Assiut Scientific Nursing Journal
http://asnj.journals.ekb.eg http://www.arabimpactfactor.com
DOI:10.21608/asnj.2025.395623.2106 http://olddrji.lbp.world/indexedJournals.aspx
https://vlibrary.emro.who.int/journals/assiut-scientific-nursing-journal

Artificial Intelligence: Its Relation to Staff Nurses' Green Behavior and Organizational Sustainability at Main Mansoura University Hospital

Heba Rabea Hagrass[1] & Hoda Reda Abdou[2]
[1.] Lecturer of Nursing Administration, Faculty of Nursing, Mansoura University, Egypt
[2.] Lecturer of Nursing Administration, Faculty of Nursing, Mansoura University, Egypt

Abstract
Back ground: Artificial intelligence (AI) has the potential to completely transform sustainability by improving biodiversity protection, reducing climate change, managing resources more efficiently, and encouraging green projects to tackle difficult environmental issues. **Aim:** The study aimed to explore the relationship between artificial intelligence, staff nurses' green behavior and organizational sustainability at Main Mansoura University Hospital. **Setting:** The study was done at Main Mansoura University Hospital. **Research design:** A descriptive correlational research design was utilized. **Subjects:** A convenient sample consisted of 239 staff nurses were enrolled in the study. **Tools:** Three tools were used for data collection namely: AI scale, nurses' green behavior questionnaire and organizational sustainability scale. **Results:** About three quarters of the studied staff nurses had satisfactory AI knowledge level and positive AI attitude whereas approximately half of the studied staff nurses had moderate AI perception level. Also, more than half of them had low green behavior level and had moderate organizational sustainability level. **Conclusion:** There was a highly significant relation between AI knowledge, attitudes and perception, staff nurses' green behavior and organizational sustainability. **Recommendations:** Establish an environment that expose nurses to AI procedures more regularly and prioritize AI training. Offer staff nurses workshops on organizational sustainability and green behavior rules to improve their professionalism.

Keywords: Artificial Intelligence, Green Behavior & Organizational Sustainability

Introduction
All parties involved in healthcare systems face complexity and difficulties, but AI has revolutionized a number of industries, including healthcare, and has the potential to enhance patient care and quality of life **(Alowais, et al., 2023).** Nursing practice could be revolutionized by AI technologies, which would allow for the delivery of more individualized, evidence-based care. These tools have the potential to improve nurses' professional identities and greatly aid in problem-solving **(Mohamed, et al., 2023)**.

AI refers to the simulation of human intelligence in robots that are designed to understand and learn similarly to humans. In order to enhance clinical decision-making, AI seeks to replicate human cognitive processes by comprehending vast volumes of data **(Korteling, et al., 2021).**

Electronic health records (EHRs), wearable technology, tele-health and virtual care, and mobile health applications are just a few of the many technologies that fall under the umbrella of digital health. Initiatives spearheaded by the National Digital Health Strategy, which seeks to establish a safe and seamless digital health ecosystem, have sped up the use of these technologies **(De Gagne, 2023).**

AI is changing the healthcare sector by providing new methods to improve patient care, streamline processes, and give healthcare workers especially nurses a better work-life balance **(Jung, et al., 2023).** Providing medical practitioners with relevant, data-driven insights and tools that improve patient care and operational efficiency is the main objective of AI in healthcare **(Van der Schaar, 2021).** The vast range of ways that nurses view AI reflects the various ways that this technology has affected their work settings and professional roles. AI is seen by many nurses as a transformative tool that greatly improves their practice by expediting repetitive tasks and increasing productivity **(Sommer, et al., 2024).**

One of the main advantages of AI is its capacity to automate administrative tasks like scheduling, data administration, and patient recording **(Ross, et al., 2024).** AI enables nurses to spend less time on these monotonous duties and more time providing direct patient care, which can enhance job satisfaction and improve patient outcomes **(Karaarslan, et al., 2024).** Furthermore, AI systems that make data sharing and real-time communication easier improve healthcare workers' cooperation and coordination. This can be especially helpful in high-stress situations where coordinated care and effective information sharing are crucial **(Rony, et al., 2024).**

AI's contribution to better communication and decision-supporting tools also makes the workplace more efficient and well-organized, which helps lessen some of the strain that nurses experience from their

workload **(Morales-Rodríguez, et al., 2021).** By improving biodiversity protection, reducing climate change, streamlining resource management, and encouraging green behavior to tackle difficult environmental issues, AI has the potential to completely transform sustainability **(Bashynska & Prokopenko, 2024).**

Green behavior in nursing has been a significant and expanding area of organizational behavior research. Green behavior means personal conduct that aligns with the goals of environmentally sustainable development **(Ababneh, 2021).** Green behavior by nurses aids organizations in achieving sustainable development goals and enhancing environmental performance **(Aboramadan, 2022).** Green behavior among nurses refers to eco-friendly practices that staff members adopt inside an organization. It describes a certain kind of environmentally friendly behavior that occurs in workplaces **(El-Sayed, et al., 2024).** Any action that helps the environment or reduces environmental harm is referred to as "green behavior." The adoption of corporate sustainability initiatives has led to an increasing focus on employees' environmentally friendly behavior at work **(Ansari, et al., 2021).**

Green behavior is just one of the many ways employees may contribute to environmental protection. Green behavior has so long been seen as one of the most crucial and effective strategies for attaining environmental sustainability Both in-role and extra-role (volunteer) green behavior might fall under this category. Formal green tasks that are an essential component of nurses' performance reviews are referred to as "in-role green behavior." On the other hand, extra-role green behaviors are optional green actions that go beyond a worker's formal responsibilities and are not taken into account when evaluating their performance **(Ye, et al., 2022).**

Overall, empirical data demonstrates that green human resources management positively affects organizational environmental citizenship, nursing empowerment, green mission behavior, and green job development **(Fawehinmi, et al., 2020).** One of the numerous ways nurses may contribute to environmental protection is by practicing green behavior **(Veerasamy, et al., 2024).** As a result, nurses' green behavior is crucial and the most effective means of achieving environmental sustainability in healthcare **(Mandal & Pal, 2024).**

