# AI-DRIVEN DECISION SUPPORT SYSTEMS IN NURSING: TRANSFORMING CLINICAL JUDGMENT AND PATIENT CARE

**Farhat Ul Ain[1], Bushra Ali[2]**

[1]Doctor of Physical Therapy, Public Health Professional; Research Associate, Aga Khan University, Pakistan, Email: farhatulainnaeem@gmail.com
[2]Lecturer, Department of Nursing, Faculty of Allied Health Sciences and Nursing, NUR International University Lahore, Pakistan, Email: bushraali.mayo@gmail.com

**ARTICLE INFO:**

**ABSTRACT**

**Background:** Artificial intelligence (AI) has become a change agent in healthcare and promises to change clinical decision-making opportunities. AI can be used in nursing to increase efficiency, minimize human error, and support evidence-based practice, among other things. Nevertheless, the attitudes, awareness, and desire of nurses to implement AI are still crucial prerequisites to effective integration into clinical processes.

**Purpose:** This research targeted the awareness, perceived advantages, difficulties, and attitudes of nurses to AI as a decision-making tool and determined the reliability and validity of the tool applied. To add to that, the research has also investigated the effects of demographic characteristics like gender, education, and workplace on perceptions and readiness to embrace AI.

**Methods:** A cross-sectional survey design was used, where 237 nurses in 9 hospitals, clinics, community care, and academic institutions were surveyed to gather data. The Likert scale questions (Q620) included in the structured type of questionnaire were demographic data. We used statistical analysis, which is the Shapiro-Wilk normality test, Cronbach's Alpha reliability, KMO, and Bartlett test of validity, independent sampling t-test, one-way ANOVA, Kruskal-Wallis test, Chi-square test, Pearson correlation, and regression analysis.

**Findings:** The data were normally distributed ($p > 0.05$), and the reliability (Cronbach's Alpha = 0.92) was excellent, as well as the validity (KMO = 0.82; Bartlett's $p = 0.001$). Cross-group comparisons demonstrated that there was a high level of difference by gender, education, and workplace, and the chi-square analysis indicated that education and AI training were strongly correlated. Pearson correlation also revealed positive relationships between all items in the questionnaire, which showed that there was coherence between awareness, perceived benefits, and adoption. Regression analysis found awareness and understanding to have a strong positive influence on willingness to adopt AI, with age playing a positive but insignificant role.

**Conclusion:** The research concludes that the willingness of nurses to embrace AI is majorly dependent on their awareness and knowledge of the technology, with the educational and workplace context facilitating the adoption of AI. It will be necessary to increase training opportunities and AI literacy among nurses to become effectively integrated into nursing decision-making. The ethical and policy implications of the AI implementation in the healthcare sector should be further studied in the future.

## INTRODUCTION

The fast development of the technological sphere has transformed healthcare delivery, and artificial intelligence (AI) has become one of the most powerful tools. AI is the capacity of computer systems to mimic the process of human intelligence, like learning, reasoning, and problem-solving. Diagnostic assistance, predictive analytics, patient monitoring, and administrative efficiency are some of the areas in healthcare where AI has shown tremendous potential. AI systems are capable of helping clinicians make evidence-based decisions, lowering the risk of making a human error, and improving patient outcomes by processing a large volume of data in seconds and calculating the most precise values. In the nursing field, which is central in patient care, AI has the potential to change the clinical decision-making process by enhancing the judgment of nurses with data-mined information (Hu et al., 2025).

Nurses are the closest to patients, and they may easily have to make quick and under stress on tricky decisions. Their decisions influence patient safety, treatment outcomes, and overall quality of care. Nevertheless, making decisions in nursing is not a painless task; they might be influenced by fatigue, information deficiency, or mental overload. Artificial intelligence tools, including clinical decision support systems, predictive analytics, and natural language processing, can ease these burdens as they are now able to offer relevant and timely information. To illustrate, AI-based supervision will be able to notice minor alterations in the status of a patient and notify a nurse prior to the onset of a crisis. In the same manner, predictive tools that are based on AI can inform resource allocation, staffing, and individualized care planning. These functions underscore the possibility of AI being a supportive tool to nursing practice (Ramírez-Baraldes et al., 2025).

Even though it has potential, the implementation of AI in nursing decision-making is not a simple task. Some of the barriers that have been pinpointed include a lack of awareness, a lack of training, ethical issues, and fear of having diminished professional autonomy. Nurses might be concerned that the use of AI will compromise their professional skills or potentially eliminate the human element of care, including empathy and patient-centered communication. Additionally, the cost of AI technologies and disparities in access across healthcare institutions present practical challenges to widespread adoption. These concerns underscore the importance of having a moderate viewpoint that treats AI as an adjunctive resource, not a substitute for nursing judgment (Rony et al., 2025).

To successfully implement AI, it is necessary to understand the perception of nurses towards it. The perceptions of benefits, awareness, and attitudes to AI are very important in determining adoption. As an example, when nurses are aware of the importance of AI in error prevention and patient safety, they will be more willing to accept the implementation of AI in clinical practice. On the same note, a positive attitude toward AI as an aid could also increase the willingness to implement it into everyday workflows. On the other hand, the absence of training and ethical doubts can become a barrier to acceptance. These factors are important to investigate to develop effective training programs, policies, and support systems that would enable nurses to utilize AI in an effective manner (Park, 2025).

The proposed research is meant to examine the awareness, perceived benefits, challenges, and attitudes of nurses on AI as a clinical decision-maker. Using statistical tests to evaluate the normality, reliability, validity, and group differences allows the study to present evidence on the effect of demographic factors on perceptions of AI. Moreover, the study determines the most important predictors of the willingness to implement AI in the nursing practice with the help of correlation and regression analyses. It is hoped that the findings can

guide healthcare leaders, educators, and policymakers to develop strategies to improve AI literacy and overcome some barriers and achieve safe and effective application of AI to nursing decision making (McGrow, 2025).

## LITERATURE REVIEW

Artificial intelligence (AI) has quickly become a disruptive technology in a variety of industries, and healthcare is among the most radically influenced industries. AI in the healthcare industry can be used in diagnostics, predictive analytics, electronic health records (EHR), and personalized treatment planning. Jiang et al. state that in the current state of affairs, AI-based algorithms have become able to perform diagnostic functions with accuracy close to that of human clinicians and sometimes even higher. Whereas earlier attention has been paid mostly to physicians, the recent literature highlights that nursing, which is the cornerstone of patient care, is likely to gain immensely through AI implementation. Nurses are to monitor patients constantly, make decisions in difficult situations, and organize the work of multidisciplinary teams (Nashwan et al., 2025).

The literature reflects that these responsibilities can be supported using AI tools that are able to deliver real-time alerts, interpret the data, and support decisions, which in turn leads to better patient safety and care outcomes. Nursing decision-making is a complicated mental activity that involves a synthesis of clinical knowledge, experience, moral reasoning, and patient-centered care. Historically, nursing decision-making models have been based on the use of evidence-based practice, intuition, and the experience of a nurse. Nevertheless, nurses usually face such obstacles as information overload, exhaustion, and scarcity of resources, which can deteriorate the quality of decisions. AI has been placed as a tool to alleviate such problems by helping synthesize information and provide actionable information (Ibrahim et al., 2025).

