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Pharmacoepidemiological Data Analysis on AI- Driven Smart Healthcare System

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Abstract

Automation and AI have revolutionized healthcare, leading to advancements in disease diagnosis, remote monitoring, robotic surgeries, and therapeutic interventions. AI-powered machines have gained the ability to make independent decisions, marking a new era in healthcare. The emergence of smart health systems has been driven by technologies like 5G, edge computing, and IoT, creating a more integrated healthcare experience. A study was conducted using a mixed-methods approach to assess AI adoption in healthcare. An online survey, distributed via Google Forms, included 300 participants aged 18 and above, all proficient in using smart-phones, mobile apps, and smart-watches. The survey assessed AI knowledge, public perception, and aspects such as trust, dependency, and decision-making of AI, privacy, and efficiency of AI. Data were analyzed using descriptive statistics, t-tests, and correlation analysis. The results showed that females, working professionals, and individuals aged 31-60 had a more positive perception of AI compared to males, college students, and younger individuals aged 18-30. The study underscored the need for targeted educational initiatives and practical demonstrations of AI's benefits to enhance acceptance, especially among specific demographic groups.

Keywords: Artificial Intelligence, Smart Healthcare, Public Perception, Dependency, Technology Acceptance Model.

Introduction

In the healthcare sector, the powerful combination of automation and Artificial Intelligence (AI) is set to revolutionize every aspect of the industry. AI's foray into healthcare marks the beginning of a new era characterized by accurate and automated disease diagnosis, remote patient monitoring and treatment, robotic surgical systems, and even therapeutic interventions like online courses for individuals dealing with social anxiety. This limitless domain allows algorithms to enable machines to independently determine outcomes without human involvement.[1]

The rapid advancement of technological expertise in healthcare, known as the smart health system, is further accelerated by the emergence of the fifth-generation wireless revolution, or 5G. This combination ushers in a significant shift where cutting-edge technologies such as edge computing, interconnected Internet of Things (IoT) devices, and data analytics merge to deliver integrated healthcare services, promoting both physical and emotional well-being.[2] As technology continues to advance, it reshapes our world and drives the wireless industry to develop the next generation of network technology.[3] This foundation underpins the smart healthcare system, paving the way for a future where healthcare becomes a seamless, holistic experience for everyone.[4]

AI algorithms are essential in creating a sophisticated system that verifies user identities and assigns permissions, ensuring that only authorized individuals can access specific data, protecting it from piracy or loss.[5] Through digital automation, including the efficient use of robots, data collection, storage, reformatting, and retrieval are performed with exceptional speed and consistency, ensuring efficient data management throughout the healthcare process.[6, 7]

Today, artificial intelligence (AI) is capable of analyzing skin lesions, pathology slides, ECGs, and medical imaging data more effectively than medical professionals. Continuous glucose monitoring systems for managing Type 2 diabetes mellitus can be improved with closed-loop insulin administration devices. Various AI algorithms that utilize data from Biomedical Devices (BMDs) are being tested to uncover undiagnosed diseases, predict patient outcomes, and provide preventive or reactive recommendations. The Internet has become an essential resource for anyone seeking health information, whether from doctors, public health professionals, or the general public.[8, 9] In the future, millions of Internet of Things (IoT) sensors will be interconnected via fifth-generation (5G) networks, revolutionizing smart healthcare, digital wellness, and advanced healthcare analytics. The integration of 5G, IoT, and AI will allow smart mobile wearables to seamlessly connect with medical and communication technologies, enabling convenient and remote healthcare services. AI algorithms, including Deep Neural Networks (DNN) and Convolutional Neural Networks (CNN), will process the vast amounts of data generated, performing complex tasks such as text and image recognition, medical imaging, and enabling accurate disease diagnosis and prediction, as well as facilitating remote healthcare.[10, 11]

AI can ensure timely service reminders, reducing the cognitive load on both doctors and patients by automating appointment alerts through SMS, WhatsApp, Emails, and more.[12] AI's intelligent analytics can uncover new therapeutic options and treatments tailored to the unique genetic profiles of individuals, offering personalized care, especially in fields like oncology. [13, 14] AI facilitates health monitoring via smart wearable devices, including step trackers, smart watches, and pulse rate checkers. These devices are seamlessly connected to mobile applications, personal computers, and tablets, making it easy to share reports with medical teams for prompt action. [15]

