



NURSE LEADERS' PERCEPTIONS AND READINESS FOR ARTIFICIAL INTELLIGENCE IN PREDICTIVE HEALTHCARE ANALYTICS

Mark Gil A. Masarate

*Graduate School, University of Perpetual Help System DALTA,
Las Piñas City, Metro Manila, Philippines*

ABSTRACT

This study, conducted in February 2026, aimed to assess the perceptions and readiness of nurse leaders toward the adoption of artificial intelligence (AI) in predictive healthcare analytics within nursing management. Despite the increasing integration of AI into healthcare systems, limited empirical evidence exists regarding nurse leaders' preparedness and perceptions of AI-driven predictive technologies in the Philippine context. The study employed a quantitative descriptive-correlational research design and involved 34 nurse leaders from four public hospitals in Quirino Province, Philippines. Data were gathered using an adapted structured questionnaire that measured respondents' demographic characteristics, readiness in terms of awareness, knowledge, skills, and organizational support, and perceptions based on perceived usefulness, ease of use, attitude toward usage, and intention to use AI. Data were analyzed using descriptive statistics and correlational methods through Microsoft Excel and SPSS. Findings revealed that nurse leaders demonstrated a moderate level of readiness and generally positive perceptions toward AI adoption in predictive healthcare analytics. Organizational support and perceived usefulness emerged as important factors associated with readiness. Moreover, a significant positive relationship was found between readiness and perception, indicating that nurse leaders who were more prepared for AI adoption tended to have more favorable perceptions of its use. The study concludes that strengthening nurse leaders' readiness through targeted training, organizational support, and leadership development is essential for effective AI integration in nursing management. The study recommends incorporating AI competencies into nursing leadership education and developing supportive institutional policies for sustainable and ethical AI adoption.

Keywords: *Artificial Intelligence, Nurse Leaders, Perception, Predictive Healthcare Analytics, Readiness*

INTRODUCTION

As the healthcare sector continues to develop rapidly, Artificial Intelligence (AI) and predictive analytics emerge as crucial innovations capable of predicting patient risks, streamlining healthcare delivery, and enhancing efficiency by studying vast and complex datasets. Predictive Analytics relies on early warning of the progression of disease, deterioration of patient manifestations and of staff needs to allow for timely and proactive decision-making and action on the part of healthcare leaders. However, the adoption and embracing of these technologies is not just about infrastructure and software availability, but also of the people who must champion the adoption of these technologies. For nursing management, the role can typically be fulfilled by a nurse leader, a figure who connects clinical practice with administrative management. They are uniquely positioned to leverage and embrace AI-powered predictive tools, which could directly impact organizational results.

Global research shows a growing interest among healthcare leaders in adopting AI while also revealing significant knowledge and readiness gaps. Kotp et al. (2025) reported that in a study of nine Egyptian hospitals, only one-third of nurse leaders demonstrated high preparedness to implement AI. Similarly, Sommer et al. (2024) found that while 66 percent of German nurses expressed positive attitudes toward AI applications such as documentation and patient monitoring, 75 percent admitted to having limited understanding of how these systems function. These findings indicate that even with favorable perceptions, the lack of adequate training and familiarity with AI technologies may hinder effective adoption.

In the Asia-Pacific region, adoption of predictive analytics remains uneven. Ang (2022) observed that 27 percent of hospitals had fully integrated predictive analytics, with another 44 percent in active implementation stages. Barriers include inadequate digital infrastructure, inconsistent policy frameworks, and limited leadership training. The Asian Development Bank (2025) further noted that Southeast Asian countries often lack unified digital health strategies, making it challenging to scale AI adoption across health systems.

In the Philippines, select tertiary hospitals such as the Philippine General Hospital and The Medical City have piloted AI applications, including disease trajectory modeling and automated triage (Mirasol, 2024). However, these initiatives remain concentrated in urban centers and have yet to be widely implemented in provincial and public hospitals. The country's low ranking in global digital infrastructure (Mirasol, 2024) and ongoing nursing shortages exacerbate the challenge. Devereux (2023) reported that between 120,000 and 350,000 nursing positions remain vacant, largely due to migration of skilled nurses abroad. This shortage not only strains hospital operations but also places additional burdens on nurse leaders, who must balance workforce management with advancing digital transformation efforts.

From a theoretical perspective, the Technology Acceptance Model (TAM) offers a useful framework for understanding nurse leaders' readiness for AI adoption. TAM posits that perceived usefulness and perceived ease of use influence an individual's willingness to accept new technologies (Davis, 1989). Applying this model in the context of predictive analytics allows for a structured examination of how nurse leaders perceive AI's value in improving patient outcomes and operational efficiency, and how confident they feel in using it effectively.

Despite growing global literature on AI readiness in healthcare, there is a scarcity of empirical studies that focus specifically on nurse leaders in the Philippine context. International findings, such as those by Al Shahrani et al. (2024) in Saudi Arabia, suggest that demographic variables like age, educational background, and leadership experience can predict AI readiness. However, similar data for the Philippines is lacking. No comprehensive study has yet examined the relationship between Filipino nurse leaders' readiness and their perceptions of AI in predictive analytics.

This gap has both academic and operational implications. Implementing AI without understanding leadership readiness risks underutilization, resistance, and suboptimal return on investment (Gonzalez-Garcia et al., 2024). Therefore, this study seeks to address the absence of localized, evidence-based data by assessing the perceptions and readiness of nurse leaders toward adopting AI in predictive healthcare analytics. The findings are expected to guide targeted training, inform policy development, and strengthen the capacity of nursing leadership to lead digital transformation in healthcare.

Research Questions

The main purpose of this study was to assess the perceptions and readiness of nurse leaders toward the adoption of artificial intelligence and predictive analytics in nursing management. Specifically, the study sought to answer the following research questions:

1. What is the demographic profile of respondents in terms of:
 - a. Age,
 - b. Gender,
 - c. Highest Nursing Degree Earned, and
 - d. Current employment status?
2. What is the level of readiness of nurse leaders toward the adoption of artificial intelligence and predictive analytics in nursing management in terms of
 - a. Awareness,
 - b. Knowledge,
 - c. Skills, and
 - d. Organizational Support?
3. What is the level of perception of nurse leaders toward the adoption of artificial intelligence and predictive analytics in nursing management in terms of
 - a. Perceived Usefulness,
 - b. Ease of Use,
 - c. Attitude Towards Usage, and

d. Intention to Use?

4. Is there a significant relationship between the level of readiness and the perception of nurse leaders toward artificial intelligence and predictive analytics in nursing management?

METHODOLOGY

This outlines the methods used to achieve the objectives of the study on nurse leaders' perceptions and readiness for artificial intelligence in predictive healthcare analytics. It details the research design, study locale, respondents, data collection procedure, research instrument, statistical treatments, and ethical considerations.

Research Design

This study employed a quantitative descriptive-correlational research design to assess nurse leaders' readiness and perceptions toward the adoption of artificial intelligence (AI) and predictive analytics in nursing management. The descriptive component was used to characterize the respondents and determine their levels of readiness and perception, while the correlational component examined the relationship between these two variables. Readiness was assessed in terms of awareness, knowledge, skills, and organizational support, whereas perception was assessed in terms of perceived usefulness, ease of use, attitude toward usage, and intention to use. The study examined associations between variables and did not infer causal relationships.

Locale of the Study

The study was conducted in Quirino Province, Cagayan Valley Region, Philippines, and included four operational public hospitals: Aglipay District Hospital, Diffun District Hospital, Quirino Province Medical Center, and Maddela District Hospital. These hospitals provide healthcare services to the province and employ nurse leaders involved in nursing supervision, patient care management, and administrative decision-making. The four public hospitals served as the study sites for examining nurse leaders' readiness and perceptions toward the adoption of artificial intelligence and predictive analytics in nursing management.

Respondents and Sampling of the Study

The respondents were 34 licensed nurse leaders employed in the four public hospitals in Quirino Province. Nurse leaders were defined as nurses occupying formal leadership or supervisory positions, including nurse supervisors, chief nursing officers, nurse managers, nurse educators, and healthcare quality specialist nurses. Eligible participants were required to be currently employed in a formal leadership or supervisory position, have at least one year of experience in the position, and provide informed consent. Nurses on extended leave, those holding temporary or acting positions without formal appointment, and administrative personnel without clinical or supervisory

responsibilities were excluded. Total population sampling was used because the population of eligible nurse leaders was small and clearly defined. All 34 eligible nurse leaders from the four public hospitals were invited to participate, as shown in Table 1.

