Effect of Orientation Program on Pediatric Nurses' Knowledge and Perception Regarding Application of Artificial Intelligence

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Abstract

Background: Artificial intelligence applications have grown vastly across all aspects of healthcare. Nursing practice is critical and AI technology will enhance practice and pediatric patient outcomes. **The current study** aimed to evaluate the effect of orientation programs on pediatric nurses' knowledge and perception regarding the application of artificial intelligence. **Design**: To fulfill the aim of this study a quasi-experimental design was utilized. **Setting:** This study was conducted in pediatric departments at Sohag University Hospitals. **Sample**: A convenience sample included (100) nurses were selected from the previously mentioned settings. **Tools:** Two tools were used to collect the data: Nurses' Knowledge regarding the Artificial Intelligence Questionnaire and Nurses' Perception regarding the application of artificial intelligence. **Results**: The current study results revealed that there was a highly statistically positive correlation between total knowledge and perception among pediatric nurses. Moreover, highly statistically significant differences between total knowledge and perception level post-orientation program ($P<0.001$). **Conclusion:** This study concluded that the orientation program had a significant positive effect on improving the studied nurses' knowledge and perception regarding the application of artificial intelligence. **Recommendation:** Encourage nurses to increase their knowledge and perception toward artificial intelligence through attendance workshops and training programs regarding artificial intelligence applications, which are required to enable them to integrate artificial intelligence applications into nursing practices.

Keywords: Artificial Intelligence application, Attitude, Nurses' knowledge

Introduction:

Artificial intelligence enhances senior management's capacity for strategic thought and innovation, which influences their duties. In the healthcare industry, artificial intelligence can help with disease assessment, diagnosis, and clinical problem-solving. It can also reduce data loss, improve nursing communication skills, improve inpatient care management, lessen nurse workload, and improve patient safety **(Zhou et al., 2022).**

Artificial Intelligence Technology (AIT) AIT is a branch of computer science that attempts to replicate how the human brain works by automating a range of processes, including learning and decision-making, as well as by completing tasks or resolving problems that are also used in patient care. Machine learning and deep learning processes are currently combined by artificial intelligence to improve health proximity and precision, leading to improved matching **(Hernon et al., 2023)**.

Three types of artificial intelligence (AI) are utilized in hospitals: natural language processing, which is the most recent and involves the fusion of linguistics and artificial intelligence and includes intelligent analysis of written language; deep learning, which is a machine learning approach and neural network extension; and machine learning, which is a statistical technique set for problem-solving (**Altas, 2020**).

In nursing education and practice, a professional identity is formed by internalizing professional knowledge, skills, attitudes, values, and ethical standards, then integrating these traits into one's own identity and conduct. Medical health nurses who have a strong sense of who they are as professionals understand that their work completely meets these standards in accordance with professional standards and ethical guidelines. Among the several factors that influence the formation of a professional identity are the educational setting, critical thinking, clinical practice, cognition, individual characteristics, societal and environmental characteristics, and public illustration (**Kim & Sim, 2020**).

The way that pediatric nurses view their work affects how they help patients through their challenges. The ultimate goal of the nursing process is to provide comprehensive care, and the skills and traits of certain

medical health nurses can influence the standard of care and help them comprehend patients and resolve challenges. Solving problems is the ability to find suitable and workable answers to problems that come up in daily life. By employing problem-solving techniques, a person or group can improve their concentration and abilities (**Hannaford et al., 2021**).

These days, the main AI applications used in nursing practice are speech recognition, data mining, and physical deterioration prediction. Future advancements in AI technology, however, will enable nurses to provide individualized, evidence-based treatment by integrating relevant data (**Ronquillo et al., 2021**).

Perception, which forms the foundation for comprehension, education, and motivation, is the deliberate identification and interpretation of sensory inputs. It is sometimes referred to as awareness or understanding of something that is simple to understand (**Adel et al., 2018**). Researchers have examined how healthcare workers view AI and discovered that, while being aware of the concerns it brings up, they typically view AI favorably and expect it to improve their day-to-day work **(Maassen et al., 2021)**.

Because nurses collaborate closely with patients and ensure that diagnosis and treatment plans are successful, they play a crucial role in the delivery of healthcare. Nurses have a wide range of everyday tasks, including keeping patient charts up to date, recording, and taking vital signs, assisting with physical examinations, and assisting with communication between patients, nursing staff, and the administrative community. Nursing care management may be enhanced by AI-based medical information processing, according to **Liu et al. (2022).**

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Nursing practice will therefore undergo a radical change as a result of AI. Examples of artificial intelligence in nursing practice include drug delivery robots, special needs robots, and medical diagnosis, planning, and intervention decision-making applications (**Taryudi et al., 2022**).

