

## Trust in Artificial Intelligence Physicians among Turkish Adults

### La confianza de los adultos turcos en la atención médica basada en inteligencia artificial

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#### Abstract

Artificial intelligence has been used in the healthcare sector for an extended period, and recent advancements suggest that AI may replace human physicians in some cases. Patient trust in a physician is known to improve treatment outcomes; however, the degree of trust in AI physicians remains uncertain. Accordingly, the Trust in Physician Scale was used in this study to assess levels of trust in both human and AI physicians. In addition, five items were developed to examine factors that may either enhance or diminish trust in AI physicians. The results indicate that participants demonstrated greater trust in their own physicians regardless of the independent variables examined. With respect to AI physicians, individuals holding graduate degrees reported the lowest levels of trust. Responses further highlighted concerns regarding reliability, confidentiality, accountability, and accessibility as key factors influencing trust and distrust in AI physicians.

**Keywords:** Artificial Intelligence, Trust, Adult, Medicine

#### Resumen

La inteligencia artificial se ha utilizado en el sector salud durante un período ya prolongado, pero avances recientes hacen pensar que la IA podría sustituir a los médicos humanos en algunos casos. Se sabe que la confianza del paciente en el médico mejora los resultados del tratamiento prescrito; sin embargo, el nivel de confianza en la medicina basada en la IA sigue siendo incierto. Por consiguiente, en este estudio se utilizó la Escala de Confianza en el Médico para evaluar los niveles de confianza tanto en los médicos humanos como en la medicina artificial. Además, se desarrollaron cinco reactivos para examinar los factores que pueden aumentar o disminuir la confianza en la medicina artificial. Los resultados indican que los participantes demostraron una mayor confianza en sus propios médicos, independientemente de las variables independientes examinadas. Con respecto a los médicos virtuales, las personas con títulos de posgrado informaron los niveles más bajos de confianza. Las respuestas destacaron además las preocupaciones sobre fiabilidad, confidencialidad, rendición de cuentas y accesibilidad como factores clave que influyen sobre la confianza y la desconfianza en la medicina artificial.

**Palabras clave:** Inteligencia artificial, Confianza, Adultos, Medicina



## Introduction

The success of treatment and patient adherence is significantly influenced by the trust established in the patient-physician relationship. A crucial element of the physician-patient interaction is the patient's trust in her physician, or the belief that the physician would prioritize her best interests<sup>1</sup>. Various circumstances, including physician dominance, knowledge asymmetry, and patient weaknesses, render patients the more vulnerable party in the patient-physician interaction<sup>2</sup>. This imbalance may lead individuals to feel a lack of control over their lives, thereby fostering distrust in medical experts and the care provided. This distrust is unfavorable, as confidence in physicians and an optimistic perspective on treatments may enhance therapeutic efficacy<sup>3</sup>.

To enhance treatment efficacy, it is advisable to educate patients and actively engage them in treatment decisions, ensure their sense of security, facilitate open communication with physicians, attentively consider patient feedback, allow uninterrupted expression, allocate sufficient time to address patient needs, and avoid haste during examinations.<sup>4-5</sup>

At present, artificial intelligence (AI) significantly influences the dynamics of trust within the physician-patient interaction and may contribute to improved therapeutic outcomes. George et al.<sup>6</sup> assert that formerly, medicine was more individualized, with physicians utilizing their own expertise to diagnose patients. In contrast, currently over 70% of physicians are reported to depend on medical tests and specialized AI algorithms capable of analyzing extensive data to propose diagnosis and therapies.

AI algorithms and machine learning methodologies can assist physicians in achieving more precise diagnoses and formulating individualized treatment regimens for patients<sup>7</sup>. Generative AI is expected to assume an increasingly vital role in medicine and healthcare as it advances and becomes more tailored to the specific circumstances and needs of the medical field that are beginning to emerge<sup>8</sup>. Generative Pre-trained Transformer (GPT) models can assist

in clinical diagnosis by evaluating medical images, hence improving diagnostic accuracy and reducing interpretation time for radiologists<sup>9</sup>. GPT models, as interactive AI language systems, can engage with patients, provide educational resources, and address medical concerns, so as to augment patient participation and empowerment in health management<sup>10</sup>.

