of use
- Purposes of AI use
- Verification practices

Disclosure

• of patient-identifiable information

- Overall AI attitude
- Perceived importance of AI
- Views regarding hospital approval of AI tools

- Greatest perceived concern
- Most important perceived benefit

For multiple-response questions, each selected response was counted separately. Because respondents could select more than one option, the total percentages for these questions could exceed 100%.

Means and standard deviations were calculated for the following domains:

- AI awareness
- Perceived benefits
- Risks and ethical concerns
- Willingness to use AI
- Organizational support and training needs

The mean represented the respondents' average level of agreement, while the standard deviation described the variability of scores around the mean.

The analysis was limited to descriptive statistics because the principal objective was to characterize nurses' experiences, attitudes, and perceptions. The study did not claim that demographic characteristics, previous training, or AI exposure caused particular attitudes or behavioral intentions.

Complete-case analysis was applied to the final dataset. The analytical sample consisted of 150 eligible respondents with sufficient information for the main study variables. Percentages were generally rounded to one decimal place, while mean scores and standard deviations were presented to two decimal places.

Ethical Considerations

Ethical approval

was obtained from the **MMSU Ethics Review Board** before data collection, with approval number **2026–2534**.

The study followed accepted ethical principles for research involving human participants, including respect for autonomy, voluntary participation, confidentiality, minimization of risk, and responsible data management [13].

Before participating, prospective respondents received information regarding:

- The purpose of the research
- The study procedures
- The eligibility requirements
- The voluntary nature of participation

- The right to decline or discontinue participation
- The confidentiality of their responses
- The intended use of the collected information
- The absence of employment-related consequences

Participation involved minimal risk because the study did not include a physical intervention, clinical experiment, biological specimen collection, medication administration, or patient-record review.

Respondents could decline to participate or discontinue the questionnaire without penalty. Participation or non-participation did not affect their employment, professional standing, salary, promotion, work assignment, or relationship with their hospital.

No direct personal identifiers were collected. Participants were instructed not to disclose patient names, medical record numbers, contact information, or any other patient-identifiable information. The analytical dataset contained study codes rather than personal names.

Electronic records were stored in password-protected files accessible only to the researcher and authorized members of the research team. Findings were reported in aggregate form so that no individual nurse, patient, hospital, or healthcare institution could be identified.

Results

Characteristics of the Respondents

A total of **150 registered nurses** met the eligibility criteria and were included in the analysis. All respondents were currently employed in hospitals in the Philippines and had at least six months of hospital nursing experience.

As presented in Table 1, the majority of respondents were female, accounting for 112 participants or 74.7% of the sample. Male respondents comprised 22.7%, while 2.0% preferred not to disclose their sex and 0.7% identified under another category. The two largest age groups were nurses aged 26–30 years, representing 25.3% of the sample, and those aged 31–35 years, representing 21.3%. The remaining 53.3% were distributed across the other age groups included in the questionnaire.

In terms of institutional setting, 63 respondents or 42.0% worked in government hospitals, while 61 or 40.7% were employed in private hospitals. Twenty respondents or 13.3% worked in university or teaching hospitals, and six or 4.0% were employed in specialty hospitals. The respondents were geographically distributed across several areas of the Philippines. Metro Manila accounted for the largest identified group, with 40 respondents or 26.7%, followed by Pangasinan with 23 respondents or 15.3% and Cebu with 22 respondents or 14.7%. The remaining 43.3% were employed in hospitals in other locations.

Table 1

Selected demographic and institutional characteristics of the respondents (N = 150)

Characteristic	Category	Frequency (n)	Percentage (%)
Sex	Female	112	74.7
	Male	34	22.7
	Prefer not to disclose	3	2.0
	Other	1	0.7
Age group	26–30 years	38	25.3
	31–35 years	32	21.3
	Other age groups combined	80	53.3
Hospital type	Government hospital	63	42.0
	Private hospital	61	40.7
	University or teaching hospital	20	13.3
	Specialty hospital	6	4.0
Hospital location	Metro Manila	40	26.7
	Pangasinan	23	15.3
	Cebu	22	14.7
	Other locations combined	65	43.3
Note. Percentages may not total exactly 100.0 because of rounding.			