Given the importance of nursing care, nurses should be knowledgeable about artificial intelligence. However, most recent studies have focused on developing AI applications and comparing pre- and post-integration work; other studies have found that participants are aware of AI and want to use it in their daily lives (**Booth et al., 2021**).

Significance of the study:

Egypt has begun applying artificial intelligence and technology in a number of areas in order to fulfill its Vision 2030. Living and doing business in Egypt has also become safer. The government is expanding its role in artificial intelligence development through initiatives designed to support domestic research and development. According to **Egypt's Artificial Intelligence Future (2020),** the government has set a broad goal that by 2030, robotics and AI will account for 7.7% of Egypt's GDP. This objective concerns an Egyptian society driven by these technologies. According to **Ronquillo et al. (2021**), artificial intelligence technologies have the potential to enhance nursing performance and empower nurses to deliver more individualized, evidence-based care for their patients by improving their professional abilities.

By strengthening nurses' professional distinctiveness and problem-solving skills, artificial intelligence technology can help surgical nurses deliver more individualized, evidence-based care to patients. To increase competitiveness in the labor market, the healthcare sector must undergo a significant digital change. The question of whether to fully or partially include artificial intelligence in their work has since drawn the attention of prominent healthcare executives and providers (**Elsayed & Sleem, 2021**). Artificial intelligence technology will become more widely used and valuable in the healthcare industry as a result of factors including cost, quality, nursing results, and assistance in efficiently analyzing vast volumes of data. Few studies, nevertheless, have looked into artificial intelligence-related teaching interventions for nurses (**Shaik, 2020**).

Hypotheses:

H1: Knowledge scores of pediatric nurses' regarding the application of artificial intelligence will be improved after orientation program intervention than pre-intervention

H2: Perception scores of pediatric nurses' regarding the application of artificial intelligence will be improved after orientation program intervention than pre-intervention

Aim of the study

This study aimed to evaluate the effect of orientation programs on pediatric nurses' knowledge and perception regarding the application of artificial intelligence.

Subjects and Methods

Research design:

To fulfill the aim of this study a quasi-experimental design was utilized.

Setting:

This study was applied in pediatric departments at Sohag University Hospitals.

Subjects:

A convenience sample that was included 100 **pediatric** nurses who selected from the previously mentioned settings.

Study tools:

Tool (I): Nurses' Knowledge Regarding Artificial Intelligence Questionnaire: This questionnaire was created by the researchers to evaluate nurses' knowledge regarding artificial intelligence. There are two portions in it:

Part I: The personal information of nurses was covered in Part I, including age, gender, educational level, years of experience, previous artificial intelligence training, and the source of information regarding artificial intelligence.

Part II: To evaluate the artificial intelligence knowledge levels of pediatric nurses before and after sessions, the study team included artificial intelligence information that was generated after reviewing pertinent literature and under the direction of **Lennartz et al., (2021); Shimon et al., (2021).** Twelve categories were used to group the questions: The nursing field's definition of artificial intelligence (2 marks), its operation (2 marks), significance (2 marks), benefits (6 marks), drawbacks (6 marks), categories of artificial intelligence (4 marks), Basic Components of AI (5 marks), obstacles (5 marks), principles (6 marks), applications (examples of AI that can assist the medical and surgical nurse, and examples of AI in the nursing field) (10 marks). Furthermore, this section inquires about artificial intelligence issues in the nursing area (10 marks), and principles (5 marks).

Scoring system:
Each true or false response was given a score of "two marks" for being complete and accurate, "one mark" for being correct but partial, and "zero" for being unclear. A score of 60% or higher indicated that the nurse had satisfactory artificial intelligence knowledge; a score of less than 60% indicated that the nurse had unsatisfactory artificial intelligence understanding.

Tool (II): Nurses' Perception Regarding Application of Artificial Intelligence, It was developed by **Abdullah & Fakieh, (2020)** to identify intensive care nurses' perception levels regarding artificial intelligence applications. This scale includes 14 items classified under three subscales; Subscale one: knowledge of nurses about AI. It contains 4 items. Subscale two: Advantages of using AI. It contains 5 items. Subscale three: Problems of application of AI in health care. It includes 5 items.

Scoring System:
The scoring of perception of AI scale was as follows through a five-point Likert scale; (1) for strongly disagree, (2) for Agree, (3) for Neutral, (4) for Agree, and (5) for strongly agree". The sums of the scores according to the three subscales; were as follows 0 - ≤ 40 was considered as low perception, a score of 41 - ≤ 80 was considered a moderate perception level, and a score of ≥ 81 was considered as high perception (**Elsayed & Sleem, 2021**).

Fieldwork:
From September 2023 to March 2024, a total of six months were needed for the data collection process.

Administrative and Ethical Considerations:
The Research Ethics Committee of Sohag University's Faculty of Nursing approved this study to be conducted. The director of the Sohag University Hospital received an official letter from the dean of the nursing faculty at Sohag University requesting permission to perform the study. Written consent was given by nurses who consented to take part in the trial. It was proven that nurses participated voluntarily. The ability to leave the study at any moment and without explanation was made clear to the nurses. By using anonymity protection, confidentiality was established.