In order for the next generation to be able to meet their demands in the long run, sustainability involves striking a balance between the needs of the present and the needs of the future. Due to its ability to provide long-term growth, financial sustainability, and competitive advantage, sustainability has emerged as a top focus for numerous healthcare organizations worldwide **(AlJaberi, et al., 2020).** Sustainability performance, which offers long-term prospects for growth and development, financial viability, and competitive advantages, has emerged as the top global concern **(Hassan Mekawy, 2023).**

Because it gives organizations a competitive edge and adds value for themselves, their stakeholders, and society at large, organizational sustainability has been receiving the attention and significance it deserves. Additionally, meet the needs of present clients while taking into account those of future generations **(Mishra, 2017).**

The implications of sustainability for nurses and organizations in the modern workplace have made it a significant area of study. A sustainable management style emphasizes a collaborative rather than a competitive viewpoint and reframes conventional thinking through many viewpoints. This entails guiding organizations towards social welfare and environmental preservation in addition to economic growth by balancing social, environmental, and economic objectives **(Wang, et al., 2022).**

Significance

Artificial intelligence in a healthcare organization can effectively meet the needs of nurses by focusing on their career development and growth. This may encourage green behavior that improves the quality and safety of patient care, motivates, innovates, and increases satisfaction, in addition to promoting organizational sustainability within the workplace. This is especially important as healthcare organizations face pressure to improve quality and efficiency while lowering costs **(Ronquillo, et al., 2021).** AI is revolutionizing sustainability efforts in the healthcare system by showcasing its ability to address environmental concerns and open the door for nurses' green behavior **(Rahman, et al.,2025).**

High levels of stress and workload are characteristics of nursing profession, and nurses' green behavior is a sign of AI used successfully and effectively. In the process of encouraging sustainable practices and reducing the environmental impact of healthcare facilities, nurses are essential, mostly through green teams. Healthcare organizations may reduce costs, enhance patient outcomes, retain nurses, and build a sustainable and just future for all by using sustainable practices. From this perspective and due to the scarcity of research linking artificial intelligence to nurses' green behavior and organizational sustainability, there is an urgent need for more research studying these variables due to the positive effects of them on sustainability of the environment. Hence the aim of this study is to explore the relationship between artificial intelligence, nurses' green behavior and organizational sustainability.

Aim of the study

This study aimed to explore the relationship between artificial intelligence, staff nurses' green behavior and organizational sustainability at Main Mansoura University Hospital.

Research questions:

Q1: What are the levels of staff nurses' knowledge about artificial intelligence at Main Mansoura University Hospital?

Q2: What are staff nurses' attitudes toward artificial intelligence at Main Mansoura University Hospital?

Q3: What are the staff nurses' perception levels toward artificial intelligence at Main Mansoura University Hospital?

Q4: What are the levels of staff nurses' green behavior at Main Mansoura University Hospital?

Q5: What are the staff nurses' perception levels toward organizational sustainability at Main Mansoura University Hospital?

Q6: Is there a relationship between artificial intelligence, staff nurses' green behavior and organizational sustainability at Main Mansoura University Hospital?

Methods

Design:

Descriptive correlational research design was utilized in the study.

Setting:

The study was done at Main Mansoura University Hospital that provides a wide spectrum of health service at Delta Region. Main Mansoura University Hospital building consists of five floors; the first floor contains five units (general medicine, orthopedic, medicine and dialysis, medical neuro surgery and anesthetic care unit). The second floor contains two units (operating room for general surgery and laboratory investigation). The third floor contains two units for obstetric and gynecological departments, two units for surgery and operating rooms for labor and anti-natal care units. The fourth floor contains two units for orthopedic surgery and two medical units. Finally, the fifth floor contains (ear, nose and throat) surgery.

Participants:

Convenience sample was utilized which includes all available staff nurses who are responsible for providing direct patient care in all inpatient units, and who fulfill the criteria of having at least one year of experience and willing to participate in the study at time of data collection (n=239).

Tools of data collection:

Three tools were used for data collection namely: Artificial Intelligence Scale, Nurses' Green Behavior questionnaire and Organizational Sustainability Scale.

Tool (I): Artificial Intelligence Scale:

This tool was developed by **Al-Sabawy, (2023)** and aimed to assess staff nurses' knowledge, attitude and perceptions toward artificial intelligence. It consisted of four parts:

Part (I): It was used to identify the personal characteristics of the study staff nurses such as age, gender, marital status, educational qualification and years of experience.

Part (II): It aimed to measure staff nurses' knowledge about using artificial intelligence technology in nursing practice. It included 4 items. Responses were measured on a five-point Likert scale from '1' (strongly disagree) to '5' (strongly agree). Scoring system: Satisfactory ≥ 60% (≥ 12 points). Unsatisfactory < 60% (< 12 points).

Part (III): It aimed to measure staff nurses' attitudes toward using artificial intelligence technology in nursing practice. It included 13 items. Responses were measured on a five-point Likert scale from '1' (strongly disagree) to '5' (strongly agree). A low score ≤ 75% reveals a negative attitude toward AI, whereas a high score ≥ 75% reveals a positive attitude toward artificial intelligence.

Part (IV): It aimed to measure staff nurses' perception levels toward artificial intelligence technology. It included 10 items. Responses were measured on a five-point Likert scale from '1' (strongly disagree) to '5' (strongly agree). The total perception score of each studied nurse was categorized into "low perception" for less than 60% of the total score, "Moderate perception " for 60% to less than or equal 75% of the total score, and "High perception" for more than 75% of the total score.

Tool (II): Nurses' Green Behavior questionnaire

This tool was developed by **McConnaughy's, (2014)** to evaluate the green behavior levels of nurses. It consisted of 40 descriptive items. Responses were measured on a five-point scale from'1' (strongly disagree) to '5' (strongly agree). Scoring of Nurses' Green Behavior: The green behavior score ranged from (40 to 200). Low green behavior scores ranged from (40 to 121), moderate green behavior scores from (122 to 159), and high green behavior scores from (160 to 200).