Methodology

Study Design

This study used a mixed methods approach to explore the adoption of AI in healthcare via an online survey. The survey had three parts: assessing knowledge of AI in healthcare, exploring public perception, and

evaluating trust, dependency, decision-making of AI, privacy, and efficiency of AI. Respondents answered multiple-choice questions, with the perception measured on a two-point dichotomous scale and technology acceptance on a 5-point Likert Scale. No open-ended questions were included.

Study Population

The study involved 300 participants were selected for the study. All participants were asked to complete and sign a consent form. They were reminded of their confidentiality rights and informed that they could withdraw from the study at any time without penalty. The participants were thoroughly briefed on the objectives of the questionnaire and were given the opportunity to ask any questions. Participation was entirely voluntary and commenced only after obtaining informed consent.

Sampling Method

The sample was obtained for this survey by using a combination of convenience sampling and snowball sampling methods. Convenience sampling was employed to recruit participants who were readily accessible and willing to participate, providing an efficient way to gather initial data. To expand the sample size and diversity, snowball sampling was subsequently used, wherein existing participants were asked to refer other potential participants within their networks. This dual approach facilitated the inclusion of a broader range of individuals, thereby enhancing the dependability and representativeness of the study sample.[16]

Eligibility Criteria

Participants aged 18 years and above, of either sex, who were proficient in using smartphones, mobile applications, and smart watches, were included in the study. The selected participants were either college-going students or working professionals. Exclusion criteria consisted of individuals under the age of 18, healthcare professionals such as doctors and nurses, due to the potential for differing perspectives from the general public, and participants with language barriers who were unable to understand and respond in the survey's chosen language.

Data Collection and Measurement

This study conducted an online survey using Google Forms, gathering 300 participants' responses. Participants were recruited via social media platforms like WhatsApp and email using convenience and snowball sampling methods. The survey focused on health and Artificial Intelligence (AI), comprising 27 items across demographic characteristics, a perception scale, and a Technology Acceptance Model (TAM) questionnaire. Respondents rated their likelihood of using AI for health-related tasks on a two-point scale and expressed attitudes towards AI using a 5-point Likert scale. Topics included privacy concerns, and trust in AI applications. Quantitative data analysis aimed to uncover correlations between demographics and AI criteria, as well as assess overall acceptance of AI-driven healthcare solutions. This approach aimed to provide insights into public perceptions and potential acceptance of AI in healthcare.

Data Analysis

Data were collected, categorized, and coded using Microsoft Excel (Microsoft Corporation). Descriptive statistics were used to describe sample by gender, age, occupation with (total frequencies and percentage). The mean, standard deviation, frequencies, and percentage of each item were calculated using Statistical package for the Social Science Software (IBM Corporation) of version 29.0.2.0. Armonk, New York: IBM Corporation.

While t- test was used to test the significant difference between the each questions and demographic variables. Correlations were used for TAM criteria with demographic variables.

Result

Descriptive Statistics

Demographic Characteristics N=300

The Table 1 showed the socio-demographic profile of the surveyed population where the majority of respondents were male, while females made up 42%. When examining the age distribution, it was evident that the bulk of participants were between the ages of 18 and 30, with a smaller segment of 14.3%, falling within the 31 to 60 ages. Regarding occupation, college students dominated the sample, with 82.3%, while the remaining 17.6% were working professionals.

Table.1: Demographic Characteristics

Gender	Frequency & (%)
Male	173 (58%)
Female	127 (42%)
Age (Year)	
18-30	257 (85.7%)
31-60	43 (14.3%)
Occupation	
College Student	247 (82.3%)
Working Professional	53 (17.6%)

N=300, Values were expressed in Frequency that is number of responses & percentage

Demographic Information Analysis Table 2 summarized the socio-demographic characteristics of health-care where (79%) of participants mostly use AI-powered applications in their daily lives.Collected responses from participants regarding their use of AI-powered applications showed they were currently using such applications, for health care with a high percentage, followed by a low percentage with finance and E-commerce. The respondents showed the number of AI applications encountered in healthcare, reported using one application with (44%), and others two to four applications, a few more than four, and some none. The maximum proportion of the responders was reported AI applications as useful and innovative tools were Pharm Easy ranked highest in a survey by responders with (60%).