Tools Validity and Reliability:
The researchers translated each tool from Arabic into English and back again. To evaluate the tools' face and content validity, a panel of five experts—two from the field of artificial intelligence and three from the medical surgery nursing department—tested them. For substance, clarity, simplicity, relevance, completeness, and applicability, the experts made revisions to the tools. In response to their criticism, no modifications were made. Experts

deemed the instruments to be legitimate. The tools' dependability was demonstrated by their strong Cronbach's alpha value (internal consistency) of 0.923 for the nurses' knowledge and 0.884 for their perception.

Pilot study:
Ten nurses, or 10% of the study sample, participated in it. Its purpose was to evaluate the study's instruments for feasibility and clarity. Analyses were done on the pilot trial data. Nurses who took part in the pilot study were included in the main study sample.

Phases of intervention:
The following phases of **the orientation program** were followed:

I. Assessment phase:
The researchers visited the study locations after receiving approval to continue with the investigation. The process of gathering the sample of nurses was initiated by the researchers. The nurses were approached one-on-one by the researchers, who also extended an invitation to participate and provided an outline of the goals and methods of the study. Each study tool was read and explained to each nurse by the researchers, who also noted each nurse's reaction. The questionnaire took the researchers 25 to 35 minutes to complete after they started filling it out. They conducted one-on-one interviews with each nurse using the research questionnaire to get baseline information on demographics, knowledge, and perception.

II. Planning phase:
Researchers developed a thorough understanding of every facet of artificial intelligence by consulting the literature pertinent to the field. Based on the evaluation phase results and the characteristics of the study sample, the researchers created the content of the intervention sessions. Furthermore, the investigators created a booklet with illustrations and verified content, which was given to the nurses under study in the surgical department as a self-learning aid. Collaborating with the hospital principals, the researchers identified the lecture room as an appropriate venue for the educational intervention. The lecture room serves as a training and workshop space for nurses. The data display for any lectures is located in this room. A pamphlet was created and given to nurses by the end of each session of the **orientation program**.

The following procedures are how the researchers created the orientation program regarding the application of artificial intelligence:

- **Orientation program objectives**

General objective: The general objective of the orientation program intervention was to increase pediatric nurses' knowledge and perception regarding the application of artificial intelligence.

Specific objectives: after thecurrent **orientation program** intervention, the nurses should be able to:

- Define artificial intelligence and its characteristics in the nursing field.
- Explain the importance of artificial intelligence.
- Discuss how artificial intelligence works
- List the advantages of artificial intelligence and its strategy.
- Identify the barriers t o artificial intelligence
- Enumerate the disadvantages of artificial intelligence.
- Discuss the four types of artificialintelligence.
- Explain the components of artificial intelligence.
- Discuss the applications of artificial intelligence
- List the most important problems of artificial intelligence and their solutions in the health field.
- Explain the principles that address artificial intelligence.
- Demonstrate the problems and solutions of artificial intelligence in the nursing field.
- Discuss how to improve the nurses' perception of artificial intelligence.

III. Implementation phase:
The intervention was applied to every chosen nurse. A strategy of question and response was used to convey the point. The researchers implemented the **orientation program** in the designated contexts. There were five groups of nurses, with ten nurses in each. The goals and titles of each session were determined by the content itself, which changed based on the nurse's understanding and absorption of the knowledge, the time allotted, and the session's content. The same materials were given to all nurses, and during the sessions, role models, lectures, small-group discussions, and the brochure booklet were used.

All computer users in the current study saw four movies on a laptop computer, which were accompanied by a PowerPoint presentation that explained the intervention. A group discussion regarding the videos' contents ensued. Furthermore, researchers assisted nurses in learning about feedback. Additionally, booklets with eye-catching pictures and straightforward, understandable writing were given out on CDs to help people following the intervention. Every session begins with an overview of the previous one's contents and an explanation of the current one's goals in plain language to suit the nurses' comprehension level. To promote active engagement and boost learning, reinforcement strategies including praise were employed during the sessions.

