Assessing The Perception Of Nurses Towards Using Artificial Intelligence

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Abstract:

Background: Artificial intelligence has a promising future and will certainly have a role in the healthcare industry; the awareness and perception of healthcare professionals towards using artificial intelligence is the cornerstone of successful implementation. This study aims to measure the perception of nurses towards artificial intelligence in Palestinian hospitals. Methods: Quantitative descriptive cross-sectional design with convenience sampling approach to recruit nurses from private Palestinian hospitals, between June and July / 2023. The SHAIP instrument was utilized to measure the nurse's perception among nurses. The sample size included 174 nurses based on the inclusion and exclusion criteria, and the SPSS version 26 was utilized to analyze the data. Results: The study's findings showed (69%) of nurses understand the term "artificial intelligence". In addition, two-thirds of nurses have an interest in learning about artificial intelligence and its application. The study showed that most of the nurses were not prepared or trained to use artificial intelligence. The nurses' demographics showed association with their perception towards using artificial intelligence, and the overall perception was 3.45 out of 5 with a standard deviation of 0.17. Conclusion: The nurses had a moderate level of perception towards using artificial intelligence in their practice, and most nurses who participated in the study were willing to learn about artificial intelligence, which reflects their attitude.

Keywords: Nurses, Artificial Intelligence, Hospital, Perception.

1. Introduction

The utilization of technologie[1]s and computer systems in the healthcare industry has increased over the past two decades and interfered with many of the domains and flows in the healthcare process [1]. There is no doubt that information technology is assisting healthcare providers in many duties and tasks, and has a valuable effect on patient safety and patient outcome, as well as an impact on quality of care and improving patient satisfaction [2].

This revolution in healthcare is flourishing in all countries worldwide, even in low-income countries. This progress includes all sectors of healthcare models and providers, with this rapid progression of technologies in healthcare introducing the use of many applications that are related to the use of information technology, such as artificial intelligence, business intelligence, big data, and telemedicine [3].

One of the most important applications that have emerged and developed in the last years is artificial intelligence (AI); the application of this technology helps in the detection of disease, supports and upgrades the methods of analyzing diagnostic services, and manages or improves the risky processes [4].

The term "Artificial Intelligence" has emerged in healthcare as an umbrella term, comprising the use of computer systems technology with its advanced ability to provide

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healthcare with state-of-the-art technology. This impacts the quality of care, enhances patient outcomes [5], uses large amounts of data [6], improves the decision-making process [7], and has a wide range of application in healthcare settings [4].

The digitalization of healthcare and the use of artificial intelligence in healthcare may rely on multiple factors, such as the ethical implications of using AI, patient engagement in the treatment or diagnostic process, administrative applications of claims, supply chain, health insurance, readiness of infrastructure, and workforce in healthcare [8].

The acceptance of healthcare providers' use of artificial intelligence is an important factor [9]; the readiness of healthcare providers is considered the main challenge in implementation [10], so healthcare providers' perceptions, attitudes, and awareness of using AI in healthcare settings and AI literacy levels are important for the implementing success of this technology [11].

The main providers of the healthcare system's perceptions of using AI is interesting, and is discussed in many studies such as, physicians who are positive towards the use of AI in heartcare [12], medical students who show belief in the value of AI (and who benefit from using AI in their practices) [13], pharmacists who overall agree that AI will support them [14], pharmacist students who show that they are aware of AI and have overall high perceptions and agree to its interference in the healthcare process [15], nurses who have a positive feelings towards the demonstration of AI in the nursing practice with moderate perceptions towards the meaning of AI [16], and nursing students who show unfavorable attitude towards AI in nursing practice [17] yet slightly positive towards willingness of use and fear of use\practice AI. At the same time, an advantage in comparison to the current method was unfavorable [18], and nursing managers showed a positive attitude towards using AI [19].

The patients' opinions on using AI during treatments were discussed in the Tyson et al. study [20], which revealed that 60% of patients who participated in the study were not satisfied with receiving the treatments by healthcare providers who relied on AI. Another study conducted by Longoni et al. [21] showed that patients are resistant to the use of AI in healthcare settings. Also, the study conducted by Richardson et al. [22] indicates that there are many issues related to the use of AI in healthcare processes with legitimate concerns from an ethical point of view.

The healthcare providers' perceptions, attitudes, and awareness of using AI in healthcare settings are discussed through different methods of research design (quantitative and qualitative); the qualitative include such studies as the one conducted by Lai [23], while the quantitative designs were dominant among those studies [5, 13, 15, 19, 24-30]. The qualitative study conducted by Lai [23] aimed to explore the perceptions of AI in healthcare from stakeholders' points of view, and utilized a semi-structured interview (13 questions) with 40 French stakeholders of healthcare professionals. The participants addressed some points related to ethical and legal issues, and the legislation of using data to ensure the sustainability of AI. Additionally, the main findings are that AI will satisfy if the collaboration is well initiated. Finally, one of the findings showed that most participants who are stakeholders are not familiar with AI tools.