Tool (III): Organizational Sustainability Scale

This tool was developed by **Balasubramanian & Balaji, (2022)** to evaluate the levels of organizational sustainability among nurses and is composed of twenty-six descriptive items divided into six subscales as follow: financial sustainability (4 items), governance sustainability (4 items), environmental management sustainability (5 items), pollution control measures (4 items), employee-related sustainability (4 items), and public-related

sustainability (5 items). Responses were measured by a five-point rating on a Likert scale from '1' (strongly disagree) to '5' (strongly agree). Scores from 26 to 77 were classified as "low organizational sustainability", scores from 78 to 103 were classified as "moderate organizational sustainability", and scores from 104 to 130 were classified as "high organizational sustainability".

Validity and Reliability

Tools of data collection was translated into Arabic, and face and content validity were verified via five experts in the field of nursing administration to evaluate the items validity as well as the entire tools as relevant, comprehensive, and appropriate. The experts revealed that the tools are comprehensive and appropriate. AI Scale, Nurses' Green Behavior questionnaire and Organizational Sustainability Scale were tested by Cronbach's Alpha reliability and was found to be (0.915), (0.873) and (0.911) respectively.

Pilot study

It was done on 10% of the study participants (23 staff nurses). They were selected randomly and excluded from the study. The aim of the pilot study was to test the clarity, feasibility of the questions, identify obstacles and problems that may be encounter during data collection, test clearness of the language and to determine the time needed to fill-in questions.

Field work

Gathering data from nurses by outlining the purpose of the study to each nurse and obtaining their consent, the questionnaires took about 30 minutes to be completed. The data gathered took a month to be completed (2025).

Ethical Considerations

The Mansoura University Faculty of Nursing's Research Ethical Committee granted ethical permission code number 0711. The hospital's responsible administrator granted formal approval to conduct the study. Every participant was made aware that their involvement in the study was entirely voluntary and that they might leave at any time. Every participant received an assurance regarding the privacy of the study sample and the confidentiality of the data acquired throughout the whole research.

Statistical analysis

SPSS software was used to organize, tabulate, and statistically analyze the gathered data (Statistical Package for the Social Sciences, version 22, SPSS Inc. Chicago, IL, USA). Frequency and percentage were used to describe categorical values. The mean and standard deviation were used to represent continuous variables. Independent t-test was used to test the difference between two means of continuous variables. The difference between more than two means of continuous variables was tested by ANOVA test. Pearson correlation coefficient test was conducted to test the association between two continuous variables. Statistically significant was considered as (p-value ≤ 0.05 &0.01).

Results

Table (1): Personal characteristics of the studied staff nurses (n=239)

Variable	No	%
Age		
From20 to 29 years	63	26.4
From30 to 39 years	108	45.2
More than 40 years	68	28.5
Mean ±SD	35.36± 7.59	
Sex		
Male	59	24.7
Female	180	75.3
Educational level		
Diploma of secondary school of nursing	20	8.4
Diploma of technical institute of nursing	89	37.2
Bachelor degree	104	43.5
others	26	10.9
Years of experience		
>2 year	30	12.6
2:5 year	55	23.0
5:10 years	51	21.3
>10 years	103	43.1
Mean ±SD	8.95±3.08	

Table (2): Mean scores of artificial intelligence knowledge, attitudes and perception of the studied staff nurses (n=239)

Variable	Score	Min - Max	Mean ±SD	Mean %
Artificial Intelligence Knowledge	20	12 - 20	17.40±2.83	87.0
Artificial Intelligence Attitudes	65	41 - 60	52.14±5.41	80.2
Artificial Intelligence Perception	50	25 - 50	35.29±6.76	70.6

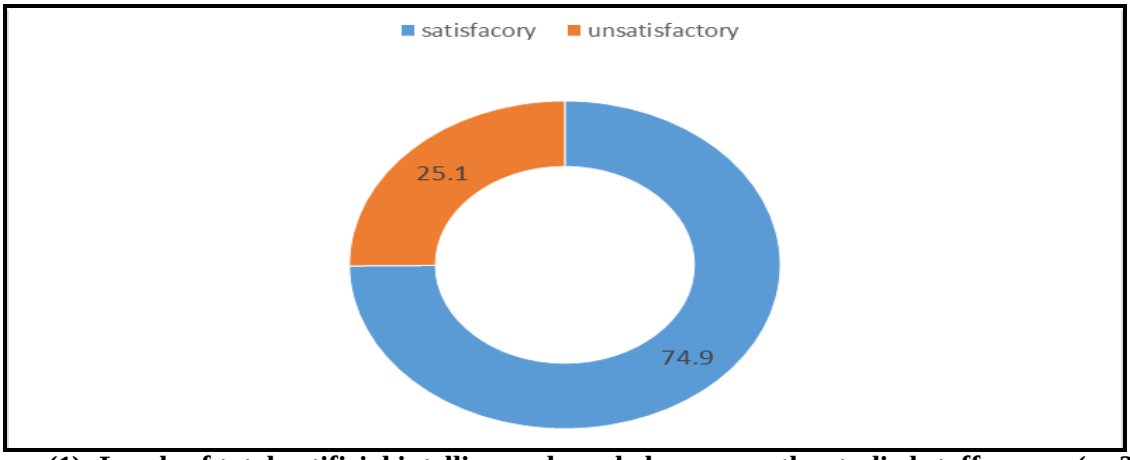

Figure (1): Levels of total artificial intelligence knowledge among the studied staff nurses (n=239)

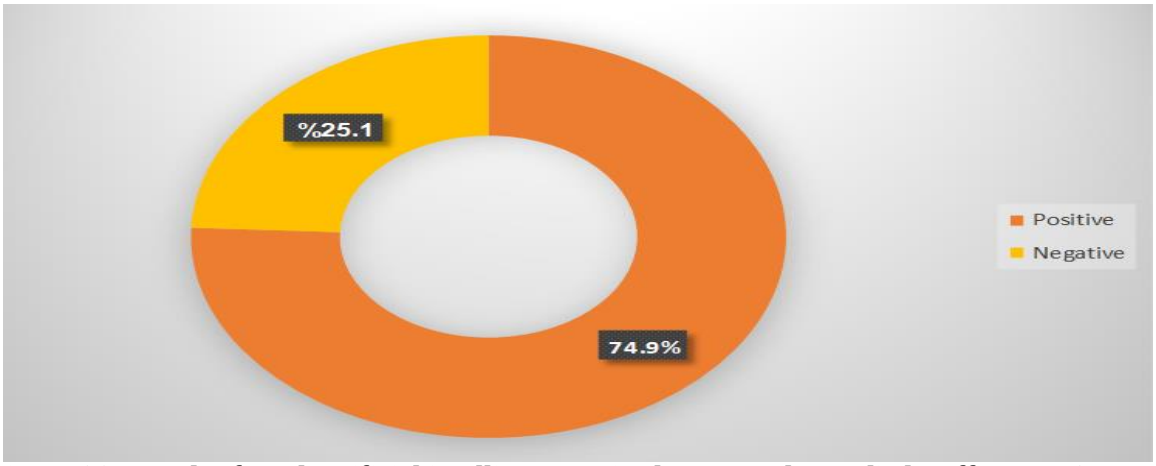

Figure (2): Levels of total artificial intelligence attitude among the studied staff nurses (n=239)

