Survey on AI and Healthcare: Public Opinion on AI-Driven Treatment Recommendations

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Abstract -The integration of artificial intelligence (AI) in healthcare has revolutionized various aspects of patient care, including diagnostics, treatment recommendations, and personalized medicine. AI-powered systems are increasingly being utilized to analyze medical data, assist healthcare professionals in making accurate diagnoses, and provide tailored treatment plans based on vast datasets. Despite these advancements, public perception of AI-driven treatment recommendations remains complex and multifaceted.

This study aims to explore public opinion regarding AI in healthcare, with a particular emphasis on AI-assisted treatment recommendations. To gain insights into societal attitudes, a survey was conducted to measure levels of trust, concerns, and overall acceptance of AI in clinical decision-making. The results reveal a generally positive outlook on AI's potential to enhance healthcare outcomes, improve efficiency, and support medical professionals in delivering high-quality care. However, significant concerns remain regarding data privacy, the transparency of AI-driven decisions, and broader ethical implications. Many respondents expressed hesitation about fully relying on AI for critical health decisions, highlighting the need for greater explain ability and regulatory oversight.

These findings underscore the importance of addressing public apprehensions through improved transparency, ethical AI development, and clear communication regarding AI's role in healthcare. As AI continues to evolve, fostering trust through patient education, robust data security measures, and physician oversight will be crucial in ensuring the successful integration of AI-driven treatment recommendations into mainstream medical practice.

Keywords: Artificial Intelligence (AI), Healthcare, Treatment Recommendations, Public Perception, AI Acceptance, Ethical Considerations, Data Privacy, AI-Assisted Healthcare

INTRODUCTION

Artificial intelligence (AI) has transformed various industries, with healthcare standing out as one of the most promising and impactful domains. The integration of AI in healthcare has led to significant advancements in patient care, particularly through AI-driven treatment recommendations. These recommendations utilize sophisticated machine learning algorithms and vast medical datasets to assist healthcare professionals in diagnosing conditions, predicting patient outcomes, and personalizing treatment plans. By analyzing patterns in medical data, AI systems can enhance decision-making, reduce human error, and improve the overall efficiency of healthcare delivery.

Despite AI's growing presence in healthcare, public opinion on its application, especially in treatment recommendations, remains diverse and complex. On one hand, proponents of AI in healthcare highlight its ability to process vast amounts of medical data with unparalleled speed and accuracy. They argue that AI-driven treatment recommendations can lead to earlier and more precise diagnoses, reduce healthcare costs, and support overburdened medical professionals by automating routine tasks. Many patients and healthcare providers view AI as a valuable tool that complements human expertise, leading to improved patient outcomes and more personalized care.

On the other hand, skepticism persists among certain individuals regarding AI's reliability, transparency, and ethical implications. Concerns about the potential for algorithmic biases, lack of explain ability in AI-driven decisions, and data privacy risks contribute to public hesitation. Many worry that an overreliance on AI could diminish the role of human judgment in critical healthcare decisions, leading to unintended consequences. Additionally, ethical debates continue regarding accountability—if an AI-driven

recommendation results in a medical error, determining responsibility remains a challenge.

As AI continues to shape the future of healthcare, addressing these concerns through enhanced transparency, regulatory oversight, and clear ethical guidelines will be essential. Building public trust in AI-driven treatment recommendations requires a collaborative effort among policymakers, healthcare professionals, and technology developers to ensure AI's safe and effective integration into patient care.

LITERATURE REVIEW

The integration of artificial intelligence (AI) in healthcare has been a subject of extensive research, particularly concerning public trust, ethical considerations, decision-making roles, and regulatory frameworks. This section reviews key studies that address these aspects of AI-driven treatment recommendations.

Trust plays a pivotal role in the adoption of AI in healthcare. Obermeyer et al. (2019) found that the willingness of both patients and physicians to accept AI-driven treatment recommendations depends largely on trust and the perceived accuracy of AI outputs. Their study suggests that AI is more likely to be accepted when it is designed to complement human expertise rather than replace it. By integrating AI as an assistive tool rather than an autonomous decision-maker, healthcare professionals and patients exhibit higher confidence in its recommendations.

Despite the potential benefits of AI in healthcare, ethical concerns remain a major barrier to its widespread adoption. McKinney et al. (2020) emphasize the importance of addressing issues such as bias in AI models, transparency in decision-making, and data privacy. AI algorithms trained on biased datasets can reinforce disparities in healthcare outcomes, leading to ethical dilemmas. Furthermore, the lack of transparency in AI decision-making processes raises concerns about accountability and trust. Data privacy is another critical issue, as AI systems require access to large volumes of sensitive patient data, necessitating robust security measures to prevent breaches and unauthorized use.