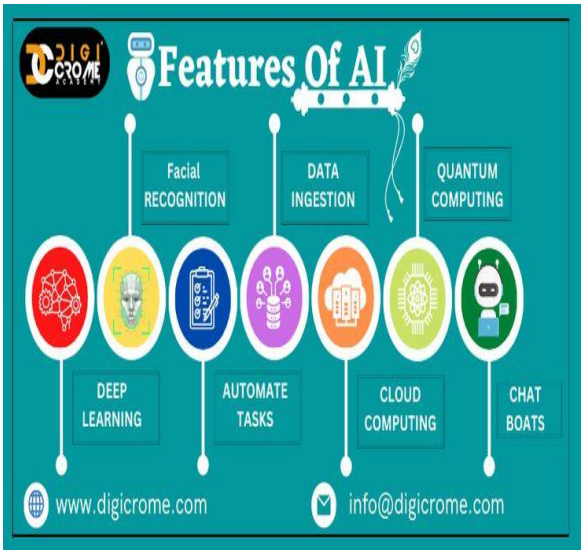
The sessions were as follows:

The first session included an overview of the instructional guidelines intervention by the researchers, outlining the objectives, number of sessions, length of each session, meeting place, and schedule. Next, a pre-test was carried out with the use of data-gathering instruments.

In the second session, the researchers gave the nurses an overview of artificial intelligence, including its definition and significance. Artificial intelligence is the foundation for creating and using algorithms integrated into dynamic computing environments to mimic the processes of human intelligence. To put it plainly, artificial intelligence is the endeavor to imitate human thought and behavior in computers. According to the figure, the researchers also talked about the key traits of artificial intelligence and the domains in which it can be used in healthcare settings.

Third session: It began with a recap of the previous session and moved into a discussion of artificial intelligence's application in nursing care as well as its mechanism. In the healthcare industry, artificial intelligence is being utilized to evaluate complicated medical and healthcare data and draw approximations of conclusions based just on input data. Artificial intelligence finds application in areas like medication discovery, treatment protocols, diagnostics, personalized medicine, and patient monitoring and care. Artificial intelligence technology can evaluate large amounts of data, including claims data, population data, clinical trial data, and health records and photographs, to find patterns and insights that would be impossible for people to find on their own **(Luca et al.,2023).**

By completing tasks that would normally be completed by people in a fraction of the time and at a fraction of the expense, artificial intelligence makes life easier for patients, nurses, doctors, and hospital managers. Artificial intelligence can facilitate remote monitoring, enhance patient empowerment through self-care, and increase the speed and accuracy of diagnoses. It can also provide practitioners with faster and simpler access to additional knowledge. The practice of medicine and the provision of healthcare could be drastically changed by artificial intelligence **(Florida et al., 2023).**



The fourth session consists of group talks regarding the benefits of artificial intelligence, including its ability to reduce human mistakes, take risks in place of people, be available around the clock, aid with repetitive tasks, provide digital assistance, make quicker judgments, and be used in everyday applications and new ideas. Additionally, strategies for artificial intelligence were also covered.

Fifth session: After reviewing the previous session, we talked about the challenges posed by artificial intelligence, including fear, cultural barriers, a lack of talent, and a lack of a strategic approach to its adoption. We also discussed potential solutions, including computing power, a lack of trust, human-level knowledge, data privacy and security, bias issues, and scarcity of data.

The sixth session began with an overview of the preceding ones, followed by the presentation of videos showcasing various forms of artificial intelligence. The elements of artificial intelligence were then covered by the researchers. Expert systems, robotics, computer vision, natural language processing, and machine learning are some of the elements that make up artificial intelligence. These parts make it feasible for robots to learn from, comprehend, and engage with their surroundings in ways that weren't before feasible.

The seventh session began with a recap of the previous ones. Major emphasis was then placed on educating nurses about the various applications of artificial intelligence, including how it may benefit pediatric nurses. Examples of AI in the nursing profession are also provided. The issues with artificial intelligence in the healthcare industry were also discussed by the scholars. Furthermore, the principles of artificial intelligence in the nursing profession.

Eighth session: Covers group discussions about AI's challenges and opportunities for the nursing profession. Also spoken upon was enhancing the favorable perception of artificial intelligence.

Group talks regarding artificial intelligence's potential to improve practice and pediatric patient outcomes are covered in the ninth session. A quarter to an hour was allotted for each.

Tenth session: The researchers listed the benefits of the **orientation program** intervention and included a summary of all the prior sessions' talks from the nurses. To respond to the nurses' inquiries and express gratitude for their participation, it also featured avenues of communication between the researchers and the nurses.

IV. Evaluation phase

To evaluate the effect of the orientation program on pediatric nurses' knowledge and perception regarding the application of artificial intelligence, the same pre-test tools and distributed again after two months of the instructional guidelines implementation to compare the effect of instructional guidelines with the pre-test.

Statistical Analysis:

Version 20.0 of SPSS for Windows (SPSS, Chicago, IL) was used for all statistical analyses. The mean ±standard deviation (±SD) was used to express continuously distributed, normally distributed data. Both percentages and numbers were used to express categorical data. Variables with categorical data were compared using the chi-square test (or Fisher's exact test, if appropriate). The study's questionnaires' internal consistency test, or reliability test, was computed. The cutoff point for statistical significance was $p<0.05$.

Results:

Table (1) describes that 80% of the studied sample were females, 45% of them aged from 30–40 years. Additionally, 47 % had 10–20 years of experience, and 56% of them had a **Nursing institute** degree in nursing education.