The present application of AI in medicine is confined to auxiliary functions, such as the interpretation of imaging results, diagnostic help, and the rapid processing of extensive datasets<sup>5</sup>; yet, some physicians conjecture that AI may imminently supplant human physicians<sup>11</sup>.

It represents a potential future technology that is unique in its context. In alignment with the Technology Acceptance Model, individuals are more likely to adopt technological applications when they perceive them as useful and easy to access<sup>12</sup>. However, as a relatively recent development, technologies that may replace human roles could yield significantly different outcomes. While public attitudes toward technologies that enhance quality of life have been widely studied, it remains uncertain how individuals will engage with technologies operating in deeply personal domains such as healthcare.

Existing literature has predominantly focused on evaluating the efficacy, reliability, and diagnostic accuracy of artificial intelligence in medical decision-making. However, because human values such as trust and commitment within physician-patient interactions may sometimes be insufficient or strained<sup>13</sup>, it remains uncertain how patients will perceive the integration of AI into this relationship and the extent to which they will trust AI in medical contexts.

Accordingly, this study primarily examines participants' trust in AI physicians by analyzing their responses to a set of structured questions. Specifically, it investigates whether trust in AI physicians is influenced by variables such as age, gender, education, occupation, place of residence, frequency of medical consultations, and patterns and purposes of internet use. In addition, the study explores factors that may contribute to either trust or distrust in AI physicians.

**Table 1. Demographic information about participants**

	n	Percentage
Gender		
Female	83	55.33%
Male	67	44.67%
Age		
21-29	58	38.67%
30-45	50	33.33%
46-65	42	28%
Marital Status		
Single	77	51.33%
Married		7348.67%
Education		
High school	46	30.67%
Undergraduate	80	53.33%
Graduate	24	16%
Occupancy		
Health professions	40	26.67%
Official	15	10%
Educationist	20	13.33%
Engineer	7	4.67%
Retired	10	6.67%
Laborer	27	18%
Student	31	20.67%
City		
Less than 1 million inhabitants	45	30%
Between 1-2million inhabitants	15	10%
Between 2-3 million inhabitants	57	38%
More than 3 million inhabitants	33	22%
The frequency of doctor appointments		
Once a year	52	34.67%
Twice a year	32	21.33%
Three times a year	27	18%
Four times a year	19	12.67%
Five times a year	20	13.33%
Regularity of Internet Use		
One hour each day	22	14.67%
One to three hours each day	68	45.33%
Three to six hours each day	60	40%
The Purpose of Internet Use		
X	33	22%
Instagram	72	48%
Research	16	10.67%
News	19	12.67%
Movie/Drama	10	6.67%

Source: own data

## Method and Materials

### Procedure and Participants

The study utilized an 11-item Likert-type Trust in Physician Scale. The Trust in Physician Scale and ten researcher-created questions were disseminated via Google Forms to assess trust and distrust regarding AI physicians. The form's link was converted into a QR code and distributed via email to academics, psychologists, and university students across seven districts in Türkiye. They disseminated this code via their social media networks, engaging approximately 500 persons. Participant acceptance transpired between July and August of 2024. Before responding to the questions, participants examined the introductory material related to the research and could proceed only upon confirming they were over 18 and consenting to participate willingly. The study ultimately involved 150 individuals aged 21 to 65. Table 1 delineates details regarding the participants.

### Measurements

The online questionnaire began with items assessing demographic characteristics, patterns of internet use, and purposes of internet utilization. The second section included the Trust in Physician Scale, which participants were asked to complete while evaluating their primary human physician. After completing this section, participants were presented with the same scale accompanied by modified instructions and were asked to complete it again while imagining their physician as an AI. The third section required participants to assess their trust in AI physicians by indicating whether they felt more or less confident in specific scenarios, using binary (yes/no) responses.

