

AWARENESS OF ARTIFICIAL INTELLIGENCE IN HEALTHCARE AMONG HEALTHCARE PROVIDERS

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of

Master of Business Administration (MBA)

in

Hospital and Health Management

By

Pilla Sai Mounika

Under the Supervision and Guidance of

Dr Swapnil Gadhave

2024



Internship Certificate

This certificate awarded to

Pilla Sai Mounika

(MBA Hospital and health management, IIHMR University, Jaipur)

From Roojh India private limited

In recognition of her efforts and achievements in completing
the 90 days internship program in

A.I in HealthCare

Conducted from 1st April – 1st July, 2023



Dr Saurabh Bhatia
Co-Founder



Shaik Salman
Internship mentor

DECLARATION BY STUDENT

I hereby declare that this dissertation titled “Awareness of artificial intelligence in healthcare among healthcare providers.” is the Bonafede record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

A handwritten signature in blue ink that reads "P. Sai Mounika". The signature is written in a cursive style and is positioned above a light gray rectangular background.

Name of the Student : Pilla Sai Mounika

Date :05-07-2024

CERTIFICATE

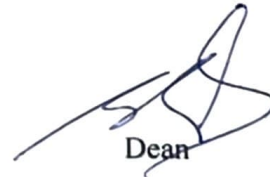
This is to certify that dissertation on **Awareness of Artificial Intelligence in Healthcare among Healthcare providers** is a record of the research work undertaken by **Pilla Sai Mounika** in partial fulfilment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.



Faculty Guide

IIHMR University, Jaipur

Date 5/7/24



Dean

IIHMR University, Jaipur

Date 05/07/2024-

CERTIFICATE

This is to certify that **PILLA SAI MOUNIKA** in partial fulfillment of the requirements for the award of the degree of MBA Hospital and Health Management from the IIHMR University, Jaipur has successfully completed her/his internship at Roojh India Pvt Ltd during April 1-July 1, 2024.

Saurabh Bhatia

Place: Pune

Preceptor/Head of the Organization : Dr Saurabh Bhatia

Date : 01-072024

Name of the organization : Roojh India Pvt Ltd

ABSTRACT

Aim:

To determine the awareness level of artificial intelligence (AI) in healthcare among healthcare professionals.

Objective:

The purpose of this study is to find out the level of awareness and acceptance of artificial intelligence (AI).

Research Question:

What is the awareness level of AI in healthcare among healthcare professionals.

Methodology:

A cross-sectional study was conducted to assess AI awareness among healthcare professionals in India, with a sample size of 100. A structured questionnaire evaluating AI awareness and attitudes was distributed via E-mail, WhatsApp, and other online platforms. Data analysis was performed using Microsoft Excel, employing descriptive statistics to summarize responses. Ethical approval was obtained, informed consent was secured, and participant confidentiality was maintained throughout the study.

Key results: A survey of 100 healthcare professionals, mostly young (56% aged 26-35) and highly educated (72% post-graduates), showed 93% aware of AI, 57% used AI chatbots, and 63% knew AI applications in medicine. Active AI use at work was reported by 54%.

AI news is followed frequently by 35%, occasionally by 38%, rarely by 25%, and never by 2%. Concerns include job security (66%) and privacy (76%), but 74% believe AI reduces stress and 96% find it useful. Support for AI in medical education is 85%.

72% believe AI can solve healthcare issues, 63% think it improves patient outcomes, and 59% see it aiding personalized medicine. Overall, 65% view AI positively, 30% are neutral, and 5% are negative.

Conclusion: This study, with a sample of 100 young, highly educated healthcare professionals reveals strong awareness of AI's potential in telehealth, workflows, and patient diagnosis. Despite concerns about job security and privacy, attitudes are generally positive, with many believing AI can improve data management, reduce costs, and alleviate stress. High support for AI in medical education indicates readiness for adoption, though ethical and trust issues need addressing for successful implementation.

Key words: Artificial Intelligence, AI, Healthcare professionals, Awareness about AI.

ACKNOWLEDGEMENTS

I express my deepest gratitude to all members of the Roojh India Pvt Ltd organization for their unwavering assistance and invaluable support throughout the process of this dissertation. Their guidance and encouragement were pivotal in successfully completing this project.

A special acknowledgment goes to **Dr Saurabh Sir**, Co-founder, Roojh India Pvt Ltd, for his indispensable guidance and support, which have played a crucial role in shaping this endeavor.