Figure (1): Shows that 88% of the studied **pediatric** nurses didn't have previous training in artificial intelligence.

Figure (2) illustrates that the main sources of **knowledge** among **pediatric** nurses about artificial intelligence were the Internet (75%), followed by TV (15%), and followed by doctors (10%).

Table 2 depicts that there were significant differences in the mean difference scores of **pediatric** nurses **regarding** knowledge about artificial intelligence before and after **orientation program** implementation. This indicates that the knowledge level of **pediatric** nurses improved after the **orientation program** intervention in alldomains. This demonstrated that the post-**orientation program** intervention phase had the highest mean scores compared to the pre-**intervention.**

Figure (2) illustrates that the total level of knowledge **concerning artificial intelligence** was satisfactory among 12% of studied **pediatric** nurses during the **orientation program** intervention period, while it was 88% post **orientation program** intervention.

It's clear from **Table (3)** that there was a highly statistically significant difference ($p= <0.001$) and improvement in the **pediatric** nurses' perception mean scores in artificial intelligence pre and post-one-month o**rientation program** intervention implementation. Additionally, the total nurses' perception mean score improved from 34.77 ±22.06 pre-**orientation program** intervention to 83.06±3.33 post-**orientation program** intervention with statistically significant differences.

Figure (3) indicates that the total level of perception was low among 40% of studied **pediatric** nurses during pre- **orientation program** intervention period while post-**orientation program** intervention 80% of them had high perception.

Table (4): evidence that moderate association (r = 0.573, P - value < 0.001) between knowledge of the studied sample and **perception** regarding artificial intelligence pre-**orientation program** intervention, Also, there association between knowledge of the studied sample with perception regarding artificial intelligence post **orientation program** intervention (r = 0.334, P - value < 0.001).

Table (1): Distribution of pediatric nurses regarding demographic data (n=100)

Items	N	%
Age (years)		
< 30	25	25.0
30 – 40	45	45.0
> 40	30	30.0
Mean ±SD	36.9 ±6.7	
Gender		
Male	20	20.0
Female	80	80.0
Educational qualifications		
Secondary nursing	27	27.0
Nursing institute	56	56.0
B.Sc.N,	17	17.0
Experience (Years)		
Less than 10	26	26.0
10 – 20	47	47.0
More than 20	27	27.0

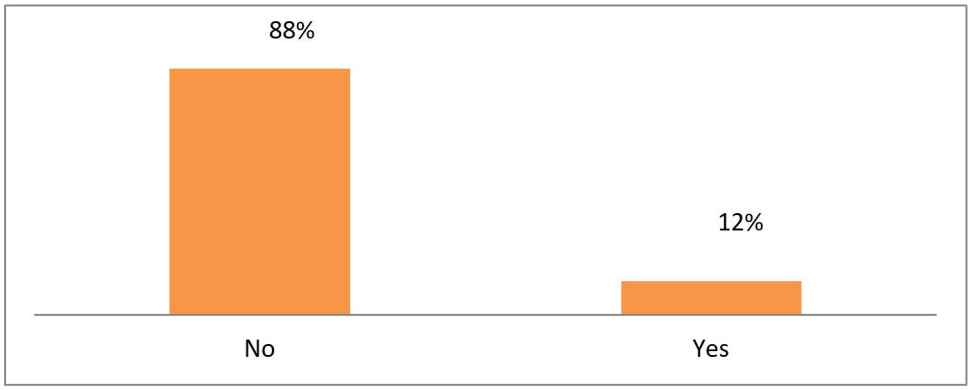


Figure (1): Training about artificial intelligence previous among pediatric nurses (n=100).

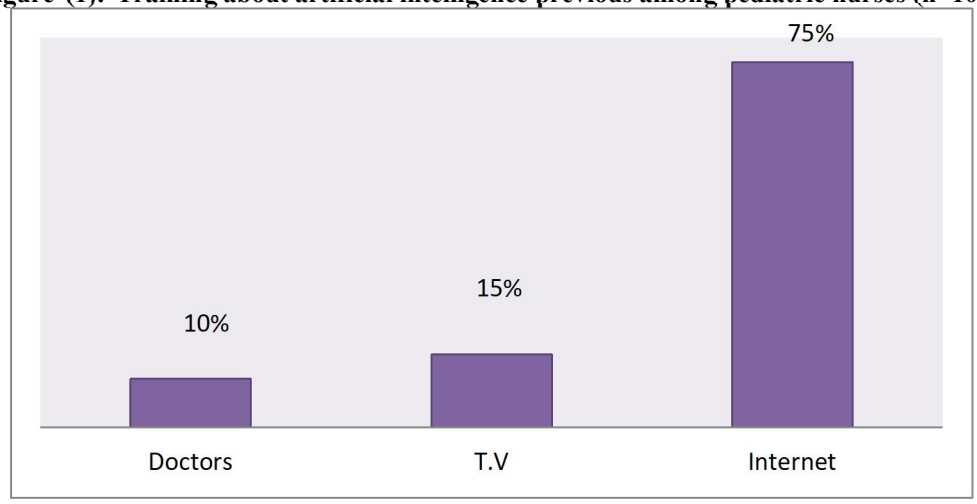


Figure (1): Sources of knowledge about artificial intelligence among pediatric nurses (n=100).