The demographic information section collected data on participants' age, gender, education level, occupation, marital status, city of residence, frequency of internet use, and purpose of internet use.

The Trust in Physician Scale, developed by Anderson and Dedrick<sup>14</sup>, was used to assess trust. The scale consists of eleven items, each rated on a 5-point Likert scale ranging from 1 (*strongly*

*disagree*) to 5 (*strongly agree*). Items 1, 5, 7, and 11 are negatively worded and were reverse-coded prior to analysis. Deniz and Çimen<sup>15</sup> adapted the scale for use in a Turkish population and conducted reliability analyses.

Examples of items included in the scale are as follows: *Item 2*: “My physician generally evaluates and prioritizes my requests.” *Item 5*: “I periodically scrutinize my physician’s judgment and seek alternative perspectives.” *Item 8*: “I am confident that my physician prioritizes my medical needs.” *Item 11*: “I sometimes worry that my physician may not safeguard my personal information.” When applied to assess trust in AI physicians, the scale demonstrated acceptable internal consistency, with a Cronbach’s alpha coefficient of 0.78.

In the absence of an existing instrument specifically designed to assess trust in AI physicians, the researchers developed a set of closed-ended items to identify factors that may foster trust or distrust in AI acting as a physician. These items were reviewed by two physicians and one health psychologist, who provided feedback prior to finalization. The items assessing factors that may **increase trust** in AI physicians included the following scenarios: (1) if the absolute confidentiality of personal and health-related information is ensured; (2) if it becomes easy to consult artificial intelligence for health-related issues, such as through instant access via the internet; (3) if health-related consultations with artificial intelligence become very inexpensive or free of charge; (4) if developed countries begin using artificial intelligence in healthcare and report satisfaction with its use; and (5) if artificial intelligence conducts tests, examinations, and diagnoses, in other words, manages the entire healthcare process from a single platform. The internal consistency of these items was acceptable, with a Cronbach’s alpha coefficient of 0.83.

A separate set of items was developed to examine factors that may **undermine trust** in AI

physicians. These included the following statements: (1) I cannot trust a machine or computer that I have never seen and know is not a real person; (2) it is unclear who would be held accountable if AI makes an error in diagnosis or treatment recommendations; (3) developers of AI may use my health information for their own benefit; (4) AI cannot replace a human physician because it lacks emotions, cannot provide commentary, and cannot understand me; and (5) only wealthy individuals can fully benefit from AI, while the general public will not have unlimited access. The Cronbach’s alpha coefficient for these items was 0.60.

## Results

The study data demonstrated normal distribution and homogeneity of variances; therefore, ANOVA and *t*-tests were used for statistical analysis. ANOVA was conducted to examine differences in trust in AI versus human physicians across participant characteristics, including gender, age, education level, occupation, city of residence, frequency of hospital visits, frequency of internet use, and purpose of internet use. Trust in human physicians and AI physicians was compared using a paired-sample *t*-test. In addition, participants’ distrust of AI physicians and factors aimed at enhancing trust—each assessed using five items—were analyzed.

Preliminary analysis indicated no significant differences in trust in AI physicians based on gender, age, occupation, city of residence, frequency of medical visits, internet use, or purpose of internet use; however, trust differed significantly by education level. Bonferroni post hoc analysis showed that high school graduates (mean difference = 7.13;  $p < 0.001$ ) and undergraduate degree holders (mean difference = 7.55;  $p < 0.001$ ) reported significantly higher trust in AI physicians compared with participants holding graduate degrees. These findings are presented in Table 2.