The quantitative studies [5, 13, 15, 19, 24-30] utilized two main descriptive designs: cross-sectional [5, 13, 15, 19, 24-29] and prospective design [30]. The data collection instruments utilized in those studies were developed and piloted recently for most of them, such as the studies [28, 29], which utilized the Shinners artificial intelligence perception (SHAIP) questionnaire, the studies [19, 24, 26] which utilized Abdullah and Fakieh questionnaire, the studies [5, 13, 15, 25, 27] which utilized different questionnaires.

Some studies measuring the perception, awareness or attitude of healthcare professionals [24-26, 28, 29] towards AI, which includes physicians, nurses, and pharmacists, showed that the perception of AI in general is above the mean. Participants who received any kind of education related to AI had a higher perception of AI, and perceptions of AI decreased with the increase of age.

The perception of nursing towards AI was studied by studies: [5, 19, 30]. They showed that the nurses' perception towards using AI is moderate, and that most of them don't use

AI tools in their work. There is a positive attitude towards using AI in their practice. The readiness to use AI needs to be improved through workshops and special educational sessions, in addition to upgrading the nursing education program to enhance knowledge and competencies towards AI.

In Palestine, the health information system and the electronic medical records have been recently implemented, and the infrastructure using the system still needs to be upgraded and is only in its first stages; this also includes the human factors, as the users from those systems reportedly need training to manage and monitor the system [31]. Thus, it is pivotal to assess the perception of advanced technology like artificial intelligence in the healthcare industry.

Based on the research knowledge, this study is the first study in Palestine assessing perception towards using artificial intelligence in the healthcare industry, not only in relation to nurses. The novelty of this study related to the following issues: 1) This topic is assessed for the first time in this area\country, and this country is a developing country with many challenges in the healthcare system, 2) The First-hand data set utilized in this study, 3) The nurses who participated in the study work in an accredited hospital, and the hospital has a steering committee to manage the information in the hospital related to accreditation standards.

This study may provide evidence to policymakers and healthcare leaders about the perception of healthcare professionals on this important topic. The purpose of this study is to assess the perception, attitude, and readiness towards using artificial intelligence by Palestinian nurses in hospitals. The research has two questions: 1) Do nursing demographics affect the perception of AI? 2) What is the perception towards using AI in nursing practice?

This paper is divided into five sections: 1) Introduction, which will provide the reader with background about the topic; 2) Materials and Methods, which includes: research design; sampling approach, inclusion, and exclusion criteria; population, study setting, data collection, and data analysis; 3) Findings of the Study, including the demographics of nurses, descriptive and testing the hypothesis, and discussion of the findings; 4) conclusions; and 5) Recommendations.

2. Materials and Methods

2.1. Study Design

The researcher utilized a quantitative descriptive cross-sectional design to describe the variables [32]; this method was used to assess the perception of nursing towards using artificial intelligence and the readiness of nurses to use AI. This study was conducted between June and July/2023. The paper is reported according to the strengthening of the reporting of observational studies in epidemiology (STROBE) guidelines [33].

2.2. Sampling Technique

The researcher recruited the convenient sampling technique; this approach is a non-probable sampling technique and was recruited by the researcher in this study to ensure that the sample size from the target population has met according to the recommended sample size. The researcher uses this technique to determine the feasibility of use. It is considered cheap and allows the researcher to meet all nurse's requirements in the proper time [34]. The data was collected by questionnaire for the two months between June and July / 2023.

2.3. Inclusion and Exclusion Criteria

The inclusion criteria include nurses working with any title, all qualifications types, and nurses who are hired for more than 3 months and finalized the probation period. The study excluded the nurses who didn't want to participate in the study or who did not report to the nursing department according to the hospital hierarchy.

2.4. Population and Sample Size

The targeted population includes about 230 nurses working at the hospital; all nurses' backgrounds are eligible to participate in the study. The sample size was calculated for nurses who are working in the hospital and according to the inclusion and exclusion criteria. The

sample size was calculated with marginal error = 5 % and a confidence level of 95%, as in equation number (1) below [35]. The recommended sample size was 171 nurses, and the collected sample was 174 nurses.

$$n = p \, (100{-}p) \, z^2 / \, E^2$$

(1)

The symbols in equation number (1) mean n: required sample size, p: percentage occurrence, E: percentage of maximum error, and Z: value corresponding to the confidence interval.