Previous AI Use, Training, and Verification Practices

The respondents' previous exposure to AI is summarized in Table 2. Of the 150 respondents, 108 or 72.0% reported that they had previously used an AI tool. Thirty-eight respondents or 25.3% reported that they had not used AI, while four or 2.7% were unsure whether the digital tools they had used could be classified as AI.

Despite the relatively high proportion of respondents with previous AI experience, formal AI-related training was less common. Only 43 respondents or 28.7% reported having received previous training related to AI, whereas 107 or 71.3% had not received such training. The difference between previous use and formal training suggests that many respondents had encountered or used AI independently rather than through structured institutional or professional education.

The respondents were also asked whether they had entered patient-identifiable information into an AI tool. Most respondents, representing 138 or 92.0%, stated that they had not entered identifiable patient

information. Nine respondents or 6.0% were unsure, two or 1.3% reported that they had entered such information, and one or 0.7% preferred not to answer.

Verification practices varied among respondents. Thirty-eight nurses or 25.3% reported that they sometimes verified health-related information obtained from AI using reliable sources. Thirty-five or 23.3% reported that they often verified such information, while 19 or 12.7% stated that they always performed verification. Sixteen respondents or 10.7% reported that they rarely verified AI-provided information. The remaining 42 respondents or 28.0% were classified as not using AI for this purpose.

Table 2
Previous AI use, training, privacy practices, and verification behavior (N = 150)

Variable	Response	Frequency (n)	Percentage (%)
Previously used an AI tool	Yes	108	72.0
	No	38	25.3
	Unsure	4	2.7
Received AI-related training	Yes	43	28.7
	No	107	71.3
Entered patient-identifiable information into an AI tool	No	138	92.0
	Unsure	9	6.0
	Yes	2	1.3
	Prefer not to answer	1	0.7
Verification of AI-provided health information	Always	19	12.7
	Often	35	23.3
	Sometimes	38	25.3
	Rarely	16	10.7
	Did not use AI for this purpose	42	28.0

Note. AI refers to artificial intelligence.

AI Tools Used and Purposes of Use

The AI platforms used by respondents and their reported purposes are shown in Table 3. Because respondents were allowed to select more than one tool and more than one purpose, the frequencies and percentages in this table are not mutually exclusive and do not total 100%.

ChatGPT was the most frequently reported AI tool, selected by 82 respondents or 54.7% of the entire sample. Grammarly and other AI-assisted writing tools were used by 40 respondents or 26.7%. Google Gemini and AI-assisted translation tools were each reported by 35 respondents or 23.3%. Microsoft Copilot was used by 24 respondents or 16.0%, while 22 or 14.7% indicated that they had encountered or used AI-enabled hospital or clinical software.

The most frequently reported purpose of AI use was searching for general health information, identified by 65 respondents or 43.3%. Reviewing nursing concepts was reported by 64 respondents or 42.7%, while 60 or 40.0% used AI to improve grammar or written communication. Fifty-six respondents or 37.3% used AI in preparing presentations or reports, and 49 or 32.7% used AI in preparing for examinations, professional education, or training activities.

These results indicate that respondents primarily used AI for information retrieval, professional learning, writing assistance, and preparation of educational or professional materials. Use of AI-enabled hospital software was less frequently reported than the use of publicly accessible platforms.

Table 3

AI tools used and purposes of AI use among respondents (N = 150)

Category	Tool or purpose	Frequency (n)	Percentage (%)
AI tools used	ChatGPT	82	54.7
	Grammarly or other AI writing tools	40	26.7
	Google Gemini	35	23.3
	AI translation tools	35	23.3
	Microsoft Copilot	24	16.0
	AI-enabled hospital or clinical software	22	14.7
Purposes of AI use	Searching for general health information	65	43.3
	Reviewing nursing concepts	64	42.7
	Improving grammar or written communication	60	40.0
	Preparing presentations or reports	56	37.3
	Preparing for examinations or professional training	49	32.7

Note. Multiple responses were permitted; therefore, percentages exceed 100% when combined.

