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**ORIGINAL ARTICLE /** ARAŞTIRMA YAZISI Physical Medicine and Rehabilitation/Fiziksel Tıp ve Rehabilitasyon

# Attitudes Toward Artificial Intelligence Among Physiotherapy and Rehabilitation Students: A Cross-Sectional Study

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**ABSTRACT**

**Purpose:** The aim of this study was to investigate the attitudes of Physiotherapy and Rehabilitation students towards Artificial Intelligence (AI) and to compare the attitudes towards AI according to sociodemographic variable.

**Methods:** 212 students participated in this study. Participants' demographic data were recorded using a sociodemographic data form. Students' attitudes toward AI were surveyed with the General Attitudes toward Artificial Intelligence Scale (GAAIS). This study was designed as a cross-sectional study.

**Results:** Positive attitude scores differed significantly according to daily internet use duration (Kruskal–Wallis $H = 17.934$, $p = 0.001$), with higher scores observed among students using the internet more than four hours per day ($47.04 \pm 7.83$). Negative attitude scores differed significantly by accommodation type (ANOVA $F = 2.26$, $p = 0.003$) and source of scholarship income (Kruskal–Wallis $H = 2.772$, $p = 0.028$). No significant differences were found according to age, gender, class level, type of high school graduated, perceived income status, and parental education level ($p > 0.05$).

**Conclusion:** Students had positive attitudes toward AI. Moreover, while students' attitudes were not affected by sociodemographic variables. However, greater use of the internet and AI was associated with more positive attitudes.

**Keywords:** Attitude to Computer, Artificial Intelligence, Rehabilitation, Health Occupations Students, Health Education

**ÖZET**

**Amaç:** Bu çalışmanın amacı, Fizyoterapi ve Rehabilitasyon öğrencilerinin Yapay Zeka (YZ) konusundaki tutumlarını araştırmak ve sosyodemografik değişikliklere göre YZ'ye yönelik tutumları karşılaştırmaktı.

**Yöntem:** Bu çalışmaya 212 öğrenci katıldı. Katılımcıların demografik verileri sosyodemografik veri formu kullanılarak kaydedildi. Öğrencilerin yapay zekaya yönelik tutumları, Yapay Zekaya Yönelik Genel Tutum Ölçeği (YZYGTÖ) ile araştırıldı.

**Bulgular:** Olumlu tutum puanları, günlük internet kullanım süresine göre önemli ölçüde farklılık gösterdi (Kruskal–Wallis $H = 17,934$, $p = 0,001$) ve günde dört saatten fazla internet kullanan öğrenciler arasında daha yüksek puanlar gözlemlendi ($47,04 \pm 7,83$). Olumsuz tutum puanları, konaklama türüne (ANOVA $F = 2,26$, $p = 0,003$) ve burs gelirinin kaynağına (Kruskal–Wallis $H = 2,772$, $p = 0,028$) göre önemli ölçüde farklılık gösterdi. Yaş, cinsiyet, sınıf seviyesi, mezun olunan lise türü, algılanan gelir durumu ve ebeveynlerin eğitim seviyesi açısından önemli bir fark bulunmamıştır ($p > 0,05$).

**Sonuç:** Öğrenciler yapay zekaya karşı olumlu tutum sergiledi. Ayrıca, öğrencilerin yapay zekaya karşı tutumları sosyodemografik değişkenlerden etkilenmezken, internet ve yapay zekanın daha fazla kullanılması daha olumlu tutumlara katkıda bulundu.

**Anahtar Kelimeler:** Bilgisayara Karşı Tutum, Yapay Zeka, Rehabilitasyon, Sağlık Meslekleri Öğrencileri, Sağlık Eğitimi

Artificial Intelligence (AI) involves developing data-driven computational systems that can analyse complex datasets and perform cognitive tasks such as classification, prediction and decision support (1). Machines equipped with AI are being endowed with cognitive abilities such as perception, reasoning, learning, problem solving, and decision making. AI has gained significant prominence in healthcare, where it is used for diagnosis and prediction, as well as for providing clinical decision support and personalised treatment planning (2). Advances in AI have substantially improved the predictive performance of various applications. As AI models have become more accurate and robust, they have been increasingly adopted in the medical field. The objective is to improve the quality of healthcare and contribute to better long-term health outcomes (3).

The utilisation of AI in medicine is becoming increasingly prevalent on a daily basis. Given the complexity of diagnostic and therapeutic decision-making, AI-based tools may assist clinicians by providing data-driven insights and supporting clinical decision processes. The incorporation of AI within this process serves to minimise the margin of error (4). The utilisation of AI can help to make diagnoses earlier and more accurately. Such applications could contribute to better clinical outcomes, more efficient use of resources, and improved rehabilitation processes (5). Advances in treatment processes have been associated with improved survival rates. It is evident that alongside the rise in survival rates, there is an increase in the prevalence of physical disability (6). This increase has highlighted the importance of rehabilitation practices. The main issue is participation the rehabilitation program. A multitude of impediments have been identified that contribute to non-compliance. A number of factors have been identified as contributing to the issue, including, but not limited to, low doctor referrals, a lack of social support, transportation problems, low confidence in the expected benefits of rehabilitation, and timing issues (7).