2.5. Data Collection Methodology

The researcher collects from the list of nurses who worked in the hospital and according to inclusion and exclusion criteria. The researcher distributes the questionnaire to the patients after explaining the aim of the study, answering all questions or concerns from the nurses, and agreeing to participate in the study. The researcher collects the questionnaire from the nurses and ensures nurses that the answers to the questions will be anonymous, and none of the hospital managers will know their responses. Also, the researcher ensures that the nurses who participated in the study filled all required data and questions in the questionnaire. The data collection process is presented in Figure (1).
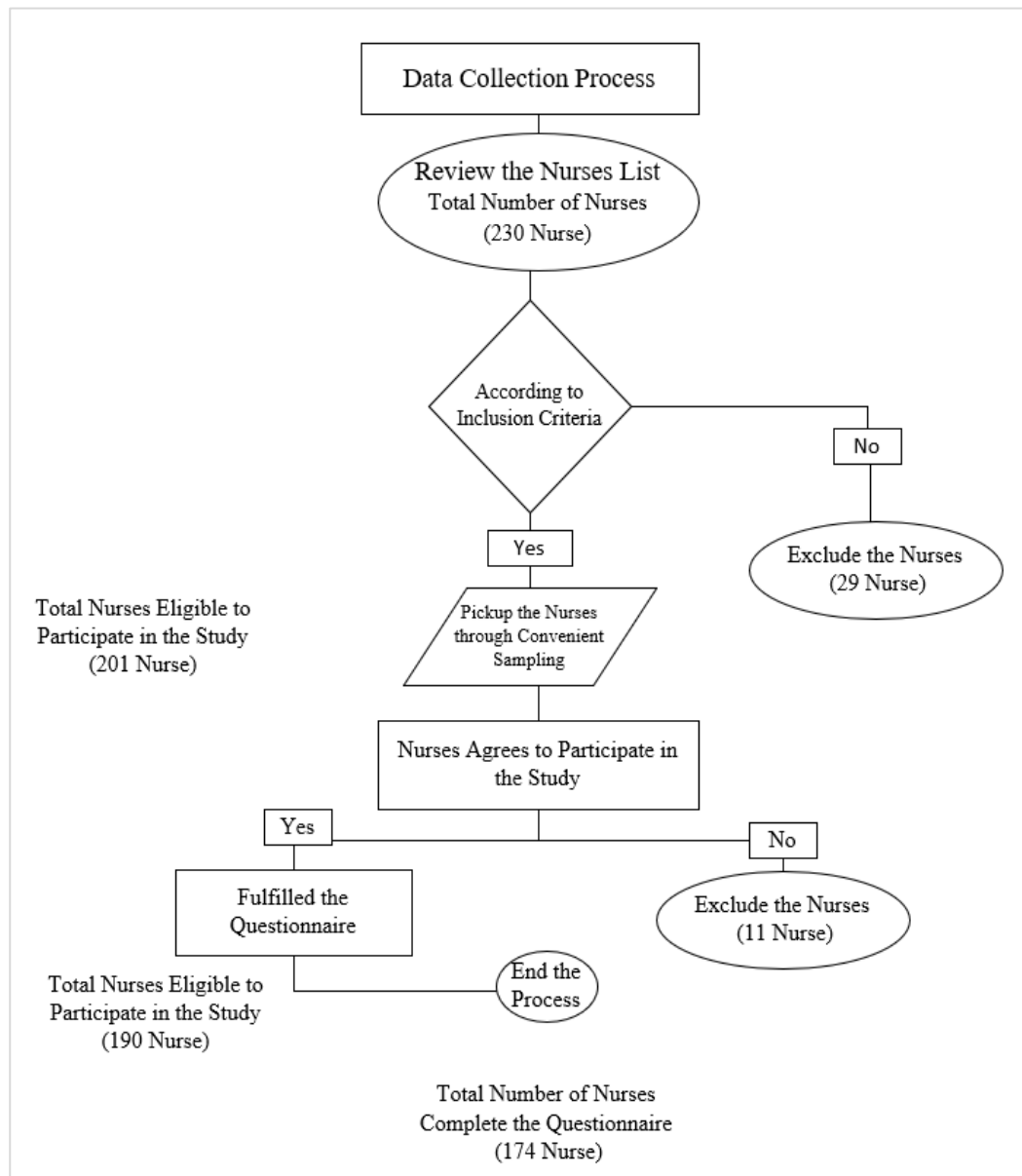
Figure 1. Data Collection Process

2.6. Study Setting

A private hospital located in Ramallah, Palestine, was established in 2016; the hospital consists of 16 inpatient departments and more than 16 outpatient clinics, 13 emergency rooms, seven operation rooms, two cardiac catheterization rooms, and two endoscopy procedures rooms, with a total bed capacity of 220 beds. The nurses worked in the hospital was about 230 nurses [36].

2.7. Study Instrument

The data was collected by the SHAIP questionnaire developed by Lucy Shinner [29], which was developed to assess the perception and awareness of healthcare professionals towards using AI in their practice. This is divided into three domains (staff demographics, screening, and perceptions); the perception domain includes 10-item questions based on the Likert scale. The perception rating the item with a scale ranged from 'Strongly Agree', which is expressed as (5), to 'Strongly Disagree' and expressed as (1). The questionnaire was utilized in the original language (English), and the nurses were competent enough to speak English, as it's the formal language of study in Palestine. Permission to use the questionnaire was obtained from the author.

2.8. Reliability and Validity

The instrument used by the researcher in the data collection process is reliable, and Cronbach's alpha calculated the reliability, and the result was 0.84, which is considered acceptable [29]. The validity of this instrument was checked by face validity and content validity methods to ensure that the instrument was a valid tool and measured what was intended to be measured [37]. The researcher recruited those types of validity and let two experts in the field review the instrument. They ensured that the instrument was valid and easy to measure the perception of nursing towards artificial intelligence.

2.9. Data Entry and Analysis:

The data collected from nurses who participated in the study was entered into an Excel sheet that reflected the questionnaire items; the researcher reviewed the data to ensure that the data was complete and that there was no missing data according to the questionnaire items; the data was coded according to predefined criteria to enable data transfer to statistical application. The data was transferred to the Statistical Package for Social Sciences (SPSS) version 26; the analysis was performed, including frequencies, percentages, mean for descriptive analysis, and the student test (T-test) and chi-square test for inferential analysis.

