

Investigation of nurses' general attitudes toward artificial intelligence and their perceptions of ChatGPT usage and influencing factors

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Abstract

Purpose: This study aimed to investigate professional nurses' general attitudes toward artificial intelligence, their knowledge and perceptions of ChatGPT usage, and the influencing factors.

Methods: The population of the research consists of nurses who follow a social media platform account in Turkey. The sample of the study consisted of 288 nurses who participated in the study between December 2023 and March 2024. Data were collected through an account on a social media platform via Google Forms using the Information Identification Questionnaire for ChatGPT and Artificial Intelligence Programs and the General Attitudes to Artificial Intelligence Scale (GAAIS).

Results: The mean scores obtained from the overall GAAIS and its Positive Attitudes subscale from the participants in this study were 67.54 ± 13.14 and 41.89 ± 11.24 , respectively. Of the participants, 48.3% knew about ChatGPT and artificial intelligence programs. Of the participants, 27.8% used ChatGPT and artificial intelligence programs. Their scores for the Positive Attitude subscale were higher than were the scores of those who did not use such programs. Of the participants, 84.4% thought that nurses should be made aware of ChatGPT and artificial intelligence programs, 67% thought that the use of these programs would contribute to nurses' professional development, 42.4% thought that the use of these programs would not reduce nurses' workload, and 58.3% thought that the use of these programs would positively affect patient care.

Conclusion: In this study, it can be said that nurses in Turkey have positive attitudes toward integrating ChatGPT and AI programs to improve patient outcomes and add them to nursing practices.

Implications for nursing practice: The present study in which nurses' attitudes toward the implementation of ChatGPT and artificial intelligence programs were investigated is expected to provide information for healthcare institutions, policy makers and artificial intelligence developers on the integration of ChatGPT and artificial intelligence into nursing practice. It is necessary to create environments that use AI technologies that reduce the nursing workload of nurses in the clinical area and positively affect the quality of patient care.

Keywords

Artificial intelligence, ChatGPT, nurse

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Statements of significance

What is known or assumed to be true about this topic?

- The use of artificial intelligence applications in nursing studies can ensure effective use of time and cost.

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- The number of studies on the use of artificial intelligence applications in nursing care is quite limited.
- Although the descriptive studies are few, they suggest that nurses support the use of artificial intelligence.

What this article adds:

- In our study, we found that nurses viewed new applications such as ChatGPT positively, as well as artificial intelligence applications.
- However, nurses' use of artificial intelligence applications and ChatGPT is still very limited.
- Nurses state that they need training on artificial intelligence applications and the use of ChatGPT.

Introduction

The concept of artificial intelligence (AI) is taking on an increasingly prominent role in professions. AI consists of complex structures that enable machines and computer programs to develop cognitive abilities.¹ AI technology enables computers to learn, perceive, and solve complex problems and to make decisions.² "Strong AI" technologies, which can further expand the potential of these programs and perform complex tasks, play an important role in developing the conversational interfaces of chatbots.³ Chatbot AI algorithms can analyze a question and produce logical answers in harmony with the question and its meaning.^{4,5} With the advancement of AI, chatbots are not only limited to understanding and responding to certain commands but can also provide more complex and personalized communication.³ ChatGPT, which is a deep learning technology and is offered by the OpenAI company, is a widely used powerful AI-based chatbot.⁶ The large data set of ChatGPT supports the expansion of the use of this technology.^{7,8}

New technologies based on AI in healthcare are gaining a place on the agenda, thanks to its gains, such as workload, time, and cost efficiency.⁹ Both in Turkey and other countries, healthcare professionals, especially nurses, may be severely affected by advanced AI technologies.^{10,11} Nursing is known as a dynamic and rapidly evolving field due to new technologies and changes in healthcare delivery models.^{7,8} AI technologies and ChatGPT can assist nursing care due to their features, such as providing automatic answers to frequently asked questions, reminding health personnel of health screenings, and facilitating access to health information. AI technologies support decision-making, one of the nursing practices, improve patient triage and clinical diagnoses, and ensure the control of the patient and the environment.^{7,12} With these features, they can assist health personnel in diagnosis, screening, and health care.^{13–15} In addition, the use of this application in personalized health promotion, disease

prevention, and rehabilitation appears to be promising in nursing care.^{4,5,16,17}