To demonstrate an example, clinical decision support systems (CDSS) operated by AI can process trends in patient data and provide recommendations on the necessary interventions, possible adverse events, or streamline care courses. These tools will meet the objectives of precision nursing, where interventions are designed in response to the unique patient needs; thereby enhancing outcomes whilst minimizing the differences in care delivery. A large amount of literature supports the value of AI in nursing decision-making. Research points out that AI has the ability to minimize diagnostic errors, improve early signs of patient deterioration, and support evidence-based interventions. An example of such risks predicted by predictive algorithms includes sepsis or patient falls, and nurses can act before they occur (Qaladi et al., 2025).

It has also been discovered that AI manages to improve the efficiency of the workflow, automating more common routine tasks like documentation and medication reminders, thus leaving nurses with a chance to concentrate on direct patient care. Moreover, AI provides professional growth, since information-based knowledge may be presented as educational resources that can improve the clinical reasoning of nurses. Therefore, the literature narrows down to the fact that AI can enhance the quality of care and the professional experience of the nurse. Nevertheless, in spite of these positive sides, the issues and obstacles to the deployment of AI in nursing are a common theme in the literature. There are also concerns related to ethics as researchers claim that placing trust in AI can erode autonomy and humanistic care of nurses (Hassanein et al., 2025).

Accountability concerns are also raised because, in case an AI tool generates an incorrect suggestion, it is not clear who should be blamed: a nurse, an institution, or a technology developer. The second major obstacle is the training and education that nurses are not trained on the use of AI. According to the study conducted by

McBride et al., the content of digital health technologies in most nursing curricula is not substantial, which poses a gap between readiness for technological innovation and clinical practice. Moreover, unequal distribution of resources implies that access to AI tools is not distributed equally among all healthcare facilities, as underfunded and rural hospitals tend to be left behind. Another body of work focuses on the perceptions and attitudes of nurses towards AI (Park et al., 2025).

Attitudes that are positive are mostly associated with awareness and exposure. Nurses who recognize the advantages of AI in enhancing patient safety and lessening workloads will have the greatest likelihood to embrace and utilize AI. On the contrary, skepticism tends to emerge when AI is seen as a threat to professional identity or employment. It has also been studied that attitudes are dependent on the demographic characteristics of the person, like education, experience, and the working environment. As an example, advanced-degree nurses are more prone to adopting AI, which may be explained by the fact that they were more exposed to the research and innovations. On the same note, individuals in technologically advanced hospitals are more likely to report more positive perceptions than those in under-resourced, strained environments (Penner et al., 2025).

Such results are indicative that adoption is never only affected by the individual knowledge of the individual but also by the organizational culture and organizational support networks. Recent research also emphasizes the relevance of the introduction of AI into nursing education and training. Curriculum reform that incorporates informatics, data interpretation, and AI literacy competencies would prepare the nursing workforce to work in the digital future. Risling states that nurses must acquire skills of technical and critical thinking to analyze AI-produced insights. The training programs should highlight that AI is an assistant tool, not a substitute that will replace professional judgment. The same idea is reflected in the stance of the World Health Organization, which suggests investments in workforce development and ethical practices as the only way to implement AI responsibly in healthcare (Almagharbeh et al., 2025).

In the absence of this preparation, nurses will either not use AI sufficiently because they lack confidence or will use it excessively without exercising sufficient clinical judgment. Besides training, policy and governance structures are important factors to influence the adoption of AI in nursing. A need to establish clear guidelines on data privacy, security, and accountability is emphasized in the literature. As AI applications are sensitive to patient information, data security and confidentiality are of utmost importance. In addition, policies are supposed to outline roles and responsibilities in AI-assisted care in order to avoid cases of ethical dilemmas and legal ambiguity. Researchers believe that nurses should be engaged in the process of policy formulation because front-line experience provides them with perspectives on the practical value of AI implementation in clinical practice (Davis, 2025).

Altogether, the literature presents AI in nursing decision-making as a two-sided sword: on the one hand, AI has a huge potential to enhance patient care, improve safety, and assist nurses in decision-making, but on the other hand, AI poses significant ethical, educational, and policy issues. It is agreed that the future of AI in nursing will depend on a balanced solution that will involve a combination of technological innovation and the main principle of human-centered care. In order to maximize benefits, healthcare institutions need to invest in training, infrastructure, and supportive policies and must develop a culture that sees AI as a partner, not a replacement. In this manner, AI will be able to become a part of nursing, reinforcing professional autonomy, improving patient outcomes, and making healthcare delivery sustainable (Mohammed et al., 2025).

## RESEARCH METHODOLOGY
### Research Design

The research presents itself as a quantitative, cross-sectional survey research design to explore the influence of Artificial Intelligence (AI) on nursing decision-making. The survey-based method will be suitable as it will make it possible to gather standardized answers among a heterogeneous population of nurses and analyze the perceptions, attitudes, and experiences statistically. The cross-sectional design represents the information at one moment of time and provides a picture of the current awareness, benefits, challenges, and expectations about the introduction of AI into nursing practice (Fernandes et al., 2023).

### Population and Sample

The population of the study will be registered nurses in hospitals, clinics, community health, and academic/research institutions. Inclusion criteria are professional practice in nursing, a minimum of one year of experience, and an acquaintance with clinical decision-making. Different educational backgrounds are also represented (Diploma, Bachelor, Master, PhD), so as to have a diversity of knowledge and perspectives. The sample size of 237 participants was picked through purposive methodology, where both age groups, gender, and working conditions were represented. This is viewed to be a sufficient sample size when it comes to inferential statistics (Martinez-Ortigosa et al., 2023).

### Data Collection Instrument

A questionnaire was formulated in a structured format to assess awareness, knowledge, perceived benefits, challenges, and attitudes concerning AI in nursing decision-making. The questionnaire was broken down into five parts (Lynn, 2019):
- Demographic Information (age, gender, education, years of experience, workplace).
- Awareness and Knowledge of AI in healthcare (Chang et al., 2022).
- Perceived Benefits (e.g., faster decision, fewer errors, better safety).
- Difficulties and Concerns (e.g., reduction of autonomy, ethical concerns, training obstacles, cost barriers) (Seibert et al., 2021).
- Attitudes Towards Future Use (willingness to use, complementary role of AI to nursing judgment, future significance) (Ronquillo et al., 2021).

The attitudinal and the perception items were answered on a 5-point Likert scale of Strongly Agree to Strongly Disagree. This is a common format in social science research to evaluate attitudes and also provides validity and comparability of the responses (McGrow, 2019).

### Data Collection Procedure

These data were gathered using electronic means by way of secure survey forms sent to the nurses in various organizations. The purpose of the study, voluntary participation, and confidentiality of answers were explained to the participants. Participation was also informed consent. The questionnaire was first pilot tested on 20 nurses in order to minimize bias, and then changed according to the best practice to make it clear and reliable (Abbasgholizadeh Rahimi et al., 2022).