Figure (3): Levels of total artificial intelligence perception among the studied staff nurses (n=239)

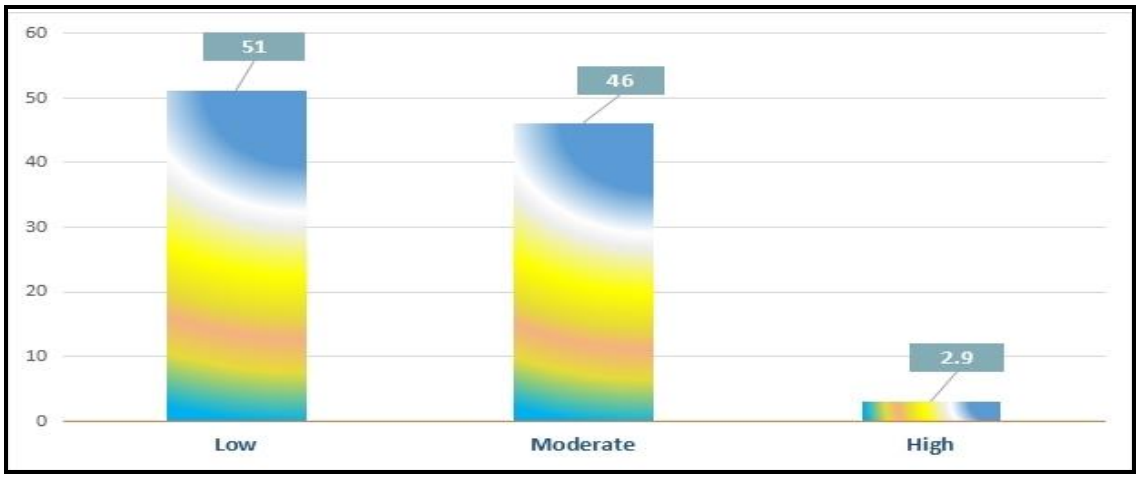

Figure (4): Levels of total nurses' green behavior among the studied staff nurses (n=239)

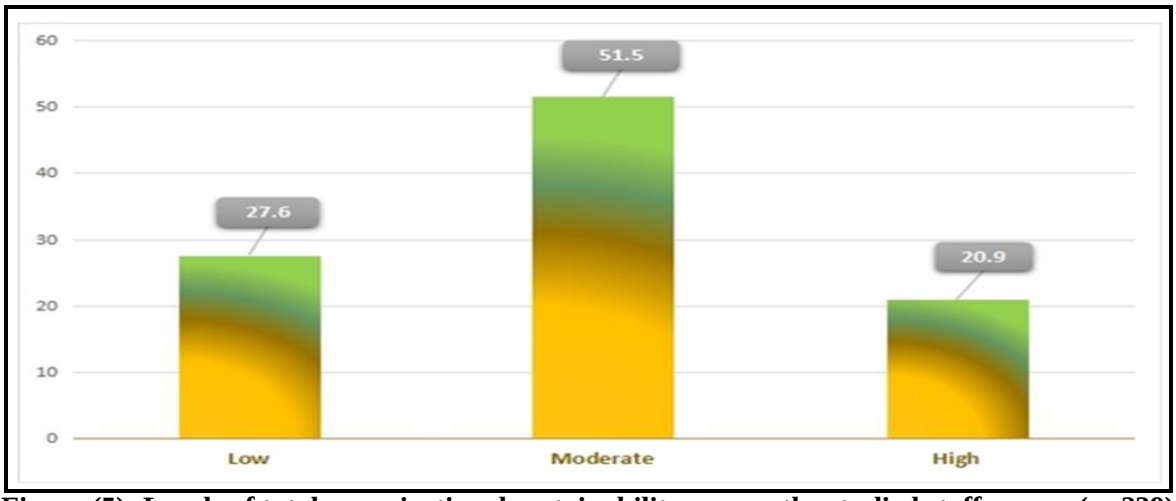

Figure (5): Levels of total organizational sustainability among the studied staff nurses (n=239)

Table (3): Correlation between artificial intelligence knowledge, attitudes and perception, staff nurses' green behavior and organizational sustainability among the studied nurses (n=239)

Variable		Artificial Intelligence Knowledge	Artificial Intelligence Attitudes	Artificial Intelligence Perception	Nurses' green behavior
Artificial Intelligence Attitudes	r	0.879	1		
	p	<0.001**			
Artificial Intelligence Perception	r	0.613	0.607	1	
	p	<0.001**	<0.001**		
Nurses' green behavior	r	0.426	0.488		1
	p	<0.001**	<0.001**		
Organizational sustainability	r	0.274	0.262	0.265	0.684
	p	0.001**	0.005**	0.004**	<0.001**

Table (1): Personal Characteristics of the Studied Staff Nurses. According to the table, a total studied staff nurses are 239. This table shows that less than half of staff nurses (45.2%) aged from 30-39 years. More than two thirds of them (75.3%) are females. Less than half of them (43.5%) have bachelor degree. Concerning experience years, a percentage of (43.1%) have experience of (>10) years while (23.0%) of them have (2-5) years.

Table (2): Mean Scores of Artificial Intelligence Knowledge, Attitudes and Perception of the Studied Staff Nurses. This table shows that artificial intelligence attitudes is the highest (mean =52.14±5.41) followed by artificial intelligence

perception and artificial intelligence knowledge respectively (mean=35.29±6.76, 17.40±2.83).