However, AI and ChatGPT bring about some risks besides their potential benefits. AI and ChatGPT, due to their potential to revolutionize nursing research, should be used appropriately and transparently.³ In addition to concerns about the accuracy of answers, privacy- and security-related ethical issues demonstrate the importance of using these tools appropriately. Due to incorrect information and faulty algorithms in creating data sets, a lack of validity and reliability may be encountered in using AI applications.¹⁸ Today, the fact that AI applications are still in the development phase is the biggest obstacle to integrating these applications into nursing care.¹⁹ Integrating AI applications into care may lead to deficiencies in psychosocial care and underestimation and disregard of human emotions. Although AI applications provide significant assistance to nurses, the importance of interaction and empathetic care can be forgotten.²⁰ Therefore, it is necessary to focus on planning the investigation and development of application models to improve the quality of care.¹⁵ In addition, in the healthcare field to which ChatGPT is integrated, nurses' motivations for, perceptions of, and attitudes toward learning and using this technology are not known sufficiently. However, in the literature, studies conducted on professional nurses' positive attitudes toward AI are limited to qualitative and survey measurements.^{15,21–23} Moreover, there is a gap regarding studies in which nurses' knowledge of ChatGPT and AI applications is measured. Determining nurses' attitudes toward AI applications is important if their readiness to benefit from such applications and their integration into healthcare services is to be accelerated. Therefore, this study aimed to investigate professional nurses' general attitudes toward artificial intelligence, their knowledge and perceptions of ChatGPT usage, and the influencing factors.

Methods

Research design

This is a descriptive cross-sectional study. EQUATOR guidelines' STROBE checklist was used in the design and reporting of the study. At the beginning of the study, all steps were defined, from determining the variables, creating the sample, and reaching the participants. The process of deciding on the sampling technique and statistical methods including sample size and their analysis was completed. Preventing study bias within the scope of STROBE check-list items, data was collected online to select sample participants from a wide population. After the data collection process, key findings were presented and interpreted within the scope of the items.

Participants and sample

The population of the research consists of nurses who follow a social media platform (Instagram) account in Turkey and following the account that produces nursing-related content on this platform. The sample of the study was created using the ‘convenience sampling’ method. An announcement was made to the population for convenience sampling, and eligible participants were enabled to participate. The call was made by sharing a link via Instagram Stories. During the first month of the two-month period, the link was shared once a week. In the second month, it was shared once every two weeks. Each story post stayed on the main page of the social media account for 24 hours. During this process, 306 nurses clicked on the survey link, but only 288 completed and submitted the survey. Data were collected between December 2023 and March 2024. Inclusion criteria in the study: following the specified social media platform, being a nurse with a bachelor’s degree, and working as a nurse. The exclusion criteria for this study are being a nursing student or a health professional outside the nursing profession.

Instruments

Demographic data form.

The form prepared by the researchers in light of the literature to obtain information about the sociodemographic characteristics of the participants includes items questioning the participants’ descriptive characteristics, such as age, sex, marital status, socioeconomic status, number of children, unit worked in, length of service in the profession, and educational status.^{13,17}

Information Identification Questionnaire for the ChatGPT and Artificial Intelligence Programs. The questionnaire developed by the researchers was used to identify the participants’ knowledge of ChatGPT and AI programs in light of the literature.^{13,17} The questionnaire consists of eight items questioning the participants’ awareness of ChatGPT/AI programs, their professional development and implementation in nursing care plans, and their perceptions of the use of these programs. This form was created by the researchers, and opinions were taken from three PhD graduate nurses for content validity. After receiving expert opinions, the form was finalized by the researchers. Before the survey was sent to the participants, the understandability of the survey was checked by three graduate nurses.

General Attitudes to Artificial Intelligence Scale (GAAIS). The GAAIS was developed by Schepman and Rodway to measure individuals’ general attitudes toward AI.²⁴ A validity and reliability study of the Turkish version of the GAAIS was conducted by Kaya et al. in 2022.²⁵ The GAAIS consists of two subscales, namely

the Positive Attitudes (GAAIS-p) subscale and the Negative Attitudes (GAAIS-n) subscale, and 20 items, of which 12 question positive attitudes and eight question negative attitudes. Responses given to the items are scored on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Items questioning negative attitudes are reverse-scored. Lower scores obtained from the Negative Attitudes Subscale and higher scores obtained from the Positive Attitudes Subscale indicate that the respondent displays positive attitudes toward AI. The scale has good internal consistency and reliability. The Cronbach’s Alpha was .82 for the GAAIS-p subscale and .84 for the GAAIS-n subscale. The item-total correlation coefficients of the scale were $r=.77$ for the GAAIS-p subscale, and $r=.83$ for the GAAIS-n subscale.²⁵ In this study, Cronbach’s Alpha was .96 for the GAAIS-p subscale, .91 for the GAAIS-n subscale, and .90 for the overall GAAIS. Written permission was received via e-mail from the researchers who conducted the validity and reliability of the scale in Turkish.