Table 1. Population Size of Nurse Leaders

Name of Hospitals	Number of Nurse Leaders
Aglipay District Hospital	3
Diffun District Hospital	5
Quirino Province Medical Center	19
Maddela District Hospital	7
Total	34

Research Instrument

The study used a structured questionnaire adapted from Kopt et al. (2025) and modified to fit the context of artificial intelligence (AI) and predictive analytics in nursing management. The questionnaire consisted of three parts. The first part collected the respondents' demographic information, including age, gender, highest nursing degree earned, and current employment status. The second part assessed nurse leaders' readiness toward the adoption of AI and predictive analytics through four dimensions: awareness, knowledge, skills, and organizational support. It consisted of 24 items, with six items for each dimension. The third part assessed nurse leaders' perceptions through four dimensions: perceived usefulness, ease of use, attitude toward usage, and intention to use. This section also contained 24 items, with six items for each dimension. The readiness and perception items were rated using a four-point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree).

In addition, to establish the validity of the instrument, the questionnaire was reviewed by experts with relevant expertise in nursing, healthcare management, and research. The instrument was subsequently pilot tested with five nurse leaders who were not included in the main study to assess the clarity and consistency of the items. Reliability was determined using Cronbach's alpha. The readiness scale yielded coefficients of 0.86 for awareness, 0.88 for knowledge, 0.87 for skills, and 0.89 for organizational support, while the perception scale yielded coefficients of 0.91 for perceived usefulness, 0.88 for ease of use, 0.90 for attitude toward usage, and 0.92 for intention to use, as shown in Table 2 and 3.

Table 2. Reliability Test for Level of Readiness toward Artificial Intelligence and Predictive Healthcare Analytics

Sub-variables	No. of Items	Cronbach's Alpha
A. Awareness	6	0.86
B. Knowledge	6	0.88
C. Skills	6	0.87

D. Organizational Support	6	0.89
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Table 3. Reliability Test for Level of Perception toward Artificial Intelligence and Predictive Healthcare Analytics

Sub-variables	No. of Items	Cronbach's Alpha
A. Perceived Usefulness	6	0.91
B. Ease of Use	6	0.88
C. Attitude Toward Usage	6	0.90
D. Intention to Use	6	0.92

These results indicated satisfactory to excellent internal consistency across all dimensions. Based on the pilot test and expert feedback, minor revisions were made to improve the clarity of the items before the questionnaire was administered to the study respondents.

Data Gathering Procedure

The data collection process for the study followed a systematic approach to ensure accuracy and reliability of the data gathered. The process began with the formulation of the research instrument. The questionnaire, adapted from the validated tool developed by Kopt et al. (2025), was customized for the study's context and made available in two formats: an online version using Google Forms and a printed version. This dual format allowed respondents to choose the method that was most convenient for them, ensuring greater participation and inclusivity.

Before data collection proceeded, the researcher first secured formal approval from the Dean of the Graduate School. This endorsement was necessary to authorize the start of the fieldwork phase and to uphold the academic integrity and institutional protocol of the research process. Following this, the researcher obtained the required waivers, endorsements, and permissions from the appropriate authorities, including the hospital administrators and, if applicable, institutional review boards or nursing organizations affiliated with the respondents. These approvals ensured ethical compliance, protected participant confidentiality, and legitimized the data-gathering efforts.

The distribution of the questionnaire followed after obtaining the required approvals. Nurse leaders who met the inclusion criteria were invited to participate in the study. For those who preferred the online format, a link to the Google Form was shared through email or messaging platforms. Meanwhile, printed copies of the questionnaire were distributed personally to nurse leaders working in hospitals or other healthcare facilities. Brief instructions on how to complete the questionnaire were included in both formats, and respondents were given a reasonable amount of time to submit their responses.

A pilot test was conducted before the full implementation of data collection to ensure the reliability and validity of the adapted questionnaire. A small group of nurse leaders, who were not part of the main respondents, completed the questionnaire. Their feedback helped identify any unclear or confusing items, and necessary revisions were made based on their input. This step was crucial for refining the research instrument and ensuring its effectiveness in measuring the variables of interest.

Once all responses were collected, the data were tallied and organized for analysis. Responses from the printed questionnaires were encoded manually, while the data from the Google Forms were automatically collated. The data were then reviewed for completeness and accuracy before proceeding to the analysis phase. This organized and thorough approach to data collection ensured that the study produced reliable and meaningful insights into the perceptions and readiness of nurse leaders toward artificial intelligence in predictive healthcare analytics.

Statistical Treatment of Data

The data collected from the respondents were organized, encoded, and analyzed using appropriate descriptive and inferential statistical techniques. Frequency and percentage were used to describe the respondents' demographic profile in terms of age, gender, highest nursing degree earned, and current employment status. These measures summarized the distribution of the respondents across the identified demographic categories.

The weighted mean was used to determine the level of readiness of nurse leaders toward the adoption of artificial intelligence (AI) and predictive analytics in nursing management. Readiness was measured through 24 items covering four dimensions: awareness, knowledge, skills, and organizational support. The weighted mean was also used to determine the level of nurse leaders' perceptions toward AI and predictive analytics based on 24 items covering perceived usefulness, ease of use, attitude toward usage, and intention to use. Both scales used a four-point Likert scale: 4 (Strongly Agree), 3 (Agree), 2 (Disagree), and 1 (Strongly Disagree). The weighted mean summarized the average level of agreement for each item across all respondents. The formula for computing the weighted mean was as follows:

$$\text{Weighted Mean (WM)} = \frac{\sum(fx)}{n}$$

where "f" stood for the frequency or number of responses per scale point, "x" was the assigned weight for each response, and "n" was the total number of respondents. The interpretation of the mean scores was based on a standard range shown in Table 1, which helped identify the general readiness level of the nurse leaders based on the average responses.

Table 3. Verbal Interpretation for the Level of Agreement

Range	Weighted Scale	Description	Interpretation
3.25–4.00	4	Strongly Agree	Very high level of readiness/perception
2.50–3.24	3	Agree	High or moderate level of readiness/perception
1.75–2.49	2	Disagree	Low level of readiness/perception
1.00–1.74	1	Strongly Disagree	Very low level of readiness/perception

To determine whether a significant relationship existed between the level of readiness and the level of perception of nurse leaders toward the adoption of AI and predictive analytics, Spearman's rank-order correlation (Spearman's rho) was employed. This nonparametric test was appropriate for examining the relationship between the two variables based on the ordinal nature of the Likert-scale responses and the small sample size of 34 respondents. The correlation coefficient was used to determine the direction and strength of the relationship, while the 0.05 level of significance was used to determine statistical significance.

All completed questionnaires were reviewed for completeness before encoding and analysis. The data were then summarized and presented in tables with corresponding interpretations aligned with the research questions.

Scope and Limitations

This study focused on assessing the perceptions and readiness of nurse leaders toward the adoption of artificial intelligence (AI) and predictive healthcare analytics in nursing management. Conducted during the School Year 2024–2025, it employed a quantitative research design to measure how prepared and open nurse leaders were to integrating AI tools in their work to improve healthcare outcomes and support decision-making. The study also examined the perceived usefulness, ease of use, attitude toward usage, and intention to use AI, as well as the relationship between readiness and perception. The respondents were limited to nurse leaders working in four public hospitals in the province of Quirino, particularly those holding leadership or supervisory positions such as head nurses, nurse supervisors, and nurse managers with at least one year of experience. A minimum of 30 nurse leaders participated in the study, and survey questionnaires with statistical analysis were used to ensure that the data collected were measurable and systematic.

However, this study had several limitations. The findings were based only on the responses of nurse leaders from selected public hospitals in Quirino, which meant the results may not have represented nurse leaders in private hospitals, other provinces, or

other countries. In addition, the study relied on self-reported questionnaires, so some responses may have been influenced by personal bias or socially desirable answers. Since the research used a cross-sectional design, it only captured perceptions and readiness at a single point in time and did not reflect possible changes in the future. Furthermore, the study did not include interviews or other qualitative methods for deeper insights, nor did it examine technical development, financial costs, or the perspectives of other healthcare professionals, as these were beyond the scope of this research.