Figure (1): Levels of Total Artificial Intelligence Knowledge among the Studied Staff Nurses. This figure shows that about three quarters of the studied staff nurses (74.9%)have satisfactory artificial intelligence knowledge level whereas (25.1%) of them have unsatisfactory artificial intelligence knowledge level.

Figure (2): Levels of Total Artificial Intelligence Attitude among the Studied Staff Nurses. This figure shows that about three quarters of the studied nurses (74.9%) have positive artificial intelligence attitude whereas (25.1%) of them have negative artificial intelligence attitude.

Figure (3): Levels of Total Artificial Intelligence perception among the Studied Staff Nurses. This figure shows that approximately half of the studied nurses (49.8%) have moderate artificial intelligence perception level and (30.1%) of them have high level while (20.1%) of them have low level.

Figure (4): Levels of Total Nurses' Green Behavior among the Studied Staff Nurses. This figure showed that more than half of the studied nurses (51.0%) have low green behavior level and (46.0%) of them have moderate level while (2.9%) of them have high level.

Figure (5): Levels of Total Organizational Sustainability among the Studied Staff Nurses. This figure shows that more than half of the studied nurses (51.5%) have moderate organizational sustainability level and (27.6%) of them have low level while (20.9%) of them have high level.

Table (3): Correlation between Artificial Intelligence' Knowledge, Attitudes, Perception, Staff Nurses' Green Behavior and Organizational Sustainability among the studied sample. This table reveals that there is a highly statistically significant relation between artificial intelligence knowledge, attitudes and perception, nurses' green behavior and organizational sustainability.

Discussion:

Adoption of AI has become a key force behind organizational change on a global scale, allowing sectors like manufacturing, healthcare, and retail to improve productivity, creativity, and sustainability. AI has enormous potential to improve client experiences, streamline operations, and promote green initiatives in the healthcare organizations **(Roppelt, et al., 2024).** So, this study aimed to explore the relationship between artificial intelligence, staff nurses' green behavior and organizational sustainability at Main Mansoura University Hospital.

Regarding Levels of Total Artificial Intelligence Knowledge among the Studied Nurses, The results of the study showed that about three quarters of the studied nurses had satisfactory AI knowledge level whereas one quarter of them had unsatisfactory AI knowledge level. This might be because, in their day-to-day work, nurses probably come with AI-powered products and concepts. AI in medical imaging analysis, predictive analytics in electronic health record systems, drug information databases, and even smart patient monitoring devices could fall under this category. Even if it is casual, this hands-on experience can provide a solid understanding. Additionally, the news, posters, media, and social networking sites were some of the indirect ways that the nurses learned about AI.

These findings are consistent with those of **Sheela, (2022)** who found that over half of the sample had prior knowledge of AI. Additionally, **Tuncer & Tuncer, (2024)** discovered that almost half of the nurses polled knew something about AI. Furthermore, **Yaseen, et al., (2025)** claim that nurses possess a considerable degree of AI knowledge. This is supported by the study results of **Abuzaid, et al., (2022)** which indicated that the majority of nurses learned about AI passively. Being at the center of patient care, nurses can play a crucial role in this transition if given the tools and expertise they need. The integration of AI in healthcare settings necessitates a collaborative approach.

Regarding Levels of Total Artificial Intelligence Attitude among the Studied Nurses, The finding of this study showed that about three quarters of the studied nurses had positive AI attitude whereas one quarter of them had negative AI attitude. This might be because nurses are becoming more conscious of AI's potential in healthcare. A more positive view of AI as a tool that can enhance their practice and enhance patient outcomes may result from this insight. Nurses may be indirectly exposed to AI-powered technology in their daily lives (such as smart devices, tailored suggestions) or at work (such as smart pumps, electronic health records with integrated algorithms), even if they are not directly employing sophisticated AI systems. A favorable attitude toward AI in a work setting may result from satisfying encounters or a general comfort level with technology.

This outcome is consistent with research by **Mehdipour, (2019)** which found that the majority of respondents had positive attitude toward AI. According to **Castagno & Khalifa, (2020),** most of respondents had favorable attitude toward AI. In a similar vein, **Swed, et al., (2022)** found that the majority of the group under study had favorable attitude regarding the need for AI. Additionally,

research of **Valerio, (2024)** showed that individuals had a high level of awareness about AI and a notably positive attitude about it. These findings concurred with those of **Al-Sabawy, (2023),** who discovered that nurses' attitudes toward the application of AI in nursing practice are largely favorable.

In addition, **Obenza, et al., (2024)** revealed that participants' agreement with all aspects of their attitude concerning AI was strong. This similar to **Tuncer & Tuncer, (2024),** who revealed that nurses, showed more positive attitudes toward AI. In contract, **Sheela, (2022)** reported that the majority of nurses had a negative attitude toward AI.

Regarding Levels of Total Artificial Intelligence perception among the Studied Nurses, The study finding showed that approximately half of the studied nurses had moderate AI perception level and one third of them had high level while lowest percentage of them had low level. This might be because nurses are open to integrating new technologies and understand the potential advantages of AI applications. Although nurses may have heard about or seen some AI-powered technology, they may not have had much direct exposure to or practical experience with these advanced AI tools. Additionally, there were few AI workshops.

This is in the same line with **Abdullah & Fakieh, (2020)** who found that health care participants had a moderate overall perception of AI. Similar to **Yaseen, et al., (2025)** half of the participants indicated that they were familiar with the AI term, indicating that broad familiarity with AI was acceptable. Furthermore, two thirds of the participants said AI may be helpful in the medical field. These findings are in contrast to those of **Kumari & Hemalatha, (2021)** who showed that respondents do not see AI systems as a treat and they have an exceptionally good image of the technology.

Concerning nurses' green behavior levels, The finding of this study showed that more than half of the studied nurses had low green behavior level and less than half of them had moderate level while a very low percentage of them had high level. This could be because nurses may not completely understand how their regular actions in the healthcare setting affect the environment. It's possible that they weren't properly instructed or trained in sustainable practices that were pertinent to their positions. Additionally, the intense nature of nursing employment frequently puts the needs of patients first. The essential duties and obligations of their jobs may be seen as taking precedence above environmental concerns. It's possible for nurses to believe that their personal behavior has no bearing on a huge healthcare organization's environmental impact.