3. Results

This section presents the findings of the study and is divided into two subsections: descriptive statistics and answering research questions. The first section: the descriptive section (3.1), presents the results of the nurse's demographics, the results of screening questions (general information about AI and awareness), and a 10-item questionnaire. The second section, Research Questions (3.2), presents the research questions and answers based on the results of the study and statistical tests.

3.1. Descriptive Statistics

3.1.1. Nurses Demographics

The nurse's demographics includes (age, gender, educational level, nursing role, and experiences). One hundred seventy-four (174) nurses filled out the questionnaire with a response rate of 81%. The study showed that 91 of the respondents were male (52.3%), and 83 of the respondents were female (47.7%), as presented in Table (1).

Most of the nurses who participated in the study according to the age category were between (31-35) years at 64 nurses with (36.8%), followed by age category between (26-

30) years at 55 with (31.6%), then age category less than 25 at 46 with (26.4%), and age category between (36-40) 6 at (3.4%). Finally, the age category above 40 at 3 with (1.7%), as presented in Table (1).

The bachelor's degree was the most prominent qualification among the nurses who participated in the study at 131 (75.3%), followed by a master's degree at 37 (21.3%), then a diploma at 4 with (2.3%) and a postgraduate diploma at 2 (1.1%). Finally, no PhD qualification was found among the nurses participating in the study, as presented in Table (1).

The study showed that the nurses who participated were employed in different roles (bedside, head nurse, and managerial roles) as follows: 153 nurses worked as bedside nurses, which formulated (87.9%), followed by head nurse at 16, which presents (9.2%), and managerial role at 5 which presents (2.9%), as presented in Table (1).

The experience levels of the nurses who participated in the study showed that the experience category of (8-12) years was the highest category at 64 nurses with (36.8%), followed by the experience category of (4-7) years at 55 nurses with (31.6%), then the experience category of (1-3) years at 29 nurses with (16.7%), and experience category of (1-3) years at 17 nurses with (9.8%). Finally, the experience category of above 12 years was at 9 nurses with (5.2%), as presented in Table (1).

**Table 1.** Nurses' Demographics Frequency and Percentages

Demographics	Classes	Frequency	Percentage
Gender	Female	83	47.7%
	Male	91	52.3%
Age	Less than 25	46	26.4%
	26 – 30	55	31.6%
	31 – 35	64	36.8%
	36 – 40	6	3.4%
	Above 40	3	1.7%
Education Level	Diploma	4	2.3%
	Bachelor	131	75.3%
	High Diploma	2	1.1%
	Master	37	21.3%
	PhD	0	0.0%
Nursing Role	Bed Side	153	87.9%
	Head Nurse	16	9.2%
	Managerial Role	5	2.9%
Experiences	Less than 1	17	9.8%
	1 – 3	29	16.7%
	4 – 7	55	31.6%
	8 – 12	64	36.8%
	Above 12	9	5.2%

3.1.2. General Screening (Information and Education Related to Artificial Intelligence)

The general screening section presents the results of section two in the questionnaire, which discusses the awareness of staff about AI and any education they received about it. It consists of five questions (three yes or no questions, two questions with multiple categories). All questions were answered by nurses who participated in the study, and there was no missed data and no data was excluded.
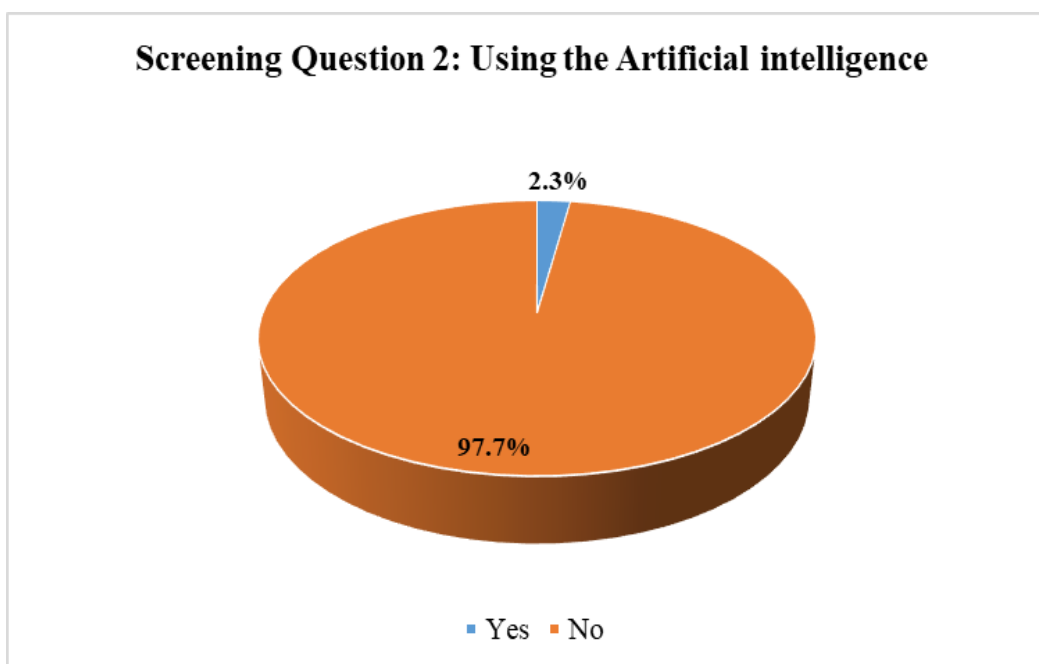
1. Awareness and Use of Artificial Intelligence