Table (2): Pediatric nurses' knowledge mean scores differences related to artificial intelligence pre and post-one-month orientation program intervention **(n=100).**

Items	Pre-test	Post-test	X2	P-value
Pediatric nurses' knowledge mean scores	8.88±10.23	36.65 ±3.33	41.22	<0.000

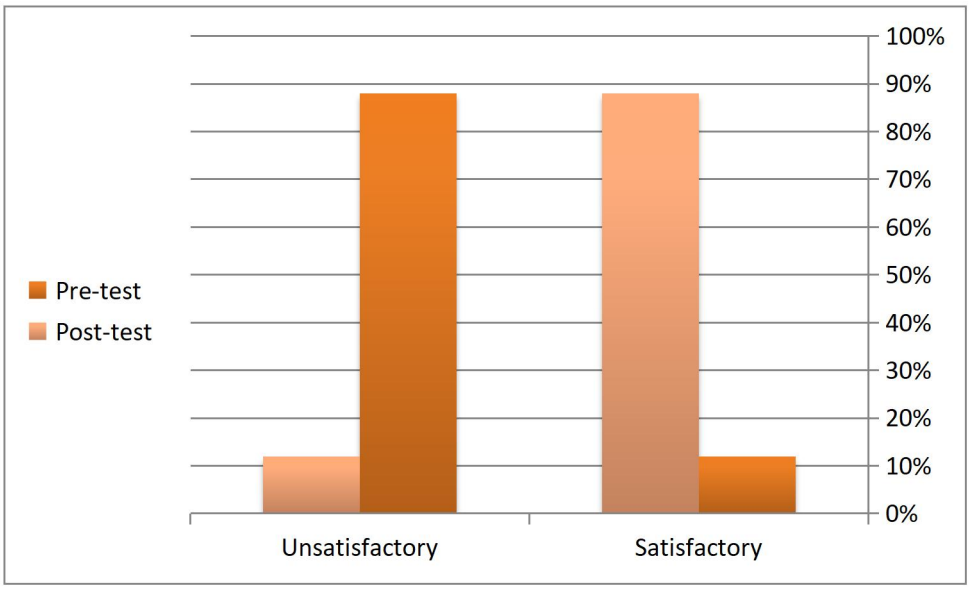


Figure (2) Pediatric Total Nurses' Knowledge Level **concerning artificial intelligence pre and post-one-month orientation program** intervention **(n=100).**

Table (3): Pediatric nurses' perception mean scores differences related to artificial intelligence pre and post-one-month orientation program intervention **(n=100).**

Items	Pre-test	Post-test	X2	P-value
Pediatric **nurses'** perception **mean scores**	34.77 ±22.06	83.06±3.33	57.21	<0.000

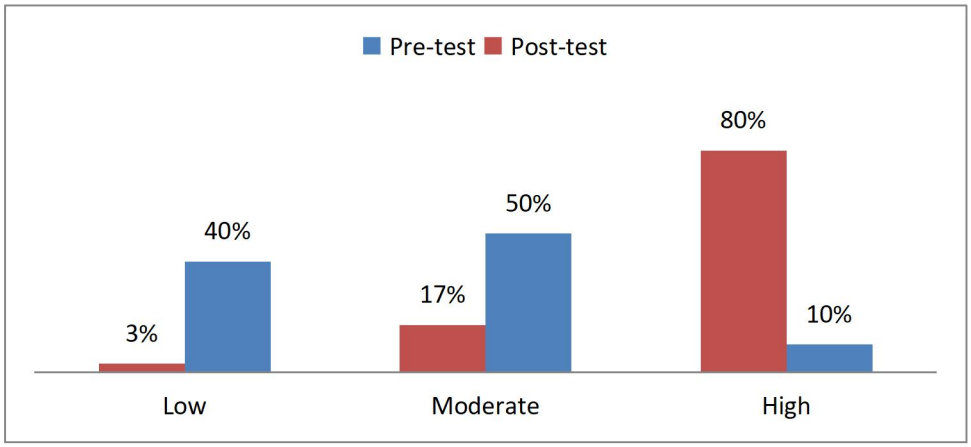


Figure (3): Total pediatric nurses' perception levels regarding the application of artificial intelligence**pre and post-one-month orientation program** intervention **(n=100).**