According to **Hasebrook, et al., (2022)** the majority of participants showed inadequate levels of green practices and behavior intention. It also confirmed the results of a study conducted by **Essawy, et al., (2024)** which showed that over half of the nurses who took part in the study reported having poor green behavior. Furthermore, **Li, et al., (2021)** discovered that nurses exhibited poor green behavior. Also, **Fawzi El-boudy, et al., (2025)** illustrated that about half of nurses exhibited negative green behavior.

This result contrasted with that of **Elkholy, (2024)** who found that nurses' perceptions of green behavior were generally modest. Moreover, **Dumont, et al., (2017)** reported that individual green behavior was good. This also contradicted the findings of **Ozkan, et al., (2024)** who found that participants' high mean cores were caused by green workplace practices.

Regarding Levels of Total Organizational Sustainability among the Studied Nurses, The results showed that more than half of the studied nurses had moderate organizational sustainability level and more than one quarter of them had low level while less than one quarter of studied sample had high level. This could be because most nurses are probably working in an environment that is barely scraping by rather than flourishing. This could show itself as sufficient but uninspired leadership, controllable but constantly present pressures, or adequate but unexceptional support systems. A moderate level indicates susceptibility; if further demands were to come their way, it wouldn't take much for these nurses to fall into a lower sustainability category. It also suggests that although basic requirements may be satisfied, there aren't enough strong components to support engagement, retention, and long-term well-being.

In line with this, a study done by **Luque-Alcaraz, et al., (2024)** found that more than two-thirds of nurses had a moderate level of environmental awareness with reference to organizational sustainability. In contrast, a study done by **Atalla, et al., (2024)** found that more than sixty nurses expressed a high level of sustainability consciousness, demonstrating a strong commitment to corporate sustainability initiatives. Additionally, according to **Algabar, et al., (2023)** about half of nurses had a high degree of sustainability consciousness.

Regarding Correlation between Artificial Intelligence' Knowledge, Attitudes and Perception, Nurses' Green Behavior and Organizational Sustainability among the Studied Nurses. The results revealed that there was a highly significant relation between artificial intelligence knowledge, attitudes and perception, nurses' green behavior and organizational sustainability. This could be as a result of AI's many capabilities, which can enhance and

support eco-friendly working practices. Nurses are more likely to recognize AI's potential advantages for efficiency, resource optimization, and better patient outcomes if they have a deeper understanding of the technology's potential, constraints, and ethical issues. Additionally, Opposition to the use of AI is lessened when nurses have a favorable attitude toward it and see it as a useful tool rather than a danger. This transparency motivates nurses to use AI-powered solutions that can help them adopt more environmentally friendly practices.

This agreed with **Suseno, et al., (2023)** who stated that employees who are technologically savvy are better able to use AI tools to enhance green practices, which eventually boosts organizational performance and encourages innovation in sustainability initiatives. Additionally, according to **Gaur, et al., (2023)** AI-powered solutions assist organizations in monitoring and controlling resource usage while motivating staff to adopt more environmentally friendly behaviors. According to **Akter, (2024)** AI applications further support sustainability goals by automating waste management and resource allocation. Furthermore, according to **Nishant, et al., (2020)** AI technologies monitor employee sustainability-related activities, facilitating improved tracking and reporting on green practices.

In this regard, **Luque-Alcaraz, et al., (2024)** stated that nurses who were more conscious of sustainability were more likely to engage in eco-friendly practices, such as reducing trash, conserving energy, and making environmentally friendly purchases. Additionally, **Othman, et al., (2025**) found that employees who are more knowledgeable and climate change and sustainability oriented have high intentions for green behavior and engage in green advocacy activities. They also found that green behavioral intentions acted as a mediator in the relationship between environmentally knowledgeable awareness and green and advocating behavior. This result is consistent with the findings of **Li, et al., (2021)** who found that behavioral intentions and related practices were positively correlated. Green practices are positively impacted by nurses' desire to act in a green manner. Nurses' efforts as green champions are positively impacted by their determination to act sustainably.

Conclusion

The findings of the present study concluded that about three quarters of the studied nurses had satisfactory artificial intelligence knowledge level and positive artificial intelligence attitude whereas approximately half of the studied nurses had moderate artificial intelligence perception level. Also, more than half of the studied nurses had low green behavior level and more than half of the studied nurses had moderate organizational sustainability level. Finally, there was a highly significant relation between artificial intelligence knowledge, attitudes and perception, nurses' green behavior and organizational sustainability.

Recommendations

In light of these findings, the following recommendations were suggested:

- Establish an environment that expose nurses to AI procedures more regularly and prioritize AI training.
- Offer staff nurses workshops on organizational sustainability and green behavior rules to improve their professionalism.
- Encouraging the implementation of new environmental-friendly policies and programs at work.
- Encourage green workplace habits to help nurses adopt green behaviors and ensure their green commitment.
- Keep an eye on how working procedures affect the environment and -Talk about environmental issues with nurses.

Further research is needed to study the relationship between artificial intelligence, nurses' green behavior and organizational sustainability in different settings.

References:

Ababneh, O. (2021): How do green HRM practices affect employees' green behaviors? The role of employee engagement and personality attributes. Journal of Environmental Planning and Management, Vol.(64) No.(7), Pp.1204-1226.

Abdullah, R., & Fakieh, B. (2020): Health care employees' perceptions of the use of artificial intelligence applications: survey study. Journal of medical Internet research, Vol.(22) No.(5),Pp. e17620.

Aboramadan, M. (2022): The effect of green HRM on employee green behaviors in higher education: the mediating mechanism of green work engagement. International Journal of Organizational Analysis,Vol.(30) No.(1), Pp.7-23.

Abuzaid, M., Elshami, W., & Fadden, S. (2022): Integration of artificial intelligence into nursing practice. Health and Technology, Vol.(12) No.(6),Pp. 1109-1115.

Akter, M. (2024): AI for sustainability: Leveraging technology to address global environmental. Journal of Artificial Intelligence General science (JAIGS) ISSN: 3006-4023,Vol.(3) No.(1),Pp. 40-48.