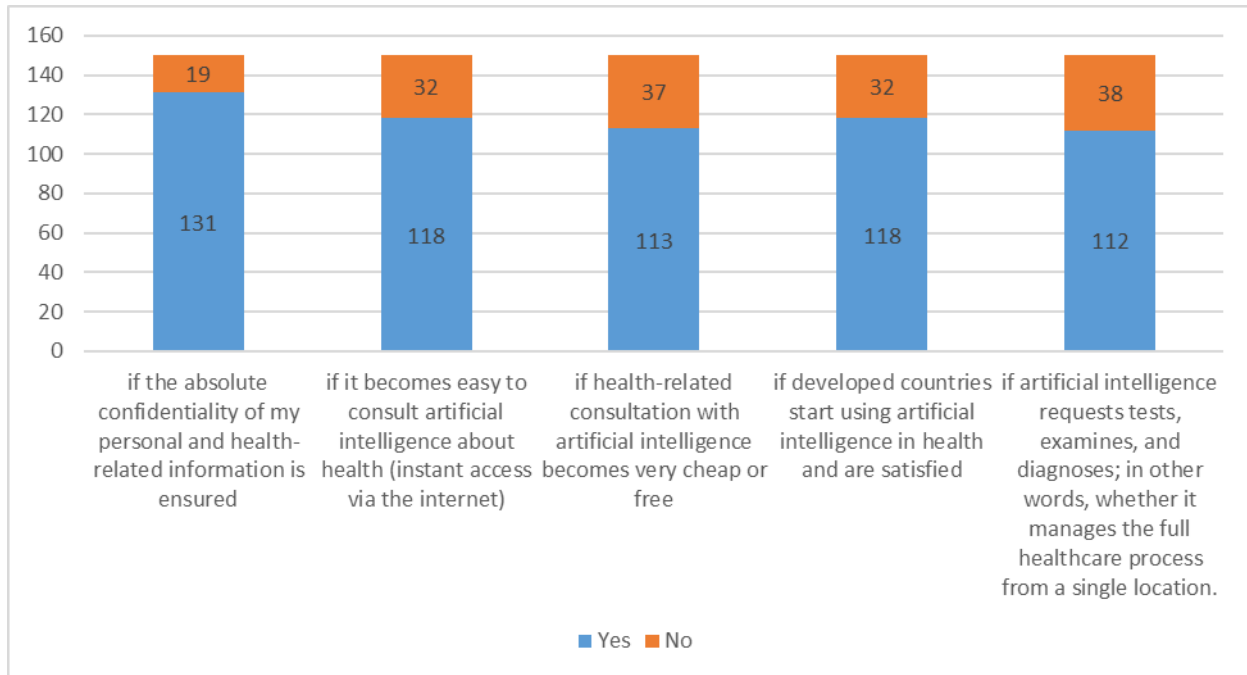
**Table 2. Comparison of trust in AI medicine with independent variables. Table 2. Comparison of trust in AI medicine with independent variables.**

n	Mea	n	SD	df	F	sig.
<b>Gender</b>				1	2.52	0.15
Female	83	38.20	5.40			
Male	67	39.67	5.87			
<b>Age</b>				2	1.18	0.31
21-29	58	38.13	5.59			
30-45	50	39.80	5,54			
46-65	42	38.86	5,82			
<b>Education</b>				2	17.85	0.00*
High school	46	38.17	6.80			
Undergraduate	80	38.60	5.39			
Graduate	24	31.01	4.57			
<b>Occupancy</b>						
Health professions	40	38.80	5.31	6	.47	0.83
Official	15	37.67	4.38			
Educationist	20	39.35	6.01			
Engineer	7	38.00	7.11			
Retired	10	40.70	5.59			
Laborer	27	39.55	5.57			
Student	31	38.17	6.36			
<b>City</b>				3	.87	0.46
Less than 1 million inhabitants	45	39.64	6.28			
Between 1-2million inhabitants	15	37.00	4.22			
Between 2-3 million inhabitants	57	38.92	5.22			
More than 3 million inhabitants	33	38.51	5.65			
<b>The frequency of doctor appointments</b>				4	.86	0.51
Once a year	52	33.30	5.39			
Twice a year	32	40.33	5.96			
Three times a year	27	39.05	5.62			
Four times a year	19	38.95	5.76			
Five times a year	20	38.00	5.37			
<b>Regularity of Internet Use</b>				2	1.30	0.28
One hour each day	12	39.75	7.04			
One to three hours each day	68	39.71	5.18			
Three to six hours each day	60	38.13	6.06			
<b>The Purpose of Internet Us</b>				4	.46	0.77
X	33	39.84	5.58			
Instagram	72	38.63	5.75			
Research	16	39.18	5.02			
News	19	38.42	6.01			
Movie/Drama	10	37.50	5.93			
<b>*p&lt; 0.00</b>						

The trust level of high school graduates and undergraduates in AI physicians was higher than that of graduates.