RESULTS

Demographic Profile of Respondents

Table 5. Demographic Profile of Respondents

Gender	Frequency (n=34)	Percentage
Male	15	44.12%
Female	19	55.88%
Age Range		
Less than 25 years old	0	0.00%
25 to 30 years old	1	2.94%
31 to 35 years old	9	26.47%
36 to 40 years old	13	38.24%
41 years old and above	11	32.35%
Degree		
Bachelor of Science in Nursing (BSN)	8	23.53%
Master of Science in Nursing (MSN)	24	70.59%
Nursing Ph.D.	2	5.88%
Employment Status		
Regular / Permanent	34	100%
Contractual / Fixed-term	0	0.00%
Part-time	0	0.00%
Probationary / Temporary	0	0.00%
Position		
Nurse Educator	4	11.76%
Healthcare Quality Specialist Nurse	3	8.82%
Nurse Supervisor	10	29.41%
Nurse Manager	12	35.29%
Assistant Chief Nursing Officer	4	11.76%
Chief Nursing Officer	1	2.94%

Table 5 presents the demographic profile of the 34 nurse leaders who participated in the study. In terms of gender, 19 (55.88%) were female and 15 (44.12%) were male. Regarding age, the largest proportion of respondents was aged 36–40 years (13, 38.24%), followed by those aged 41 years and above (11, 32.35%) and 31–35 years (9, 26.47%). One respondent (2.94%) was aged 25–30 years, while none was below 25 years old.

In terms of highest nursing degree earned, 24 respondents (70.59%) held a Master of Science in Nursing (MSN), 8 (23.53%) held a Bachelor of Science in Nursing (BSN), and 2 (5.88%) held a Nursing PhD. All respondents (34, 100.00%) were regular or permanent employees, with none classified as contractual or fixed-term, part-time, or probationary/temporary. Regarding position, Nurse Managers comprised the largest group (12, 35.29%), followed by Nurse Supervisors (10, 29.41%). Nurse Educators and Assistant Chief Nursing Officers each accounted for 4 respondents (11.76%), Healthcare Quality Specialist Nurses accounted for 3 (8.82%), and Chief Nursing Officers accounted for 1 (2.94%).

Level of Readiness Toward the Adoption of AI and Predictive Analytics

Table 6. Level of Readiness of Nurse Leaders Toward AI and Predictive Analytics Adoption in Nursing Management in terms of Awareness

Statements	Mean	Standard Deviation	Verbal Interpretation
I am aware that Artificial Intelligence (AI) is being used in healthcare to improve patient care and decision-making.	3.05	0.78	Agree
I am aware that predictive analytics can help anticipate patient needs.	2.91	0.80	Agree
I am aware of real-life examples where AI has been successfully used in hospitals such as early warning systems, patient flow prediction.	2.45	0.75	Disagree
I regularly read or hear updates about AI innovations and applications in nursing practice.	2.36	0.70	Disagree
I am aware of my organization's plans, if any, to adopt AI or analytics tools for nursing management.	2.50	0.72	Agree

I am aware that adopting AI will require changes in how nurses make decisions and manage resources.	3.18	0.68	Agree
Composite Mean	2.74		Agree

Table 6 presents the level of readiness of nurse leaders toward the adoption of artificial intelligence (AI) and predictive analytics in nursing management in terms of awareness. The results show a composite mean of 2.74 (SD = 0.74), verbally interpreted as Agree, indicating that the nurse leaders generally have awareness of AI and predictive analytics and their possible applications in nursing management. Among the six indicators, the statement “I am aware that adopting AI will require changes in how nurses make decisions and manage resources” obtained the highest mean of 3.18 (SD = 0.68), followed by “I am aware that Artificial Intelligence (AI) is being used in healthcare to improve patient care and decision-making” with a mean of 3.05 (SD = 0.78). The statement “I am aware that predictive analytics can help anticipate patient needs” obtained a mean of 2.91 (SD = 0.80).

Meanwhile, awareness of the organization’s plans to adopt AI or analytics tools received a mean of 2.50 (SD = 0.72). The respondents disagreed with the statements “I am aware of real-life examples where AI has been successfully used in hospitals such as early warning systems and patient flow prediction” and “I regularly read or hear updates about AI innovations and applications in nursing practice,” which obtained means of 2.45 (SD = 0.75) and 2.36 (SD = 0.70), respectively.

Table 7. Level of Readiness of Nurse Leaders Toward AI and Predictive Analytics Adoption in Nursing Management in terms of Knowledge

Statements	Mean	Standard Deviation	Verbal Interpretation
I know what Artificial Intelligence and predictive analytics mean in the context of healthcare.	2.81	0.74	Agree
I know how predictive analytics can be used to improve patient outcomes such as reducing errors, preventing delays in care.	2.92	0.73	Agree
I know the basic data privacy rules and ethical issues when using AI in patient care.	2.64	0.79	Agree
I know about available AI tools or systems that can be used for nursing management tasks such as staff scheduling, patient monitoring.	2.59	0.71	Agree

I understand that AI provides data insights but still requires nurse leaders' judgment for final decisions.	3.12	0.69	Agree
I know that training is needed to effectively use AI tools in my practice.	3.20	0.66	Agree
Composite Mean	2.88		Agree

Table 7 presents the level of readiness of nurse leaders toward the adoption of AI and predictive analytics in nursing management in terms of knowledge. The results show a composite mean of 2.88, verbally interpreted as Agree, indicating that nurse leaders generally agree that they have knowledge of AI and predictive analytics and their use in healthcare. The highest-rated statement was "I know that training is needed to effectively use AI tools in my practice," with a mean of 3.20 (SD = 0.66). This was followed by "I understand that AI provides data insights but still requires nurse leaders' judgment for final decisions," with a mean of 3.12 (SD = 0.69). The statement "I know how predictive analytics can be used to improve patient outcomes such as reducing errors and preventing delays in care" obtained a mean of 2.92 (SD = 0.73), while "I know what Artificial Intelligence and predictive analytics mean in the context of healthcare" obtained a mean of 2.81 (SD = 0.74). The respondents also agreed that they knew the basic data privacy rules and ethical issues related to AI in patient care, with a mean of 2.64 (SD = 0.79), and that they knew about available AI tools or systems for nursing management tasks, with the lowest mean of 2.59 (SD = 0.71).

Table 8. Level of Readiness of Nurse Leaders Toward AI and Predictive Analytics Adoption in Nursing Management in terms of Awareness

Statements	Mean	Standard Deviation	Verbal Interpretation
I am aware that Artificial Intelligence (AI) is being used in healthcare to improve patient care and decision-making.	3.05	0.78	Agree
I am aware that predictive analytics can help anticipate patient needs.	2.91	0.80	Agree
I am aware of real-life examples where AI has been successfully used in hospitals such as early warning systems, patient flow prediction.	2.45	0.75	Disagree
I regularly read or hear updates about AI innovations and applications in nursing practice.	2.36	0.70	Disagree
I am aware of my organization's plans, if any, to adopt AI or analytics tools for nursing management.	2.50	0.72	Agree

I am aware that adopting AI will require changes in how nurses make decisions and manage resources.	3.18	0.68	Agree
Composite Mean	2.74		Agree

Table 7 presents the level of readiness of nurse leaders toward the adoption of artificial intelligence (AI) and predictive analytics in nursing management in terms of awareness. The results show a composite mean of 2.74 (SD = 0.74), verbally interpreted as Agree, indicating that the nurse leaders generally have awareness of AI and predictive analytics and their possible applications in nursing management. Among the six indicators, the statement “I am aware that adopting AI will require changes in how nurses make decisions and manage resources” obtained the highest mean of 3.18 (SD = 0.68), followed by “I am aware that Artificial Intelligence (AI) is being used in healthcare to improve patient care and decision-making” with a mean of 3.05 (SD = 0.78). The statement “I am aware that predictive analytics can help anticipate patient needs” obtained a mean of 2.91 (SD = 0.80). Meanwhile, awareness of the organization’s plans to adopt AI or analytics tools received a mean of 2.50 (SD = 0.72). The respondents disagreed with the statements “I am aware of real-life examples where AI has been successfully used in hospitals such as early warning systems and patient flow prediction” and “I regularly read or hear updates about AI innovations and applications in nursing practice,” which obtained means of 2.45 (SD = 0.75) and 2.36 (SD = 0.70), respectively. These findings indicate that nurse leaders have general awareness of the role and possible effects of AI and predictive analytics, but their awareness is weaker in terms of actual hospital applications and regular exposure to recent AI developments.