AI Awareness, Perceived Benefits, Risks, Willingness, and Support Needs

The descriptive results for the five principal AI-related domains are presented in Table 4. All domains were measured using a five-point scale, with higher scores indicating stronger agreement with the statements under the corresponding domain.

The respondents obtained a mean AI-awareness score of **3.91** with a standard deviation of **0.40**. This indicates that the respondents generally reported familiarity with AI concepts, common AI tools, possible applications in healthcare, and the need to evaluate AI outputs before using them in professional practice.

The perceived-benefits domain obtained a mean score of **4.08** and a standard deviation of **0.29**. Respondents therefore generally agreed that AI could assist nurses through faster information access, professional learning, documentation support, communication assistance, patient education, and other nursing-related applications.

The risks and ethical-concerns domain produced a mean score of **4.17** with a standard deviation of **0.19**. This score was slightly higher than the perceived-benefits score, indicating that respondents strongly recognized concerns related to inaccurate information, privacy, confidentiality, overdependence, bias, accountability, reduced critical thinking, and the possible weakening of human-centered nursing care.

Willingness to use AI received the highest mean score among the five domains, with a mean of **4.48** and a standard deviation of **0.22**. Respondents expressed strong willingness to learn more about AI, participate in training, and use approved AI tools when appropriate safeguards and professional verification procedures were present.

The organizational support and training-needs domain recorded a mean score of **4.32** with a standard deviation of **0.19**. This finding indicates that respondents strongly supported the establishment of hospital policies, approved tools, privacy protections, training programs, human oversight, and mechanisms for addressing incorrect or unsafe AI outputs.

Because the five domains represent distinct constructs—and the risks domain was intentionally not reverse-coded—no overall AI-related total score was calculated. The relatively small standard deviations observed across the domains suggest that respondents' scores were generally concentrated around the respective domain means.

Table 4

Descriptive statistics for the AI-related domains (N = 150)

Domain	Number of items	Mean	Standard deviation
AI awareness	8	3.91	0.40
Perceived benefits of AI	8	4.08	0.29
Risks and ethical concerns	10	4.17	0.19
Willingness to use AI	8	4.48	0.22
Organizational support and training needs	8	4.32	0.19

Note. Items were measured using a five-point Likert scale from 1 = strongly disagree to 5 = strongly agree. Domains were analyzed separately; no overall total was calculated because they represent distinct constructs and the risks domain was not reverse-coded.

Overall Attitudes and Views Regarding AI Adoption

The respondents' overall attitudes and views regarding the importance and institutional use of AI are presented in Table 5. Most respondents expressed a favorable overall attitude toward AI. Eighty-one respondents or 54.0% described their attitude as positive, while 26 or 17.3% described it as very positive. Combined, 107 respondents or 71.3% expressed either a positive or very positive attitude.

Forty-one respondents or 27.3% reported a neutral attitude, while only two or 1.3% reported a negative attitude. No substantial negative response pattern was observed in the sample.

When asked whether AI was important to the future of nursing in the Philippines, 90 respondents or 60.0% answered "probably yes," while 12 or 8.0% answered "definitely yes." These categories represented a combined 68.0% of the sample. Forty-six respondents or 30.7% were unsure, and only two or 1.3% answered "probably no."

The respondents were also asked whether hospitals should allow the use of approved AI tools. Seventy-five respondents or 50.0% believed that AI tools should be permitted only under specific conditions. Sixty-one or 40.7% supported hospital approval without selecting the conditional option. Combined, 136 respondents or 90.7% supported the use of approved AI tools either fully or under specified conditions. Six respondents or 4.0% opposed hospital approval, while eight or 5.3% remained unsure.

Table 5

Overall attitudes and views regarding AI in nursing (N = 150)

Variable	Response	Frequency (n)	Percentage (%)
Overall attitude toward AI	Very positive	26	17.3
	Positive	81	54.0
	Neutral	41	27.3
	Negative	2	1.3
AI is important to the future of nursing in the Philippines	Definitely yes	12	8.0
	Probably yes	90	60.0
	Unsure	46	30.7
	Probably no	2	1.3
Hospitals should allow approved AI tools	Yes	61	40.7
	Yes, but only under specific conditions	75	50.0
	No	6	4.0
	Unsure	8	5.3

Note. Percentages may not total exactly 100.0 because of rounding. No respondent selected “very negative” or “definitely no.”