One of the main concerns about AI in healthcare is the balance between AI-driven and human decision-making. Topol (2019) conducted a comprehensive review of AI's role in clinical decision-making, highlighting that while AI has demonstrated remarkable capabilities in enhancing diagnostic accuracy, the public remains hesitant about allowing AI to make independent treatment decisions. The study indicates that AI is best utilized as a support system for healthcare professionals rather than as a standalone decision-maker. This finding underscores the need for a human-AI collaborative approach, where AI assists in generating insights while physicians maintain the final authority over treatment plans.

The establishment of clear regulatory policies and ethical guidelines is essential for increasing public confidence in AI-driven treatment recommendations. Research by Gerke et al. (2020) suggests that well-defined legal frameworks can mitigate concerns regarding AI reliability, accountability, and ethical considerations. Effective regulations ensure that AI models undergo rigorous validation, adhere to ethical principles, and maintain transparency in their decision-making processes. By implementing standardized guidelines, policymakers can foster greater public acceptance of AI in healthcare. These studies provide a foundation for understanding public sentiment toward AI in healthcare and highlight the need for further research in addressing concerns related to trust, privacy, and ethical considerations.

METHODOLOGY

To gauge public opinion, an online survey was conducted, targeting individuals across different demographics. The survey included questions assessing trust in AI-driven recommendations, willingness to accept AI-based treatments, perceived benefits, and major concerns. Total 94 responses were received and were analysed to identify patterns and general sentiments.
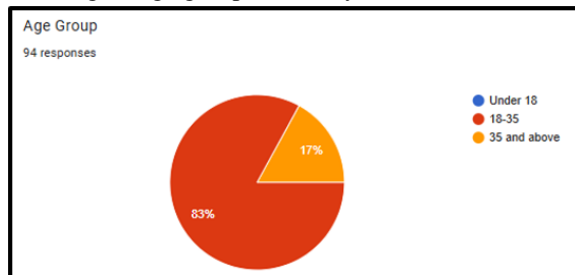
FINDINGS AND ANALYSIS

Based on responses gathered, following are the findings:
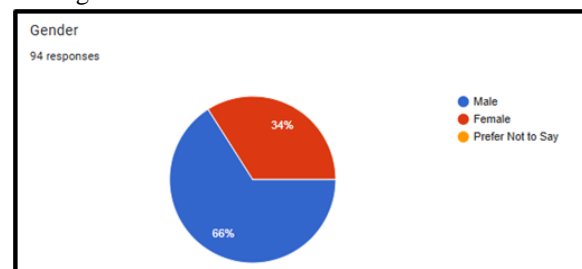
The survey performed consists of 66% of male and 34% of female.

As shown in graph, majority (83%) of responses is received from the age group of 18 – 35. 17% of the responses are from age group 35 and above thus covering all age groups for analysis.


Age Group
94 responses

80.9% which is approximately equal to 81% of respondent have not received medical treatment where AI was involved in any capacity. 7.4% of the respondent have received medical treatment where AI was involved and 11.7% says they are not sure of same.

Have you ever received medical treatment where AI was involved in any capacity?
94 responses
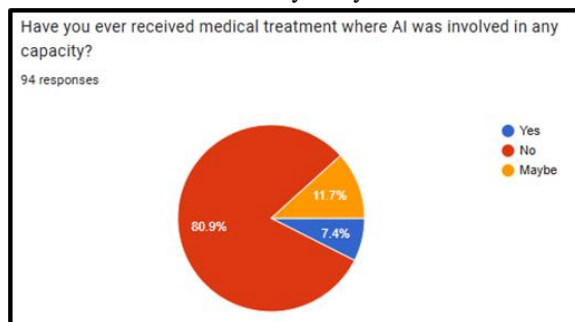
As per the findings, majority of the respondents (74.5%) are familiar with the concept of AI in healthcare and only 25.5% respondents is not familiar with the concept of AI in healthcare.

How familiar are you with the concept of AI in healthcare?
94 responses
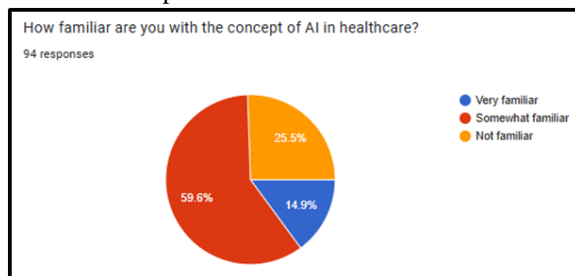
From the above graph, it is clear that 35.1% of respondents feel comfortable receiving treatment recommendations from an AI system, 37.2% are unsure and only 27.7% are not comfortable receiving treatment recommendations from an AI system.