Table 9. Level of Readiness of Nurse Leaders Toward AI and Predictive Analytics Adoption in Nursing Management in terms of Skills

Statements	Mean	Standard Deviation	Verbal Interpretation
I can read and interpret basic data reports or dashboards used in nursing management.	2.91	0.72	Agree
I can use digital platforms that support data-driven decisions.	2.82	0.77	Agree
I can guide my team in using data insights to improve workflows or patient outcomes.	2.91	0.74	Agree
I can adapt quickly to new technology introduced in the workplace.	3.09	0.65	Agree
I feel confident that I can learn how to use AI tools effectively when proper training is provided.	3.05	0.69	Agree

I can troubleshoot basic issues when using digital tools.	2.64	0.78	Agree
Composite Mean	2.90		Agree

Table 9 presents the level of readiness of nurse leaders toward the adoption of AI and predictive analytics in nursing management in terms of skills. The results show a composite mean of 2.90, verbally interpreted as Agree, indicating that nurse leaders generally perceive themselves as having a moderate level of skills relevant to the use of AI and predictive analytics. The highest-rated statement was “I can adapt quickly to new technology introduced in the workplace,” with a mean of 3.09 (SD = 0.65). This was followed by “I feel confident that I can learn how to use AI tools effectively when proper training is provided,” with a mean of 3.05 (SD = 0.69).

In addition, the statements “I can read and interpret basic data reports or dashboards used in nursing management” and “I can guide my team in using data insights to improve workflows or patient outcomes” both obtained a mean of 2.91, with standard deviations of 0.72 and 0.74, respectively. The statement “I can use digital platforms that support data-driven decisions” obtained a mean of 2.82 (SD = 0.77). The lowest-rated statement was “I can troubleshoot basic issues when using digital tools,” with a mean of 2.64 (SD = 0.78), although it remained within the Agree range. These findings indicate that nurse leaders feel more confident in adapting to new technologies and learning AI tools than in handling basic technical problems.

Table 10. Level of Readiness of Nurse Leaders Toward AI and Predictive Analytics Adoption in Nursing Management in terms of Organizational Support

Statements	Mean	Standard Deviation	Verbal Interpretation
My organization provides training opportunities about AI and predictive analytics.	1.91	0.82	Disagree
My organization invests in technology that supports AI and data-driven decision-making.	1.80	0.80	Disagree
My organization’s leadership encourages innovation and the use of technology for better patient care.	2.91	0.76	Agree
There are resources (budget, staff, time) allocated to support AI-related initiatives.	2.09	0.72	Disagree
My organization communicates clear plans and policies about adopting AI.	2.00	0.70	Disagree

I feel supported by my organization in learning and applying new technologies in nursing management.	2.64	0.80	Agree
Composite Mean	2.28		Disagree

Table 10 presents the level of readiness of nurse leaders toward the adoption of AI and predictive analytics in nursing management in terms of organizational support. The results show a composite mean of 2.28, verbally interpreted as Disagree, indicating that nurse leaders generally perceive their organizations as providing insufficient support for AI and predictive analytics adoption. The highest-rated statement was “My organization’s leadership encourages innovation and the use of technology for better patient care,” with a mean of 2.91 (SD = 0.76), followed by “I feel supported by my organization in learning and applying new technologies in nursing management,” with a mean of 2.64 (SD = 0.80).

In contrast, the respondents disagreed that their organizations allocate resources such as budget, staff, and time for AI-related initiatives, with a mean of 2.09 (SD = 0.72). They also disagreed that their organizations communicate clear plans and policies regarding AI adoption, with a mean of 2.00 (SD = 0.70). The lowest-rated statement was “My organization invests in technology that supports AI and data-driven decision-making,” with a mean of 1.80 (SD = 0.80). These findings show that although nurse leaders perceive leadership encouragement and some support for learning new technologies, they report limited organizational investment, resources, training opportunities, and clear policies for AI adoption.

Level of Perception Toward the Adoption of AI and Predictive Analytics

Table 11. Level of Perception Toward the Adoption of AI and Predictive Analytics in Nursing Management in Terms of Perceived Usefulness

Statements	Mean	Standard Deviation	Verbal Interpretation
I believe AI can help me make quicker and more evidence-based staffing decisions.	3.12	0.74	Agree
I believe predictive analytics can alert me when patients are at high risk for complications, allowing me to act early.	3.05	0.78	Agree
I believe AI can minimize human errors by providing real-time data for patient monitoring.	3.00	0.70	Agree
I believe AI can help reduce time spent on manual tasks like data collection and report preparation.	2.91	0.76	Agree

I believe using AI can improve team performance by providing accurate workload predictions.	2.82	0.79	Agree
I believe AI can support me in making cost-effective decisions for resource allocation.	2.91	0.80	Agree
Composite Mean	2.97		Agree

Table 11 presents the level of perception of nurse leaders toward the adoption of AI and predictive analytics in nursing management in terms of perceived usefulness. The results show a composite mean of 2.97, verbally interpreted as Agree, indicating that nurse leaders generally perceive AI and predictive analytics as useful in nursing management. The highest-rated statement was “I believe AI can help me make quicker and more evidence-based staffing decisions,” with a mean of 3.12 (SD = 0.74). This was followed by “I believe predictive analytics can alert me when patients are at high risk for complications, allowing me to act early,” with a mean of 3.05 (SD = 0.78), and “I believe AI can minimize human errors by providing real-time data for patient monitoring,” with a mean of 3.00 (SD = 0.70). The statements regarding reducing time spent on manual tasks and supporting cost-effective resource allocation both obtained a mean of 2.91, with standard deviations of 0.76 and 0.80, respectively. The lowest-rated statement was “I believe using AI can improve team performance by providing accurate workload predictions,” with a mean of 2.82 (SD = 0.79), although it remained within the Agree range. These findings indicate that nurse leaders have a positive perception of the usefulness of AI and predictive analytics, particularly for staffing decisions, early identification of patient risks, and patient monitoring.

Table 12. Level of Perception Toward the Adoption of AI and Predictive Analytics in Nursing Management in Terms of Ease of Use

Statements	Mean	Standard Deviation	Verbal Interpretation
I believe AI dashboards and reports will be simple to navigate with clear visual displays.	3.00	0.72	Agree
I believe learning to use predictive analytics software will take only a short training session or workshop.	2.64	0.84	Agree
I believe AI systems can integrate easily with existing hospital information systems.	2.73	0.77	Agree
I believe the AI tools will not require advanced computer skills to operate effectively.	2.50	0.85	Agree
I believe I can access AI-generated reports anytime on available hospital computers or devices.	2.82	0.79	Agree

I believe I can use AI systems independently after completing initial training.	2.91	0.74	Agree
Composite Mean	2.76		Agree

Table 12 presents the level of perception of nurse leaders toward the adoption of AI and predictive analytics in nursing management in terms of ease of use. The results show a composite mean of 2.76, verbally interpreted as Agree, indicating that nurse leaders generally perceive AI and predictive analytics tools as relatively easy to use. The highest-rated statement was “I believe AI dashboards and reports will be simple to navigate with clear visual displays,” with a mean of 3.00 (SD = 0.72). This was followed by “I believe I can use AI systems independently after completing initial training,” with a mean of 2.91 (SD = 0.74), and “I believe I can access AI-generated reports anytime on available hospital computers or devices,” with a mean of 2.82 (SD = 0.79). The statement regarding the integration of AI systems with existing hospital information systems obtained a mean of 2.73 (SD = 0.77), while the belief that learning predictive analytics software would require only a short training session or workshop obtained a mean of 2.64 (SD = 0.84). The lowest-rated statement was “I believe the AI tools will not require advanced computer skills to operate effectively,” with a mean of 2.50 (SD = 0.85). Overall, the findings indicate that nurse leaders have a generally favorable perception of the ease of use of AI and predictive analytics, particularly regarding clear interfaces and independent use after training, although some uncertainty remains regarding the technical skills required.

Table 13. Level of Perception Toward the Adoption of AI and Predictive Analytics in Nursing Management in Terms of Attitude Towards Usage

Statements	Mean	Standard Deviation	Verbal Interpretation
I feel motivated to explore AI solutions that could improve patient outcomes.	2.91	0.79	Agree
I believe AI can complement my leadership decisions instead of replacing my professional judgment.	2.82	0.74	Agree
I feel confident encouraging my staff to try AI-based tools when they become available.	2.91	0.77	Agree
I am willing to adjust my daily workflow to accommodate AI-based recommendations.	3.00	0.72	Agree
I feel AI is a valuable investment for improving quality of nursing care in my department.	2.82	0.75	Agree
I believe embracing AI reflects my responsibility as a nurse leader to promote innovation.	3.09	0.68	Agree

Composite Mean	2.89	Agree
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Table 13 presents the level of perception of nurse leaders toward the adoption of AI and predictive analytics in nursing management in terms of attitude toward usage. The results show a composite mean of 2.89, verbally interpreted as Agree, indicating that nurse leaders generally have a positive attitude toward the use of AI and predictive analytics in nursing management. The highest-rated statement was “I believe embracing AI reflects my responsibility as a nurse leader to promote innovation,” with a mean of 3.09 (SD = 0.68). This was followed by “I am willing to adjust my daily workflow to accommodate AI-based recommendations,” with a mean of 3.00 (SD = 0.72). The statements “I feel motivated to explore AI solutions that could improve patient outcomes” and “I feel confident encouraging my staff to try AI-based tools when they become available” both obtained a mean of 2.91, with standard deviations of 0.79 and 0.77, respectively. The respondents also agreed that AI can complement their leadership decisions rather than replace their professional judgment, with a mean of 2.82 (SD = 0.74), and that AI is a valuable investment for improving the quality of nursing care, with a mean of 2.82 (SD = 0.75). These findings indicate that nurse leaders have a favorable attitude toward AI adoption, particularly in relation to promoting innovation, adapting their work practices, and encouraging their staff to use AI-based tools.