Participation in physical therapy and rehabilitation programs is closely related to frequency of prescribed exercise performance.The extent to which the programme is able to deliver the anticipated benefits is contingent upon two factors: first, adherence to the programme's guidelines, and second, the precise execution of the prescribed exercises (8). In order to enhance this harmony, it is essential to develop innovative ideas with the aim of overcoming the barriers to programme participation. Recent research on the effectiveness of technology-based AI-assisted rehabilitation methods offers promising data for closing this gap. Telerehabilitation-based applications, virtual reality and augmented reality applications, robotic rehabilitation, and wearable sensors are important rehabilitation tools that enable integration with AI (9,10). These applications provide an opportunity to offer effective therapeutic interventions to increase participation in rehabilitation, fortifying patient motivation, and support participation (11). AI systems offer capabilities for storing and analyzing complex data, supporting objective assessment, informing discharge planning, facilitating high-intensity programs, enabling personalized rehabilitation, and improving cost efficiency. Data security and ethical issues, resource limitations, low levels of knowledge about AI among patients and healthcare professionals, and insufficient guidelines are the main obstacles to the use of this technology (12). Addressing these obstacles could pave the way for the effective and safe use of AI in rehabilitation.

Physical therapists, an important part of the rehabilitation team, play a critical role in the quality of the rehabilitation process. They make significant contributions in areas such as providing exercise prescriptions, reviewing rehabilitation protocols, and monitoring compliance and adherence to exercise (13). As AI-based assessment tools, robotic rehabilitation systems and decision support technologies become more integrated into physiotherapy practice, clinicians must not only use these systems competently, but also critically evaluate their ethical, clinical and safety implications. In this context, the attitudes of physiotherapy students towards AI may influence their future clinical decision-making, affect patient trust and adherence to AI-supported interventions, and impact the safe implementation of emerging technologies in rehabilitation settings. Therefore, it is essential to understand students' attitudes towards AI in order to anticipate how these technologies will be integrated into clinical practice.It was hypothesised that students' attitudes towards artificial intelligence differ according to their sociodemographic characteristics, and that these attitudes are significantly associated with their awareness of and habits regarding the use of AI.

The aim of the study was to find the attitudes of Physiotherapy and Rehabilitation students toward AI and to compare their attitudes according to sociodemographic changes and AI awareness and usage habits.

## Methods and Method

### *Study design*

This cross-sectional, non-interventional study examined the attitudes of physiotherapy and rehabilitation students towards artificial intelligence. Ethical approval was obtained from the İnonu University Health Sciences Scientific Research Ethics Committee (Approval No: 2025/8421; Date: 30-09-2025). The required institutional permissions were also obtained before data collection

began. All procedures were carried out in accordance with the ethical standards of the Declaration of Helsinki. Students were provided with detailed information regarding the study's purpose and procedures at the baseline. Participation was entirely voluntary, and written informed consent was obtained from each participant.

### *Participants*

The study population included all students registered in the Physiotherapy and Rehabilitation Department of the Faculty of Health Sciences at Iğdır University during the 2024–2025 academic year. The study aimed to reach the entire target population. As of the 2024-2025 academic year, there are a total of 290 students; of these, 212 (73.1%) have agreed to participate in the study on a voluntary basis. A post-hoc power analysis was conducted to determine the adequacy of the study's sample size. The post hoc power analysis indicated that the study had a statistical power of 0.95 at a significance level of 0.05.

Inclusion criteria were as: being student in the Physiotherapy and Rehabilitation department, being 18 years of age or older, participating voluntarily, and being able to read and understand the survey in Turkish. Participants who failed to complete all items of the structured survey were excluded from the final analysis.

### *Measurements*

The online platform Google Forms (Google LLC, Mountain View, California, USA) was used during the data collection process. A data collection form was designed to be accessible only through the researcher's Google account to protect data security. The form link was sent to students via WhatsApp (Meta Platforms Inc., California, USA), and participants were asked to voluntarily complete the form on their own devices.

The data collection form consists of two sections: a "Personal Information Form" and a "General Attitudes toward Artificial Intelligence Scale (GAAIS)."

### *Personal Information Form*

This form was developed by the researcher to determine students' sociodemographic characteristics and knowledge levels regarding AI. The form, developed in line with relevant literature, aims to assess variables such as age, gender, grade level, income, type of high school graduated from, and parental education level, as well as students' internet usage time, awareness of AI technologies, and usage habits.

## GAAIS

This scale was developed by Schepman and Rodway to assess individuals' general attitudes towards AI (14). The Turkish adaptation of the scale was carried out by Kaya et al. (2024) (15). The scale comprises two subdimensions: Positive GAAIS and Negative GAAIS. It includes a total of 20 items, with 12 items reflecting positive statements and 8 items reflecting negative statements. Responses are scored on a five-point Likert scale (1 = Strongly disagree, 5 = Strongly agree). The score range is 12–60 for the positive attitude subscale and 8–40 for the negative attitude subscale (16).