A large portion of participants (93%) believed that AI had made their lives more convenient, whereas a small portion did not, because (93%) of participants felt that AI could improve the overall quality of healthcare services, with (41%) confidence in the accuracy of AI predictions and recommendations, whereas the awareness with (77%) of AI-based chat-bots or virtual assistants used in healthcare services, some were not aware, and a few were unsure.

Table 2: Assessment of General Questionnaires Analysis for AI in Healthcare

S. No	Questions	Options	Frequency & (%)	n	Mean ± SD
1.	Are you currently using any AI-powered applications or tools in your daily life?	Yes	236 (79%)	300	150 ± 121.6
		No	64 (21%)		
2.	Which AI-based applications do you use most?	Healthcare	172 (59%)	290	58 ± 67.1
		Finance	3 (1%)		
		E-commerce	15 (5%)		
		Education	50 (17%)		
		None	50 (17%)		
3	How many AI applications have you come across in your healthcare?	One	126 (44%)	287	71.7 ± 49.3
		Two to four	101 (35%)		
		More than four	26 (9%)		
		None	34 (12%)		
4.	Are there any healthcare AI applications you find particularly useful or innovative?	Yes	237 (79%)	300	150 ± 123.1
		No	63 (21%)		
5.	Which AI healthcare application do you find useful and use most frequently for medical-related tasks and information?	Pharm Easy	180 (60%)	298	49.6 ± 65.9
		TATA1mg	51 (17%)		
		Net meds	31 (10%)		
		Medlife	21 (7%)		
		Practo	8 (3%)		
		Diabetes india	7 (3%)		
6.	Do you think AI has made your life more convenient?	Yes	280 (93%)	300	150 ± 183.8
		No	20 (7%)		
7.	Do you think AI can improve the overall quality of healthcare services?	Yes	232 (93%)	300	150 ± 115.9
		No	68 (23%)		
8.	How confident are you in the accuracy of AI predictions and recommendations?	Very Confident	78 (26%)	300	75 ± 48.1
		Confident	125 (41%)		
		Neutral	89 (30%)		
		Not confident	9 (3%)		
9.	Are you aware of AI-based chat bots or virtual assistants used in healthcare services by companies for patient interactions and medical information?	Yes, I	230 (77%)	300	100 ± 112.6
		No, I'm not aware of them	38 (13%)		
		I'm not sure	32 (11%)		

Values were expressed in absolute frequency and percentage; n (%), with Mean ± Standard Deviation.

Perception for AI in Healthcare Response Analysis

The Perception for AI in Healthcare survey questions analyse the perception for use of AI for Health management.

Table 3 showed that females, working professional, and older individuals (aged 31-60) generally have a more positive perception of AI in healthcare compared to males, college student, and younger individuals (aged 18-30). Significant differences were observed across these demographics for various questions. Females showed greater comfort with AI-generated diagnostic recommendations and using AI for symptom information and diagnostic tests because they generally utilize primary healthcare service more frequently than man, also take primary health management roles within families. Working professional was more likely than college student to positively perceive AI across multiple applications, including general health information, prescribing medication, and counseling. Older aged respondents were more open to using AI for healthcare purposes, demonstrating a higher acceptance level than the younger age group. These findings suggest that targeted efforts may be needed to address the concerns of males, college student, and younger individuals to enhance their acceptance of AI in healthcare services.

The age showed the significant perception for AI in Healthcare with 31-60 age, whereas occupation with working professional and less significant on gender were female showed high perception towards AI in Healthcare.