Table (4): Correlation matrix between knowledge and perception of the studied pediatric nurses regarding artificial intelligence pre and post-one-month orientation program intervention **(n=100).**

Items		Knowledg escores (pre)	Total perception scores (pre)	Total Knowledge Scores (Post)	Total perception scores (Post)
Total Knowledgescores (pre)	r *P* - value				
Total perception scores (pre)	r *P* - value	0.573 0.001**			
Total KnowledgeScores (Post)	r *P* - value				
Total perception scores (Post)	r *P* - value			0.334 0.001**	

**Highly significant p ≤0.0

Discussion:

In order to integrate AI expertise into clinical practice, nurses need to be equipped with the requisite information and abilities. Healthcare companies may reduce future risks, treat patients proactively, and optimize business procedures with the use of AI. Because of the quick changes in technology, regulations, and patient expectations, healthcare institutions must include AI. These challenges have made healthcare organizations essential to the development and functioning of the system since they save costs while providing high-quality care. These challenges have made healthcare organizations essential to the development and functioning of the system since they save costs while providing high-quality care (**Ahlstedt et al., 2020).** Therefore, the goal of the study was to evaluate the effect of orientation programs on pediatric nurses' knowledge and perception regarding the application of artificial intelligence

The majority of nurses were female, with about half of them being between the ages of 30 and 40, according to the current survey. Additionally, a somewhat higher number of them were married, had a bachelor's degree in nursing, and had between 10 and 20 years of experience. The fact that nurses value involvement may help to explain these findings. Only women were permitted to work as nurses in the past.

The results of this survey showed that most nurses were female, that fewer than half of them had a nursing institute degree, and that over a fifth of them had between 10 and 20 years of experience. These results may be the result of nursing's promotion of involvement. In the past, the nursing profession exclusively accepted women. According to an Egyptian study by **Mohamed et al. (2023**), all head nurses were female, and 51.1% of them were between the ages of 40 and under 50. These findings are in line with those of that study. The majority had at least 15 years of experience, and the majority had a bachelor's degree in nursing.

The findings of the study by **Abd El-Monem et al. (2023),** which looked at "The Relationship Between Artificial Intelligence Technology and Staff Nurses' Professional

Identity and Problem-Solving Skills," contradict this. The study found that over two-fifths of staff nurses were between the ages of 25 and under 30. Additionally, slightly less than two-fifths of staff nurses had years of experience ranging from five to less than ten.

The current study found that most of the pediatric nurses who were the subject of the investigation had never received any prior artificial intelligence training. This confirmed that the maternity nurses in the study had to adhere to the latest artificial intelligence training standards, the researchers said. This finding may be explained by the fact that most nurses reported that they had never taken any artificial intelligence training classes before and that the nursing curriculum did not address the concepts of AI. Few of the nurses in the study reported having studied artificial intelligence in postgraduate courses, therefore they had no prior knowledge of the topic. Furthermore, the absence of this training session is due to the failure to hold them accountable.

The pediatric nurses in the current study primarily learned about artificial intelligence from the internet. One possible explanation for this could be that the internet is a valuable resource for information and education. Everybody who wants to learn more about the world they live in can benefit greatly from it because of its scope, immediacy, accessibility, diversity of perspectives, and interpersonal connectivity. These findings align with those of **Robinson (2020),** who reported that 893.2% of Nigerian sources came from the Internet.

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The results of this study demonstrated that the mean scores of pediatric nurses' knowledge of artificial intelligence before and after the implementation of the orientation program differed significantly. This suggests that following the orientation program intervention, pediatric nurses' level of knowledge increased across the board. This showed that, in comparison to the pre-intervention phase, the post-orientation program intervention phase had the highest mean scores. According to the researchers, it demonstrated how well the orientation training had worked to increase the nurses' understanding of artificial intelligence.

The results of the study showed improvements and statistically significant changes in the overall level of artificial intelligence expertise. According to the researchers, it confirmed the positive effects of putting in place an orientation program that met the maternity nurses' need to learn more about artificial intelligence.

This outcome is consistent with the findings of **Abuzaid et al. (2022**), who investigated the lack of technical knowledge and comprehension of AI principles in the nursing profession and came to the conclusion that healthcare organizations and higher education institutions need to develop and implement suitable AI educational and training programs for nursing staff in order to increase their competency in fostering the safe integration and application of AI into nursing practice.

The current study's findings showed that, following the implementation of the orientation program, the majority of the pediatric nurses under investigation had overall satisfactory knowledge scores about artificial intelligence, whereas the majority had poor total knowledge scores during the pre-test phase. According to these findings, **Luca et al. (2020)** found that participants in a study named "A Qualitative Survey Study of French Actors' Perceptions of AI in Healthcare" generally lacked sufficient expertise about AI. Conversely, however. The findings of **Mohamed et al. (2023**), who found that only a small portion of head nurses had sufficient knowledge of artificial intelligence prior to the

deployment of their study's orientation program, differed from this one.