The understanding of the term artificial intelligence is measured by screening question one; the answers showed that most participants understand the term and 120 out of 174 answered "Yes" which makes up (69%) of the total participants. In comparison, 54 of the nurses answered "No" which comprises (31%), as presented in Figure (2).
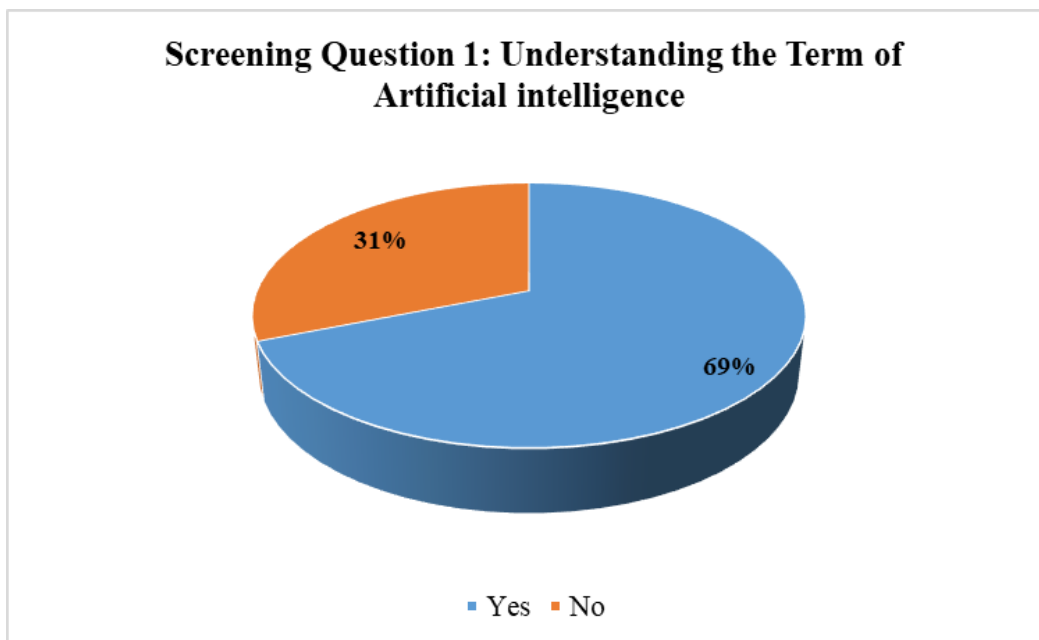
Figure 2. Screening Question 1 – Understanding of the Term "Artificial Intelligence"

The use of artificial intelligence is measured by question two; the study showed that 170 of the nurses who participated in the study didn't use artificial intelligence in their current role, which comprises (97.7%). Only four nurses who were present (2.3%) used artificial intelligence in their current role, as presented in Figure (3).

Figure 3. Screening Question 2 – Using the Artificial Intelligence

2. Education/Training Related to Artificial Intelligence

The education received by nurses who participated in the study about artificial intelligence is measured by screening question three; the answers showed that most participants didn't receive any education or training related to artificial intelligence: 137 out of 174, which means (78.7%) of the total participants. In comparison, 37 of the nurses answered that they train or educate themselves about the term, self-training, which comprises (21.3%). Finally, the study showed that none of the nurses had any type of formal qualification awarded by the staff or any training that had been conducted at the workplace, as presented in Table (2).

Two-thirds of the nurses who participated in the study showed their interest in learning about artificial intelligence at 119 nurses, and 55 nurses (31.6%) weren't interested in learning about it. The training topics related to artificial intelligence that may be of interest to know about provided the opportunity to learn are as follows: application of artificial intelligence in healthcare at 58 nurses (33.3%), ethics of artificial intelligence in healthcare at 55 nurses (31.6%), general teaching about artificial intelligence at 53 nurses (30.5%), and training on machine learning at 8 nurses (4.6%), as presented in Table (2).

Table 2. Screening Questions Related to the Artificial Intelligence

Screening Questions	Screening Answers	Frequency	Percentage
Question 1: Do you understand what the term Artificial intelligence means?	Yes	120	69.0%
	No	54	31.0%
Question 2: In your current role, are you using Artificial intelligence to assist you in delivering or planning care?	Yes	4	2.3%
	No	170	97.7%
Question 3: What sort of education/training have you had in Artificial Intelligence?	University Qualification	0	0.0%
	Workplace Training	0	0.0%
	Self-Training	37	21.3%
	None	137	78.7%
Question 4: Would you like to receive education about Artificial Intelligence in healthcare?	Yes	119	68.4%
	No	55	31.6%
Question 5: Which topics would you like to know more about?	Application of Artificial Intelligence in Healthcare	58	33.3%
	Ethics of Artificial Intelligence in Healthcare	55	31.6%
	General Teaching about Artificial Intelligence	53	30.5%
	Training in Machine Learning	8	4.6%

3.2. Research Question

This study has two research questions; each question was answered after being tested with proper statistical tests as follows: 1) Do nursing demographics affect the perception of AI? This question was answered by using a chai square test for age, experiences, education, and nursing role, and independent sample t-test for gender. 2) What is the perception towards using AI in nursing practice? This question was answered by using means of overall perception towards artificial intelligence.