Table 3: Assessment of Perception Questionnaires Analysis for AI in Healthcare

Questions	n	Category	Sub Category	Frequency		Mean ± SD	Sig.
				Likely	Unlikely		
Q.1	270	Gender	Male (157)	110 (70.6%)	47 (29.9%)	1.30 ± 0.45	0.36
			Female (113)	82 (72.5%)	31 (27.4%)	1.27 ± 0.44	
		Occupation	College Student (221)	159 (71.9%)	62 (28.5%)	1.28 ± 0.45	0.23
			Working Professional (49)	33 (67.3%)	16 (32.6%)	1.33 ± 0.47	
		Age	18-30 (231)	168 (72.7%)	63 (27.2%)	1.27 ± 0.44	0.02[a]
			31-60 (39)	24 (61.5%)	15 (38.4%)	1.38 ± 0.49	
Q.2	221	Gender	Male (127)	96 (75.5%)	31 (24.4%)	1.24 ± 0.43	0.001[b]
			Female (94)	61 (64%)	33 (35.1%)	1.35 ± 0.48	
		Occupation	College Student (175)	120 (68.5%)	55 (31.4%)	1.31 ± 0.46	<0.001[b]
			Working Professional (46)	37 (80.4%)	9 (19.5%)	1.20 ± 0.40	
		Age	18-30 (182)	127 (69.7%)	55 (30.2%)	1.30 ± 0.46	0.04[a]
			31-60 (39)	30 (76.9%)	9 (23.7%)	1.23 ± 0.42	
Q.3	273	Gender	Male (152)	115 (75.6%)	37 (24.3%)	1.24 ± 0.43	0.43
			Female (121)	89 (73.5%)	32 (26.4%)	1.26 ± 0.44	
		Occupation	College Student (223)	173 (77.5%)	50 (22.4%)	1.22 ± 0.41	<0.001[b]
			Working Professional (50)	31 (62%)	19 (38%)	1.38 ± 0.49	
		Age	18-30 (233)	182 (78.1%)	51 (21.8%)	1.22 ± 0.41	<0.001[b]
			31-60 (40)	22 (55%)	18 (45%)	1.45 ± 0.50	

Q.4	286	Gender	Male (164)	139 (84.7%)	25 (15.2%)	1.15 ± 0.36	0.37
			Female (122)	101 (82.7%)	21 (17.2%)	1.17 ± 0.37	
		Occupation	College Student (236)	205 (86.8%)	31 (13.1%)	1.13 ± 0.33	<0.001[b]
			Working Professional (50)	35 (70%)	15 (30%)	1.30 ± 0.46	
		Age	18-30 (246)	212 (86.1%)	34 (13.8%)	1.14 ± 0.34	<0.001[b]
			31-60 (40)	28 (70%)	12 (30%)	1.30 ± 0.46	
Q.5	260	Gender	Male(153)	102 (66.6%)	51 (33.3%)	1.33 ± 0.47	0.02[a]
			Female (107)	78 (72.8%)	29 (27.1%)	1.27 ± 0.44	
		Occupation	College Student (210)	149 (70.9%)	61 (29.4%)	1.29 ± 0.45	0.03[a]
			Working Professional(50)	31 (62%)	19 (38%)	1.38 ± 0.49	
		Age	18-30 (220)	156 (70.9%)	64 (29.9%)	1.29 ± 0.45	0.03[a]
			31-60 (40)	24 (60%)	16 (40%)	1.40 ± 0.49	
Q.6	277	Gender	Male (158)	134 (84.8%)	24 (15.1%)	1.15 ± 0.36	<0.001[b]
			Female (119)	89 (74.7%)	30 (25.2%)	1.25 ± 0.43	
		Occupation	College Student (232)	193 (83.1%)	39 (16.8%)	1.17 ± 0.37	<0.001[b]
			Working Professional (45)	30 (66.6%)	15 (33.3%)	1.33 ± 0.47	
		Age	18-30 (242)	202 (83.4%)	40 (16.5%)	1.17 ± 0.37	<0.001[b]
			31-60 (35)	21 (60%)	14 (40%)	1.40 ± 0.49	
Q.7	282	Gender	Male (162)	146 (90.1%)	16 (9.8%)	1.10 ± 0.29	0.003[a]
			Female (120)	101 (84.1%)	19 (15.8%)	1.16 ± 0.36	
		Occupation	College Student (232)	207 (89.2%)	25 (1.7%)	1.11 ± 0.3	<0.001[b]
			Working Professional (50)	40 (80%)	10 (20%)	1.20 ± 0.40	
		Age	18-30 (242)	214 (88.4%)	28 (11.5%)	1.12 ± 0.32	0.04[a]
			31-60 (40)	33 (82.5%)	7 (17.5%)	1.18 ± 0.38	
Q.8	284	Gender	Male (163)	128 (78.5%)	35 (21.4%)	1.21 ± 0.41	0.50
			Female (121)	97 (80.1%)	24 (19.8%)	1.20 ± 0.40	
		Occupation	College Student (236)	194 (82.2%)	42 (17.7%)	1.18 ± 0.38	<0.001[b]
			Working Professional (48)	31 (64.5%)	17 (35.4%)	1.35 ± 0.48	
		Age	18-30 (246)	201 (81.7%)	45 (18.2%)	1.18 ± 0.38	<0.001[b]
			31-60 (38)	24 (63.1%)	14 (36.8%)	1.37 ± 0.48	