Procedure

Research data were collected online. The Demographic Data Form developed by the researchers, GAAIS, and the General Attitudes to Artificial Intelligence Scale were transferred to the Google Forms application. A description of the study and inclusion criteria were added to this survey form created using Google Forms. The form is arranged in such a way that each item must be marked. However, to prevent nursing students and other professionals from responding, the participants were asked to write the name of the institution and unit where they worked. In addition, to prevent duplicate responses, the “limit to only 1 answer” option was selected in the “Limit responses section” in the survey settings when the Google survey link was created. Also, a checkbox indicating that the respondent agreed to participate in the study was added to the participation link. The survey form was opened after the respondent ticked the checkbox. Because it was necessary to mark all the items in the forms, only the forms with all of the items answered by working participant nurses were analyzed.

This survey form link was shared for a fee from an Instagram account that is active as a nursing content producer on a social media application in Turkey. Approximately 80% of the 155,000 followers of this social media application account are nurses and nursing students. The administrator of this page is a nurse who shares nursing-related practices. The administrator published six “Story” posts containing the link to this form on this social media application for a fee of \$40. The link sharing this survey link was created from the “Stories” section of this nursing account on the social media platform. Each story post was kept on the main page of the social media account for 24 hours. These six “Stories” shared on this nursing

page over a two-month period were viewed by 37,228 people. Although 306 nurses clicked on the link, only 288 completed the survey and submitted it to the researcher. All statistics were forwarded to the researchers by the owner of the nurse account in the social media application after the sharing process.

To ensure the security of the data form, data was collected through Google Forms, which is connected to the first author's e-mail account with a unique password and two-factor authentication. No data editors other than the first author were added to Google Forms. Data was collected only by publishing the link on the social media platform. Participants' responses were collected anonymously, and no personal identifying information, such as IP addresses, was recorded. Additionally, all data is encrypted during data transfer and storage processes. In online informed consent section, it is clearly stated that the data will be used only for research purposes and will not be shared with third parties. After the data is collected, the data retrieval feature of the link is limited. The data collected for this study will be securely retained and protected by the two researchers for a period of five years.

Analysis

While the dependent variables of the study were the mean scores obtained from the overall GAAIS and its sub-dimensions, the independent variables were the participants' sociodemographic data. Numbers, percentages, and arithmetic mean were used in the analysis of descriptive data, and Pearson correlation analysis, independent samples t-test, and ANOVA were performed to determine the relationship between descriptive data and GAAIS and its subscales. Between the survey questions and GAAIS total and sub-dimensions, ANOVA was performed if the data showed parametric distribution, and Kruskal–Wallis analysis was performed if the data showed nonparametric distribution. After the ANOVA analysis of the three-option items regarding AI applications in the survey form, the Bonferroni test was used to find out which option caused the difference.

Ethical considerations

Ethics committee approval to conduct the study was obtained from the non-interventional ethics committee of a university (Decision Number: 2023/38-10, Decision Date: 29 November 2023, Protocol Number: 8479-GOA). To administer the scales, permissions were obtained from the authors who conducted the validity and reliability studies of the scales. Participants were informed about the purpose of the study and the confidentiality of the data before starting the survey, and their online informed consent to participate in the study was obtained.

Results

The mean age of the participants was 29.4 ± 6.6 years. The mean number of children they had was 0.4 ± 0.7 . Of the participants, 90.3% were women, 56.6% were single, 67.4% had an income equal to or more than expenses, 71.5% did not have postgraduate education, 35.4% worked in inpatient services, 51% had a length of service in the profession for 1–4 years, 51.7% were not knowledgeable about AI programs, and 72.2% did not use AI programs. The mean scores obtained from the overall GAAIS and its GAAIS-p and GAAIS-n subscales were 67.54 ± 13.14 , 41.89 ± 11.24 , and 25.64 ± 6.91 (Table 1).