### *Statistical Analysis*

Statistical analyses were conducted using IBM SPSS Statistics version 27.0. Continuous variables were summarized as mean ± standard deviation (Mean ± SD) or median (min–max), while categorical data were presented as frequencies (n) and percentages (%). The Kolmogorov–Smirnov test was applied to evaluate the normality of data distribution. For comparisons between two groups, the independent samples t-test was used when the data met normality assumptions, whereas the Mann–Whitney U test was applied for non-normally distributed variables. For comparisons across three or more groups, one-way analysis of variance (One-Way ANOVA) was employed for normally distributed data, and the Kruskal–Wallis test was used for data that did not follow a normal distribution. In cases where significant differences were identified, Bonferroni-adjusted post hoc tests were performed to determine the source of the differences. Effect size was calculated using eta squared ($\eta^2$). $\eta^2 < 0.02$ was interpreted as small effect, $0.02 \leq \eta^2 < 0.06$ as small-to-medium transition, $0.06 \leq \eta^2 < 0.14$ as medium effect, and $\eta^2 \geq 0.14$ as large effect. A p-value of <0.05 was considered statistically significant for all analyses.

## Results

The socio-demographic characteristics and knowledge levels of the students are presented in Tables 1 and 2, respectively. These findings provide a foundation for understanding students' attitudes towards artificial intelligence and set the stage for discussing factors associated with these attitudes. Participants' positive GAAIS scores ranged from 12 to 60, mean of 41.10±9.88. Negative GAAIS scores ranged from 8 to 40, mean of 24.60±7.15.

| **Table 1.** Sociodemographic Characteristics of the Students | | | |
|---|---|---|---|
| **n=212** | | **Mean± SD** | **Median (Min-Max)** |
| **Age (years)** | | 21.03±1.954 | 21.00(17-28) |
| | | **n** | **%** |
| **Gender** | Female | 149 | 70.3 |
| | Male | 163 | 29.7 |
| **Class** | 1st Class | 54 | 25.5 |
| | 2nd Class | 57 | 26.9 |
| | 3rd Class | 42 | 19.8 |
| | 4th Class | 59 | 27.8 |
| **Daily Internet Use Duration** | 30 min-1 hour | 15 | 7.1 |
| | 1-2 hours | 35 | 16.5 |
| | 2-3 hours | 55 | 25.9 |
| | 3-4 hours | 50 | 23.6 |
| | More than 4 hours | 57 | 26.9 |
| **Accommodation Type** | Dormitory | 171 | 80.7 |
| | House | 33 | 15.6 |
| | Apartment | 3 | 1.4 |
| | Family home | 5 | 2.4 |
| **Source of Income** | Scholarship | 88 | 41.5 |
| | Student loan | 21 | 9.9 |
| | Family support | 89 | 42 |
| | Earning income by working | 9 | 4.2 |
| | Other | 5 | 2.4 |
| **Type of High School Graduated** | Science High School | 14 | 6.6 |
| | Anatolian High School | 167 | 78.8 |
| | Vocational High School | 15 | 7.1 |
| | Other | 16 | 7.5 |
| **Perceived Income Level** | Income Less Than Expenses | 80 | 37.7 |
| | Income Equals Expenses | 126 | 59.4 |
| | Income More Than Expenses | 6 | 2.8 |
| **Mother's Education Level** | Elementary School | 120 | 56.6 |
| | Middle School | 34 | 16 |
| | High School | 40 | 18.9 |
| | University | 17 | 8 |
| | Postgraduate | 1 | 0.5 |
| **Father's Education Level** | Elementary School | 82 | 38.7 |
| | Middle School | 57 | 26.9 |
| | High School | 47 | 22.2 |
| | University | 22 | 10.4 |
| | Postgraduate | 4 | 1.9 |
| **Technological Devices Used[a]** | Smartphone | 212 | 100 |
| | Tablet | 53 | 25 |
| | Personal computer | 60 | 28.3 |
| | Smartwatch/wearable technology | 22 | 10.4 |
| | Other | 8 | 3.8 |

*SD: Standard deviation. n: Frequencies, % Percentage, [a]: The possibility of marking more than one option is provided*

| **Table 2.** Students' knowledge status regarding artificial intelligence technologies | | | |
|---|---|---|---|
| **n=212** | | **n** | **%** |
| **Frequency of Using Artificial Intelligence Applications** | Never | 6 | 2.8 |
| | Rarely | 45 | 21.2 |
| | Occasionally | 92 | 43.4 |
| | Frequently | 50 | 23.6 |
| | Every day | 19 | 9 |
| **Have you previously received training on AI technologies?** | Yes | 34 | 16 |
| | No | 178 | 84 |
| **Have you ever used an application that incorporates AI?** | Yes | 145 | 68.4 |
| | No | 67 | 31.6 |
| **Do you have general knowledge about artificial intelligence?** | Yes | 154 | 72.6 |
| | No | 58 | 27.4 |
| **Purpose of Using Artificial Intelligence[a]** | Game | 19 | 9.1 |
| | Translation | 61 | 29.2 |
| | Homework-Research | 173 | 82.8 |
| | Design | 37 | 17.7 |
| | Information | 146 | 69.9 |
| | Curiosity | 100 | 47.8 |
| **AI Tools Known by Students[a]** | ChatGPT | 212 | 100 |
| | CoPilot | 32 | 15.1 |
| | Synk | 5 | 2.4 |
| | Replit | 3 | 1.4 |
| | Dall-E | 1 | 0.5 |
| | LitMaps | 1 | 0.5 |
| | Murf | 2 | 0.9 |
| | Wix | 4 | 1.9 |
| **Sources of Information About AI[a]** | Internet | 193 | 91.5 |
| | Social Media | 129 | 61.1 |
| | Books-Magazines | 31 | 14.7 |
| | Friends-Family | 50 | 23.7 |
| | School | 24 | 11.4 |
| *n: Frequencies, % Percentage, [a]:The possibility of marking more than one option is provided* | | | |