2-point dichotomous scale (1 Likely, 2 Unlikely), Values were expressed in frequency, n is the no. of respondents with mean ± SD; data were analyzed using a t-test, where $p^a < 0.05$ and $p^b < 0.001$ was considered significant.

Questions

Q.1 Have you heard of AI being used in healthcare service?

Q.2 Would you be comfortable receiving AI-generated diagnostic recommendations or treatment plants?

Q.3 Use of AI for general health information?

Q.4 Use of AI for knowing efficacy and prescribe medication?

Q.5 Use of AI for knowing details about symptoms/ Disorders Information on diseases?

Q.6 Use of AI for knowing diagnostic test for particular Disease/disorder?

Q.7 Use of AI for counseling purpose medical test details?

Q.8 Would you be open to relying more on AI for managing your health in the future?

Technology Acceptance Model Response Analysis (TAM)

The Technology Acceptance Model Questionnaires were divided into five criteria (Trust, Dependency, Decision Making of AI, Privacy, and Efficiency of Artificial Intelligence).

The analysis of the Technology Acceptance Model (TAM) for AI in healthcare revealed that males exhibited greater trust and confidence in AI healthcare systems compared to females. College students showed higher trust in AI than working professionals, while more confidence in AI diagnoses. Older individuals (31-60 age) tended to trust AI more than younger individuals (18-30 age), although the older group had greater confidence in AI-diagnosed conditions. Significant differences were noted particularly in occupation and age categories for trust, and confidence, indicating varying attitude of AI in healthcare across demographics. The dependency on AI was males showed more comfortable and confident in AI's timeliness in healthcare than females. Working professionals reported greater comfort and belief in AI's timeliness compared to college students, with significant differences, while older individuals showed significantly higher comfort and belief in AI's timeliness than younger individuals. These findings highlighted varying levels of dependency on AI in healthcare across demographics, with notable significance in occupation and age categories. The decision making of AI on males was generally believed more strongly for AI's potential to improve healthcare outcomes and was more open to receiving healthcare advice from AI than females, though these differences were not statistically significant. Working professionals showed slightly higher belief and openness compared to college students, without significant differences. However, older individuals (31-60) indicated significantly higher belief in AI's potential to improve healthcare outcomes and greater openness to AI healthcare advice compared to younger individuals (18-30). These findings highlighted varying levels of acceptance of AI in healthcare decision-making across different demographics, with notable significance in age categories. Privacy on AI showed that males and females were similarly willing to share healthcare data with AI tools, whereas female had high privacy concern about data. Working professionals were significantly more willing than college students, and older individuals were more willing than younger ones.

Privacy concerns were similar between college students and working professionals, but younger individuals were significantly more concerned about data privacy with AI than older individuals. These findings highlighted varying perspectives on data privacy in AI healthcare across demographics, with significant differences in occupation and age categories. The efficiency on AI was indicated that males generally believed more in AI's ability to enhance healthcare efficiency and reduce costs compared to females, though these differences were not statistically significant. Working professionals exhibited higher belief in AI's efficiency enhancement compared to college students, with no significant difference, while college students had a significantly higher belief in AI's potential to reduce costs compared to working professionals. Older individuals significantly believed more in AI's efficiency enhancement compared to younger individuals, while beliefs in cost reduction were similar between the age groups. These findings highlighted varying perspectives

on AI's efficiency and cost reduction in healthcare across different demographics, with notable significance in age and occupation categories.