Source: own data

**Fig. 1. Participants' replies reveal the circumstances under which they would place their trust in artificial intelligence physicians**



Source: own data

The study demonstrated a significant difference in trust levels between AI physicians and human physicians, as reflected in participants' trust scores ( $t = 9.23$ ;  $p < 0.001$ ;  $\eta^2 = 0.37$ ). This difference was observed regardless of participant characteristics, including gender, age, education, occupation, city of residence, frequency of hospital visits, frequency of internet use, and purpose of internet use. Overall, participants exhibited significantly lower levels of trust in AI physicians compared with human physicians.

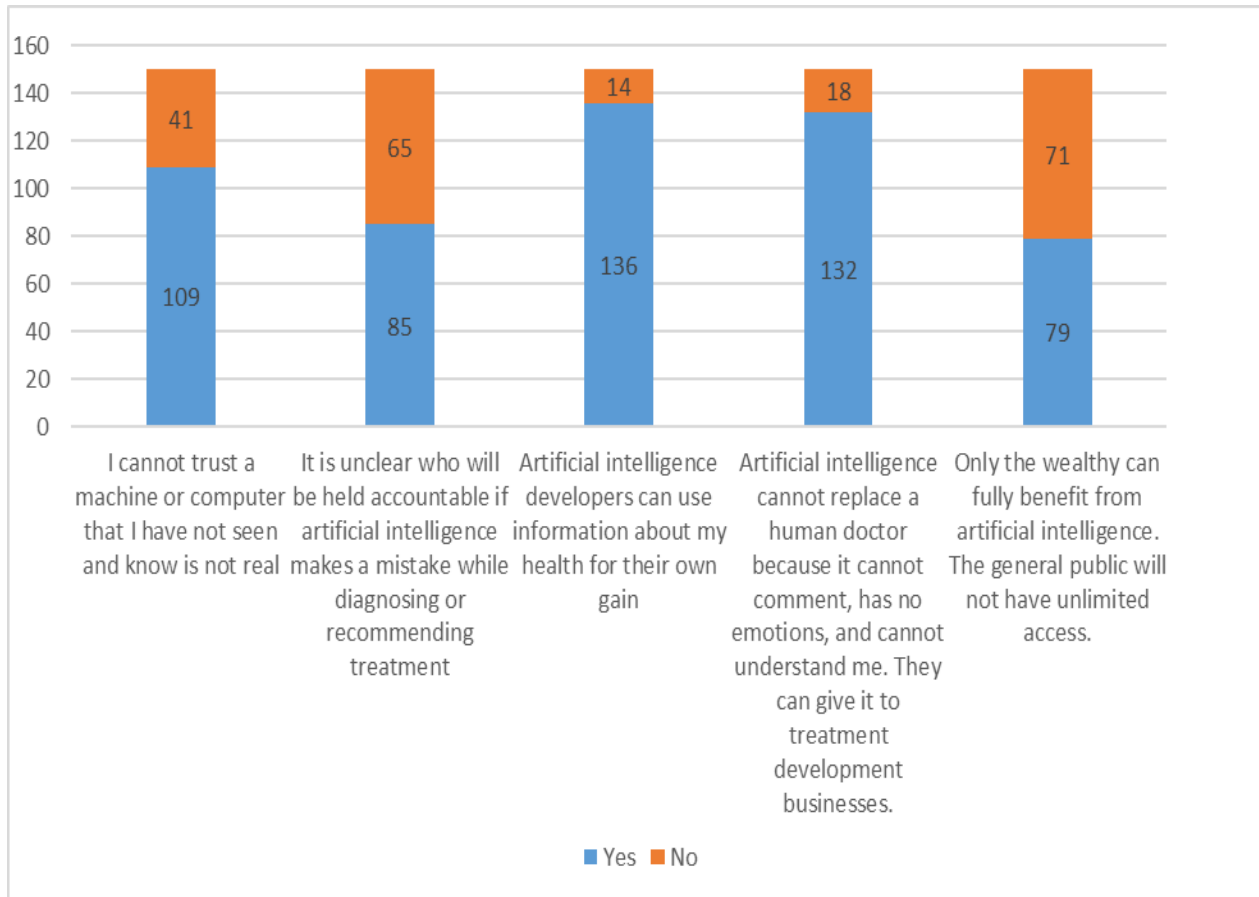
The final stage of analysis focused on participants' evaluations of AI-based medical care, specifically examining the conditions under which individuals expressed trust in AI physicians and the factors that may undermine such trust. Figure 1 presents participants' responses regarding the reasons for trusting AI physicians.