General AI attitude scores did not differ significantly across socio-demographic variables, including age, gender, academic year, type of accommodation, income source, type of high school graduated from, perceived income status, and parental educational level ($p > 0.05$). However, positive attitude scores varied significantly according to daily internet use ($p < 0.001$; $\eta^2=0.203$). Bonferroni-adjusted post hoc comparisons indicated that students who used the internet for more than four hours per day had significantly higher positive attitude scores than those who used it for 30 minutes–1 hour, 1–2 hours, 2–3 hours, or 3–4 hours. Additionally, students who reported 1–2 hours of daily internet use scored significantly higher than those who reported 30 minutes–1 hour of use ($p = 0.003$; $p < 0.001$; $p = 0.004$; $p < 0.001$; $p < 0.001$, respectively).

Negative attitude scores differed significantly according to income level ($p = 0.028$). Bonferroni-adjusted post hoc comparisons demonstrate that students reporting "other income sources" had significantly higher negative attitude scores than those supported by scholarships, family assistance, or personal employment income ($p = 0.015$; $p = 0.014$; $p = 0.036$, respectively) (Table 3).

**Table 3.** Comparison of General Attitudes toward Artificial Intelligence Scale scores according to students' socio-demographic characteristics

| | | Positive attitude | | Eta kare ($\eta^2$) | *p* | Negative attitude | | Eta kare ($\eta^2$) | Test value | *p* |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Mean±SD | Median (Min-Max) | | | Mean±SD | Median (Min-Max) | | | |
| **Age (years)** | Ages 18-19 | 41.04±10.80 | 43(16-60) | 0.010 | 0.577[b] | 24.30±6.86 | 25(8-40) | 0.007 | F:0.497 | 0.685[c] |
| | Ages 20 | 40.87±9.95 | 43(13-60) | | | 24.70±7.63 | 24(8-40) | | | |
| | Ages 21 | 43.26±9.31 | 44(23-59) | | | 25.91±7.67 | 26(13-40) | | | |
| | Ages 22 and above | 40.40±9.59 | 42(12-58) | | | 24.20±6.88 | 24(8-40) | | | |
| **Gender** | Female | 41.02±9.89 | 42(12-60) | <0.001 | 0.767[a] | 24.32±7.04 | 24(8-40) | 0.004 | t:-0.881 | 0.695[d] |
| | Male | 41.30±9.93 | 44(18-60) | | | 25.27±7.40 | 26(8-40) | | | |
| **Class** | 1st Class | 40.74±10.92 | 43(12-60) | 0.001 | 0.988[b] | 23.65±7.31 | 24(9-40) | 0.019 | F:1.352 | 0.259[c] |
| | 2nd Class | 41.42±9.55 | 43(13-60) | | | 25±6.74 | 26(8-40) | | | |
| | 3rd Class | 40.86±11.20 | 43.50(15-60) | | | 26.29±8.12 | 25(8-40) | | | |
| | 4th Class | 41.31±8.32 | 42(13-58) | | | 23.90±6.55 | 25(10-40) | | | |
| **Daily Internet Use Duration** | 30 min-1 hour | 30±12.56 | 33(12-46) | 0.203 | **<0.001**[b] | 21.80±7.58 | 23(8-37) | 0.036 | F:1.934 | 0.106[c] |
| | 1-2 hours | 41.40±7.26 | 42.00(24-55) | | | 25.17±8.53 | 24(12-40) | | | |
| | 2-3 hours | 38.98±9.32 | 42(13-59) | | | 24.31±6.92 | 25(8-39) | | | |
| | 3-4 hours | 39.80±9.35 | 42.50(15-54) | | | 23.36±6.80 | 24(9-37) | | | |
| | More than 4 hours | 47.04±7.83 | 46(31-60) | | | 26.37±6.36 | 27(12-40) | | | |
| **Accommodation Type** | Dormitory | 40.93±10.06 | 43(12-60) | 0.004 | 0.822[b] | 23.99±7.26 | 24(8-40) | 0.032 | F:2.26 | 0.083[c] |
| | House | 41.41±9.68 | 42(19-59) | | | 27.15±6.44 | 27(12-40) | | | |
| | Apartment | 41±9.53 | 40(30-47) | | | 28.33±6.35 | 32(21-32) | | | |
| | Family home | 45±5.87 | 45(38-53) | | | 26.60±4.03 | 25(23-33) | | | |
| **Source of Income** | Scholarship | 41.10±10.08 | 43(12-60) | 0.018 | 0.238[b] | 24.32±7.42 | 24(8-40) | 0.051 | F:2.772 | **0.028**[c] |
| | Student loan | 40.62±10.30 | 44(19-59) | | | 25.48±7.99 | 24(8-39) | | | |