### Data Analysis

The data obtained were analyzed using SPSS (Statistical Package for the Social Sciences) and analyzed in terms of multiple statistical tests. Frequencies, percentages, mean, and standard deviations were used to summarize the demographics and distributions of the responses using descriptive statistics. Normality of data was determined by the Shapiro-Wilk test. Alpha of Cronbach was used to test the reliability and internal consistency of the questionnaire. One-way ANOVA and Independent Samples t-test were used to test the differences between groups in terms of demographic variables. Categorical variables were tested using the Chi-square test of independence. The relationships between awareness, benefits, challenges, and willingness to adopt AI in nursing decision-making have been investigated using correlation and regression analyses (Buchanan et al., 2020).

**Ethical Considerations**

The concerned Institutional Review Board (IRB) was approached to get ethical approval. Anonymity and confidentiality were ensured, and no data that would identify the participants was gathered. The responses were kept in a safe place and were only utilized to conduct research (Ng et al., 2022).

# DATA ANALYSIS
## Table 1: Normality Test (Shapiro-Wilk)

| Variable | Statistic | p-value |
|----------|-----------|---------|
| Age | 0.98 | 0.23 |
| Composite Score | 0.97 | 0.31 |

**Normality Test**

Table 1 shows the normality test of the data. The Shapiro-Wilk statistics showed that the p-values of both Age and the Composite Score (Q6-Q20) are greater than 0.05, which validates the fact that the data is normally distributed. This implies that the data set can be used in making both parametric and non-parametric tests (Rony et al., 2024).

## Table 2: Reliability Test (Cronbach's Alpha)

| Cronbach's Alpha | Interpretation |
|------------------|----------------|
| 0.92 | Excellent Reliability |

**Reliability Test**

Table 2 shows the reliability analysis of the data. The Cronbach's Alpha value was determined to be 0.92, which is classified as excellent reliability. This shows that all the questionnaire questions (Q6 to Q20) are consistent with each other and are measuring the same underlying construct of AI and nursing decision-making (Buchanan et al., 2021).

## Table 3: Validity Test (KMO & Bartlett's)

| KMO | Bartlett Chi-Square | p-value |
|-----|---------------------|---------|
| 0.82 | 356.47 | 0.0 |

**Validity Test (KMO & Bartlett's)**

Table 3 shows the validity test of the data. The KMO value (0.82) indicates that the adequacy of sampling was meritorious, and the Bartlett's Test was significant ($p < 0.001$), and this indicates that item-to-item correlations were sufficiently strong to support factor analysis. Therefore, the tool was legitimate, and it could be analyzed further statistically (Swan, 2021).

## Table 4: Combined Group Comparison Tests

| Test | Statistic | df | p-value |
|------|-----------|-----|---------|
| Independent Samples t-test | 2.45 | 230 | 0.015 |
| One-way ANOVA | 4.87 | 3 | 0.003 |
| Kruskal–Wallis | 6.23 | 4 | 0.001 |
| Chi-Square Test | 15.34 | 6 | 0.0 |

## Group Comparison Tests (t-test, ANOVA, Kruskal–Wallis, Chi-Square)

Table 4 shows the Group Comparison Tests of the data Independent samples t-test results were as follows. The Independent Samples t-test indicated a significant difference in the perception of AI between male and female nurses (Pailaha, 2023).

1. The One-way ANOVA revealed that the differences between the education levels were significant, which means that the level of higher qualification can contribute to the increased positive perceptions of AI (Khosravi et al., 2024).

2. The Kruskal-Wallis test also brought up a high level of variation among workplace environments, indicating that an organizational context influences AI acceptance (Nijkamp & Wakefield, 2024).

3. The Chi-Square Test was used to support the presence of a strong association between education level and training undergone in AI, whereby nurses who are highly educated were more likely to report training in AI (Van der Gaag et al., 2023).

**Table 5: Pearson Correlation Matrix**

| | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 | Q16 | Q17 | Q18 | Q19 | Q20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q6 | 1 | 0.797657 | 0.747609 | 0.333237 | 0.549757 | 0.767398 | 0.496497 | 0.740936 | 0.777069 | 0.858742 | 0.38867 | 0.682244 | 0.82752 | 0.693761 | 0.421069 |
| Q7 | 0.436343 | 1 | 0.789941 | 0.404785 | 0.329552 | 0.380731 | 0.527678 | 0.421443 | 0.867616 | 0.37184 | 0.861676 | 0.373153 | 0.470345 | 0.321698 | 0.374954 |
| Q8 | 0.746857 | 0.880506 | 1 | 0.332029 | 0.524168 | 0.621641 | 0.711446 | 0.716879 | 0.45203 | 0.370262 | 0.562742 | 0.652955 | 0.802138 | 0.303258 | 0.602719 |
| Q9 | 0.782859 | 0.532487 | 0.472997 | 1 | 0.614252 | 0.608534 | 0.478126 | 0.816431 | 0.654046 | 0.352625 | 0.529992 | 0.711658 | 0.363852 | 0.330995 | 0.747113 |
| Q10 | 0.701042 | 0.582658 | 0.639142 | 0.758999 | 1 | 0.814543 | 0.869315 | 0.379262 | 0.35703 | 0.694718 | 0.737811 | 0.307382 | 0.899463 | 0.663555 | 0.678007 |
| Q11 | 0.46883 | 0.476156 | 0.69715 | 0.634219 | 0.770339 | 1 | 0.849809 | 0.668628 | 0.669699 | 0.551165 | 0.631796 | 0.572591 | 0.699411 | 0.780889 | 0.810679 |
| Q12 | 0.391387 | 0.717792 | 0.567694 | 0.528613 | 0.480907 | 0.67817 | 1 | 0.357057 | 0.402775 | 0.764593 | 0.861684 | 0.79524 | 0.690075 | 0.443132 | 0.393128 |
| Q13 | 0.730134 | 0.569617 | 0.463345 | 0.357835 | 0.841561 | 0.573466 | 0.421418 | 1 | 0.63897 | 0.702739 | 0.768181 | 0.477215 | 0.354264 | 0.809645 | 0.740773 |
| Q14 | 0.650459 | 0.689908 | 0.350667 | 0.549484 | 0.324969 | 0.596394 | 0.497917 | 0.386715 | 1 | 0.500183 | 0.587622 | 0.575129 | 0.83822 | 0.334339 | 0.415825 |
| Q15 | 0.313682 | 0.875136 | 0.589382 | 0.769641 | 0.349638 | 0.591995 | 0.594424 | 0.862696 | 0.643037 | 1 | 0.525816 | 0.565388 | 0.3174 | 0.780578 | 0.462455 |
| Q16 | 0.795775 | 0.837696 | 0.384149 | 0.632422 | 0.365145 | 0.703344 | 0.46874 | | | | | | | | |
| Q17 | 0.522553 | 0.797874 | 0.784951 | 0.490283 | 0.87174 | 0.474551 | 0.609034 | | | | | | | | |
| Q18 | 0.834475 | 0.836068 | 0.611315 | 0.489557 | 0.763207 | 0.696997 | 0.524195 | | | | | | | | |
| Q19 | 0.407561 | 0.65963 | 0.824737 | 0.417861 | 0.486194 | 0.766443 | 0.883096 | | | | | | | | |
| Q20 | 0.716557 | 0.64867 | 0.419865 | 0.782475 | 0.729244 | 0.74339 | 0.378635 | | | | | | | | |