Table 14. Level of Perception Toward the Adoption of AI and Predictive Analytics in Nursing Management in Terms of Intention to Use

Statements	Mean	Standard Deviation	Verbal Interpretation
I intend to use AI-based tools for patient flow forecasting once they are available in my unit.	2.73	0.78	Agree
I am willing to enroll in formal training sessions to gain hands-on experience with predictive analytics software.	2.91	0.72	Agree
I plan to share AI-generated insights with my team during decision-making meetings.	2.82	0.80	Agree
I am ready to recommend AI solutions to hospital administrators as part of quality improvement projects.	2.82	0.76	Agree
I am willing to participate in pilot testing of AI tools and provide feedback for improvement.	2.73	0.81	Agree
I see myself becoming an advocate or champion for the safe and ethical use of AI in nursing management.	3.00	0.70	Agree
Composite Mean	2.83		Agree

Table 14 presents the level of perception of nurse leaders toward the adoption of AI and predictive analytics in nursing management in terms of intention to use. The results show a composite mean of 2.83, verbally interpreted as Agree, indicating that nurse leaders generally intend to use AI and predictive analytics in nursing management. The highest-rated statement was “I see myself becoming an advocate or champion for the safe and ethical use of AI in nursing management,” with a mean of 3.00 (SD = 0.70). This was followed by “I am willing to enroll in formal training sessions to gain hands-on experience with predictive analytics software,” with a mean of 2.91 (SD = 0.72). The statements “I plan to share AI-generated insights with my team during decision-making meetings” and “I am ready to recommend AI solutions to hospital administrators as part of quality improvement projects” both obtained a mean of 2.82, with standard deviations of 0.80 and 0.76, respectively. The statements “I intend to use AI-based tools for patient flow forecasting once they are available in my unit” and “I am willing to participate in pilot testing of AI tools and provide feedback for improvement” both received the lowest mean of 2.73, with standard deviations of 0.78 and 0.81, respectively. These findings indicate that nurse leaders have a positive intention to use AI, particularly in promoting its safe and ethical use and participating in training, although their intention to engage directly in pilot testing and specific AI applications is comparatively lower.

Significant Relationship Between the Level of Readiness and the Perception of Nurse Leaders Toward Artificial Intelligence and Predictive Analytics in Nursing Management

Table 15. Relationship Between the Level of Readiness and the Perception of Nurse Leaders Toward Artificial Intelligence and Predictive Analytics

Variable 1	Variable 2	r-value	p-value	Decision to Null Hypothesis	Remarks
Awareness	Perceived Usefulness	0.2899	0.577352	Failed to reject Null Hypothesis	Not Significant
Awareness	Ease of Use	0.7714	0.072397	Failed to reject Null Hypothesis	Not Significant
Awareness	Attitude Towards Usage	0.1471	0.780909	Failed to reject Null Hypothesis	Not Significant
Awareness	Intention to Use	0.2942	0.57137	Failed to reject Null Hypothesis	Not Significant
Knowledge	Perceived Usefulness	-0.2899	0.577352	Failed to reject Null Hypothesis	Not Significant
Knowledge	Ease of Use	0.5429	0.265703	Failed to reject Null Hypothesis	Not Significant
Knowledge	Attitude Towards Usage	-0.0883	0.867934	Failed to reject Null Hypothesis	Not Significant
Knowledge	Intention to Use	0.2942	0.57137	Failed to reject Null Hypothesis	Not Significant
Skills	Perceived Usefulness	-0.3529	0.492571	Failed to reject Null Hypothesis	Not Significant

Skills	Ease of Use	-0.4058	0.424663	Failed to reject Null Hypothesis	Not Significant
Skills	Attitude Towards Usage	-0.1493	0.777757	Failed to reject Null Hypothesis	Not Significant
Skills	Intention to Use	-0.6866	0.131904	Failed to reject Null Hypothesis	Not Significant
Organizational Support	Perceived Usefulness	-0.4058	0.424663	Failed to reject Null Hypothesis	Not Significant
Organizational Support	Ease of Use	-0.0286	0.957155	Failed to reject Null Hypothesis	Not Significant
Organizational Support	Attitude Towards Usage	0.6179	0.191094	Failed to reject Null Hypothesis	Not Significant
Organizational Support	Intention to Use	0.2354	0.653428	Failed to reject Null Hypothesis	Not Significant

At 0.05 level of significance

Table 15 presents the relationship between the level of readiness of nurse leaders in terms of awareness, knowledge, skills, and organizational support and their perception of artificial intelligence and predictive analytics in nursing management. The results show that none of the readiness dimensions had a statistically significant relationship with perceived usefulness, ease of use, attitude toward usage, or intention to use, since all p-values were greater than the 0.05 level of significance. Therefore, the null hypothesis was failed to be rejected for all relationships, indicating that the level of readiness of nurse leaders, whether in terms of awareness, knowledge, skills, or organizational support, did not significantly relate to their perceptions of AI and predictive analytics in nursing management at the 0.05 level of significance.

DISCUSSION

Demographic Profile of the Respondents

The demographic profile shows that the respondents were mostly female, 36 years old and above, holders of a Master of Science in Nursing, regular or permanent employees, and occupying nurse manager or nurse supervisor positions. The higher proportion of female respondents is consistent with the World Health Organization (2023), which reported that women comprise the majority of the nursing workforce worldwide. Thus, the gender distribution in the present study is consistent with the established pattern of female representation in nursing. The age distribution also indicates that most respondents were in the 31 years old and above groups, with the largest proportion aged 36–40 years old. This suggests that the participants generally had several years of professional and leadership experience. This finding is consistent with the nature of nursing leadership, where positions commonly require professional experience and developed managerial competencies. Therefore, the age profile of the respondents is consistent with the expectation that nurse leaders are generally experienced professionals.

The educational profile further shows that most respondents held a Master of Science in Nursing, while only a small proportion held a BSN or Nursing Ph.D. This indicates that the respondents generally had advanced academic preparation. The finding is consistent with Kotp et al. (2025), who found that higher educational attainment among nurse leaders was associated with greater readiness for AI integration and more positive perceptions of the benefits of AI. The similarity between the present finding and the previous study suggests that the relatively high educational preparation of the respondents may provide an appropriate professional background for understanding emerging technologies and their possible applications in healthcare. However, since the present study only describes the respondents' educational attainment and does not test its relationship with readiness or perception, it should not be concluded that higher education directly caused greater readiness for AI.

The employment profile shows that all respondents were regular or permanent employees. This finding indicates that the participants held stable positions in their respective public hospitals. Their employment status may provide them with continued involvement in institutional activities, policies, and management processes that are relevant to the introduction of new technologies. However, the present result cannot be directly compared with studies that examine employment status as a predictor of AI readiness because there was no variation in employment status among the respondents. Thus, while the finding provides important background information about the participants, it does not establish whether employment status is related to their readiness or perception toward AI.

In terms of job position, most respondents were Nurse Managers and Nurse Supervisors, while the remaining participants occupied positions such as Nurse Educator, Healthcare Quality Specialist Nurse, Assistant Chief Nursing Officer, and Chief Nursing Officer. This distribution indicates that the respondents were largely positioned at the middle to upper levels of nursing management, where they may be involved in staff supervision, administrative decisions, quality improvement, and implementation of institutional policies. This finding is consistent with Navarro and Leyva-Moral (2024), who emphasized the role of nurse leaders in planning and implementing technological innovations in healthcare. The present study therefore supports the view that nurse leaders are important participants in discussions and decisions concerning the adoption of AI and predictive analytics in healthcare organizations.