| | Family support | 40.99±9.41 | 43(16-60) | | | 24.25±6.46 | 24(9-40) | | | |
| | Earning income by working | 38.89±12.77 | 36(19-59) | | | 23.33±6.89 | 23(13-33) | | | |
| | Other | 49.20±6.49 | 49(43-58) | | | 34.60±5.12 | 33(29-40) | | | |
| **Type of High School Graduated** | Science High School | 40.71±12.25 | 42(15-60) | <0.001 | 0.889[b] | 22.07±8.59 | 20.5(9-40) | 0.015 | F:1.083 | 0.357[c] |
| | Anatolian High School | 41.14±10.08 | 43(12-60) | | | 24.53±7.13 | 24(8-40) | | | |
| | Vocational High School | 41.13±5.74 | 43(25-48) | | | 26.13±4.98 | 27(18-36) | | | |
| | Other | 41±9.38 | 42.50(19-60) | | | 26.19±7.60 | 27(13-40) | | | |
| **Perceived Income Status** | Income Less Than Expenses | 41.51±9.46 | 44(17-60) | 0.004 | 0.511[b] | 25.05±7.51 | 25(8-40) | 0.004 | F:0.454 | 0.636[c] |
| | Income Equals Expenses | 40.71±10.35 | 42(12-60) | | | 24.25±7.05 | 24(8-40) | | | |
| | Income More Than Expenses | 43.83±3.76 | 43.83(37-48) | | | 26.17±3.37 | 26.50(20-30) | | | |
| **Mother's Education Level** | Elementary School | 40.93±10.61 | 43(12-60) | 0.005 | 0.748[b] | 23.34±7.22 | 23.50(8-38) | 0.041 | F:2.230 | 0.067[c] |
| | Middle School | 40.32±9.23 | 41.50(17-60) | | | 26.32±7.30 | 25(12-40) | | | |
| | High School | 42.13±9.05 | 44(19-60) | | | 26.28±7.10 | 26(12-40) | | | |
| | University | 41.76±8.32 | 43(20-60) | | | 26.18±5.04 | 26(18-37) | | | |
| | Postgraduate | 36,00±7.23 | 36(36-36) | | | 24±4.96 | 24(24-24) | | | |
| **Father's Education Level** | Elementary School | 39.57±10.83 | 43(12-60) | 0.024 | 0.263[b] | 24.00±6.96 | 24.50(8-37) | 0.041 | F:2.235 | 0.066[c] |
| | Middle School | 42.91±9.30 | 44(19-60) | | | 24.89±7.60 | 24(10-40) | | | |
| | High School | 41.91±9.72 | 43(13-60) | | | 23.77±7.43 | 23(9-40) | | | |
| | University | 41.27±7.98 | 43(20-60) | | | 28.50±5.37 | 29.50(18-37) | | | |
| | Postgraduate | 36.25±4.64 | 37(30-41) | | | 21.25±3.20 | 21.50(18-24) | | | |

*SD: Standard deviation, Min:Minimum, Max:Maximum, [a], Mann-Whitney U Test, [b], Kruskal–Wallis test, [c], One Way ANOVA Test, [d], Student-t Test*

**Table 4.** Comparison of General Attitudes toward Artificial Intelligence Scale scores based on questions about technology and artificial intelligence

| | | Positive attitude | | p | Negative attitude | | Test value | p |
|---|---|---|---|---|---|---|---|---|
| | | Mean± SD | Median (Min-Max) | | Mean± SD | Median (Min-Max) | | |
| **Frequency of Using Artificial Intelligence Applications** | Never | 32±15.38 | 34(13-53) | **0.02**[b] | 25.67±10.03 | 25(9-37) | F:0.686 | 0.603[c] |
| | Rarely | 37.33±10.94 | 37(15-58) | | 24.40± 7.59 | 24.40(8-40) | | |
| | Occasionally | 41.33±7.95 | 43(13-60) | | 25.01±6.27 | 25(8-39) | | |
| | Frequently | 42.92±10.22 | 45(12-60) | | 23.36±7.55 | 24(8-40) | | |
| | Every day | 47.05±8.53 | 48(33-60) | | 26.05±8.25 | 25(12-40) | | |
| **Have you previously received training on AI technologies?** | Yes | 39.85±9.55 | 42(13-59) | 0.412[a] | 26.03±6.94 | 26(12-40) | t:1.270 | 0.205[d] |
| | No | 41.34±9.95 | 43(12-60) | | 24.33±7.17 | 24(8-40) | | |
| **Have you ever used an application that incorporates AI?** | Yes | 41.65±9.76 | 43(12-60) | 0.179[a] | 24.63±6.71 | 24(8-40) | t:0.071 | 0.943[d] |
| | No | 39.93±10.11 | 42(15-60) | | 24.55±8.06 | 25(8-40) | | |
| **Do you have general knowledge about artificial intelligence?** | Yes | 41.55±9.94 | 44(12-60) | 0.163[a] | 24.28±7.13 | 24(8-40) | t:-1.077 | 0.283[d] |
| | No | 39.91±9.71 | 39(15-60) | | 25.47±7.18 | 25(8-40) | | |