The fig.1 showed the Reliability and Dependency Level of Subjects for AI in Healthcare by age were age significantly proved attitude towards the AI for Healthcare mostly depended on AI for health was 31-60 age.

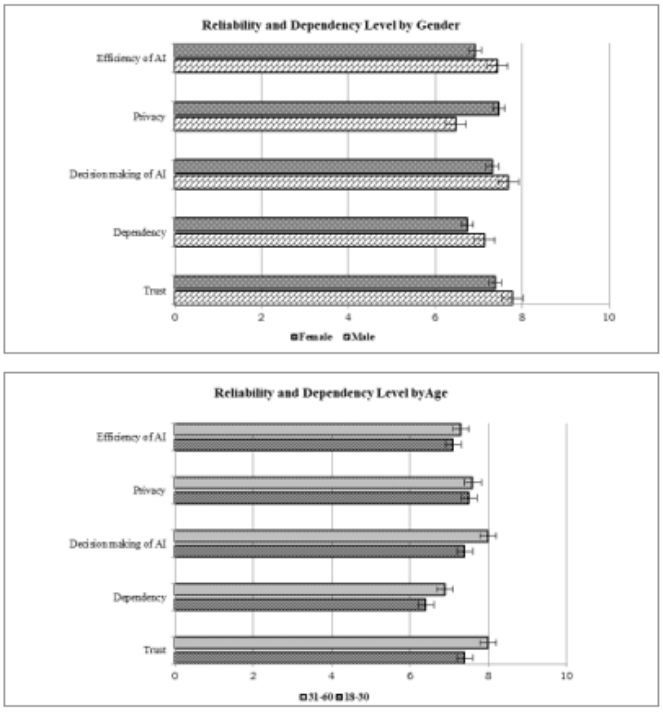

Fig. 1: Reliability and Dependency Level of Subjects

Correlational Analysis

The correlation analysis showed in table 4 explored which demographic variables associated with trust, decision making, dependency, privacy, and efficiency. This exploratory analysis of variables associated with trust, decision making, dependency, privacy, and efficiency indicated that demographic variables were largely unrelated. There was the modest relationship of age and occupation with trust and a negative relationship with gender. The age shows a modest relationship with trust, decision-making, dependency, privacy, and efficiency whereas occupation also shows a modest relationship with trust, decision-making, and efficiency. On the other hand, gender shows a negative relationship with the five criteria.

Table 4: Correlation Analysis of Demographic Variables with TAM Criteria

Criteria	Gender		Occupation		Age	
	r	95% CI	r	95% CI	r	95% CI
Trust	-0.06	-0.20 – 0.07	0.08	-0.05 – 0.22	0.09	-0.04 – 0.23
Decision Making of AI	-0.08	-0.22 – 0.06	0.09	-0.05 – 0.23	0.11	-0.34 - 0.25
Dependency	-0.10	-0.23 – 0.03	-0.10	-0.14 – 0.13	0.04	-0.93 – 0.18
Privacy	-0.50	-0.29 - -0.04	-0.02	-0.16 – 0.12	0.02	-0.14 – 0.14
Efficiency of AI	-0.91	-0.22 – 0.04	0.63	-0.07 – 0.019	0.06	-0.07 – 0.20

Correlation between Demographic Variables with Criteria and values were expressed in Pearson correlation r (-1, +1) and 95% CI.

Discussion

Artificial Intelligence shown immense potential to transform our society and lives. Artificial Intelligence gained popularity in the healthcare domain for its ability to replicate human cognition in the complex medical fields, diagnosis problems and identify trends that can be immensely useful in the treatment of critical diseases like cancer. Artificial Intelligence can discover very important links in a data set and is now widely used in clinical trials for the prediction of outcomes. AI can therefore be useful for healthcare providers and biotech/life sciences firms and general population. Machine learning (neural networks and deep learning, natural language processing, rule –based expert systems, physical robots, and robotic process automation can be used in different combinations for precise diagnosis and treatment selection. However, there are various ethical implications related to the application of Artificial Intelligence in the healthcare domain. Decision making by smart machines can be generate issues related to accountability, transparency, permission, and privacy.[17-19]

The primary objective of this research study was to investigate the impact of Artificial Intelligence on smart healthcare solutions on general population perceptions and

attitudes in order to enhance drug safety and effectiveness by decoding emerging trends, identifying key challenges.