3.2.1. Nurses Demographics with Perception of Artificial Intelligence

All nurses' demographics were tested by Chai square, except gender, which was tested by independent sample t-test. The study showed that nurses' demographics affect the perception of artificial intelligence, as presented in Table (3). All nurses' demographics (gender,

age, educational level, nursing role, and experiences) have statistical significance at the level ($P \le 0.05$) with overall perception towards artificial intelligence.

Table 3. Nurses Demographics with Perception Towards Artificial Intelligence

Variables	Statistical analysis			
Demographics	Mean	F-Value	T-Value	P-Value
Gender	(3.34 – 3.57)	-	(-11.87) – (-12.06)	0.000*
Age	1.84	274.88	-	0.000
Education Level	3.45	435.81	-	0.000
Nursing Role	1.76	231.21	-	0.000
Experiences	1.35	307.25	-	0.000

* Independent Sample t. test

3.2.2. Perception of Artificial Intelligence Questionnaire Statements

The perception of nurses who participated in the study towards artificial intelligence was measured by the 10-item statements rated by Likert scale 5 items; the overall perception was 3.45 out of 5 with a standard deviation of 0.17. The highest statement was statement two, "I believe that the use of AI in my specialty could improve clinical decision making," at 4.52 with a standard deviation (0.50), followed by statement one, "I believe that the use of AI in my specialty could improve the delivery of patient care" at 4.21 with standard deviation (0.41). The lowest statement rated by the nurses who participated in the study was statement eight, "I believe that I have been adequately trained to use AI that is specific to my role," at 1.38 with a standard deviation of (0.49), as presented in Figure (4).
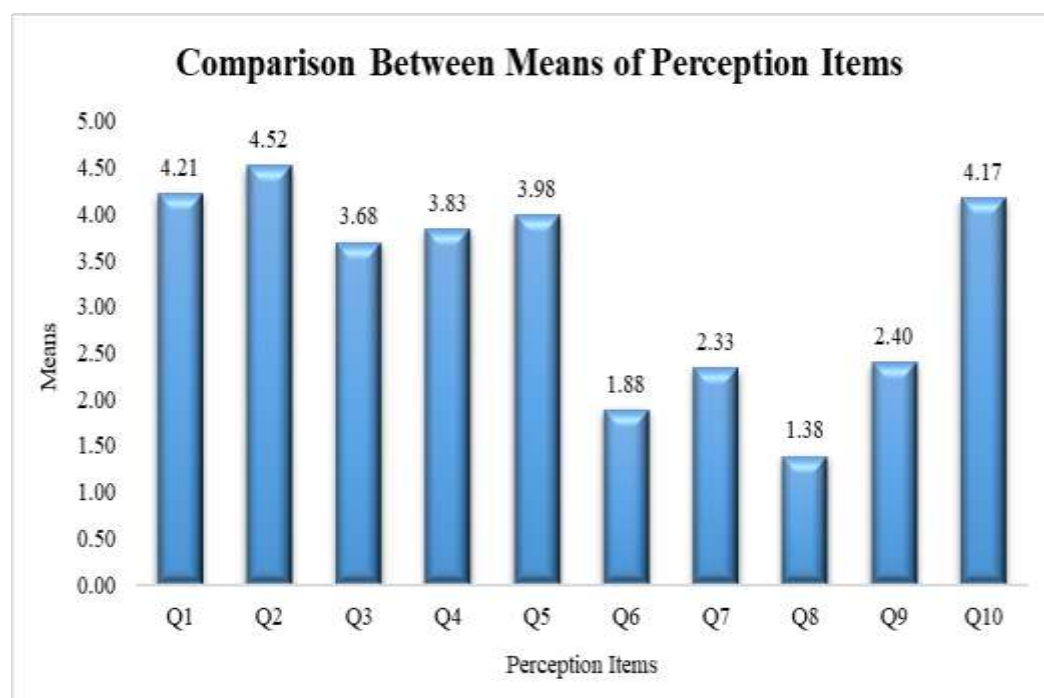
Figure 4. Comparison Between Means of Perception Items

Furthermore, the study showed that most of the nurses who participated were not prepared to use artificial intelligence; this result was measured by statement six. "I believe that overall, healthcare professionals are prepared for the introduction of AI technology" at 1.38 with a standard deviation of (0.58), as presented in Table (4).

Table 4. Perception of Artificial Intelligence Questionnaire Statements

Statement	Mean	Std.*
1: I believe that the use of AI in my specialty could improve the delivery of patient care	4.21	0.41
2: I believe that the use of AI in my specialty could improve clinical decision-making	4.52	0.50
3: I believe that AI can improve population health outcomes	3.68	0.47
4: I believe that AI will change my role as a healthcare professional in the future	3.83	0.37
5: I believe that the introduction of AI will reduce the financial cost associated with my role	3.98	0.81
6: I believe that overall, healthcare professionals are prepared for the introduction of AI technology	1.88	0.58
7: I believe that one day, AI may take over part of my role as a healthcare professional.	2.33	0.75
8: I believe that I have been adequately trained to use AI that is specific to my role.	1.38	0.49
9: I believe there is an ethical framework in place for the use of AI technology in my workplace	2.40	0.58
10: I believe that AI technology makes an error; full responsibility lies with the healthcare professional	4.17	0.37
Overall Perception	3.45	0.17

* Std: standard deviation.