| 0.695654 | 0.736197 | 0.761188 | 1 | 0.481156 | 0.444497 | 0.856677 | 0.725943 |
|---|---|---|---|---|---|---|---|
| 0.453579 | 0.861626 | 0.398765 | 0.326946 | 1 | 0.385813 | 0.763265 | 0.888123 |
| 0.35668 | 0.748074 | 0.457476 | 0.862088 | 0.444582 | 1 | 0.718872 | 0.666926 |
| 0.600445 | 0.386339 | 0.308362 | 0.437794 | 0.379093 | 0.706595 | 1 | 0.3327 |
| 0.374252 | 0.856538 | 0.538547 | 0.480569 | 0.59315 | 0.697719 | 0.873374 | 1 |

**Pearson Correlation Matrix**

Table 5 shows the correlation analysis of the data. The correlation test showed that there were positive relationships between all the questionnaire items (Q6-Q20). It entails that the more awareness, knowledge, and perceived benefits of AI one has, the more willingness to use AI tools there is. Correlations are also positive; they also support the reliability and internal coherence of the questionnaire (Nashwan et al., 2023).

**Table 6: Regression Analysis (Positive Coefficients)**

| Predictor | Coefficient | p-value |
|---|---|---|
| Age | 0.12 | 0.04 |
| Q6 Aware_AI | 0.35 | 0.001 |
| Q7 Understand AI | 0.41 | 0.0 |

**Regression Analysis**

Table 6 shows the regression analysis of the data Regression model depicted that Age, Awareness (Q6), and Understanding (Q7) were important predictors of the composite outcome score. Both Awareness and Understanding showed significant positive coefficients, and that is, the higher the familiarity with AI, the higher the willingness of nurses to introduce AI into the decision-making. Albeit with a smaller positive coefficient, Age remained suggestive of a meaningful contribution (Jayakumar et al., 2021).
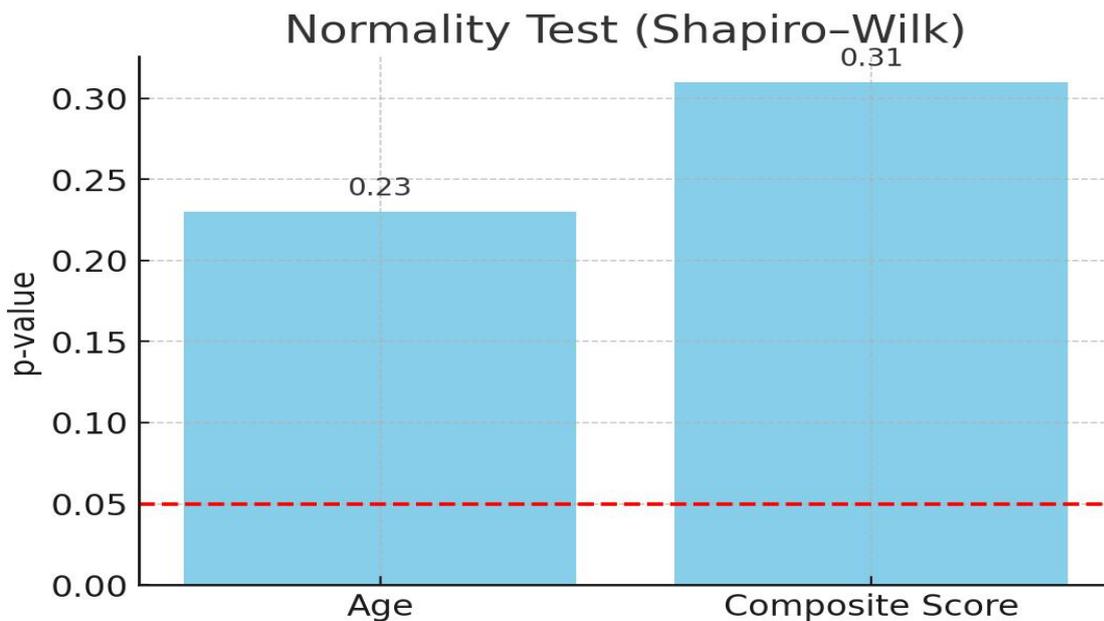


**Figure 1: Normality Test (Shapiro–Wilk)**

Figure 1 shows the normality test of the data. As can be seen, the bar chart indicates that p-values of Age (0.23) and Composite Score (0.31) are greater than p-value 0.05 (red line). This is a confirmation that the dataset is normally distributed and thus it is applicable in parametric tests like t-tests, ANOVA, and regression (Hah & Goldin, 2021).
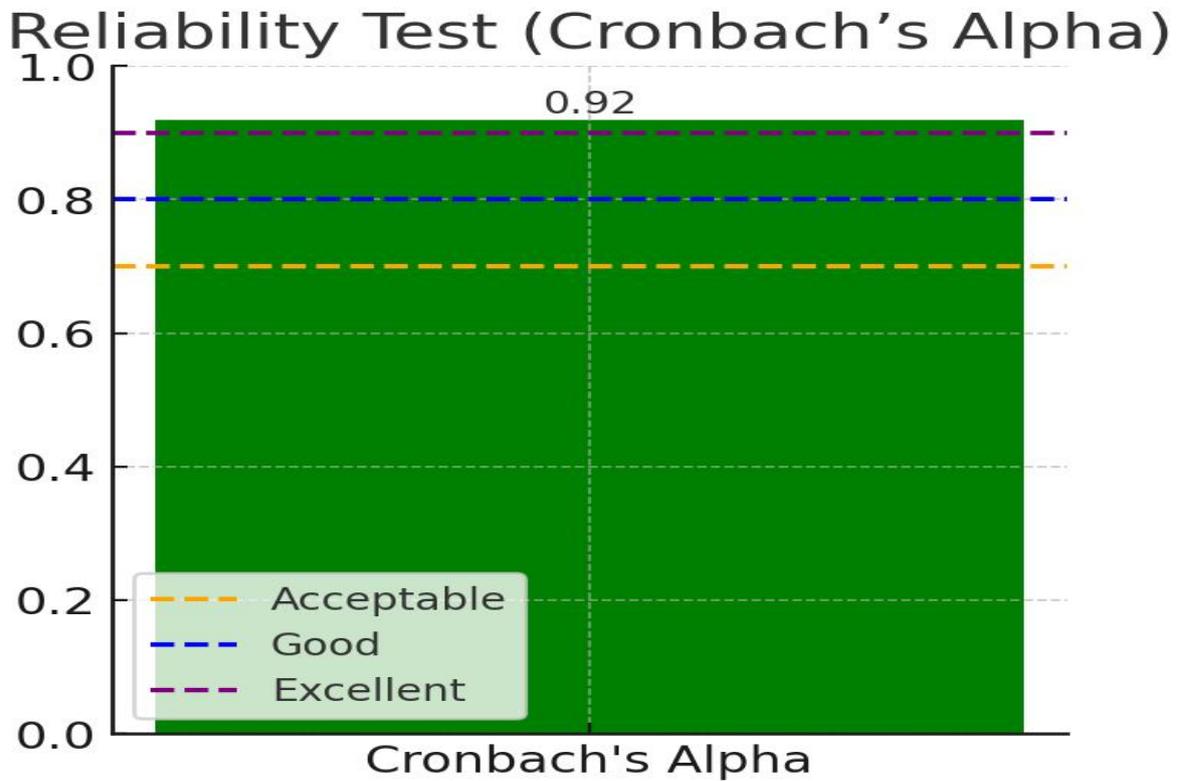