The study employed a mixed methods approach to explore AI adoption in healthcare through an online survey divided into three sections: assessing AI knowledge in healthcare, public perception, and evaluating trust, dependency, and decision-making of AI, privacy, and efficiency of AI. Multiple-choice questions were used, with perception measured on a two-point dichotomous scale and technology acceptance on a 5-point Likert scale, excluding open-ended questions. Participants, who were 18 years or older and proficient with smartphones, mobile applications, and smartwatches, were recruited using convenience and snowball sampling methods to ensure a diverse and representative sample.[20] College students and working professionals were included, while healthcare professionals and individuals with language barriers were excluded. Participants were informed about confidentiality, their right to withdraw without penalty, and provided informed consent before participating. Data was collected via Google Form shared through email, WhatsApp, and social media groups, accompanied by a cover letter explaining the study's purpose and data usage.

A consent form was prepared and completed by participants to ensure confidentiality and clarify the research purpose. The final baseline questionnaire had three sections: demographics, perception, and Technology Acceptance Model (TAM) questionnaires. The demographic section included questions on gender, age, and occupation. The perception section assessed views on AI in healthcare using 8-item dichotomous two-point scale, with questions like Have you heard of AI in healthcare? and Would you be comfortable with AI-generated diagnostic recommendations.[21] The TAM section, based on the theory of reasoned action (TRA), used a 5-point Likert scale to measure trust, dependency, decision making of AI, privacy, and efficiency with items such as I believe AI can improve healthcare outcomes and I trust AI systems to make accurate decisions.[22] Data were collected and coded using Microsoft Excel, and descriptive statistics were used to describe the sample by gender, age, and occupation. SPSS version 29.0.2.0 was used to calculate the mean, standard deviation, frequencies, and percentages of each item. A t-test assessed significant differences between questions and demographics, while correlation for the Technology Acceptance Model criteria (Trust, Dependency, Decision making of AI, Privacy, and Efficiency of AI) with demographic variables.

The study findings highlight notable differences in perceptions and acceptance of AI in healthcare across various demographic groups. Females, working professionals, and older individuals (aged 31-60) generally demonstrated more positive perception towards AI compared to males, college students, and younger individuals (aged 18-30). This discrepancy could be attributed to the higher frequency of healthcare service utilization by females and their primary role in family health management, which may lead to greater familiarity and comfort with AI-generated diagnostic recommendations. Working professionals' positive perceptions might stem from their broader exposure to technology in healthcare settings, enhancing their trust in AI applications. Older individuals' openness to AI could be due to their increased healthcare needs and the potential benefits AI offers in managing chronic conditions. Conversely, the lower acceptance levels among younger individuals and college students may be due to their limited healthcare experiences and potential doubt towards new technologies. The correlation analysis indicates a

modest relationship between age and occupation with trust, decision-making of AI, dependency, privacy, and efficiency of AI, while gender shows a negative relationship, suggesting that targeted efforts to improve AI acceptance should consider these demographic nuances. Addressing concerns of males, college students, and younger individuals through tailored educational initiatives and demonstrations of AI's practical benefits could enhance their acceptance of AI in healthcare services. Additionally, privacy concerns, particularly among younger individuals, need to be addressed to foster greater trust and willingness to share healthcare data with AI tools.

Conclusion

The study explored the transformative potential of Artificial Intelligence in healthcare, revealing notable demographic variations in its perception and acceptance. Females, working professionals, and older individuals (31-60 Ages) generally exhibit more favorable dependent toward AI, likely due to their frequent interactions with healthcare services and familiarity with technological tools. Conversely, younger individuals (18-30 age) and college students display lower acceptance levels, potentially due to limited healthcare experiences and skepticism towards new technologies.

Appendix

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