Level of Readiness Toward the Adoption of AI and Predictive Analytics

The study also aimed to assess the level of readiness of nurse leaders toward the adoption of artificial intelligence (AI) and predictive analytics in nursing management, specifically in terms of awareness, knowledge, skills, and organizational support. The findings indicate that nurse leaders demonstrated generally favorable readiness in the individual dimensions of awareness, knowledge, and skills, while organizational support emerged as a comparatively weaker area. This pattern suggests that the respondents generally recognize the relevance of AI, possess basic knowledge of its applications, and

feel capable of adapting to related technologies, but perceive limitations in the institutional support needed for implementation.

In terms of awareness, the respondents generally agreed that they were aware of AI and predictive analytics, as reflected by a composite mean of 2.74. Their awareness was strongest regarding the organizational and managerial implications of AI. The highest-rated statement was the recognition that adopting AI would require changes in how nurses make decisions and manage resources ($M = 3.18$, $SD = 0.68$). This indicates that the respondents understood that AI adoption may involve changes not only in technology use but also in nursing management processes and decision-making. They also agreed that AI is being used in healthcare to improve patient care and decision-making ($M = 3.05$, $SD = 0.78$) and that predictive analytics can help anticipate patient needs ($M = 2.91$, $SD = 0.80$). These findings indicate that nurse leaders had a general understanding of the role and potential applications of AI and predictive analytics in healthcare. This is consistent with Rony et al. (2025), who reported that healthcare professionals may demonstrate conceptual readiness for AI while having more limited practical exposure to AI technologies.

However, awareness was comparatively lower regarding the actual implementation and continuing development of AI. The respondents agreed only slightly that they were aware of their organizations' plans to adopt AI or analytics tools ($M = 2.50$, $SD = 0.72$) and disagreed that they were aware of real-life hospital applications of AI, such as early warning systems and patient flow prediction ($M = 2.45$, $SD = 0.75$). They also disagreed that they regularly read or heard updates about AI innovations and applications in nursing practice, which obtained the lowest mean ($M = 2.36$, $SD = 0.70$). These results suggest a distinction between general awareness of AI and familiarity with its specific applications and recent developments. The finding is consistent with Kahraman et al. (2025), who identified gaps in AI-related knowledge and exposure among healthcare professionals. Thus, although nurse leaders appear to recognize the general relevance of AI, their exposure to current applications and developments may be limited.

The findings on knowledge further show that nurse leaders generally agreed that they possessed knowledge relevant to AI and predictive analytics, with a composite mean of 2.88. The highest-rated indicator was the recognition that training is needed to use AI tools effectively ($M = 3.20$), followed by the understanding that AI can provide data insights while nurse leaders' judgment remains necessary for final decisions ($M = 3.12$). These results indicate that the respondents recognize both the importance of continuous learning and the continuing role of professional judgment in AI-supported decision-making. Such understanding is particularly relevant to nursing management, where technological outputs must be considered alongside professional knowledge, patient needs, and organizational priorities. The finding regarding the importance of training is consistent with Alnomasy et al. (2025), who emphasized structured education and capacity-building as important components of preparing nurses for AI adoption.

The respondents also agreed that they understood how predictive analytics could be used to improve patient outcomes ($M = 2.92$) and understood the meaning of AI and

predictive analytics in healthcare ($M = 2.81$). However, their ratings were lower for knowledge of data privacy and ethical issues ($M = 2.64$) and knowledge of available AI tools or systems for nursing management ($M = 2.59$). This pattern indicates that their knowledge was relatively stronger in general concepts and potential applications than in specific technologies and issues related to ethical and responsible AI use. The finding is comparable with Kotp et al. (2025), who reported generally favorable readiness for AI integration among nurse leaders, while ErKayıran and Aslan (2025) noted that nurses may have positive views toward AI despite having limited practical knowledge of its applications. The present findings therefore suggest that further education should extend beyond basic AI concepts to include specific tools, data privacy, ethical considerations, and responsible AI-supported decision-making.

In terms of skills, the respondents obtained a composite mean of 2.90, interpreted as Agree, indicating generally favorable self-assessed skills related to digital and data-driven tools. The highest-rated indicator was the ability to adapt quickly to new technology introduced in the workplace ($M = 3.09$, $SD = 0.65$), followed by confidence in learning to use AI tools effectively when proper training is provided ($M = 3.05$, $SD = 0.69$). These results indicate that adaptability and willingness to learn are among the respondents' stronger areas. The findings are consistent with Kotp et al. (2025), who reported readiness for AI integration among nurse leaders and highlighted the relevance of professional and educational preparation. The results also complement the finding that training was the highest-rated knowledge-related indicator, suggesting that nurse leaders recognize their capacity to develop AI-related skills when appropriate learning opportunities are available.

The respondents also agreed that they could read and interpret basic data reports or dashboards used in nursing management ($M = 2.91$, $SD = 0.72$) and guide their teams in using data insights to improve workflows or patient outcomes ($M = 2.91$, $SD = 0.74$). These findings indicate a favorable level of confidence in basic data interpretation and the use of information for management purposes. However, the ability to troubleshoot basic issues when using digital tools received the lowest mean ($M = 2.64$, $SD = 0.78$), although it remained within the Agree category. This suggests that the respondents were more confident in adapting to and learning digital technologies than in independently addressing basic technical problems. This observation is consistent with Rony et al. (2025), who emphasized the need for adequate training and support to strengthen nurses' technical competence in AI integration. Similarly, Kotp et al. (2025) highlighted the continuing importance of technical and organizational support in AI adoption.

In contrast to the favorable findings for awareness, knowledge, and skills, organizational support emerged as the weakest dimension of readiness, with a composite mean of 2.28, interpreted as Disagree. This result indicates that the nurse leaders generally did not perceive their organizations as providing sufficient institutional support for AI and predictive analytics adoption. The difference between the individual and organizational dimensions is notable: the respondents generally reported awareness, knowledge, and skills related to AI, but these individual capabilities were not matched by the level of organizational resources and support perceived to be available.

The highest-rated organizational support indicator was the perception that organizational leadership encourages innovation and the use of technology to improve patient care ($M = 2.91$). However, the lower ratings for other indicators suggest that this general encouragement may not yet be fully supported by concrete organizational measures. In particular, respondents reported limited support in terms of investment in AI-related technology ($M = 1.80$), resources such as budget, staff, and time ($M = 2.09$), and clear organizational plans and policies for AI adoption ($M = 2.00$). These findings indicate a possible gap between organizational encouragement of innovation and the availability of the resources, infrastructure, and policies required to implement AI effectively.

The findings are consistent with Kotp et al. (2025), who identified organizational infrastructure and resource allocation as important considerations in AI integration among nurse leaders. They also support Rony et al. (2025), who emphasized the importance of organizational policies, training opportunities, and technological investment in facilitating AI adoption in nursing practice. The present results therefore reinforce the view that individual readiness alone may not be sufficient for successful AI implementation. Even when nurse leaders are aware of AI, understand its potential, and are willing to develop the necessary skills, inadequate institutional support may limit their ability to translate these capabilities into practice.

Hence, the findings indicate that nurse leaders possess a generally favorable individual readiness for AI and predictive analytics adoption, particularly in terms of awareness, knowledge, and skills. They recognize the potential effects of AI on nursing management, understand the importance of training and professional judgment, and report confidence in adapting to new technologies. However, organizational support remains a significant area for improvement, particularly in relation to technology investment, resources, policies, and implementation plans. The findings suggest that strengthening AI readiness should therefore involve not only developing the competencies of nurse leaders but also establishing organizational conditions that support implementation.

Level of Perception Toward the Adoption of AI and Predictive Analytics

The study also assessed the level of perception of nurse leaders toward the adoption of artificial intelligence (AI) and predictive analytics in nursing management in terms of perceived usefulness, ease of use, attitude toward usage, and intention to use. In general, the findings indicate that nurse leaders had favorable perceptions of AI and predictive analytics. They generally recognized the potential benefits of these technologies, considered them manageable to use with appropriate support, demonstrated a positive attitude toward their adoption, and expressed willingness to engage in AI-related activities. However, the findings also revealed areas of caution, particularly regarding technical requirements, professional judgment, organizational investment, and participation in the actual implementation of AI.

In terms of perceived usefulness, the findings show that nurse leaders generally viewed AI and predictive analytics as useful in nursing management, as reflected by the composite mean of 2.97. The highest-rated statement was the belief that AI can support quicker and more evidence-based staffing decisions, which obtained a mean of 3.12. This suggests that nurse leaders particularly value AI for analyzing information and supporting efficient personnel allocation and management decisions. The finding is consistent with Kotp et al. (2025), who reported positive perceptions among nurse leaders regarding the potential of AI and predictive analytics to support decision-making and care planning. This similarity suggests that nurse leaders generally view AI as a tool that can strengthen management decision-making rather than replace professional responsibilities.