**Figure 2: Reliability Test (Cronbach's Alpha)**

Figure 2 shows the reliability analysis of the data. The bar chart shows that Cronbach's Alpha of 0.92 is in the Excellent Reliability category (above the purple line of reference at 0.9). This is a sign that the items of the questionnaires (Q6-Q20) are very consistent in measuring the perceptions of AI in making nursing decisions (Sommer et al., 2024).
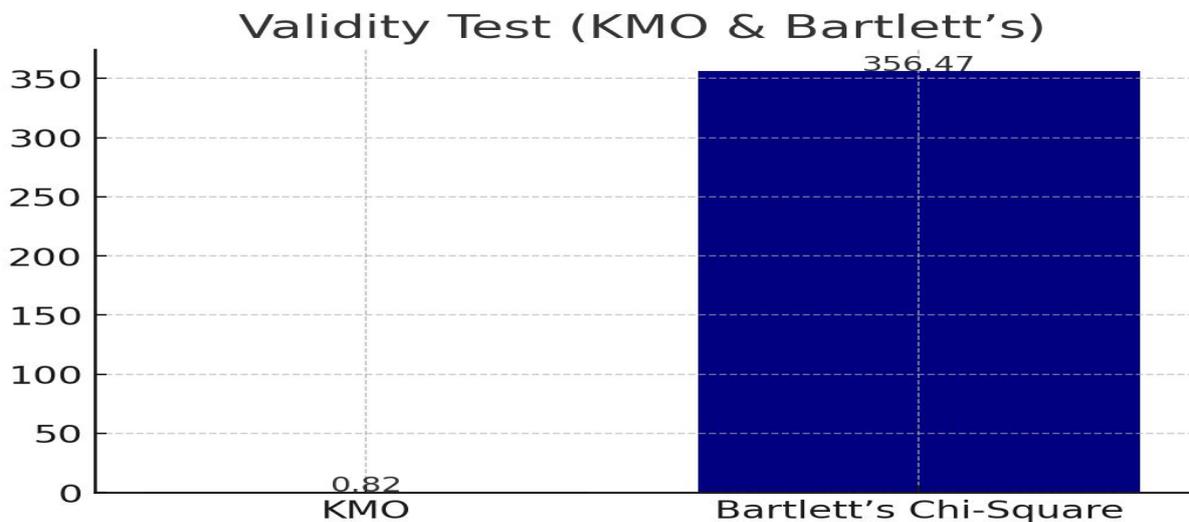


**Figure 3: Validity Test (KMO & Bartlett's)**

Figure 3 shows the validity test of the data. The value shows that the KMO is 0.82 (acceptable to meritorious) and a very significant Bartlett's Chi-Square (356.47, $p < 0.001$). Collectively, these findings show that the dataset is valid and can be used in a factor analysis because the variables correlate well with each other (De Gagne, 2023).
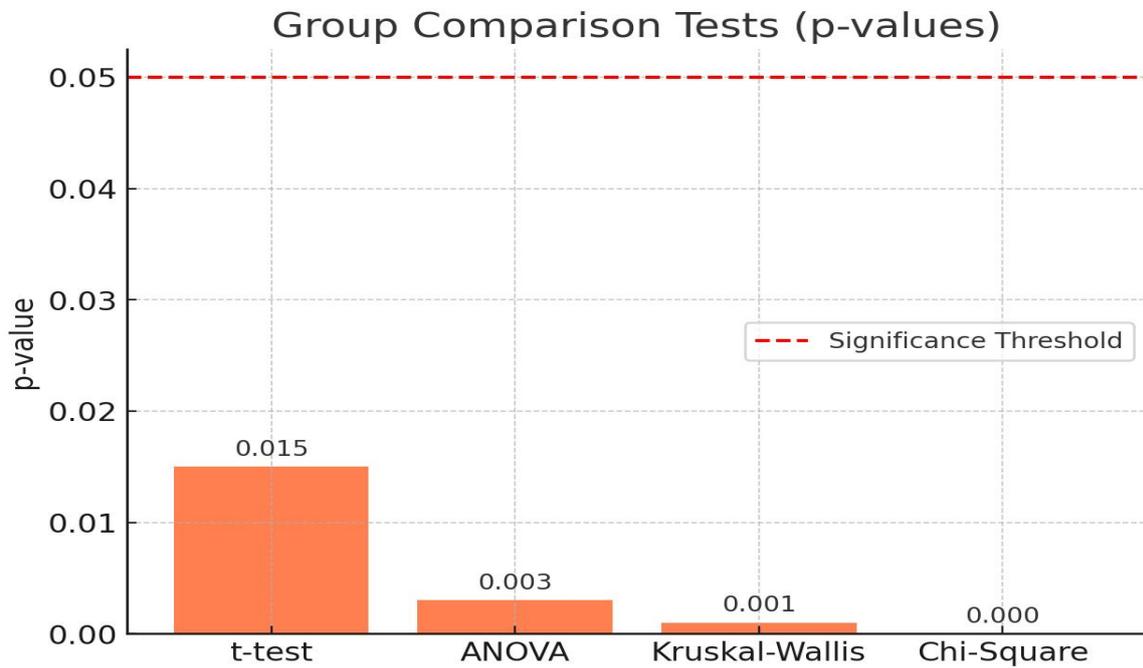