The final stage of analysis evaluated participants' perceptions of AI-based medical care, focusing on the conditions under which individuals expressed

trust in AI physicians and the factors that may undermine such trust. Figure 1 presents participants' responses regarding the reasons for trusting AI physicians.

As shown in Figure 1, 87.33% of participants indicated that they would trust an AI physician if the absolute confidentiality of their personal and health-related information were ensured. Additionally, 78.66% reported that trust would increase if consulting AI for health-related issues were easy (e.g., instant access via the internet). Approximately three-quarters of participants stated that trust would increase if AI-based health consultations were very inexpensive or free of charge (75.33%), if developed countries began using AI in healthcare and reported satisfaction with its use (78.66%), and if artificial intelligence were capable of requesting tests, conducting examinations, and making diagnoses—thus managing the entire healthcare process from a single platform (74.67%).

**Fig. 2. Factors contributing to participants' distrust of artificial intelligence physicians**



Source: own data

Participants' responses regarding factors contributing to distrust in AI physicians are presented in Figure 2. Among respondents, 72.66% reported that they could not trust a machine or computer they had not encountered and whose authenticity they questioned. More than half (56.66%) expressed uncertainty regarding who would be held accountable if AI made an error in diagnosis or treatment recommendations. A substantial majority believed that AI developers might use personal health information for their own benefit (90.66%) and that artificial intelligence could not replace a human physician due to its lack of emotions, inability to provide commentary, and limited capacity for understanding patients (88%). Additionally,

56.66% of participants believed that only wealthy individuals would fully benefit from AI, while the general public would not have unrestricted access.

### Discussion

Artificial intelligence is currently being used in healthcare, and its areas of application are expanding rapidly. Existing studies have largely focused on evaluating the effectiveness, reliability, and diagnostic accuracy of AI-based medical systems<sup>16</sup>. However, because human values such as trust and commitment are not always fully present in physician–patient interactions<sup>17</sup>, it remains unclear how patients will perceive AI when it is introduced in the role of a physician and to what extent they will trust it.

Although evidence suggests that most patients generally trust physicians to prioritize their best interests, growing concern has emerged that rapid and large-scale transformations within healthcare systems may place pressure on this trust and potentially undermine it<sup>18</sup>. Research conducted in Türkiye has produced mixed findings: while some studies report high levels of trust in physicians<sup>15</sup>, others indicate only moderate trust<sup>19</sup>. Bayın Donar et al.<sup>20</sup> reported that having a relative working in healthcare, undergoing frequent medical checkups, income level, and educational attainment significantly influence trust in the healthcare system. However, to date, no studies have specifically examined trust in AI physicians or AI-driven medical interventions. From this perspective, the present study aimed to analyze individuals' trust in AI physicians and to identify factors contributing to initial trust or distrust.

This study compared participants' trust in their own physicians with their trust in a hypothetical AI physician. The results demonstrated that participants exhibited significantly greater trust in their own physicians, regardless of the independent variables examined. Nevertheless, analyses focusing specifically on trust in AI physicians revealed that individuals with graduate-level education exhibited the lowest levels of trust.