The comparison of the relationship and differences between the sociodemographic characteristics of the participants and the scores they obtained from the GAAIS and its GAAIS-p and GAAIS-n subscales demonstrated a low negative correlation between the age variable and their GAAIS-n subscale score ($r = -.121$ $p = .040$), and a low negative correlation between the number of children variable and their GAAIS-n subscale score ($r = -.147$ $p = .012$) and the overall GAAIS score ($r = -.148$ $p = .012$).

Of the participants, those who had postgraduate education obtained higher mean scores from the overall GAAIS ($t = -3.392$ $p = .001$) and its GAAIS-n subscale ($t = -2.371$ $p = .018$) and GAAIS-p subscale ($t = -2.532$ $p = .012$) than those without postgraduate education. Also, those who were knowledgeable about ChatGPT and AI programs obtained higher mean scores from the overall GAAIS ($t = -4.768$ $p < .000$) and its GAAIS-n subscale ($t = -3.568$ $p < .001$) and GAAIS-p scale ($t = -3.095$ $p = .002$) than those who were not knowledgeable. Besides, those who used ChatGPT and AI programs obtained higher mean scores from the overall GAAIS ($t = -5.247$ $p < .000$) and its GAAIS-n subscale ($t = -4.089$ $p < .001$) and GAAIS-p subscale ($t = -3.112$ $p = .002$) than those who did not use ChatGPT and AI programs.

Of the participants, 84.4% thought that nurses' awareness of ChatGPT and AI programs should be raised, 67% thought that ChatGPT and AI programs contributed to the professional development of nurses, 69.4% used ChatGPT and AI programs when they created nursing care plans, 63.5% used ChatGPT and AI programs as guides in nursing interventions, 56.3% were undecided about the difficulty of using ChatGPT and AI programs, 47.6% considered ChatGPT and AI programs to be dangerous, 42.4% thought that ChatGPT and AI programs would not reduce nurses' workload, and 58.3% thought that ChatGPT and AI programs would positively affect the care of patients (Table 2).

In this study, significant differences in GAAIS scores were found among groups regarding whether nurses thought it was necessary to become aware of ChatGPT and AI programs ($z = 38.808$, $p < .001$). Additionally, significant differences in GAAIS scores were identified

Table 1. Relationship between the participants' sociodemographic characteristics and general attitudes to artificial intelligence scale (n = 288).

		GAAIS-p			GAAIS-n			GAAIS			
		41.89 ± 11.24	(12-60)	25.64 ± 6.91	(8-40)	67.54 ± 13.14	(20-100)				
X ± SD	Min-max	r*	p	r*	p	r*	p	t/F	X ± SD	t/F	p
Age	29.4 ± 6.6	19-49									
		-.058	.328	-.121	.040	-.113	.055				
The number of children	.4 ± .7	0-2									
		-.082	.164	-.147	.012	-.148	.012				
Gender	n	t**/F***	p	X ± SD	t/F	X ± SD	t/F	X ± SD	t/F	p	
Women	260	42.26 ± 10.87	.093	25.48 ± 6.84	-1.205**	67.75 ± 13.19	.806	67.75 ± 13.19	.806	.421	
Men	28	38.50 ± 14.01		27.14 ± 7.44		65.64 ± 12.70		65.64 ± 12.70			
Marital status	125	43.4	.405	24.78 ± 7.64	-1.869**	66.04 ± 14.20	-1.699	66.04 ± 14.20	-1.699	.090	
Married											
Single	163	42.38 ± 10.67		26.31 ± 6.23		68.69 ± 12.18		68.69 ± 12.18			
Income status	94	40.41 ± 12.04	.120	26.08 ± 7.04	.744**	66.50 ± 13.70	-.939	66.50 ± 13.70	-.939	.348	
Income less than expenses											
Income equal to or more than expenses	194	42.61 ± 10.79		25.43 ± 6.85		68.05 ± 12.86		68.05 ± 12.86			
Postgraduate education	206	40.91 ± 10.91	.018	25.0 ± 7.02	-2.532**	65.91 ± 12.75	-3.392**	65.91 ± 12.75	-3.392**	.001	
No											
Master's and doctorate degree	82	44.36 ± 11.74		27.26 ± 6.38		71.63 ± 13.27		71.63 ± 13.27			
Unit worked in	27	39.22 ± 11.74	.431	26.85 ± 7.16	.948***	66.07 ± 13.33	.948***	66.07 ± 13.33	.948***	.436	
Emergency room											

(continued)

Table 1. Continued.