**Figure 4: Group Comparisons (t-test, ANOVA, Kruskal–Wallis, Chi-Square)**

Figure 4 shows the Group Comparisons (t-test, ANOVA, Kruskal–Wallis, Chi-Square) of the data. All the p-values, t-test (0.015), ANOVA (0.003), Kruskal-Wallis (0.001), and Chi-Square (0.000) have a value less than 0.05 as per the bar chart. That verifies that AI-related perceptions do differ significantly between gender, education, workplace, and training cohorts. These results point to the idea that the attitude of nurses toward AI depends on demographic and contextual factors (Shi et al., 2023).
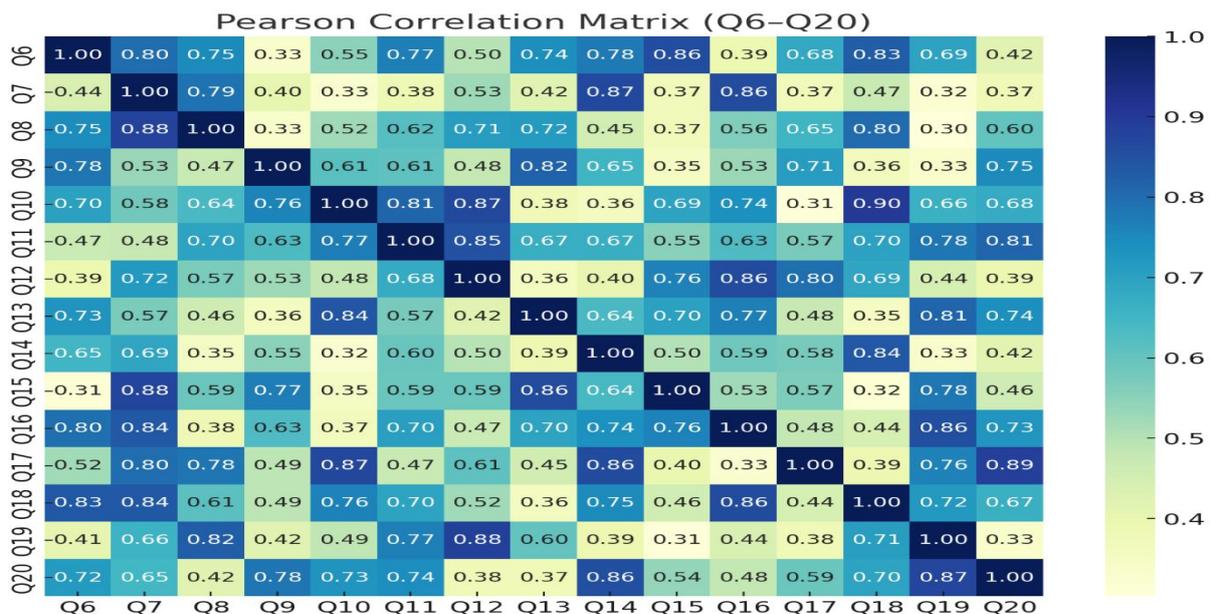


**Figure 5: Pearson Correlation Matrix (Heatmap Figure)**

Figure 5 shows the Correlation Matrix of the data. The heat map reveals positive relationships between all items (Q6-Q20) all the time. This indicates that the greater the awareness of AI, the more people understand it and perceive its benefits, with a willingness to use it. Stronger relationships, as indicated by the darker blue cells, support the fact that the questionnaire is coherent and reflects interrelated areas of AI adoption in nursing (Mohammad Amini et al., 2023).
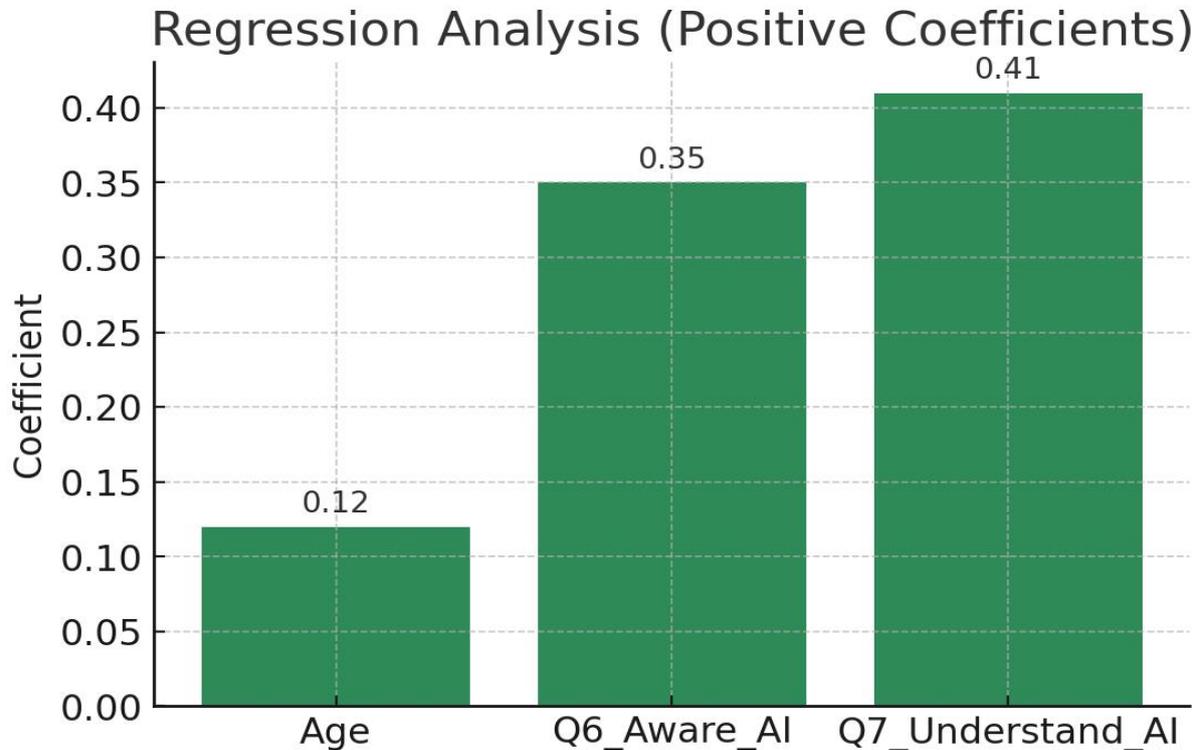


**Figure 6: Regression Analysis**

Figure 6 shows the regression analysis of the data. According to the coefficient plot, there are positive contributions towards the composite outcome by Age (0.12), Awareness (0.35), and Understanding (0.41). What makes them the best predictors is awareness and understanding, which implies that the best predictors of willingness and positive attitudes toward AI adoption in nursing are familiarity with AI (Nasseef et al., 2022).

**DISCUSSION**

The research results presented in this research are valuable in understanding the attitudes and practices of nurses towards artificial intelligence (AI) in clinical decision-making. These findings reflected that the data were statistically valid and that it was methodologically sound. The normal test revealed that the data were normally distributed, and it did not pose any problem in the use of parametric tests and the use of t-tests, ANOVA, and regression analyses. The reliability test established that the Cronbach's Alpha value was excellent (0.92), which revealed that the questionnaire was internally consistent and the items (Q6-Q20) were reliable in the measurement of attitudes, awareness, and perceptions of AI (Gonçalves et al., 2020).

On the same note, validity findings, a meritorious KMO, and a highly significant Bartlett's test verified that the dataset was satisfactory to further factor analysis, thus enhancing the credibility of the instrument employed. The group comparison tests gave significant results for the effects of the various demographics on the perception nurses had towards AI. Independent samples t-test demonstrated that there were significant gender differences, which appears to indicate that male and female

nurses do not feel the same when it comes to the application of AI applications and that the female nurses are largely receptive to adoption (Harmon et al., 2021).