4. Discussion

This section presents the discussion of findings with related studies conducted previously with an explanation of the findings by the researcher and the point of view in the Palestinian. The discussion is divided into five subsections as follows: 1) nurses' demographics with perception; 2) awareness and using artificial intelligence; 3) training related to artificial intelligence; 4) preparedness of using artificial intelligence; and 5) perception towards using artificial intelligence.

4.1. Nurses' demographics with perception

The study showed that there is a statistical significance between nurses' demographics (gender, age, educational level, nursing role, and experiences) and perception towards using artificial intelligence. This result means that all nurse's demographics impact the perception of using artificial intelligence. This result is compatible with the findings of the study conducted by Sayed et al. [15], which found that age is associated with perception. The study conducted by Fritsch et al. [27] found that gender and education level were associated with perception towards using artificial intelligence, and the study conducted by Elsayed et al. [19] found a significant positive relation with experiences, education, education, and nursing role.

These results may be related to the fact that the world after the COVID-19 pandemic showed interest in the technologies that assist healthcare providers and promote the safety of environments and workplaces, as the fact that the rapid progression of AI applications such as Chat GPT® contributes positively to nurses' perception towards using artificial intelligence and showed evidence that may provide those staff with benefits of the AI technology, and lead to this level of perception.

4.2. Awareness and Using Artificial Intelligence

The study findings showed the awareness of most nurses artificial intelligence (69%), which means that the nurses who participated in the study understand the benefits of artificial intelligence. This result is consistent with Mehdipour's study [38], which found that awareness about AI is considered high and understanding of the term. Also, this result is compatible with a study conducted by Sayed et al. [15], which found that the health professional staff has a good level of awareness.

The level of awareness of artificial intelligence among nurses who participated in the study may be related to the fact the hospital has had electronic medical records for eight years. The hospital managers utilized some models to predict readmission, in addition to ~~the~~ activities performed in the hospital by the continuous education center that is available in the hospital. Moreover, the hospital has a steering committee to oversee and manage the information technology in the hospital as one of the accreditation requirements implemented in the hospital, which enhances the awareness of the information technology environment and infrastructure of the technology in the hospital, and enhances the communication of ~~the~~ information [38].

4.3. Training Related to Artificial Intelligence

The study's findings showed that most nurses who participated hadn't received any training related to artificial intelligence (78.7%). This means that the nurses were not enrolled in education or training programs about artificial intelligence. This result is consistent with study findings conducted by Al-Sabawy and Rawdhan [16], which found that the participants expressed not having sufficient knowledge, and weren't trained in artificial intelligence. Furthermore, this finding is consistent with a study conducted by Shinner et al. [29], which found that training on artificial intelligence is needed, and that there is a lack of training conducted related to the topic.

The low number of staff trained in artificial intelligence may relate to the fact that formal university qualifications didn't include this topic in their curriculum, that the small number of nurses who trained relied on self-based training out of personal interest, and that the hospital training program is still focused on health-related issues and didn't consider the topic of artificial intelligence in their regular training program. The study findings indicate that most of the nurses who participated in the study were interested in the training topics related to artificial intelligence.

4.4. Preparedness of Using Artificial Intelligence

The study findings showed that the nurses who participated in the study were not prepared to use artificial intelligence, and the result of the study showed that this aspect was one of the lowest aspects rated by nurses. This means that the nurses were aware that the use of artificial intelligence needs special training, skills, and knowledge. This result is compatible with the study by Shinners et al. [28], which found that the nurses express not feeling prepared to use artificial intelligence, and compatible with a study conducted by Lai et al. [23], which found that they do not prepare to take this responsibility.

This result is logical in that the study indicates that the nurses were not trained well, and think that there is no clear ethical framework for artificial intelligence. Hence, those answers lead to the fact that the nurses were not prepared to use artificial intelligence in their practices. In addition to the fact that no legal legislation regulates the use of artificial intelligence in the country. Furthermore, the ethical and legal concerns are part of the healthcare provider concerns in different country and studies such as the [39] study which found that many aspects that belong to the providers and considered as ethical principles need to be clear prior to implement AI in the healthcare industry.

4.5. Perception Tworads Using Artificial Intelligence

The study findings indicate that the overall perception of nurses towards artificial intelligence had an acceptable level of perception at (3.45 out of 5) with a standard deviation of (0.17). This means that the nurses who participated in the study were understanding, aware,

and had a positive attitude toward artificial intelligence being used in the healthcare industry in the nursing care process. This result is compatible with the study conducted by Sayed et al. [15], which found a positive perception of artificial intelligence; also compatible with the study conducted by Cetin et al. [26], which found a higher perception of artificial intelligence, and is furthermore compatible with the study conducted by Fritsch et al. [27] which found positive perception towards the topic. It is also consistent with the study conducted by Elsayed and Sleem [19] which found that there is moderate perception towards artificial intelligence. Moreover, it is compatible with the study conducted by Shinners et al. [28] which found that there is a positive attitude and perception towards artificial intelligence. Also, the results are consistent with the study findings of [40] study which found that the level of perception of nurses was moderate, and that there was positive correlation between perception of nurses and their attitude. Finally, this results is compatible with the findings of [41] study which found that the nurses had moderate perception towards using artificial intelligence.