Main Concerns and Perceived Benefits

The leading concerns and benefits selected by the respondents are summarized in Table 6. Inaccurate or misleading information was the most frequently identified concern, selected by 39 respondents or 26.0%. Patient privacy and confidentiality ranked second, selected by 35 respondents or 23.3%.

Reduced critical thinking was identified as the principal concern by 19 respondents or 12.7%, while lack of sufficient training was selected by 18 or 12.0%. Overdependence on AI was identified by 17 respondents or 11.3%, and unclear professional accountability was reported by 15 or 10.0%.

Regarding the potential benefits of AI, faster access to information was the most frequently selected benefit, reported by 36 respondents or 24.0%. Improved professional learning ranked second, selected by 29 respondents or 19.3%. Assistance with nursing documentation was selected by 25 or 16.7%, while clinical decision support was identified by 21 or 14.0%. Eighteen respondents or 12.0% selected assistance with patient education as the most important benefit.

The simultaneous recognition of benefits and concerns was consistent with the domain scores reported in Table 4. Respondents expressed strong willingness to use AI and acknowledged its potential usefulness while also recognizing substantial concerns involving information accuracy, privacy, professional judgment, and accountability.

Table 6
Leading concerns and perceived benefits associated with AI (N = 150)

Category	Response	Frequency (n)	Percentage (%)
Leading concerns	Inaccurate or misleading information	39	26.0
	Patient privacy and confidentiality	35	23.3
	Reduced critical thinking	19	12.7
	Lack of sufficient training	18	12.0
	Overdependence on AI	17	11.3
	Unclear professional accountability	15	10.0
Leading perceived benefits	Faster access to information	36	24.0
	Improved professional learning	29	19.3
	Assistance with documentation	25	16.7
	Clinical decision support	21	14.0
	Assistance with patient education	18	12.0
Note. The table presents the most frequently selected concerns and benefits.			

Summary of Principal Findings

The results showed that AI use was already relatively common among the participating hospital nurses, with nearly three-fourths reporting previous use. However, fewer than one-third had received formal AI-related training. ChatGPT was the most commonly reported platform, and AI was used primarily for health-information searches, review of nursing concepts, written communication, and preparation of professional materials.

The respondents reported favorable perceptions of AI's potential benefits and a strong willingness to learn about and use approved AI tools. At the same time, they demonstrated substantial awareness of the risks and ethical concerns associated with AI. Inaccurate information and patient privacy were the most frequently identified concerns.

Most respondents supported hospital use of approved AI tools, particularly when their use was governed by specific conditions. The findings also showed a strong perceived need for organizational policies, practical training, confidentiality protections, professional verification, clear accountability, and human oversight.

Discussion

This study examined registered hospital nurses' awareness, previous utilization, attitudes, perceived benefits, perceived risks and ethical concerns, willingness to use artificial intelligence (AI), and perceived need for organizational support and training in the Philippines. The principal findings showed that AI use was already common among the respondents, although formal preparation remained limited. Nearly three-fourths of the nurses had previously used an AI tool, but fewer than one-third had received AI-related training. Respondents reported favorable attitudes toward AI, recognized its potential value in nursing, and demonstrated a strong willingness to use approved AI applications. At the same time, they expressed substantial concerns regarding inaccurate information, patient privacy, confidentiality, critical thinking, overdependence, and professional accountability.

The findings reflect neither unqualified acceptance nor rejection of AI. Instead, the respondents appeared to demonstrate a form of cautious readiness. They were interested in the potential contributions of AI but expected its use to be supported by training, institutional policies, privacy safeguards, professional verification, and human oversight. This pattern is consistent with the wider nursing literature, which describes nurses and nursing students as generally optimistic about AI while remaining concerned about their level of knowledge, the reliability of AI outputs, and the ethical implications of implementation [3, 6, 7, 10].