SD: Standard deviation, Min:Minimum, Max:Maximum, [a], Mann-Whitney U Test, [b], Kruskal–Wallis test, [c], One Way ANOVA Test, [d], Student-t Test

Analysis of GAAIS scores in relation to technology- and AI-related variables revealed no significant differences in positive or negative attitudes based on prior AI training, previous use of AI-based applications, or general knowledge about AI ($p > 0.05$). However, positive attitude scores differed significantly according to frequency of AI application use ($p = 0.02$). Post hoc comparisons showed significant differences between never users and daily users, rarely users and occasional users, rarely users and frequent users, and rarely users and daily users ($p = 0.017$; $p = 0.039$; $p = 0.010$; $p = 0.002$, respectively) (Table 4).

Regarding familiarity with AI tools, 171 students reported knowledge of a single tool, whereas 41 reported familiarity with more than one. Positive and negative GAAIS scores did not differ significantly between these groups ($p = 0.882$; $p = 0.502$, respectively).

## Discussion

The study found that the attitudes of Physiotherapy and Rehabilitation students towards AI, revealing a high rate of AI tool usage. AI is frequently used by students for assignments, research, or information gathering, with ChatGPT being the most widely used application. This study showed that students had positive attitudes towards AI. Those who spent more time online and used AI tools more frequently were found to be more positive. Furthermore, attitudes towards AI were not associated with socio-demographic factors, level of education, awareness of, or prior experience with AI.

The research findings showed that participants demonstrated a favorable orientation toward AI. Similarly, in the literature, 58% of pharmacy students reported supportive perceptions of AI (17). Nursing students also displayed a high level of receptiveness to AI, with a mean score of 64.5 out of 100 (18). Overall, our findings align with previous studies and suggest that artificial intelligence is gaining increasing acceptance in educational settings.

The study found that 76% of students used AI either occasionally or frequently. These findings were similar with the fact that 78.7% of higher education students reported using generative AI tools (19). Furthermore, most students reported having experience and knowledge of AI, even though they had not received formal training on the subject. While we did not evaluate the demand for AI training in our study, these findings suggest that training is needed for the correct use of AI tools. This aligns with the demand from pharmacy students for more effective AI training (17). Medical students also state that AI should be included in health education so that it can be used to support healthcare services (20). The fact that the vast majority of students are aware of AI tools is consistent with the literature. Recent research results from nursing students show that 56.8% of students are aware of AI tools (21). Students primarily used AI tools for homework, research, and information gathering. Similarly, previous studies have shown that medical students primarily use AI for information searching (84.4%) and completing academic assignments (60.4%) (22). Chinese university students, however, prefer it most for text generation (91.4%) and information search (81.5%) functions (23).

Additionally, the majority of students were using ChatGPT as an AI tool. This finding was consistent with the results of a study conducted with German university students (24). Among Chinese university students, Doubao (78.2%) and ERNIE Bot (66.0%) were the top two choices, with ChatGPT (36.2%) coming in third (23). The differing results may be related to the variety of AI applications included in the studies, as well as the socio-economic and cultural policy differences between countries regarding digital usage.

The study revealed that students' attitudes towards AI remained unaffected by socio-demographic factors. This may be related to the fact that students in this research population own at least one technological device and spend a considerable amount of time online. However, another study of conducted on midwifery students showed that socio-demographic variables such as parental education and occupation, and income level did influence anxiety regarding AI (24). Given the rapid advancements in artificial intelligence, this result is not surprising. AI tools are advancing rapidly and are being used more by students as well (23). Similar to our findings, nursing students' attitudes towards AI were shown to be age-independent. However, male nursing students were reported to have higher positive attitudes (18). Another study found that nursing students' attitudes towards AI did not differ based on gender (25). Similarly, no significant difference was found in the attitudes of undergraduate students based on gender (26). The conflicting results showed that the need for further researches to understand the impact of gender on AI attitudes. Those who spent more time online daily also had higher positive attitude scores. This was consistent with both the frequency and duration of AI use in the study population. Previous studies have also showed that perceived value is positively correlated with the frequency of ChatGPT use (27). The positive attitudes of sports science students towards AI have been influenced by their frequency of daily internet use. (28).

The study showed that students' AI training, prior use, and knowledge did not make a difference in terms of positive or negative attitudes. This may be related to students' AI literacy. Students need to have a good level of AI literacy to use AI tools effectively. The research highlights that while students may have basic knowledge about AI, they lack comprehensive knowledge (29). Although AI literacy was not directly assessed in this study, limited foundational knowledge among students may have restricted their analytical capacity, which in turn may explain the lack of change in attitudes.