How comfortable would you feel receiving treatment recommendations from an AI system?
94 responses
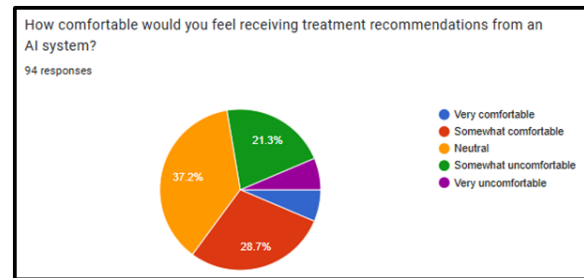
A question regarding concerns about AI driven recommendations was asked, and following are the major findings: 51.1% have concern regarding accuracy of recommendation and with respect to data privacy and security, 72.3% have concern regarding lack of human oversight, 31.9% have concerns regarding ethical implications.

What concerns, if any, do you have about AI-driven treatment recommendations? (Select all that apply)
94 responses
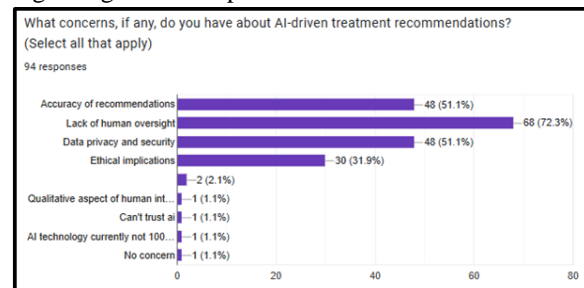
An important question with respect to AI system and human doctor was asked and the respondents strongly believes that recommendation by human doctor is always preferred but remaining respondents agrees that AI system or both combined recommendation can also be accepted.

If an AI system and a human doctor provided different treatment recommendations, whose advice would you trust more?
94 responses

38.3% of the respondents are willing to use an AI-powered healthcare assistant for treatment guidance at home, 35.1% are unsure and 26.6% says no for same.

Would you be willing to use an AI-powered healthcare assistant for treatment guidance at home?
94 responses
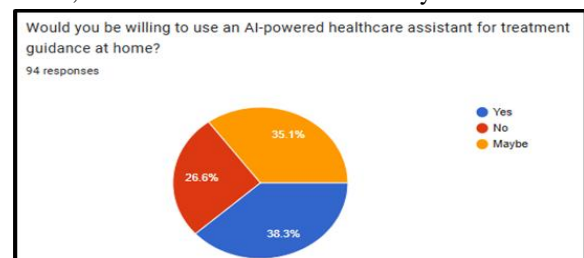
Based on the findings, following hypothesis is performed:

Alternative Hypothesis (H_1): There is an association between trust preferences (AI/human doctor) and willingness to use AI-powered healthcare assistant.

Null Hypothesis (H_0): There is no association between trust preferences (AI/human doctor) and willingness to use AI-powered healthcare assistant.

Parameters	May be	No	Yes
AI system	0	0	100
Both equally	25	8.33	66.66
Human Doctor	35.93	34.37	29.68
Not sure	46.66	13.33	40

Test Statistics from our analysis:
Chi-square statistic: 13.49
p-value: 0.036
Degrees of freedom: 6
Significance level (α): 0.05

Based on the chi-square test of independence results ($\chi^2 = 13.49$, df = 6, p = 0.036), we reject the null hypothesis at the 0.05 significance level. There is statistically significant evidence to conclude that there is an association between an individual's trust preferences (whether they trust AI systems, human doctors, or both) and their willingness to use AI-powered healthcare assistants for treatment guidance at home.

The data reveals distinct patterns:

1. 100% of respondents who trust AI systems are willing to use AI healthcare assistants.
2. Approximately 67% of those who trust both AI and human doctors equally are willing to use AI healthcare assistants.
3. Those who trust human doctors more show more distributed preferences, with only about 30% willing to use AI healthcare assistants.
4. The "Not sure" group shows mixed preferences, indicating uncertainty in both trust and willingness

This suggests that trust in AI systems is a significant factor in determining whether someone would be willing to use AI-powered healthcare assistants for home treatment guidance. The findings have important implications for the implementation and adoption of AI healthcare solutions, indicating that building trust in AI systems could be crucial for increasing willingness to use AI-powered healthcare assistants.