		GAAIS-p			GAAIS-n			GAAIS				
		41.89 ± 11.24 (12-60)			25.64 ± 6.91 (8-40)			67.54 ± 13.14 (20-100)				
Length of service in the profession (years)	Inpatient Service	102	35.4	43.41 ± 11.33		26.00 ± 6.94		69.42 ± 14.14				
	Intensive care unit	75	26.0	41.76 ± 11.81		25.61 ± 6.74		67.37 ± 11.56				
	Outpatient clinic	25	8.7	40.36 ± 11.70		25.36 ± 7.40		65.72 ± 12.04				
	Dialysis Unit etc.	53	18.4	41.73 ± 9.82		24.09 ± 6.67		65.83 ± 13.80				
AI knowledge	Not Knowledgeable	149	51.7	39.65 ± 10.65	.912***	.403	26.04 ± 6.47	1.590***	.206	68.89 ± 12.23	1.648***	.194
	Knowledgeable	139	48.3	44.29 ± 11.40			25.73 ± 7.05			66.44 ± 14.96		
		71	24.7	41.45 ± 11.41			24.29 ± 7.47			65.74 ± 13.39		
AI use	No	208	72.2	40.25 ± 10.29	-3.568**	.000	24.44 ± 6.93	-3.095**	.002	64.10 ± 12.18	-4.768**	.000
	Yes	80	27.8	46.15 ± 12.50			27.66 ± 6.75			73.81 ± 13.49		

GAAIS: General Attitudes to Artificial Intelligence Scale.

*r: regression analysis, **t: independent samples t test, ***F: ANOVA analysis.

Table 2. Relationship between the participants' perceptions of ChatGPT and AI programs and their general attitudes toward artificial intelligence (n = 288).

	GAAIS-p			GAAIS-n			GAAIS					
	n	%	X ± SD	F*/z**	p	X ± SD	F*/z**	p	X ± SD	F*/z**	p	
It is necessary to raise nurses' awareness of ChatGPT and AI Programs.	Disagree	12	4.2	24.41 ± 15.08	39.787**	.000	27.33 ± 10.82	1.288**	.525	51.75 ± 13.02	38.808**	.000
	Undecided	33	11.5	33.63 ± 10.77			24.66 ± 7.53			58.30 ± 12.33		
	Agree	243	84.4	43.88 ± 9.79			25.69 ± 6.59			69.58 ± 12.19		
ChatGPT and AI Programs contribute to the professional development of nurses.	Disagree	26	9.0	24.53 ± 11.91	89.909**	.000	23.76 ± 10.78	9.707**	.008	48.30 ± 14.07	88.222**	.000
	Undecided	69	24.0	37.68 ± 8.23			24.15 ± 6.02			61.84 ± 9.06		
	Agree	193	67.0	45.74 ± 9.19			26.43 ± 6.43			72.17 ± 10.94		
Nurses should use ChatGPT and AI Programs when creating the nursing care plan.	Disagree	26	9.0	28.57 ± 13.96	41.836**	.000	25.69 ± 9.56	1.537**	.464	54.26 ± 15.50	39.253**	.000
	Undecided	62	21.5	38.85 ± 10.09			24.93 ± 6.30			63.79 ± 10.12		
	Agree	200	69.4	44.57 ± 9.66			25.86 ± 6.70			70.43 ± 12.31		
Nurses should use ChatGPT and AI Programs as a guide in nursing interventions.	Disagree	33	11.5	27.75 ± 12.41	48.184*	.000 ^a	24.27 ± 9.41	3.506*	.031	52.03 ± 15.36	46.971*	.000 ^a
	Undecided	72	25.0	39.58 ± 9.19			24.22 ± 6.34			63.80 ± 10.39		
	Agree	183	63.5	45.35 ± 9.43			26.45 ± 6.91			71.81 ± 11.00		
ChatGPT and AI Programs are difficult to use.	No	106	36.8	43.87 ± 12.26	11.304**	.004	27.73 ± 6.53	16.510**	.000	71.61 ± 13.74	15.117**	.000
	Not sure	162	56.3	40.74 ± 9.79			24.77 ± 6.67			65.51 ± 11.31		
	Yes	20	6.9	40.75 ± 15.18			21.70 ± 7.81			62.45 ± 18.00		
I think using ChatGPT and AI Programs is dangerous.	No	102	35.4	44.50 ± 12.61	8.905*	.000 ^b	29.94 ± 6.13	51.032*	.000 ^a	74.44 ± 12.84	40.704*	.000 ^a

(continued)

Table 2. Continued.