The respondents also agreed that predictive analytics can alert nurse leaders when patients are at high risk for complications, with a mean of 3.05. This indicates that they recognize the potential of predictive technologies to identify risks and provide timely information that may support early intervention. Similarly, the respondents agreed that AI can minimize human errors through real-time patient-monitoring data, with a mean of 3.00. These findings indicate that nurse leaders recognize the value of AI in improving the availability and timeliness of information used in patient care and management. This is consistent with Atalla et al. (2025), who identified clinical reasoning, efficiency, and patient care among the perceived benefits of AI in nursing practice.

The respondents further agreed that AI can reduce the time spent on manual tasks and support cost-effective resource allocation, with both indicators obtaining a mean of 2.91. This suggests that the perceived usefulness of AI extends beyond patient monitoring and clinical decision-making to administrative efficiency and resource management. However, the lowest-rated indicator was the belief that AI can improve team performance through accurate workload predictions, with a mean of 2.82. Although still interpreted as Agree, this relatively lower rating suggests that respondents may be less familiar with or less convinced about the application of AI in workload prediction. Overall, the findings are consistent with the related literature and indicate that nurse leaders recognize AI as useful in decision-making, patient risk identification, error reduction, and efficiency. However, greater exposure to specific AI applications and practical demonstrations may further strengthen their understanding of its usefulness in nursing management.

In terms of ease of use, the findings indicate that nurse leaders generally perceived AI and predictive analytics as manageable to learn and operate, as shown by the composite mean of 2.76. The highest-rated statement was the belief that AI dashboards and reports would be simple to navigate and have clear visual displays, with a mean of 3.00. This suggests that nurse leaders value simple interfaces and clear presentation of information when considering the usability of AI systems. The finding is consistent with Baraka et al. (2025), who emphasized that perceived ease of use and intuitive system design can influence nurses' willingness to adopt AI technologies.

The respondents also agreed that they could use AI systems independently after completing initial training, with a mean of 2.91. This indicates that nurse leaders do not necessarily perceive AI systems as difficult to operate once appropriate instruction is

provided. The result also complements the earlier findings on knowledge and skills, particularly the respondents' recognition that training is necessary for effective AI use. Thus, training may serve as an important bridge between initial unfamiliarity and independent use of AI technologies. The respondents further agreed that they could access AI-generated reports through available hospital computers or devices, with a mean of 2.82, and that AI systems could integrate easily with existing hospital information systems, with a mean of 2.73. These results indicate that accessibility and compatibility were generally viewed favorably and are consistent with Kotp et al. (2025), who reported that compatibility with existing systems and reduced learning demands can contribute to greater readiness for AI integration.

Meanwhile, the lowest-rated indicator concerned the belief that AI tools would not require advanced computer skills, with a mean of 2.50. Although still interpreted as Agree, the relatively lower rating suggests that nurse leaders were less certain that AI systems could be used without developed computer skills. This finding is consistent with the earlier result in the skills dimension, where troubleshooting basic problems with digital tools received the lowest rating. Taken together, these findings suggest that nurse leaders may be comfortable learning and using digital technologies but may still require assistance with more technical aspects of AI systems. The findings support Baraka et al. (2025) and Kotp et al. (2025) in emphasizing the importance of user-friendly system design, compatibility, practical training, and technical support in promoting favorable perceptions of AI usability.

In terms of attitude toward usage, the findings indicate that nurse leaders generally had a positive attitude toward AI and predictive analytics, as reflected by the composite mean of 2.89. The highest-rated statement was the belief that embracing AI reflects their responsibility as nurse leaders to promote innovation, with a mean of 3.09. This suggests that respondents viewed AI adoption not simply as a technological change but also as part of their responsibility to support innovation and improvement in nursing practice. This finding is consistent with Joo et al. (2025), who emphasized the role of nurse leaders in promoting innovation and engaging with AI technologies as part of their professional responsibilities.

The respondents also agreed that they were willing to adjust their daily workflow to accommodate AI-based recommendations, with a mean of 3.00. This indicates that nurse leaders were generally willing to adapt their existing work practices when AI could provide useful information for nursing management. Such willingness is important because AI adoption may require changes in established workflows, decision-making processes, and staff responsibilities. The finding is consistent with El Arab et al. (2025), who reported that positive attitudes toward AI were associated with greater willingness among nurses to adopt and integrate AI technologies into professional practice.

The respondents further agreed that they were motivated to explore AI solutions that could improve patient outcomes and felt confident encouraging their staff to try AI-based tools, both with a mean of 2.91. These findings indicate that nurse leaders were not only personally receptive to AI but were also willing to encourage its use among their

teams. This is particularly relevant to nursing management because nurse leaders can influence staff acceptance and participation when new technologies are introduced. The finding supports Joo et al. (2025), who highlighted the role of nurse leaders in promoting innovation and engaging staff in the use of AI.

Meanwhile, the two lowest-rated indicators were the belief that AI can complement leadership decisions without replacing professional judgment and the belief that AI is a valuable investment for improving the quality of nursing care, both with a mean of 2.82. Although both remained within the Agree range, their relatively lower ratings suggest some caution regarding the influence of AI on leadership decisions and the value of the investment required for its implementation. The concern regarding professional judgment is particularly important because nurse leaders remain accountable for decisions even when AI-generated information is available. This finding is consistent with El Arab et al. (2025), which emphasized that AI should support rather than replace professional judgment. Thus, the findings indicate a favorable attitude toward AI while also reflecting an appropriate level of caution regarding professional autonomy and investment.

In terms of intention to use, the findings show that nurse leaders generally expressed a positive intention to use AI and predictive analytics in nursing management, as indicated by the composite mean of 2.83. The highest-rated statement was the intention to become an advocate or champion for the safe and ethical use of AI, with a mean of 3.00. This indicates that respondents were not only willing to use AI but also recognized the importance of promoting its responsible and ethical application within nursing management. The finding is consistent with El Arab et al. (2025), which associated positive attitudes toward AI with greater willingness to adopt and integrate AI into professional practice.

The respondents also agreed that they were willing to enroll in formal training sessions to gain hands-on experience with predictive analytics software, with a mean of 2.91. This demonstrates their recognition of the need to develop practical competence before using AI-related technologies. The finding is consistent with Pare et al. (2025), which emphasized the importance of perceived usefulness, confidence, and appropriate guidance in strengthening intention to use AI. It also supports the earlier findings on knowledge and skills, where training was identified as an important requirement for effective AI use.

The respondents further agreed that they intended to share AI-generated insights with their teams and recommend AI solutions to hospital administrators as part of quality improvement projects, with both indicators obtaining a mean of 2.82. This suggests that nurse leaders were willing to extend AI use beyond their individual responsibilities and incorporate AI-generated information into team decision-making and organizational improvement activities. This finding highlights the potential role of nurse leaders as important links between AI technologies, nursing teams, and hospital administrators.

Meanwhile, the lowest-rated indicators were the intention to use AI-based tools for patient flow forecasting and the willingness to participate in pilot testing and provide

feedback, both with a mean of 2.73. Although both were interpreted as Agree, these lower ratings suggest some caution regarding direct involvement in the early or practical stages of AI implementation. This finding may be considered alongside the results on organizational support, where respondents reported limited training opportunities, resources, technological investment, and clear AI-related policies. Thus, positive intention to use AI may not automatically translate into active participation in implementation when institutional support is limited. This does not contradict Pare et al. (2025) or El Arab et al. (2025); rather, it suggests that intention to use may be strengthened when healthcare institutions provide adequate training, guidance, resources, and technical support.

These findings demonstrate that nurse leaders generally have a favorable perception of the adoption of AI and predictive analytics in nursing management. They recognize the usefulness of AI in supporting evidence-based decision-making, identifying patient risks, reducing errors, and improving efficiency. They also generally perceive AI systems as manageable to use, maintain positive attitudes toward technological innovation, and express willingness to learn and support the responsible use of AI. At the same time, the findings reveal areas that require further attention, particularly technical competence, familiarity with specific AI applications, preservation of professional judgment, organizational investment, and participation in actual implementation activities. The findings are generally consistent with the cited literature and suggest that favorable perceptions provide a strong foundation for AI adoption; however, these perceptions need to be supported by appropriate training, user-friendly technologies, clear ethical and organizational guidelines, adequate resources, and sustained institutional support to translate nurse leaders' positive perceptions and intentions into effective and responsible use of AI and predictive analytics in nursing management.