Although the literature on this topic remains limited, existing research suggests that trust in AI within medical contexts may vary depending on specific circumstances. Juravle et al.<sup>21</sup> examined participants' confidence in AI-assisted diagnostics and found that participants preferred human physicians over AI for second opinions, with trust in AI declining when serious illnesses were involved. Notably, when participants were allowed to choose their physician, confidence in AI diagnoses increased substantially, and the trust gap between AI and human diagnoses disappeared when participants freely selected AI over human physicians. Accordingly, the use of AI in diagnosing non-severe conditions may lead to greater acceptance and increased trust in AI-based medical care.

In contrast to the aforementioned study, the present research evaluated trust in an AI physician

conceptualized as independently performing all clinical functions, including diagnosis. When comparing trust levels between AI and human physicians— independent of demographic and behavioral variables— trust in human physicians was significantly higher. One possible explanation is that receiving healthcare services exclusively through AI, without human interaction, represents a fundamentally different and more demanding conceptual shift than using AI as a supportive diagnostic tool.

Notably, educational status emerged as the only variable associated with significant differences in trust. In this study, individuals with graduate-level education—including physicians, professors, and engineers— demonstrated lower levels of trust in AI physicians compared to those with lower educational attainment. Higher education was associated with more critical responses to items assessing conditions that might increase trust in AI physicians. This finding suggests that greater domain knowledge and professional familiarity with healthcare or technology may foster heightened awareness of the limitations, ethical concerns, and accountability challenges associated with AI-based medical care.

These findings are partially consistent with previous research. For example, a study examining graduates' trust in AI reported that medical students perceived AI in medicine as credible, trustworthy, and technically competent, while simultaneously expressing limited trust in its clinical judgment and decision-making capabilities<sup>22</sup>. This nuanced perspective may help explain why individuals with advanced education demonstrate cautious or restrained trust in AI physicians.

Studies involving graduate students and professionals in the health sciences suggest that these practitioners develop refined clinical judgment through extensive practical experience and may cultivate a degree of skepticism toward tools that lack human intuition and adaptability. Their daily practice involves complex decision-making processes that integrate patient history, individualized care, and ethical considerations, which remain beyond the capabilities of current AI systems<sup>23–25</sup>. Furthermore, concerns regarding potential job displacement, the erosion of clinical

skills, and the possibility that AI may reduce hands-on training opportunities for future clinicians may further contribute to reluctance to fully integrate such technologies (26). Apprehensions related to data privacy, cybersecurity, and the risk of AI-related errors resulting in serious clinical consequences may also intensify this hesitancy<sup>27</sup>. Consequently, advanced practitioners tend to evaluate not only the technical performance of AI systems but also their ability to uphold ethical standards and humanistic values that are central to high-quality patient care.<sup>28</sup>

Given the limited prior research specifically examining the relationship between educational level and trust in AI physicians, it is necessary to consider broader literature addressing the association between educational attainment and general trust. While some studies indicate that trust in physicians increases with higher educational levels and socioeconomic status<sup>29</sup>, other studies report the opposite association<sup>30</sup>. These findings challenge the assumption that education universally enhances trust. In contexts characterized by high levels of corruption, education has been shown to reduce interpersonal trust<sup>31</sup>. Similarly, Wu<sup>32</sup> reported that although education positively influences social trust in stable societies with low levels of conflict, this relationship may become negative in transitional societies where social and political risks are more prevalent.

Moreover, the higher level of distrust toward AI physicians observed among graduates may be explained by their enhanced critical thinking abilities and by the four criteria for trust and acceptance of AI systems proposed by Gillespie et al.<sup>33</sup>. Critical thinking is a core component of higher education across many disciplines<sup>34</sup> and aims to equip learners with the capacity to engage constructively with emerging challenges and to respond effectively to complex global issues<sup>35</sup>. As a result, graduates generally demonstrate stronger critical evaluation skills than individuals with lower levels of educational attainment. This may position them as the group most likely to express reservations about trusting AI in medical contexts, particularly given that AI medicine remains largely conceptual and is characterized by substantial uncertainty.