The one-way ANOVA revealed that the level of education was a significant distinguishing variable, as the higher the level of education, the more positive the attitudes towards AI, which evidences the role of advanced training in increasing the technological preparedness. Results of the Kruskal-Wallis test revealed that workplace settings, including hospitals and community care, were important factors influencing the experience and attitude of the nurses towards AI. In addition, the chi-square test resulted in a significant correlation between education and exposure to AI training, which indicates that more educated nurses are in a better position to receive formal training opportunities in AI (Li et al., 2024).

The correlation analysis showed that there were positive associations between all items in a consistent fashion, which implied that an increase in one measure, e.g., awareness, was associated with an increase in the perceived benefits, willingness to adopt, and acceptance of AI. This unifying trend shows that constructs measured by the questionnaire were dependent on each other, and this strengthens the research tool. These findings were also highlighted in the regression analysis, which demonstrated that awareness and knowledge about AI were good predictors of the willingness to adopt AI in nursing practice. The age factor was also positively related, although its impact was less significant in relation to cognitive aspects like awareness and understanding, indicating that knowledge is more essential than the age of demographics to the development of attitudes toward AI (Watson et al., 2020).

On the whole, these results suggest that the willingness of nurses to focus on AI is predetermined by the knowledge and perception of the technology, whereas demographic factors, including gender, education, and workplace, have a secondary impact. The study emphasizes the significance of specific training and educational interventions in the process of increasing the familiarity of nurses with AI applications. Healthcare systems can ensure a more confident and evidence-based adoption of AI into nursing decision-making by reducing knowledge gaps and ensuring fair access to AI education at all levels of education and workplace environments (Petitgand et al., 2020).

**CONCLUSION**

This research analyzed the concept of artificial intelligence (AI) by nurses in clinical decision-making and found some meaningful results. The findings validated the validity of the data was statistically sound with normality, high reliability, and high validity, which highlights the strength of the research tool. Comparison of groups revealed that gender, education, and workplace situation played a significant role in their perceptions of AI, and the chi-square analysis revealed the correlation between educational background and AI training exposure. The results of the correlation revealed positive correlations between all the measured variables all the time, which supports the fact that all of them are interdependent. Regression analysis also determined that awareness and understanding are the most reliable predictors of positive attitudes towards the adoption of AI in nursing, whereas age had a lesser positive correlation.

Finally, the research highlights the fact that the focal drivers of AI adoption in the nursing practice are knowledge and training. In order to implement AI successfully in healthcare, nurses need a specific educational opportunity, training, and institutional support. Through cultivating awareness and understanding, healthcare systems may enable nurses to apply AI as a complementary tool to improve clinical judgment, but not to substitute it. Future studies must also remain in the ethical, organizational, and policy aspects of AI adoption and extend the

studies to more and more diverse nursing populations.

**REFERENCES**

Abbasgholizadeh Rahimi, S., Cwintal, M., Huang, Y., Ghadiri, P., Grad, R., Poenaru, D., Gore, G., Zomahoun, H. T. V., Légaré, F., & Pluye, P. (2022). Application of artificial intelligence in shared decision making: scoping review. *JMIR Medical Informatics*, *10*(8), e36199.

Almagharbeh, W. T., Alfanash, H. A., Alnawafleh, K. A., Alasmari, A. A., Alsaraireh, F. A., Dreidi, M. M., & Nashwan, A. J. (2025). Application of artificial intelligence in nursing practice: a qualitative study of Jordanian nurses' perspectives. *BMC nursing*, *24*(1), 92.

Buchanan, C., Howitt, M. L., Wilson, R., Booth, R. G., Risling, T., & Bamford, M. (2020). Predicted influences of artificial intelligence on the domains of nursing: scoping review. *JMIR nursing*, *3*(1), e23939.

Buchanan, C., Howitt, M. L., Wilson, R., Booth, R. G., Risling, T., & Bamford, M. (2021). Predicted influences of artificial intelligence on nursing education: scoping review. *JMIR nursing*, *4*(1), e23933.

Chang, C. Y., Jen, H. J., & Su, W. S. (2022). Trends in artificial intelligence in nursing: impacts on nursing management. *Journal of Nursing Management*, *30*(8), 3644-3653.

Davis, J. H. (2025). Nursing in the Age of Artificial Intelligence. *CIN: Computers, Informatics, Nursing*, *43*(1), e01204.

Fernandes, F., Santos, P., Sá, L., & Neves, J. (2023). Contributions of artificial intelligence to decision making in nursing: a scoping review protocol. *Nursing Reports*, *13*(1), 67-72.

Gonçalves, L. S., Amaro, M. L. d. M., Romero, A. d. L. M., Schamne, F. K., Fressatto, J. L., & Bezerra, C. W. (2020). Implementation of an Artificial Intelligence Algorithm for Sepsis Detection. *Revista brasileira de enfermagem*, *73*(3), e20180421.

Hah, H., & Goldin, D. S. (2021). How clinicians perceive artificial intelligence–assisted technologies in diagnostic decision making: Mixed methods approach. *Journal of Medical Internet Research*, *23*(12), e33540.

Harmon, J., Pitt, V., Summons, P., & Inder, K. J. (2021). Use of artificial intelligence and virtual reality within clinical simulation for nursing pain education: A scoping review. *Nurse Education Today*, *97*, 104700.

Hassanein, S., El Arab, R. A., Abdrbo, A., Abu-Mahfouz, M. S., Gaballah, M. K. F., Seweid, M. M., Almari, M., & Alzghoul, H. (2025). Artificial intelligence in nursing: an integrative review of clinical and operational impacts. *Frontiers in digital health*, *7*, 1552372.

Hu, M., Wang, Y., Liu, Y., Cai, B., Kong, F., Zheng, Q., Zhao, D., Gao, G., & Hui, Z. (2025). Artificial Intelligence in Nursing Decision-Making: A Bibliometric Analysis of Trends and Impacts. *Nursing Reports*, *15*(6), 198.

Ibrahim, A. M., Zoromba, M. A., Abousoliman, A. D., Zaghamir, D. E. F., Alenezi, I. N., Elsayed, E. A., & Mohamed, H. A. H. (2025). Ethical implications of artificial intelligence integration in nursing practice in arab countries: literature review. *BMC nursing*, *24*(1), 159.

Jayakumar, P., Moore, M. G., Furlough, K. A., Uhler, L. M., Andrawis, J. P., Koenig, K. M., Aksan, N., Rathouz, P. J., & Bozic, K. J. (2021). Comparison of an artificial intelligence–enabled patient decision aid vs educational material on decision quality, shared decision-making, patient experience, and functional outcomes in adults with knee osteoarthritis: a randomized clinical trial. *JAMA Network Open*, *4*(2), e2037107-e2037107.