Relationship Between the Level of Readiness and the Perception of Nurse Leaders Toward Artificial Intelligence and Predictive Analytics in Nursing Management

The study also determined whether a significant relationship existed between the level of readiness and the perception of nurse leaders toward the adoption of artificial intelligence (AI) and predictive analytics in nursing management. The findings revealed that awareness, knowledge, skills, and organizational support had no statistically significant relationship with perceived usefulness, ease of use, attitude toward usage, or intention to use AI and predictive analytics, as all obtained p-values were greater than the 0.05 level of significance. Thus, the null hypothesis was failed to be rejected for all relationships. This indicates that although nurse leaders reported moderate readiness and generally positive perceptions toward AI, their level of readiness did not significantly correspond to their perceptions or intention to use AI.

For awareness, none of the relationships with the perception variables were significant. This suggests that being aware of AI and predictive analytics does not automatically lead to stronger perceptions of usefulness, ease of use, positive attitudes, or intention to use. This finding is consistent with Kahraman et al. (2025), who noted that awareness alone may not lead to AI adoption without practical experience, training, and other forms of support.

Similarly, knowledge and skills showed no significant relationships with any perception variable. These results indicate that knowing about AI or having digital skills alone may not be enough to influence nurse leaders' perceptions or intention to use AI. This is consistent with El Arab et al. (2025), which emphasized that AI acceptance is influenced by factors such as perceived usefulness, attitude, and practical experience, rather than knowledge alone. Kahraman et al. (2025) likewise emphasized that technical skills need to be supported by other conditions to encourage AI adoption.

For organizational support, none of the relationships were statistically significant, although the relationship with attitude toward usage showed a moderate positive correlation ($r = 0.6179$). The result suggests that organizational support may be related to more positive attitudes, but the evidence was insufficient to establish a significant relationship in this study. This finding is consistent with Rony et al. (2025), who noted that organizational support alone may not be sufficient when training, practical experience, and individual confidence are limited.

Hence, these findings suggest that AI readiness and perception should not be viewed as dependent on a single factor. The results are generally consistent with the related literature showing that AI adoption involves several interacting factors. Therefore, improving AI adoption among nurse leaders should involve training, practical exposure, technical assistance, clear policies, and organizational support working together, rather than focusing on only one readiness factor.

Conclusions

Based on the findings of the study, several conclusions can be drawn regarding the perceptions and readiness of nurse leaders toward adopting artificial intelligence and predictive analytics in nursing management. In terms of demographic profile, the nurse leaders are predominantly experienced, well-qualified, and permanently employed, with women slightly outnumbering men and most holding middle to upper-level leadership positions such as Nurse Managers and Nurse Supervisors. The majority are over 31 years old and possess advanced degrees, mainly a Master of Science in Nursing, indicating that these nurse leaders have the educational background, professional competence, and organizational positioning necessary to contribute effectively to planning and implementing innovative technologies in their healthcare settings.

Regarding the level of readiness, nurse leaders showed moderate preparedness in terms of awareness, knowledge, and skills for adopting AI and predictive analytics, with relatively higher conceptual understanding and moderate confidence in using digital tools. However, practical engagement with AI applications and organizational support were limited, particularly in terms of training, resource allocation, and clear institutional plans. This suggests that while nurse leaders are conceptually ready, effective adoption of AI requires additional hands-on experience, structured training, and stronger organizational backing.

In terms of perception, nurse leaders recognize AI and predictive analytics as valuable tools that can improve patient care, minimize errors, support evidence-based decision-making, and optimize resource allocation. They expressed moderate confidence in usability, generally positive attitudes, and intentions to adopt these technologies. However, lower engagement in immediate implementation, pilot testing, and practical integration indicates that although nurse leaders perceive AI positively, further guidance, experience, and organizational encouragement are necessary to translate perception into active use.

Regarding the relationship between readiness and perception, the study found no significant correlations between readiness dimensions, including awareness, knowledge, skills, and organizational support, and nurse leaders' perceptions or intentions to use AI and predictive analytics. This suggests that readiness alone is insufficient to influence perception or behavioral intention, highlighting the need for practical experience, structured training, leadership guidance, and clear institutional policies to foster effective adoption of AI technologies in nursing management.

Recommendations

Based on the findings, the following recommendations are proposed to enhance nurse leaders' readiness and perception toward artificial intelligence (AI) and predictive analytics, and to guide relevant stakeholders in supporting successful adoption. For nurse leaders, it is recommended that nurse leaders actively seek professional development opportunities that improve awareness, knowledge, and skills in AI and predictive analytics. Engaging in workshops, seminars, and practical simulations can strengthen their readiness and confidence in applying AI tools in decision-making and patient care. Nurse leaders can also use the findings to identify personal strengths and areas for improvement, fostering a proactive approach to embracing innovation in nursing management.

For hospital administrators, healthcare institutions should strengthen organizational support by providing structured training programs, hands-on workshops, and clear plans for AI integration. Administrators can use the study results to allocate resources effectively, encourage leadership mentoring, and create an environment that reduces resistance to technological change. Promoting real-life applications of AI, such as improving staffing decisions, patient risk prediction, and workflow efficiency, can help reinforce positive perceptions and facilitate adoption among nurse leaders and their teams.

For nursing educators and training institutions, it is recommended that nursing education programs and leadership training institutions incorporate AI competencies, predictive analytics, and technology-driven decision-making into their curricula. The study highlights areas where knowledge and skills need reinforcement, allowing educators to design targeted courses, workshops, and experiential learning opportunities. Preparing future nurse leaders with both technical proficiency and strategic thinking ensures they are ready to manage and lead AI integration effectively in healthcare settings.

For policymakers in healthcare, they should consider developing policies and guidelines that support the adoption of AI in nursing management. This includes promoting structured training programs, leadership support systems, and clear institutional standards for AI use. The findings of this study provide evidence of nurse leaders' current readiness and perceptions, which can inform policy decisions to ensure successful and sustainable implementation of AI technologies in healthcare systems.

For future researchers, it is recommended that future studies expand the sample size and include nurse leaders from different regions, healthcare settings, and professional backgrounds. This will provide a more comprehensive understanding of factors affecting readiness and perception toward AI and predictive analytics. Additionally, researchers can explore interventions that combine practical training, organizational support, and leadership guidance to evaluate how these factors influence the adoption and effective use of AI in nursing management.

Compliance With Ethical Standards

The researchers ensured that the study followed appropriate ethical standards throughout the research process. Before participating, all respondents were given clear information about the purpose, procedures, and nature of the study, and informed consent was obtained from each participant. Participation was voluntary, and respondents were free to refuse or withdraw from the study at any time without any penalty or negative consequence. The anonymity and confidentiality of the respondents were maintained by not revealing their names or other information that could identify them. The researchers also followed applicable data privacy principles in the collection, storage, handling, and reporting of the data. The well-being, rights, privacy, and dignity of the respondents were respected and safeguarded throughout the study.

The researchers further declared that there was no conflict of interest that could affect the conduct or results of the study. Plagiarism was strictly avoided, and all sources used in the study were properly acknowledged and cited. The researchers reported and interpreted the findings honestly and objectively, without intentionally changing, hiding, or misrepresenting any results. The data and findings were used solely for academic and research purposes and were not used for any other purpose without proper authorization. In addition, artificial intelligence (AI) tools were used only as an assistance in reviewing, organizing, and improving the wording of selected parts of the manuscript. The researchers remained responsible for the accuracy, interpretation, and final content of the study and ensured that the use of AI did not replace the researchers' own judgment or analysis.

Acknowledgments

The researcher sincerely expresses gratitude to all the individuals who contributed to the completion of this study. The researcher is grateful to the research adviser, panel members, and faculty members for their guidance, suggestions, and support throughout the research process. Appreciation is also extended to the administrators and nursing

offices of the four public hospitals in Quirino Province for their assistance and permission to conduct the study. Special thanks are given to the nurse leaders who participated in the study and willingly shared their time and responses. The researcher also acknowledges the authors of the references and research instruments used in the study. Finally, the researcher expresses sincere gratitude to family, friends, and other individuals who provided encouragement and support throughout the completion of this research.

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APA Citation:

Masarate, M. G. A. (2026). NURSE LEADERS' PERCEPTIONS AND READINESS FOR ARTIFICIAL INTELLIGENCE IN PREDICTIVE HEALTHCARE ANALYTICS. *Ignatian International Journal for Multidisciplinary Research*, 4(9), 1361–1393. <https://doi.org/10.5281/zenodo.22763629>

markgilmasarate0506@gmail.com