In *Confidence in Artificial Intelligence*, Gillespie et al.<sup>33</sup> identified four key determinants influencing confidence in and acceptance of AI systems. Institutional drivers refer to safeguards and the belief that existing laws, regulations, and governance frameworks adequately ensure the safe use of AI, as well as trust in governmental, technological, and commercial organizations to develop, implement, and oversee AI systems. Motivational drivers concern the perceived benefits of AI, reflecting the extent to which individuals expect advantages from the use of AI technologies. Uncertainty-related drivers involve perceived risks, capturing the degree of concern individuals have regarding potential negative consequences associated with AI use. Knowledge drivers encompass subjective knowledge, specifically individuals' self-assessed understanding of AI and its applications, as well as technological efficacy, defined as individuals' perceived competence in using digital technologies and online services.

Based on the elements outlined by Gillespie et al.<sup>33</sup> regarding trust in AI, it can be argued that state authorities have not yet adequately evaluated the safety of AI systems, while the intended users, timing, context, and methods of implementation remain unclear. In addition, the potential benefits of AI are uncertain, and the associated risks are not clearly defined. Moreover, educational level emerged as the variable most strongly associated with responses to items reflecting distrust in AI, including concerns about its lack of authenticity, ambiguity surrounding accountability, potential threats to personal data security, and the perception that AI services may benefit only specific population groups. Critical thinking skills may heighten graduates' awareness of these issues, contributing to their more cautious evaluations of AI reliability.

It is important to note, however, that participants did not express absolute distrust toward AI physicians. Rather, respondents indicated that their trust in AI physicians would increase under certain conditions, including guaranteed protection of personal data, improved accessibility and affordability, evidence of successful implementation in developed countries, and the ability of AI systems to manage diagnosis and

treatment efficiently through a single, integrated platform.

## Conclusions

Consequently, although AI is currently employed in the medical domain, especially in radiography and diagnostics, it is a possibility that this technology could completely supplant human physicians in the future. To examine this possibility, the present study investigated differences in trust between human and AI physicians. The findings indicate that participants consistently reported greater trust in their own physicians, regardless of independent variables. However, analysis of trust in AI physicians revealed that individuals with graduate-level education exhibited the lowest levels of trust.

Graduates may demonstrate reduced confidence in AI physicians due to their heightened critical thinking skills, as AI physicians remain largely theoretical and are characterized by considerable uncertainty. At present, authorities have not comprehensively evaluated the safety of AI in medicine, and the intended users, timing, context, and methods of implementation remain unclear. Moreover, the potential benefits of AI are not fully established, and the associated risks are insufficiently defined. In addition to concerns related to accuracy, ethics, stability, and reliability, patients' perceptions of AI physicians must also be considered.

Patients typically prefer physicians who listen attentively, understand their concerns, and establish interpersonal connections. The duration and quality of physician–patient interactions, responsiveness to patient questions, and the development of trust that fosters a sense of security all contribute to improved treatment adherence. Persistent concerns regarding reliability may lead individuals to avoid forming relationships with AI physicians, which are often perceived as emotionless and impersonal. These challenges represent potential relational barriers that may emerge in future healthcare settings. To increase acceptance, AI physicians must be designed to support meaningful patient interaction while ensuring strict protection of personal health data. Clear delineation of responsibilities,

accountability, and governance structures will also be essential.

## Limitations

The intended sample size for this study was set at 350; however, only 150 participants were addressed throughout the data collection phase. This constrains the study's representational capacity; yet, post-hoc power analysis revealed that the current sample yielded substantial power for the pertinent statistical tests. Although this research included individuals from seven geographical regions of Türkiye, participant assignment was not random. The participants were persons who actively use the internet and have at least a high school education. Additionally, in light of the lack of real-world AI physicians, trust in AI was evaluated hypothetically. Future studies may evaluate the dynamics of trust and distrust in AI physicians from more nuanced perspectives, and using a broader range of participants.

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