Algabar, A., Ghadery, S., Mohamed, L. & Abou Shaheen, R. (2023): Role of nurse managers' sustainable management behaviors in Building sustainability consciousness among nurses. Tanta Scientific Nursing Journal, Vol.(30) No.(3),Pp. 246-261.

AlJaberi, O., Hussain, M., & Drake, P. (2020): A framework for measuring sustainability in healthcare systems. International journal of healthcare management. https://doi.org/10.1080/20479700.2017.1404710

Alowais, S., Alghamdi, S., Alsuhebany, N., Alqahtani, T., Alshaya, A., Almohareb, S., & Albekairy, A. (2023): Revolutionizing healthcare: the role of artificial intelligence in clinical practice. BMC medical education, Vol.(23) No.(1), Pp.689. https://doi.org/10.1186/s12909-023-04698-z

Al-Sabawy, M. (2023): Artificial intelligence in nursing: a study on nurses' perceptions and readiness. In 1st International and 6th Scientific Conference of Kirkuk Health Directorate.

Ansari, N., Farrukh, M., & Raza, A. (2021): Green human resource management and employees pro-environmental behaviors: Examining the underlying mechanism. Corporate Social Responsibility and Environmental Management,Vol.(28) No.(1), Pp.229-238.

Atalla, A., Mostafa, W., & Ali, M. (2024): Inspiring nurses' sustainability mindset: Exploring the Mediating Role of Organizational Culture on the relationship between Pro-social Leader behaviors and nurses' sustainability consciousness. BMC nursing, Vol.(23) No.(1)Pp675.

Balasubramanian, N., & Balaji, M. (2022): Organizational sustainability scale-measuring employees' perception on sustainability of organization. Measuring Business Excellence,Vol.(26) No.(3) Pp. 245-262.

Bashynska, I., & Prokopenko, O. (2024): Leveraging Artificial Intelligence for Circular Economy: Transforming Resource Management, Supply Chains, and Manufacturing Practices. Scientific Journal of Bielsko-Biala School of Finance and Law, Vol.(28) No.(2) Pp 85-91.

Castagno, S., & Khalifa, M. (2020): Perceptions of artificial intelligence among healthcare staff: a qualitative survey study. Frontiers in artificial intelligence,Vol.(3), 578983.https://doi.org/10.3389/frai.2020.578983

De Gagne, J. (2023): The state of artificial intelligence in nursing education: Past, present, and future directions. International journal of environmental research and public health, Vol.(20) No.(6) Pp. 4884.

Dumont, J., Shen, J., & Deng, X. (2017): Effects of green HRM practices on employee workplace green behavior: The role of psychological green climate and employee green values. Human resource management, Vol.(56) No.(4) Pp. 613-627.

Elkholy, S. (2024): Prosocial leadership and Organizational sustainability: moderating role of nurses' green behavior. International Egyptian Journal of Nursing Sciences and Research,Vol.(4) No.(2) Pp.70-86.

El-Sayed, A. A. I., Alsenany, S. A., Abdelaliem, S. M. F., & Asal, M. G. R. (2024): Exploring Organizational Agility's Impact on Nurses' Green Work Behavior: The Mediating Role of Climate Activism. Journal of Advanced Nursing.. **https://doi.org/10.1111/jan.16551**

Essawy, D. R. M., Gaber, M. A., & ElAraby, A. E. (2024): Effect of Ethical Leadership on Nurses' Voice Behavior at Zagazig University Hospitals. Zagazig Nursing Journal,Vol.(20) No.(2) Pp.359-372.

Fawehinmi, O., Yusliza, M. Y., Mohamad, Z., Noor Faezah, J., & Muhammad, Z. (2020): Assessing the green behaviour of academics: The role of green human resource management and environmental knowledge. International Journal of Manpower, Vol.(41) No.(7) Pp., 879-900.

Fawzi El-boudy, D., Mohamed Abdelrahman, M., & Mohammed Bakeer, H. (2025): Factors Affecting the Adoption of Green-Hospitals and Their Relation to Nurses' Green Behaviour. Egyptian Journal of Health Care,Vol.(16) No.(1) Pp.1101-1113.

Gaur, L., Afaq, A., Arora, G. K., & Khan, N. (2023): Artificial intelligence for carbon emissions using system of systems theory. Ecological Informatics, Vol.(76), Pp.102165.

George, J. S., & Jayakumar, K. N. (2020): The demographics of employee green behaviour among IT Professionals. International Journal of Scientific and Technology Research,Vol.(9) No.(4) Pp. 13-16.

Hasebrook, J. P., Michalak, L., Wessels, A., Koenig, S., Spierling, S., & Kirmsse, S. (2022): Green behavior: factors influencing behavioral intention and actual environmental behavior of employees in the financial service sector. Sustainability, Vol.(14) No.(17)Pp.10814.

Hassan Mekawy, S. (2023): Climate Change and its Relation to Environmental Sustainability Practice as Perceived by Staff Nurses. Journal of Nursing Science Benha University,Vol.(4) No.(1) Pp. 1226-1243.

Jung, J., Lee, H., Jung, H., & Kim, H. (2023): Essential properties and explanation effectiveness of explainable artificial intelligence in healthcare: A systematic review. Heliyon,Vol. (9) No.(5).

Karaarslan, D., Kahraman, A., & Ergin, E. (2024): How does training given to pediatric nurses about artificial intelligence and robot nurses affect their opinions and attitude levels? A quasi-experimental study. Journal of Pediatric Nursing. Vol.(77), Pp.211-217.

Korteling, J., van de Boer-Visschedijk, G., Blankendaal, R., Boonekamp, R. & Eikelboom, A. (2021): Human-versus artificial intelligence. Frontiers in artificial intelligence,Vol.(4), 622364.

Kumari, D. P. B., & Hemalatha, A. (2021): Perception towards artificial intelligence in human resources management practices-with reference to IT companies in chennai.

Li, M., Gong, Z., Gilal, F., Van Swol, L., Xu, J., & Li, F. (2021): The moderating role of ethical leadership on nurses' green behavior intentions and real green behavior. BioMed Research International, vol.(2021) No.(1), 6628016.

Luque-Alcaraz, O., Aparicio-Martinez, P., Gomera, A., & Vaquero-Abellan, M. (2022): Nurses as agents for achieving environmentally sustainable health systems: A bibliometric analysis. Journal of Nursing Management, Vol.(30) No.(8)Pp. 3900-3908.