DISCUSSION

The findings of this study indicate that while there is a general acknowledgment of artificial intelligence (AI) as a transformative tool in healthcare, several critical concerns hinder its widespread adoption. Many respondents recognize AI's ability to enhance diagnostic accuracy, streamline treatment processes, and support healthcare professionals in delivering more efficient and personalized care. However, skepticism persists, particularly regarding data security, ethical decision-making, and the transparency of AI-driven recommendations.

A primary concern among the public is data security. AI systems require access to vast amounts of patient data to function effectively, raising fears about data breaches, unauthorized access, and potential misuse of sensitive health information. Many individuals worry about how their medical records are stored, shared, and protected, emphasizing the need for stringent data protection policies, regulatory oversight, and encryption measures to ensure patient confidentiality and trust in AI-driven healthcare.

Ethical decision-making also emerges as a significant issue, with respondents expressing concerns about potential biases in AI algorithms and the ethical implications of AI-driven treatment decisions. AI models trained on biased datasets can inadvertently reinforce healthcare disparities, leading to unequal treatment outcomes for different demographic groups. Additionally, there is apprehension about AI making autonomous decisions without human oversight, particularly in life-or-death situations. Addressing these ethical challenges requires continuous monitoring of AI systems, diverse and representative training datasets, and clear guidelines on human-AI collaboration in medical decision-making.

Another major barrier to adoption is algorithmic transparency. Many individuals, including healthcare professionals, struggle to understand how AI arrives at its recommendations, leading to distrust in its outputs. The "black box" nature of many AI models makes it difficult for users to assess their reliability and accuracy. To build confidence in AI-driven healthcare, developers and researchers must prioritize explainability by making AI models more interpretable and ensuring that healthcare professionals and patients can understand the reasoning behind AI-generated recommendations.

The study underscores the necessity for increased transparency in AI decision-making, robust data protection policies, and enhanced collaboration between AI systems and human healthcare providers. By addressing these concerns, healthcare institutions and policymakers can foster greater trust in AI, ensuring that it is integrated in a way that complements human expertise while maintaining ethical integrity and data security.

CONCLUSION

AI-driven treatment recommendations have the potential to revolutionize healthcare by enhancing diagnostic accuracy, personalizing treatment plans, and improving overall patient outcomes. By leveraging vast datasets and sophisticated machine learning algorithms, AI can identify patterns that may be difficult for human physicians to detect, leading to earlier diagnoses and more effective interventions. However, despite these promising advancements, widespread public acceptance remains dependent on several key factors, including trust, ethical considerations, and the assurance of human oversight.

One of the primary barriers to AI adoption in healthcare is trust. Patients and healthcare providers are more likely to accept AI-driven recommendations when they perceive them as reliable, transparent, and beneficial to patient care. Building trust requires addressing concerns about data security, accuracy, and the potential for AI bias. Ethical considerations also play a significant role in public perception, as concerns about fairness, accountability, and bias in AI algorithms continue to influence acceptance. Many worry that AI models trained on incomplete or biased datasets may lead to disparities in healthcare outcomes, particularly among marginalized populations. Ensuring that AI is developed and deployed ethically—through diverse training datasets, continuous monitoring, and strict regulatory oversight—is essential to gaining public confidence.

Another critical factor influencing acceptance is human oversight. While AI can assist in clinical decision-making, the assurance that human healthcare professionals remain the final authority in treatment decisions is vital for both patients and physicians. AI should function as a collaborative tool rather than an independent decision-maker, supporting clinicians with data-driven insights while allowing for human judgment and empathy in patient interactions. Hybrid models that integrate AI recommendations with physician expertise can enhance both trust and effectiveness, ensuring that AI serves as an aid rather than a replacement for human care.

Future research should focus on strategies to improve public confidence in AI-assisted healthcare. One essential approach is education—both for medical professionals and the general public. Increasing awareness about how AI functions, its benefits, and its limitations can help demystify the technology and reduce skepticism. Additionally, policymakers must work toward developing clear and enforceable regulations that govern AI use in healthcare, ensuring ethical standards, transparency, and accountability. Another crucial area of research is improving AI explainability—creating models that provide clear, understandable reasoning for their recommendations. Enhancing AI transparency will enable both doctors and patients to better assess AI-driven insights, fostering greater trust in the technology.

By prioritizing trust, ethical integrity, and human oversight, AI-driven treatment recommendations can achieve broader public acceptance, paving the way for a future where AI enhances medical decision-making while maintaining the essential human elements of healthcare.

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