### *Limitations*

This study has several limitations. First, although the sample size was relatively large and included all students enrolled in the Department of Physiotherapy and Rehabilitation, participants were drawn from a single university, which may limit the generalizability of the findings. Including students from diverse universities and socio-demographic backgrounds would strengthen future inferences regarding physiotherapy students' attitudes toward AI. Second, data were collected via WhatsApp and Google Forms, which may have introduced selection bias. Students who do not actively use these digital platforms or who have limited access to online tools may have been underrepresented, potentially excluding individuals with less exposure to AI technologies. Finally, this study was conducted at a university in eastern Turkey. Regional differences in digital infrastructure and access to technology compared to metropolitan areas may influence students' awareness of and experiences with AI. Therefore, the findings should be interpreted within this contextual framework. Multi-centre studies including universities from different regions are recommended to enhance generalizability.

### *Strengths*

A key strength of this study is the comprehensive assessment of socio-demographic and AI use-related variables that may shape students' attitudes toward AI. Secondly, although this was a single-centre study, the relatively large sample size enhances the statistical robustness of the findings.

## Conclusion

The results of this cross-sectional study examining the attitudes of prospective physiotherapists towards AI showed that students exhibited positive attitudes. Furthermore, students' attitudes were not associated with basic sociodemographic characteristics or AI training or experience. On the other hand, greater use of AI and the internet was associated with more positive attitudes. Given the growing use of AI, it is of great importance to evaluate students' attitudes towards AI from undergraduate education onwards. Students' positive attitudes towards AI suggest a potential for integrating AI into the rehabilitation process. The absence of a significant association between AI-related experiences and attitudes highlights the need for more comprehensive and

application-oriented AI training for students. This may contribute to students using AI more effectively in their professional practice.

## Declarations

### *Ethical Consideration*

Ethical approval for the study was obtained from Inonu University Health Sciences Scientific Research Ethics Committee (Approval No: 2025/8421; Date: 30-09-2025).

### *Author Contributions*

Idea/Concept: D.D.K., B.C., R.C.Y., A.P.; Design: D.D.K., B.C.; R.C.Y., A.P.; Supervision/Consulting: D.D.K; Analysis and/or Interpretation: B.C.; Literature Search: D.D.K., B.C., R.C.Y., A.P.; Writing the Article: D.D.K., B.C., R.C.Y., A.P.; Critical Review: D.D.K., B.C., R.C.Y., A.P.

### *Conflict of Interest*

The authors have no conflict of interest to declare.