Mandal, V., & Pal, D. (2024): Sustainable leadership: empowering green organizational citizenship behaviour through employee green value in the Indian healthcare sector. Journal of Asia Business Studies, Vol.(19) No.(1)Pp. 79-102.

McConnaughy, J. (2014): Development of an employee green behavior descriptive norms scale. California State University - San Bernardino, Electronic Theses, Projects, and Dissertations,Pp. 1- 105.

Mehdipour, Y. (2019): Nursing managers‟ Attitudes towards using artificial intelligence systems in nursing decisions. IOSR Journal of Nursing and Health Science (IOSR-JNHS), Vol.(8) No.(1) Pp. 87-90.

Mishra, P. (2017): Green human resource management: A framework for sustainable organizational development in an emerging economy. International Journal of Organizational Analysis, Vol.(25) No.(5)Pp. 762-788.

Mohamed, A., Elsayed R., & Ghoneimy H. (2023): Artificial Intelligence Technology and its Relation to Staff Nurses' Professional Identity and Problem Solving Abilities. International Egyptian Journal of Nursing Sciences and Research,Vol.(3) No.(2) Pp. 144-164.

Morales-Rodríguez, F. M., Martínez-Ramón, J. P., Méndez, I., & Ruiz-Esteban, C. (2021): Stress, coping, and resilience before and after COVID-19: A predictive model based on artificial intelligence in the university environment. Frontiers in Psychology, Vol.(12) Pp 647964.

Nishant, R., Kennedy, M., & Corbett, J. (2020): Artificial intelligence for sustainability: Challenges, opportunities, and a research agenda. International journal of information management,Vol. (53), Pp.102104.

Obenza, B., Salvahan, A., Rios, A., Solo, A., Alburo, R., & Gabila, R. (2024): University students' perception and use of ChatGPT: Generative artificial intelligence (AI) in higher education. International Journal of Human Computing Studies,Vol. 5 No.(12), Pp.5-18.

Othman, A. A., Abdelall, H. A., & Ali, H. I. (2025): Enhancing nurses' sustainability consciousness and its effect on green behavior intention and green advocacy: quasi-experimental study. BMC nursing, Vol.(24) No.(1), Pp475.

Ozkan, S., Tari Selcuk, K., & Kan, Z. E. (2024): Is green behaviors of health professionals related to green practices in the workplace? Multicenter study in Turkey. International journal of environmental health research, Vol.(34) No.(2), Pp.898-910.

Rahman, M., Emon, M., Khan, T., Hamid, A, & Yaakub, N. (2025): Eco-Intelligence: AI's Contribution to a Sustainable World. In AI and Green Technology Applications in Society (pp. 31-62). IGI Global Scientific Publishing.

Ronquillo, C., Peltonen, L., Pruinelli, L., Chu, C. H., Bakken, S., Beduschi, A., & Topaz, 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,Vol.77 No.(9), Pp.3707-3717.

Rony, M., Numan, S., Johra, F., Akter, K., Akter, F., Debnath, M., & Parvin, M. (2024): Perceptions and attitudes of nurse practitioners toward artificial intelligence adoption in health care. Health Science Reports, vol. (7) No.(8), Pp.70006.

Roppelt, J. , Kanbach, D., & Kraus, S. (2024): Artificial intelligence in healthcare institutions: A systematic literature review on influencing factors. Technology in society,Vol.(76), Pp. 102443.

Ross, A., Freeman, R., McGrow, K., & Kagan, O. (2024): Implications of artificial intelligence for nurse managers. Nursing Management,Vol. 55 No.(7), Pp.14-23.

Sheela, J. (2022): Attitude of nursing students towards artificial intelligence. International Journal of Science & Healthcare Research, Vol. (7) No.(2), Pp.344-347.

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, Vol.(23) No.(1), Pp.205.

Suseno, Y., Chang, C., Hudik, M., & Fang, E. S. (2023): Beliefs, anxiety and change readiness for artificial intelligence adoption among human resource managers: the moderating role of high-performance work systems. In Artificial Intelligence and International HRM (pp. 144-171). Routledge.

Swed, S., Alibrahim, H., Elkalagi, N. , Nasif, M., Rais, M., Nashwan, A. & Shoib, S. (2022): Knowledge, attitude, and practice of artificial intelligence among doctors and medical students in Syria: a cross-sectional online survey. Frontiers in artificial intelligence, Vol. (5), Pp.1011524.

Tuncer, G., & Tuncer, M. (2024): Investigation of nurses' general attitudes toward artificial intelligence and their perceptions of ChatGPT usage and influencing factors. Digital Health, vol. (10), 20552076241277025.

Valerio, A. (2024): Anticipating the Impact of Artificial Intelligence in Higher Education: Student Awareness and Ethical Concerns in Zamboanga City, Philippines. Cognizance Journal of Multidisciplinary Studies,vol. (4)No.(6), 10-47760.

Van der Schaar, M., Alaa, A., Floto, A., Gimson, A., Scholtes, S., Wood, A., & Ercole, A. (2021): How artificial intelligence and machine learning can help healthcare systems respond to COVID-19. Machine Learning,vol.(110), Pp.1-14.

Veerasamy, U., Joseph, M., & Parayitam, S. (2024): Green human resource management and employee green behaviour: participation and involvement, and training and development as moderators. South Asian Journal of Human Resources Management,Vol.(11)No(2),Pp.277-309.

Wang, B., Batmunkh, M., Samdandash, O., Divaakhuu, D., & Wong, W. (2022): Sustainability of nursing leadership and its contributing factors in a developing economy: a study in Mongolia. Frontiers in Public Health, Vol.(10), 900016.

Yaseen, M., Alsharif, F., Altaf, R., Asiri, T., Bagies, R., Alharbi, S., & Altaf, B. (2025): Assessing Nurses' Knowledge Regarding the Application of Artificial Intelligence Among Nursing Practice. Nursing Research and Practice, vol.(2025) No.(1),Pp. 9371969.

Ye, J., Zhang, X., Zhou, L., Wang, D., & Tian, F. (2022): Psychological mechanism linking green human resource management to green behavior. International Journal of Manpower,Vol.(43), No.(3), Pp.844-861.