Previous AI Use and Limited Formal Training

A notable finding was that 72.0% of the respondents had previously used an AI tool, whereas only 28.7% had received AI-related training. This difference suggests that exposure to AI among hospital nurses may be occurring more rapidly than the development of formal education and institutional preparation. Nurses may already be using publicly accessible tools for learning, writing, information retrieval, translation, and preparation of professional materials even when their hospitals have not yet established structured AI-training programs.

The gap between use and training is important because familiarity with a digital tool does not necessarily indicate adequate AI literacy. A nurse may know how to submit a question to an AI platform without understanding how the tool processes information, how its output should be evaluated, whether submitted information is retained, or whether the system is suitable for healthcare-related use. AI literacy should therefore include more than basic operational ability. It should involve understanding the limitations of AI, recognizing uncertain or incorrect information, protecting confidential data, identifying possible bias, verifying outputs, and knowing when professional judgment must take priority.

The findings are comparable with the German survey conducted by Sommer and colleagues, in which only 25.2% of nurses reported substantial AI knowledge, while 73.0% demonstrated limited understanding [6]. Other research has similarly emphasized the need to prepare nurses through structured education rather than assuming that frequent exposure will automatically result in safe and competent use [3, 4, 7]. The systematic review by El Arab and colleagues identified AI literacy, readiness, attitudes, anxiety, ethical awareness, organizational support, and access to training as important influences on adoption among nursing students and practicing nurses [10].

The present findings therefore indicate a need for hospitals and nursing organizations to respond to an existing practice reality. AI education should not be postponed until advanced AI systems are fully embedded in hospital operations. Nurses are already encountering and using AI, particularly general-purpose platforms. Education is consequently needed now to reduce unsafe use and strengthen nurses' capacity to distinguish between appropriate professional support and inappropriate dependence on unverified information.

Patterns and Purposes of AI Use

ChatGPT was the most frequently reported AI platform, used by 54.7% of the total sample. Grammarly and other AI writing tools, Google Gemini, AI translation applications, Microsoft Copilot, and AI-enabled hospital software were also reported. The most common purposes were searching for general health information, reviewing nursing concepts, improving grammar or written communication, preparing presentations or reports, and preparing for examinations or professional training.

These patterns show that the respondents primarily used AI for educational, informational, and communication-related activities. AI-enabled hospital or clinical software was reported less frequently than publicly accessible applications. Thus, AI adoption among the respondents appeared to be driven more by individual access to general-purpose tools than by systematic implementation of clinical AI within healthcare institutions.

This finding is understandable because tools such as ChatGPT and AI-assisted writing platforms can be accessed through personal computers or mobile devices without formal hospital integration. They offer immediate assistance with summarization, explanation, language improvement, and document preparation. However, ease of access may also create the impression that these applications are appropriate for all professional purposes. General-purpose AI platforms may not be validated for clinical decision-making, may not contain current or context-specific information, and may not comply with institutional data-protection requirements.

Previous literature has identified potential nursing applications in documentation, patient monitoring, risk prediction, clinical decision support, communication, care planning, and professional education [1, 3, 6]. Ronquillo and colleagues emphasized that AI development and implementation should begin with a clear understanding of clinical questions and nursing workflows [1]. Nurses should therefore participate in

determining which tasks may appropriately be supported by AI and which require direct human assessment and judgment.

The respondents' current use of AI for general health information and nursing concepts highlights the importance of teaching source evaluation. AI-provided information should be treated as an initial resource rather than final clinical evidence. Nurses must compare health-related outputs with institutional protocols, medication references, clinical guidelines, peer-reviewed literature, and the patient's actual condition before using the information in professional practice.

Awareness and Perceived Benefits

The respondents obtained a relatively high mean score for AI awareness. This suggests that they generally recognized AI tools, understood that AI could have applications in healthcare, and acknowledged the importance of evaluating AI outputs. However, self-reported awareness should not be interpreted as proof of comprehensive competence. Awareness may reflect general familiarity, whereas competence requires the ability to apply knowledge safely in specific professional situations.

The perceived-benefits score was also high. Respondents recognized that AI could provide faster access to information, support professional learning, assist documentation, improve communication, contribute to patient education, and support clinical decision-making. Faster access to information was the most frequently selected principal benefit, followed by improved professional learning and assistance with documentation.