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## References


1. Majumder A, Sen D. Artificial intelligence in cancer diagnostics and therapy: current perspectives. *Indian J Cancer.* 2021;58(4):481-92. https://doi.org/10.4103/ijc.IJC_399_20
2. Shin Y. Toward Human-Centered Artificial Intelligence for Users' Digital Well-Being: Systematic Review, Synthesis, and Future Directions. *JMIR Human Factors.* 2025;12(1):e69533. https://doi.org/10.2196/69533
3. Mintz Y, Brodie R. Introduction to artificial intelligence in medicine. *Minim Invasive Ther Allied Technol.* 2019;28(2):73-81. https://doi.org/10.1080/13645706.2019.1575882
4. Bhatt J, Jain S, Bhatia DD. Artificial Intelligence (AI) in Healthcare Diagnosis: Evidence-Based Recent Advances and Clinical Implications. *Sens Diagn.* 2025;4:1047-1059. https://doi.org/10.1039/D5SD00146C5.
5. Khanna NN, Maindarkar MA, Viswanathan V et al. Economics of artificial intelligence in healthcare: diagnosis vs. treatment. *Healthcare;* 2022;10(12):2493:1-38. https://doi.org/10.3390/healthcare101224936.
6. Guo Y, Wang T, Ge T, et al. Prevalence of self-care disability among older adults in China. *BMC geriatrics.* 2022;22(1):775. https://doi.org/10.1186/s12877-022-03412-w
7. Sumner J, Lim HW, Chong LS et al. Artificial intelligence in physical rehabilitation: A systematic review. *Artif Intell Med.* 2023;146:102693. https://doi.org/10.1016/j.artmed.2023.102693
8. Jack K, McLean SM, Moffett JK et al. Barriers to treatment adherence in physiotherapy outpatient clinics: a systematic review. *Manual therapy.* 2010;15(3):220-8. https://doi.org/10.1016/j.math.2009.12.004
9. Seron P, Oliveros M-J, Gutierrez-Arias R et al. Effectiveness of telerehabilitation in physical therapy: a rapid overview. Phys Ther. 2021;101(6):pzab053. https://doi.org/10.1093/ptj/pzab053
10. Wei S, Wu Z. The application of wearable sensors and machine learning algorithms in rehabilitation training: a systematic review. *Sensors.* 2023;23(18):7667. https://doi.org/10.3390/s23187667
11. Sharififar S, Ghasemi H, Geis C et al. Telerehabilitation service impact on physical function and adherence compared to face-to-face rehabilitation in patients with stroke: A systematic review and meta-analysis. *PM&R.* 2023;15(12):1654-72. https://doi.org/10.1002/pmrj.12988
12. Lanotte F, O'Brien MK, Jayaraman A. AI in rehabilitation medicine: opportunities and challenges. *Ann Rehab Med.* 2023;47(6):444-58. https://doi.org/10.5535/arm.23131
13. Cinthuja P, Krishnamoorthy N, Shivapatham G. Effective interventions to improve long-term physiotherapy exercise adherence among patients with lower limb osteoarthritis. A systematic review. *BMC Musculoskelet Disord.*. 2022;23(1):147. https://doi.org/10.1186/s12891-022-05050-0
14. Schepman A, Rodway P. Initial validation of the general attitudes towards Artificial Intelligence Scale. *Comput Hum Behav Rep.* 2020;1:100014. https://doi.org/10.1016/j.chbr.2020.100014
15. Kaya F, Aydin F, Schepman A et al. The roles of personality traits, AI anxiety, and demographic factors in attitudes toward artificial intelligence. *Int J Hum Comput Interact.* 2024;40(2):497-514. https://doi.org/10.1080/10447318.2022.2151730
16. Schepman A, Rodway P. The General Attitudes towards Artificial Intelligence Scale (GAAIS): Confirmatory validation and associations with personality, corporate distrust, and general trust. Int J Hum Comput Interact. 2023;39(13):2724-41. https://doi.org/10.1080/10447318.2022.2085400
17. Busch F, Hoffmann L, Truhn D et al. International pharmacy students' perceptions towards artificial intelligence in medicine-A multinational, multicentre cross-sectional study. Br J Clin Pharmacol. 2024;90(3):649-61. https://doi.org/10.1111/bcp.15911
18. Lukić A, Kudelić N, Antičević V et al. First-year nursing students' attitudes towards artificial intelligence: Cross-sectional multi-center study. *Nurse Educ Pract*. 2023;71:103735. https://doi.org/10.1016/j.nepr.2023.103735
19. Almassaad A, Alajlan H, Alebaikan R. Student Perceptions of Generative Artificial Intelligence: *Investigating Utilization, Benefits, and Challenges in Higher Education. Systems*. 2024; 12(10):385: https://doi.org/1-19. 10.3390/systems1210038520.
20. Stewart J, Lu J, Gahungu N et al. Western Australian medical students' attitudes towards artificial intelligence in healthcare. *PLOS ONE*. 2023;18(8):e0290642. https://doi.org/10.1371/journal.pone.0290642
21. Berse S, Akca K, Dirgar E et al. Nursing Students' Early Attitudes Towards the Use of Artificial Intelligence and ChatGPT: An Exploratory Study. *Int J Nurs Pract.* 2025;31(6):e70083. https://doi.org/10.1111/ijn.70083
22. Hu N, Jiang XQ, Wang YD et al. Status and perceptions of ChatGPT utilization among medical students: a survey-based study. *BMC Med Educ.* 2025;25(1):831. https://doi.org/10.1186/s12909-025-07438-7
23. Xiao L, Pyng HS, Ayub AF, et al. University Students' Usage of Generative Artificial Intelligence for Sustainability: A Cross-Sectional Survey from China. *Sustainability.* 2025; 17(8):3541: https://doi.org/1-20. 10.3390/su1708354124.

24. von Garrel J, Mayer J. Artificial Intelligence in studies—use of ChatGPT and AI-based tools among students in Germany. *Humanit Soc Sci Commun*. 2023;10(1):799. https://doi.org/10.1057/s41599-023-02304-7

25. Reyhan FA, Daglı E. Ebelik Ogrencilerin Yapay Zeka Kaygı Durumlarının Degerlendirilmesi. *Inst Health Sci J.* 2023;8:290-6. https://doi.org/10.51754/cusbed.1286594

26. Ozdemir Aydın G, Kucukaydınoglu S, Pallos A, et al. The relationship between first-year nursing students' innovation skills and attitudes toward artificial intelligence: A multicentre study. *Nurse Edu Prac*. 2025;86:104429. https://doi.org/10.1016/j.nepr.2025.104429

27. Saranza C, Villamar E, Arlan E et al. Exploring the impact of usage frequency on perceived value of ChatGPT among university students: The moderating role of income. *Int J Soc Sci Hum Res*. 2024;7(12). https://doi.org/10.47191/ijsshr/v7-i12-77

28. Cetinkayalı G, Karacan Dogan P, Doğan I. Spor Bilimleri Ogrencilerinin Yapay Zekaya Yönelik Tutumları ile İs Bulma Kaygıları Arasındaki İliskinin İncelenmesi. *Yalova Univ J Sport Sci.* 2023;2(3):174-89. https://doi.org/10.29228/roljournal.52766

29. Hornberger M, Bewersdorff A, Nerdel C. What do university students know about Artificial Intelligence? Development and validation of an AI literacy test. *Comput Educ Artif Intell.* 2023;5:100165. https://doi.org/10.1016/j.caeai.2023.100165