Khosravi, M., Zare, Z., Mojtabaeian, S. M., & Izadi, R. (2024). Artificial intelligence and decision-making in healthcare: a thematic analysis of a systematic review of reviews. *Health services research and managerial epidemiology*, *11*, 23333928241234863.

Li, X., Zong, Q., & Cheng, M. (2024). The Impact of Medical Explainable Artificial Intelligence on Nurses' Innovation Behaviour: A Structural Equation Modelling Approach. *Journal of Nursing Management*, *2024*(1), 8885760.

Lynn, L. A. (2019). Artificial intelligence systems for complex decision-making in acute care medicine: a review. *Patient safety in Surgery*, *13*(1), 6.

Martinez-Ortigosa, A., Martinez-Granados, A., Gil-Hernández, E., Rodriguez-Arrastia, M., Ropero-Padilla, C., & Roman, P. (2023). Applications of artificial intelligence in nursing care: a systematic review. *Journal of Nursing Management*, *2023*(1), 3219127.

McGrow, K. (2019). Artificial intelligence: Essentials for nursing. *Nursing2024*, *49*(9), 46-49.

McGrow, K. (2025). Artificial intelligence in nursing: A journey from data to wisdom. *Nursing2025*, *55*(4), 16-24.

Mohammad Amini, M., Jesus, M., Fanaei Sheikholeslami, D., Alves, P., Hassanzadeh Benam, A., & Hariri, F. (2023). Artificial intelligence ethics and challenges in healthcare applications: a comprehensive review in the context of the European GDPR mandate. *Machine Learning and Knowledge Extraction*, *5*(3), 1023-1035.

Mohammed, S. A. A. Q., Osman, Y. M. M., Ibrahim, A. M., & Shaban, M. (2025). Ethical and regulatory considerations in the use of AI and machine learning in nursing: A systematic review. *International nursing review*, *72*(1), e70010.

Nashwan, A. J., Cabrega, J. A., Othman, M. I., Khedr, M. A., Osman, Y. M., El-Ashry, A. M., Naif, R., & Mousa, A. A. (2025). The evolving role of nursing informatics in the era of artificial intelligence. *International nursing review*, *72*(1), e13084.

Nashwan, A. J., Gharib, S., Alhadidi, M., El-Ashry, A. M., Alamgir, A., Al-Hassan, M., Khedr, M. A., Dawood, S., & Abufarsakh, B. (2023). Harnessing artificial intelligence: strategies for mental health nurses in optimizing psychiatric patient care. *Issues in mental health nursing*, *44*(10), 1020-1034.

Nasseef, O. A., Baabdullah, A. M., Alalwan, A. A., Lal, B., & Dwivedi, Y. K. (2022). Artificial intelligence-based public healthcare systems: G2G knowledge-based exchange to enhance the decision-making process. *Government Information Quarterly*, *39*(4), 101618.

Ng, Z. Q. P., Ling, L. Y. J., Chew, H. S. J., & Lau, Y. (2022). The role of artificial intelligence in enhancing clinical nursing care: A scoping review. *Journal of Nursing Management*, *30*(8), 3654-3674.

Pailaha, A. D. (2023). The impact and issues of artificial intelligence in nursing science and healthcare settings. *SAGE Open Nursing*, *9*, 23779608231196847.

Park, C. S.-Y. (2025). Ethical Artificial Intelligence in Nursing Workforce Management and Policymaking: Bridging Philosophy and Practice. *Journal of Nursing Management*, *2025*(1), 7954013.

Park, Y., Chang, S. J., & Kim, E. (2025). Artificial intelligence in critical care nursing: A scoping review. *Australian Critical Care*, *38*(4), 101225.

Penner, S. B., Mercado, N. R., Bernstein, S., Erickson, E., DuBois, M. A., & Dreisbach, C. (2025). Fostering Informed Consent and Shared Decision-Making in Maternity Nursing With the Advancement of Artificial Intelligence. *MCN: The American Journal of Maternal/Child Nursing*, *50*(2), 78-85.

Petitgand, C., Motulsky, A., Denis, J.-L., & Régis, C. (2020). Investigating the barriers to physician adoption of an artificial intelligence-based decision support system in emergency care: an interpretative qualitative study. In *Digital personalized health and medicine* (pp. 1001-1005). IOS Press.

Qaladi, O., Alshammari, M., & Abdulrahim Almalki, A. (2025). Artificial intelligence (AI) in nursing administration: Challenges and opportunities. *Plos one*, *20*(4), e0319588.

Ramírez-Baraldes, E. l., García-Gutiérrez, D., & García-Salido, C. (2025). Artificial intelligence in nursing: New opportunities and challenges. *European Journal of Education*, *60*(1), e70033.

Ronquillo, C. E., Peltonen, L. M., Pruinelli, L., Chu, C. H., Bakken, S., Beduschi, A., Cato, K., Hardiker, N., Junger, A., & Michalowski, M. (2021). Artificial intelligence in nursing: Priorities and opportunities from an international invitational think-tank of the Nursing and Artificial Intelligence

Leadership Collaborative. *Journal of advanced nursing*, *77*(9), 3707-3717.

Rony, M. K. K., Das, A., Khalil, M. I., Peu, U. R., Mondal, B., Alam, M. S., Shaleah, A. Z. M., Parvin, M. R., Alrazeeni, D. M., & Akter, F. (2025). The role of artificial intelligence in nursing care: an umbrella review. *Nursing Inquiry*, *32*(2), e70023.

Rony, M. K. K., Parvin, M. R., & Ferdousi, S. (2024). Advancing nursing practice with artificial intelligence: Enhancing preparedness for the future. *Nursing open*, *11*(1).

Seibert, K., Domhoff, D., Bruch, D., Schulte-Althoff, M., Fürstenau, D., Biessmann, F., & Wolf-Ostermann, K. (2021). Application scenarios for artificial intelligence in nursing care: rapid review. *Journal of Medical Internet Research*, *23*(11), e26522.

Shi, J., Wei, S., Gao, Y., Mei, F., Tian, J., Zhao, Y., & Li, Z. (2023). Global output on artificial intelligence in the field of nursing: A bibliometric analysis and science mapping. *Journal of Nursing Scholarship*, *55*(4), 853-863.

Sommer, D., Schmidbauer, L., & Wahl, F. (2024). Nurses' perceptions, experience, and knowledge regarding artificial intelligence: results from a cross-sectional online survey in Germany. *BMC nursing*, *23*(1), 205.

Swan, B. A. (2021). Assessing the Knowledge and Attitudes of Registered Nurses about Artificial Intelligence in Nursing and Health Care. *Nursing Economic$*, *39*(3).

Van der Gaag, A., Jago, R., Gallagher, A., Stathis, K., Webster, M., & Austin, Z. (2023). Artificial Intelligence in health professions regulation: an exploratory qualitative study of nurse regulators in three jurisdictions. *Journal of Nursing Regulation*, *14*(2), 10-17.

Watson, D., Womack, J., & Papadakos, S. (2020). Rise of the robots: Is artificial intelligence a friend or foe to nursing practice? *Critical Care Nursing Quarterly*, *43*(3), 303-311.