I am also grateful for the mentorship by **Mr. Shaik Salman**, Lead Software Engineer; his expertise and encouragement have become very instrumental in directing the research.

I am highly indebted to my faculty mentor, **Dr. Swapnil Gadhave Sir**, whose mentorship, expertise, and scholarly insights have been invaluable throughout the process.

Last but not least, I want to thank IIHMR University for facilitating resources and a good environment for this study.

I wish to extend my deepest gratitude to all the respondents who willingly spared their time and experiences for this survey; without whom this study would have never been successful. I remain deeply indebted to my parents, friends, and all those who helped and motivated me in this process. To all those who have, either directly or indirectly, helped me complete this dissertation,

My heartfelt thanks are extended to both. It goes without saying that both of you have been crucial, through support and encouragement, while I traversed this journey of professional development.

Pilla Sai Mounika

MBA- HM27

IIHMR University

TABLE OF CONTENTS

Chapter	Topic	Page No.
1	Introduction	01
2	Literature review	02
3	Methods	05
4	Results	06
5	Discussion	17
7	Conclusion	18
8	References	19

LIST OF FIGURES

Figure 1.1:	Gender distribution of the respondents
Figure 1.2:	Age distribution of the respondents
Figure 1.3:	Highest education level of the respondents
Figure 1.4:	Professions of the respondents
Figure 1.5:	Years of work experience of the respondents
Figure 2.1:	Awareness of AI
Figure 2.2:	Respondents who have used AI-powered health chatbots
Figure 2.3:	Respondents who know any AI applications in the medical field
Figure 2.4:	Respondents who reported AI being used in their organization
Figure 2.5:	The openness of respondents to adopting new AI technologies in their practice
Figure 2.6:	How often respondents read about AI advancements in healthcare
Figure 3.1:	Percentage of how useful respondents think AI could be at their workplace
Figure 3.2:	Percentage of how worried respondents are that AI will replace them at their job
Figure 3.3:	Percentage of respondents who feel that using AI can make them feel less stressed
Figure 3.4:	Percentage of respondents who have attended a session of AI training
Figure 3.5:	Percentage of respondents who believe AI should be included in medical education
Figure 3.6:	Percentage of respondents' belief in AI's ability to reduce medical errors
Figure 4.1:	Percentage of respondents' views on which areas AI is most useful in healthcare
Figure 4.2:	Percentage of respondents aware of AI technologies for managing health insurance claims

Figure 4.3:	Percentage of respondents' familiarity with the ethical considerations of AI in healthcare
Figure 4.4:	Percentage of respondents who are worried about completely trusting AI algorithms with patients' lives
Figure 4.5:	Percentage of respondents who believe patients data management would be improved if by AI
Figure 4.6:	Percentage of respondents who believe AI System would be superior to the doctors in making diagnosis and treatment
Figure 4.7:	Percentage of respondents who believe there may be serious privacy issues with the use of AI
Figure 4.8:	Percentage of respondents who believe inclusion of AI can solve the current problems faced by the healthcare system (low doctor-patient ratio, lack of efficiency and accuracy, financial burden)
Figure 4.9:	Percentage of respondents who believe AI can improve patient outcomes
Figure 4.10:	Percentage of respondents who believe AI can assist in personalized medicine
Figure 4.11:	Percentage of respondents who believe AI can help in reducing healthcare costs
Figure 4.12:	Percentage of respondents about overall perception of AI in healthcare

CHAPTER 1

Introduction

The healthcare sector is on the brink of a major transformation due to artificial intelligence (AI). AI can revolutionize patient care, diagnosis, treatment, and operational efficiency worldwide by using advanced algorithms to replicate human. This will require the best outcomes possible from health professionals at all levels, from primary care staff to specialised experts adopt these technologies..This makes assessing their level of awareness about AI-based technology very important, and it is precisely what this study will seek to do in a clinical context.

AI is proving to be a powerful tool in medicine, changing many aspects of medical practice.

This helps in monitoring the patient's disease progression and suggesting plausible treatment plans for them. It surges the process involved in finding drugs by traversing vast datasets to optimize formulations of drugs. It enhances and streamlines clinical documentation using NLP and improves early intervention and predictive analytics by capturing patients' data. Besides, AI boosts operational efficiency in healthcare workflows and addresses

AI in healthcare will demand high-level collaboration between data scientists, policymakers, and healthcare providers. This means practitioners would be at the core of its implementation.