These findings are consistent with previous studies reporting that nurses perceive AI as potentially useful for administrative tasks, monitoring, documentation, health promotion, decision support, and learning [3, 6, 7]. Abuzaid and colleagues reported favorable attitudes among nurses regarding the integration of AI into daily practice, with many respondents recognizing its potential importance to nursing work [3]. Sommer and colleagues likewise found that nurses were familiar with AI applications in monitoring, documentation, communication, and decision support [6].

The perceived benefit of faster information access is particularly relevant in hospital nursing, where nurses often work under time pressure and must retrieve information rapidly. AI may assist in organizing complex material, summarizing general concepts, or identifying areas that require further review. Nevertheless, speed should not be prioritized over accuracy. Rapidly produced information may still be incomplete, incorrect, outdated, or unsuitable for a particular patient. AI should therefore reduce information-search burden without replacing the nurse's responsibility to validate and contextualize the information.

The recognition of professional learning as an important benefit also suggests that AI may have a role in continuing nursing education. AI-based learning tools may help nurses review concepts, practice clinical reasoning, simplify difficult topics, or receive immediate explanations. The educational value of AI will

depend on appropriate instructional design, reliable content, disclosure of limitations, and the continued involvement of qualified educators and clinical experts.

Risks, Ethical Concerns, and Professional Accountability

The risks and ethical-concerns domain received a mean score of 4.17, which was slightly higher than the perceived-benefits mean of 4.08. This is an important finding because it demonstrates that favorable perceptions of AI did not prevent respondents from recognizing its dangers. The nurses appeared to understand that AI could be useful while still requiring strict safeguards.

Inaccurate or misleading information was the most frequently identified concern. This concern is justified because AI systems can produce responses that are grammatically convincing and confidently presented even when the information is incomplete or unsupported. In nursing practice, accepting inaccurate information without verification could affect patient education, documentation, medication-related decisions, escalation of care, or communication with other healthcare professionals.

The respondents' verification practices showed room for improvement. Only 19 respondents reported always verifying AI-provided health information, while 35 reported doing so often. Others verified information only sometimes or rarely. These findings indicate that willingness to use AI must be accompanied by a stronger culture of verification. Hospitals should require nurses to validate AI-provided clinical information using approved evidence sources and institutional policies. AI output should not be copied directly into clinical documentation or used as the sole basis for patient-care decisions.

Patient privacy and confidentiality were the second most frequently identified concern. Most respondents reported that they had not entered patient-identifiable information into an AI platform, which is encouraging. Nevertheless, nine respondents were unsure whether they had done so, and two acknowledged entering identifiable information. Although these numbers were small, they reveal a meaningful patient-safety and data-protection issue. Uncertainty may indicate that some nurses do not fully understand which details can make a patient identifiable or how information entered into an external AI platform may be processed and stored.

Reviews of healthcare AI ethics consistently identify privacy, confidentiality, trust, accountability, algorithmic bias, transparency, data security, patient autonomy, and fairness as major concerns [8, 9]. Prakash and colleagues emphasized that the ethical challenges of AI include data privacy, bias, accountability, explainability, governance, and the potential worsening of existing health inequities [8]. Mohammed and colleagues similarly identified gaps in nursing-specific ethical and regulatory frameworks, particularly concerning patient autonomy, privacy, accountability, and bias in AI-supported decisions [9].

Hospitals should therefore clearly prohibit the submission of identifiable patient information to unapproved public AI platforms. Policies should explain that patient identity may be revealed not only

through names or medical record numbers but also through combinations of age, diagnosis, location, dates, rare conditions, photographs, and detailed clinical circumstances. Nurses should be trained to recognize these risks before using any AI tool.

Unclear professional accountability was another concern identified by respondents. AI may provide a recommendation, but responsibility for nursing care remains with the licensed professional and the healthcare institution. Nurses must not assume that responsibility transfers to the technology developer or platform. When AI output influences care, the nurse must still assess its relevance, compare it with available evidence, consider the patient's condition, and communicate concerns through appropriate clinical channels.

Willingness to Use AI and Conditional Acceptance

Willingness to use AI obtained the highest domain mean at 4.48. In addition, 71.3% of respondents reported positive or very positive attitudes, and 68.0% believed that AI was probably or definitely important to the future of nursing in the Philippines. These findings demonstrate considerable openness to technological change.