The first research hypothesis in this study was validated by the results, which indicated that nurses' knowledge of AI technology is influenced by applied AI orientation programs. The findings of the current investigation showed that a minority of nurses knew insufficiently about artificial intelligence before the intervention. Nevertheless, following the educational intervention, there were statistically significant differences in all domains of nurses' artificial intelligence knowledge ratings between before and just after the intervention and follow-up. According to this, nurses' general level of knowledge increased very away after **Swan (2021**) also looked into the attitudes and knowledge of nursing staff regarding artificial intelligence in US healthcare settings. They found that most nurses were either ignorant of or did not comprehend the use of AI in clinical practice. These results run counter to those of Sheela (2022), who found that more than half of the participants had adequate knowledge of AI.

These findings also concurred with those of **Abuzaid et al. (2022**), who discovered a lack of awareness regarding AI in Sharjah, USA. Seventy-five percent of all respondents believed that some fundamental knowledge of AI should be taught in nursing curricula. These outcomes were consistent with a very recent study by **Mohamed et al. (2023**), which found that head nurses' mean difference scores before and after intervention and between pre-intervention and follow-up varied significantly.

The results of the study clearly show that the perception mean scores of the pediatric nurses in artificial intelligence before and after a month of the implementation of the orientation program intervention showed a highly statistically significant improvement. According to the researchers, it demonstrated the beneficial outcomes of the orientation program intervention.

Positive perceptions regarding the emergence and development of artificial intelligence entities/devices, the advantages it could bring in the future by creating advanced robots, surpassing human intelligence, allowing humans to control intelligent weapons, the emergence of new trades, the improvement of healthcare and human health, and the optimization of material resources. These findings were supported by a study conducted by **Gherheș (2018**) titled "Perception, Expectations, Hopes, and Advantages of Artificial Intelligence."

Similarly, a study conducted by **Kumari** & **Hemalatha (2021**) on "Human Resources Management Practices' Perception of Artificial Intelligence: With Particular Reference to Chennai IT Companies" showed that workers have a positive opinion of the technology and do not see AI systems as a threat.

Regarding the perceptions of pediatric nurses about the use of artificial intelligence about issues with its implementation in healthcare settings. According to the findings, one-third of nurses concurred that AI is not adaptable enough to benefit every patient and is challenging to deploy in contentious situations. This finding was corroborated by **Oh et al. (2019**), who found that nurses believed AI would not be applied to every patient and could not be applied to controversial topics. Furthermore, according to **Sabra et al. (2023**), less than half of nurses concurred that AI is rigid and challenging to use because of controversial issues. **Elsayed & Sleem (2021**) discovered that perceptions of the benefits of adopting artificial intelligence were in agreement with this outcome the highest mean score followed by the problems concerning artificial intelligence application in healthcare among nurse managers. Otherwise, **Abdullah & Fakieh, (2020)**, reported that the highest score was regarding problems concerning artificial intelligence applications in healthcare followed by the advantage of using artificial intelligence among healthcare employees. From the researchers' opinion; this may be due to the widespread of artificial intelligence technology applications in every aspect of society in response to Egypt's Vision 2030 which focuses on using artificial intelligence in a variety of work settings including the health care sector.

The findings of the current study were corroborated by **Elsayed and Sleem's (2021**) study, "Attitudes and Perceptions of Nurse Managers about The Use of AI in Healthcare

Settings," which found that over three-quarters of the sample had a moderate opinion of the use of AI in nursing settings. The minority of nurses, however, had a favorable opinion. Additionally, the study "Perceptions of Artificial Intelligence Applications by Healthcare Workers: A Survey Study" by **Abdullah & Fakieh (2020**) showed that healthcare workers' general attitudes regarding AI were moderate. This could be explained, according to the researchers, by the fact that COVID-19 is giving nurses the chance to understand the advantages of using AI in nursing settings.

Regarding the applications of artificial intelligence in healthcare, there was a strong statistically favorable association between the entire knowledge and perception of pediatric nurses and those of critical care nurses. According to the researchers, this outcome might be the consequence of the nurses' exposure to contextual cues and information that shape their perspectives about artificial intelligence. The second query, which inquired about the nurses' perceptions of AI applications, is addressed by this finding.

Conclusion:

Based on the study results, it was concluded that the instructional guidelines had a significant positive effect on improving the studied nurses' knowledge and attitudes regarding artificial intelligence applications.

Recommendations:

Based on the findings of the current study, the researchers suggested the following recommendations.

1. They are attending workshops and training programs regarding artificial intelligence applications to encourage nurses to increase their knowledge and attitudes toward artificial intelligence and enable them to integrate artificial intelligence applications into nursing practices.
2. The current study will be conducted again with a bigger sample size of nurses in other situations to generalize the findings.

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