	GAAIS-p				GAAIS-n				GAAIS			
	n	%	X ± SD	F*/z**	p	X ± SD	F*/z**	p	X ± SD	F*/z**	p	
	Not sure	137	47.6	41.89 ± 9.32		24.45 ± 5.31			66.35 ± 9.87			
	Yes	49	17.0	36.46 ± 11.42		20.04 ± 7.13			56.51 ± 13.39			
I think ChatGPT and AI Programs will reduce nurses' workload.	No	122	42.4	41.55 ± 12.05	.442*	26.19 ± 7.24	.668*	.514	67.75 ± 14.81	2.341*	.098	
	Not sure	87	30.2	40.01 ± 10.40		25.29 ± 6.26			65.31 ± 10.99			
Yes	79	27.4	44.49 ± 10.47		25.18 ± 7.08			69.68 ± 12.29				
I think ChatGPT and AI Programs will positively affect the patient care.	No	30	10.4	32.70 ± 11.40	27.891*	21.83 ± 8.52	10.940*	.000 ^b	54.53 ± 15.02	44.217*	.000 ^a	
	Not sure	90	31.3	38.22 ± 9.28		24.21 ± 6.20			62.43 ± 9.80			
Yes	168	58.3	45.50 ± 10.64		27.10 ± 6.56			72.60 ± 11.66				

GAAIS: General Attitudes to Artificial Intelligence Scale.

*F: ANOVA analysis, **z: Kruskal-Wallis test.

AI: Artificial Intelligence.

^aBonferroni test was used for the difference between two variables in the ANOVA test. According to the Bonferroni test, significance resulted from the difference between all groups.

^bBonferroni test was used for the difference between two variables in the ANOVA test. Significance in the Bonferroni test was due to the difference between "no" and "yes" and the difference between "not sure" and "yes".

among groups concerning the perceived contribution of these programs to professional development ($z = 88.222$, $p < .001$). Significant differences in GAAIS scores were also observed among groups regarding the necessity of using these programs in developing nursing care plans ($z = 39.253$, $p < .001$). Furthermore, significant differences in GAAIS scores were found among groups concerning the use of these programs as a guide in nursing interventions ($F = 46.971$, $p < .001$) (Table 2).

The results of this study reveal significant differences in GAAIS scores between nurses who consider the use of ChatGPT and AI programs to be easy and those who do not ($z = 15.117$, $p < .001$). Additionally, significant differences in GAAIS scores were identified between those who consider these programs to be safe and those who do not ($F = 40.704$, $p < .001$). Significant differences in GAAIS-p scores were also found between nurses who believe that these programs will reduce their workload and those who do not ($F = .442$, $p < .05$). Furthermore, there were significant differences in GAAIS scores between nurses who believe that these programs will positively affect patient care and those who do not ($F = 44.217$, $p < .001$).

Discussion

This study provides valuable insights into nurses' attitudes toward ChatGPT and other AI applications and their integration into nursing practice. The findings indicate that approximately half of the nurses surveyed had knowledge about ChatGPT and other AI programs, with those who did having higher positive AI attitude scores than those who did not. Furthermore, those who used AI applications had higher positive AI attitude scores than those who did not. Similarly, in the literature, it has been observed that nurses have a positive attitude toward the use of AI applications in supporting healthcare.^{21–23,26,27} This positive perspective is in alignment with nurses' endeavors to ascertain the potential benefits of AI programs in studies designed to enhance care practices.^{15,28} Nevertheless, despite this positive attitude, there is a continued lack of knowledge among nurses about AI applications, with usage rates remaining low.^{26,29–31} In light of these findings, it is imperative to create environments where nurses encounter AI practices more frequently and to emphasize training on this subject.