However, this willingness was conditional rather than unrestricted. Half of the respondents believed that hospitals should allow approved AI tools only under specific conditions, while 40.7% supported their use more generally. Combined, 90.7% supported approved AI use either fully or conditionally. This result indicates that most respondents did not advocate uncontrolled access to any available platform. Instead, they favored institutionally approved use supported by defined rules and safeguards.

This conditional acceptance is consistent with the concept of guarded optimism described in the recent nursing literature [10]. Nurses may perceive AI as an efficiency-enhancing and educational resource while expecting ethical alignment, professional-identity preservation, clear protocols, and organizational readiness. The findings also correspond with research showing that positive attitudes and self-efficacy may strengthen behavioral intention, particularly when nurses receive education and support [4].

High willingness represents an opportunity for healthcare institutions. Training programs may receive favorable participation because many nurses are already interested in learning and using AI. However, high willingness may also increase risk when policies and education are absent. Nurses who are motivated to use AI may turn to publicly accessible tools and establish their own practices without adequate guidance. Hospitals should therefore respond with practical governance rather than relying solely on prohibition.

Organizational Support and Training Needs

The organizational support and training-needs domain obtained a high mean score of 4.32. Respondents strongly endorsed the need for approved tools, clear policies, practical training, confidentiality protections, human oversight, accountability guidance, and systems for reporting inaccurate or unsafe outputs.

This finding suggests that nurses recognize AI adoption as an organizational responsibility rather than an exclusively individual matter. Safe implementation requires collaboration among nursing leaders, information-technology departments, data-protection officers, educators, clinical governance teams, legal advisers, and frontline healthcare workers. Nurses should be involved in technology selection, workflow assessment, testing, implementation, evaluation, and policy development [1, 6].

Training should address both practical and conceptual competencies. Practical content should include appropriate prompting, verification of information, identification of unreliable outputs, use of approved systems, protection of patient information, and reporting of errors. Conceptual content should include AI terminology, data quality, algorithmic bias, transparency, accountability, ethical reasoning, and the limits of automation. Kwak and colleagues emphasized the importance of strengthening AI ethics awareness, self-efficacy, and positive attitudes through educational programs [4].

Hospitals should also differentiate between types of AI. A hospital-approved clinical decision-support system connected to validated patient data is not equivalent to a public chatbot. The level of acceptable use, evidence requirements, oversight, and confidentiality protection may differ substantially. Nurses need clear guidance regarding which systems may be used, for what purposes, with which data, and under whose authorization.

Implications for Nursing Practice, Education, and Administration

The findings have important implications for hospital practice. Nurse administrators should develop formal policies governing AI use before unsafe practices become established. Policies should define approved applications, prohibited uses, verification requirements, documentation standards, privacy protections, and lines of accountability.

Nursing education institutions and hospital staff-development units should incorporate AI literacy into orientation, continuing education, and competency-development programs. Training should not focus only on enthusiasm for innovation. It should prepare nurses to critically question AI outputs and recognize situations in which AI should not be used.

For nursing practice, AI should be positioned as an assistive resource rather than a substitute for assessment, critical thinking, professional communication, and compassionate care. Nurses should remain responsible for interpreting information according to the patient’s individual needs. Human judgment is especially important when situations are complex, rapidly changing, ethically sensitive, or poorly represented in available data.

Nurse leaders should also involve frontline nurses when selecting or implementing AI technologies. Nurses understand patient-care workflows, documentation burdens, communication needs, and practical barriers that may not be apparent to technology developers. Their involvement may improve system relevance, usability, safety, and acceptance [1].

Limitations of the Study

The findings should be interpreted in light of several limitations. First, the study used a descriptive cross-sectional design. Data reflected respondents' experiences and perceptions during the collection period from May 29 to June 30, 2026. The study could not determine changes over time or establish causal relationships between training, previous AI use, attitudes, and willingness.

Second, non-probability sampling was used. Although nurses from different hospital types and locations participated, the sample may not represent all registered nurses in the Philippines. Nurses who were interested in AI or comfortable with electronic surveys may have been more likely to participate.