5. Conclusions

Most of the nurses who participated in the study were oriented and understood the term "artificial intelligence" with (69%). The findings of the study showed that nurses who participated in the study had a moderate level of perception towards using artificial intelligence in their practice at (3.45 out of 5), and most nurses who participated in the study (68.4%) are willing to learn about artificial intelligence, which reflects their positive attitude towards artificial intelligence. The study found that there were no formal qualifications that obtained by any of the participants in the study and the nurses' programs didn't include any type of education or training related to artificial intelligence. Moreover, the nurses who participated in the study believe that artificial intelligence improves the patient care process and will enhance the support decision system. Finally, the nurses have an issue with ethical concerns, and they believe that no ethical or legal framework is ready for dealing with artificial intelligence in the country.

6. Recommendations and Research Implications

Artificial intelligence has a promising future, and it provides many benefits to users, managers, policymakers, and public health. Based on the study findings, the researcher recommends increasing awareness about artificial intelligence and preparing nurses on how they can deal with using artificial intelligence. The researcher also recommends that policymakers in the education sector upgrade the nursing curriculum to educate the nurses about artificial intelligence and provide them with the knowledge, skills, and training required to be familiar and competent with this technology. This technology may be implemented in the future with many applications that will enhance patient safety and quality of care. In addition, the researcher recommends conducting similar studies with all domains in the healthcare providers in Palestine, including: physicians, pharmacists, dieticians, physiotherapists, laboratory technicians, and radiology technicians. Finally, the policymaker may need to take the ethical and legal concerns into their considerations in the future, and in planning of the introduction of artificial intelligence in the healthcare industry.

7. Limitations

All studies have limitations; this study was conducted in one hospital and one professional category "Nurses" was included in the study; in addition to the sampling technique utilized in the study as a non-probability approach, those limitations will make the generalization of the study limited. Also, the data collection methodology utilized a structured tool, which made the answers limited to the context or the scope of the questions and statements.

Institutional Review Board Statement: The study was conducted in a private hospital; the ethics committee reviewed the research application before conducting the study and reviewed the proposal of the study, with a data collection questionnaire, the background of the researcher, and the informed consent that will be used to take the participants' approval. The formal approval from the ethics committee was obtained before the researcher collected the data.

Informed Consent Statement: The consent form was obtained from the participants verbally before the nurse participated in the study. After getting the information from the researcher, the researchers provided information about the study's purpose, and the participants had the opportunity to ask any questions and get an answer from the researcher.

Data Availability Statement: The data will be available from the correspondence author upon

the request.

Acknowledgments: The author acknowledges the hospital that gave the permission to conduct the study and the nurses who participated in the study.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Table A1: STROBE Checklist for Reporting Cross-Sectional Studies.

Title	Item No	Statement	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	1
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	1-3
Objectives	3	State-specific objectives, including any prespecified hypotheses	3
Methods			
Study design	4	Present key elements of study design early in the paper	3
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	3-5
Participants	6	Give the eligibility criteria and the sources and methods of selection of participants	3
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	3-4
Data sources / Measurement	8	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	4
Bias	9	Describe any efforts to address potential sources of bias	4
Study size	10	Explain how the study size was arrived at	3-4

Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	4, 5-7
Statistical methods		(a) Describe all statistical methods, including those used to control for confounding	4, 5-7
		(b) Describe any methods used to examine subgroups and interactions	4, 5-7
	12	(c) Explain how missing data were addressed	5-6
		(d) If applicable, describe analytical methods taking account of sampling strategy	4, 5-7
		(e) Describe any sensitivity analyses	4, 5-7

Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—e.g., numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analyzed	4
		(b) Give reasons for non-participation at each stage	3
		(c) Consider the use of a flow diagram	4
Descriptive data	14*	(a) Give characteristics of study participants (e.g., demographic, clinical, social) and information on exposures and potential confounders	5-6
		(b) Indicate the number of participants with missing data for each variable of interest	5-6
Outcome data	15*	Report numbers of outcome events or summary measures	5-7

Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (e.g., 95% confidence interval). Make clear which confounders were adjusted for and why they were included	7
		(*b*) Report category boundaries when continuous variables were categorized	5-8
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	-
Other analyses	17	Report other analyses are done—e.g., analyses of subgroups and interactions and sensitivity analyses	4-7

Discussion			
Key results	18	Summarize key results with reference to study objectives	12
Limitations	19	Discuss the limitations of the study, taking into account sources of potential bias or imprecision. Discuss both the direction and magnitude of any potential bias	12
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	10-12
Generalizability	21	Discuss the generalizability (external validity) of the study results	12

Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	12

*Give information separately for exposed and unexposed groups. Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in

conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org. (Accessed on 25/12/2023).

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