This study revealed that nurses with postgraduate education exhibited more positive attitudes toward AI. This suggests that educational level is a significant factor in developing positive attitudes toward artificial intelligence. Similarly, as the level of education increased, nurses were found to have more positive AI attitudes.^{27,32} As the level of education of nurses increases, they may be more skilled in following current developments, thinking critically, and transferring this to healthcare practices, which,

in turn, may have contributed to their attitudes toward AI practices. Therefore, the integration and use of AI applications should be expanded in nursing education.³³

In this study, similar to the findings of previous research, there was no significant difference in attitudes toward ChatGPT and AI applications between age groups.^{21,32,34} However, it should be noted that the majority of the participants were young and relatively close in age (29.4 ± 6.6). This may have obscured the distinction between the attitudes of different age groups. Furthermore, the fact that the participants were a young group limits the generalizability of inferences about nurses' attitudes toward ChatGPT and artificial intelligence. In comparison to the older population, young people may exhibit greater adaptability and more positive attitudes toward technological developments.³⁵

In our study, nurses expressed that AI programs could positively affect nursing care and contribute to professional development. Similarly, the literature indicates that AI applications can improve patient care, contribute to nursing education, support professional development, and reduce workload.^{15,23,32,36–38} This indicates that nurses recognize the potential benefits of AI applications and have a positive approach toward the integration of these technologies. It is also hypothesized that the use of ChatGPT can enhance the patient–nurse relationship by providing clinical decision support, medical record-keeping, medication management, and symptom control.^{39,40}

The results of our study indicate that individuals who perceived the use of ChatGPT and other AI programs to be safe exhibited a positive attitude toward AI. However, in contrast to our findings, previous research has highlighted concerns that AI applications may lead to privacy and security breaches.³⁰ Similarly, healthcare professionals have indicated that the utilization of ChatGPT may result in issues pertaining to misdiagnosis and medical errors, communication difficulties, and the delivery of personalized care.^{34,39} Furthermore, nurses have emphasized that AI applications should prioritize ethical considerations that safeguard patient rights, privacy, and data security.¹⁵ In light of these concerns, it is imperative to prioritize cybersecurity, medical error liability, and system failures.³⁷

In our study, nurses asserted that they did not believe AI applications would diminish the necessity for nursing care. However, concerns have been reported in the literature that AI applications may disrupt workflow, increase skill loss, and threaten their careers.^{36,41} Another source of concern regarding AI applications is that compassion and human touch, which are at the basis of nursing care philosophy, are ignored.^{15,42} The fact that AI is still an emerging technology makes it difficult to predict its potential benefits and risks. A multidimensional perspective is needed for its use in areas that directly concern human life, such as healthcare. It is thought that future integrated studies in this field will affect nurses' attitudes toward AI.

Limitations

The first limitation of this study is that sample selection creates a risk of bias. In our study, nurses who followed a social media platform and volunteered to participate in the study were reached. This may negatively affect the generalizability of the study. This survey, announced in the “Story” section on the social media platform, may only be affected by the selective attention of nurses interested in AI applications. In this regard, the results may be mirroring people already interested in this subject. Therefore, this study does not represent all nurses who follow the social media platform. Additionally, this situation represents nurses who actively use social media. In other words, the study may not be valid for nurses who do not actively use social media platforms. Also, a single platform cannot represent all Turkish nurses. To prevent this, it is recommended to conduct large sample studies with random selection representing a certain probability sample. Within the scope of this generalization limitation, study results need to be interpreted carefully. Another limitation is the lack of a valid and reliable survey form measuring nurses’ use of AI tools and chatbots in their care practices, which prevented the researchers from making comparisons in the discussion section.

Conclusion

It is essential to determine nurses’ attitudes toward AI technologies, which are increasingly gaining importance today and are expected to be frequently implemented in clinics in the future. This study in which the participants displayed positive attitudes toward AI applications provides important implications for nurses’ use of AI applications and chatbots. A significant majority of the participants agreed that ChatGPT and AI programs should be included in the development of nursing and care practices and that they would positively affect patient care. Positive attitudes toward AI applications show that these technologies to be added to nursing care can be easily accepted by nurses. However, the participants are concerned that ChatGPT and AI programs are difficult to use and risky and pose a threat to the future of nursing. Nurses’ awareness of ChatGPT and AI programs-related risks to privacy and ethical violations in patient care, and the management of these risks should be raised. It is necessary to create environments in which AI technologies that reduce nurses’ workload in the clinical area and positively affect the quality of patient care are integrated into nursing interventions.

Availability of data and material: All data and materials used in the research are kept by the researchers.

Contributorship: Study design: MT, GZT. Data collection: GZT. Data analysis: MT, GZT. Study supervision: MT, GZT.

Manuscript writing: GZT. Critical revisions for important intellectual content: MT, GZT.

Consent for publication: The participants give written and verbal consent for the anonymous publication of this study. Moreover, no personal details were revealed in the study.


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The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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