Third, the study relied on self-reported information. Respondents' reports of awareness, verification practices, patient-information handling, and AI use may have been affected by recall error or social-desirability bias. Self-reported awareness also does not necessarily demonstrate objectively measured AI competence.

Fourth, the questionnaire was researcher-developed from themes in the literature. Although the domains were conceptually aligned with prior studies, the present report does not provide evidence of formal content-validity testing, construct validation, or internal-consistency reliability for this sample. Domain scores should therefore be interpreted as descriptive indicators, and the instrument requires further psychometric evaluation before broader use.

Fifth, the study combined different types of AI under a broad category. Respondents may have interpreted AI differently depending on whether they were thinking about ChatGPT, writing assistants, translation tools, clinical software, or automated hospital systems. Future studies should distinguish general-purpose generative AI from validated clinical AI applications.

Sixth, the principal analysis was descriptive. Relationships between demographic characteristics, training, experience, awareness, attitudes, and willingness were not tested. Future research could use inferential analysis, longitudinal designs, qualitative interviews, intervention studies, and objective AI-literacy assessments.

Recommendations

Hospitals should establish written AI-governance policies identifying approved and prohibited tools and purposes. Entry of patient-identifiable information into unapproved AI platforms should be explicitly prohibited. Institutions should provide accessible training on AI literacy, verification, privacy, bias, accountability, and ethical decision-making.

AI-provided clinical information should be independently verified using reliable professional sources before being applied to patient care, education, or documentation. Nurse leaders should include frontline nurses in decisions concerning AI selection and implementation.

Nursing schools and professional organizations should integrate AI competencies into nursing curricula and continuing professional development. Future studies should include larger probability-based samples, compare hospital sectors and clinical specialties, measure actual competence, and evaluate whether training improves safe AI use.

Conclusion

Registered hospital nurses in the Philippines demonstrated substantial exposure to AI, favorable attitudes, strong willingness to use approved applications, and recognition of AI's potential benefits for information access, professional learning, documentation, communication, and patient education. However, formal AI-related training remained limited despite widespread previous use.

The respondents also recognized significant risks, particularly inaccurate information, patient privacy and confidentiality, reduced critical thinking, overdependence, inadequate training, and unclear professional accountability. Most supported hospital use of approved AI tools, especially when implementation was governed by specific conditions.

The findings indicate that hospital nurses are receptive to AI but do not support its uncontrolled integration into professional practice. Responsible adoption will require clear institutional policies, approved technologies, practical education, protection of patient data, routine verification of AI-provided information, transparent accountability, and continued human oversight. AI should be used to strengthen nursing capability and efficiency while preserving professional judgment, ethical responsibility, patient safety, equity, confidentiality, and the human-centered nature of nursing care.

Declarations

Ethics Approval and Consent to Participate

Ethical approval for this study was obtained from the MMSU Ethics Review Board (approval no. 2026–2534) before data collection. The study was conducted in accordance with accepted ethical principles for research involving human participants.

Consent for Publication

The manuscript does not contain identifiable personal information, individual clinical details, photographs, videos, or other materials requiring separate consent for publication. Therefore, consent for publication was not applicable.

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Author Contributions

Both authors contributed to the conception and design of the study, development of the research instrument, interpretation of the findings, review of the literature, and preparation and revision of the manuscript. Both authors read and approved the final manuscript and accept responsibility for the integrity and accuracy of the work.

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Confidentiality and Data Protection

All information collected during the study was treated confidentially. Electronic records were stored in password-protected files accessible only to the researcher and authorized individuals. Study identification codes were used in place of personal identifiers. The results were presented as grouped findings, and no individual nurse, patient, hospital, or healthcare institution was identified in the manuscript.

Availability of Data and Materials

The data supporting the findings of this study are available from the corresponding author upon reasonable request. Access may be subject to ethical, confidentiality, and data-protection requirements because the dataset contains information provided by healthcare professionals. No personally identifiable information will be shared.

Competing Interests

The authors declare that they have no financial, professional, institutional, or personal competing interests that could have influenced the conduct, analysis, interpretation, or reporting of this study.

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