Aim:

To determine the awareness level of artificial intelligence (AI) in healthcare among healthcare professionals.

Objective:

The purpose of this study is to find out the level of awareness and acceptance of artificial intelligence (AI).

CHAPTER 2

Literature Review

Author(Year)	Study Location	Sample Size	Sampling Technique	Salient Features
Mohammad Umer, Aiman Naveed Qanita Maryam, Arif Rasheed Malik, Naghmana Bashir Kamal Kandel (2024)	King Edward Medical University (KEMU) bFatima Jinnah Medical University, Lahore, Pakistan.	351	Snowball sampling technique	Low AI Familiarity: Only 21.3% of participants were familiar with AI, and just 16% understood its role in medicine. Mixed Perceptions and Trust: While 74.4% saw AI as useful for administrative tasks, 61.0% were hesitant to fully trust AI, and 64.1% supported integrating AI into Pakistan's healthcare system.
Tezpal, Manvinder Wg Cdr, Ghosh, Subhodeep Col, Lalwani, Radhika Lt Col, Yadav, Jyoti Dr Arun Kumar Col 2024	Tertiary care teaching hospital and medical college, India.	402		Need for AI Training: Despite 79.8% of participants never having attended a course on AI, 82% agreed that training in AI is necessary to explore new opportunities in their fields. Data Privacy Concerns: A significant majority (72.1%) identified data privacy

				and confidentiality as the most significant challenge to AI implementation.
Wajid Syed and Mahmood Basil A. Al-Rawi 2023	Healthcare Students in Riyadh, Saudi Arabia.	157	Convenience sampling	1. Awareness and Knowledge: 73.9% of pharmacy students in Riyadh were aware of AI, but 80.3% hadn't received formal education on it. Despite this, 69.4% saw AI as beneficial for healthcare professionals, and 57.3% believed it would enhance healthcare in Saudi Arabia. 2. Perceptions and Opinions: A majority (75.1%) agreed AI reduces medical errors, and 82.8% felt it helps in making accurate decisions. While 56.7% thought AI facilitates patient education, opinions were split on its impact on the humanistic aspect of medicine. Many students (56.7%) advocated for integrating AI education into the curriculum and

				addressing ethical challenges (70.1%).
Chetty Ravikumar Parvathavarthine, M K Phani Krishna, C Sadagopan Janaki, Mahima Sophia 2022	Medical students in Urban area of Kancheepuram District, Tamil Nadu	100	Simple random sampling	High Awareness and Optimistic Views: 85% of medical students knew about AI, and 98% believed it could improve healthcare, with 85% foreseeing reduced doctor workload. Concerns and Familiarity: Most students were comfortable with data collection (91% self, 86% patients) but anticipated more ethical challenges (91%). Familiarity: 57% knew chatbots, 50% IBM, 58% ANNs..
Simone Castagno, Mohamed Khalifa (2020)	Healthcare professionals working in Royal Free London NHS Foundation Trust.	98	Convenience sampling	1. Low AI Awareness: 64% of healthcare workers haven't encountered AI at work, and 87% can't differentiate between machine learning and deep learning. 2. Mixed AI Attitudes: 2. Mixed AI Attitudes: Despite 80% worrying

				about AI privacy, 79% find it useful, and only 10% fear job displacement.
--	--	--	--	---

CHAPTER 3

Methods:

Research Question: What is the awareness level of AI in healthcare among healthcare professionals?

Research Approach: Quantitative approach

Study Design: Descriptive Cross-sectional Study

Study Population: Healthcare professionals

Study Location: This was a multi-center study. The questionnaire was forwarded to multiple medical colleges/hospitals/healthcare staff from different parts of India.

Inclusion Criteria: All the healthcare professionals working during the study period.

Study Duration: 3 months

Sample Size: 100

Sampling technique: Participants were recruited using a snowball sampling technique. An online questionnaire was shared through emails, text messages, WhatsApp status, and social circles using a Google Form.

Statistical methods : Basic analysis was done using pie charts generated by the google form.

Data Collection Method: A 31-item, close-ended survey administered using Google Forms as the online platform.

Data Collection type: Quantitative type.

Ethical consideration: The data collected is handled with confidentiality.

CHAPTER 4

Results :

Demographic

Figure 1.1: Gender distribution of the respondents

1. Gender
100 responses

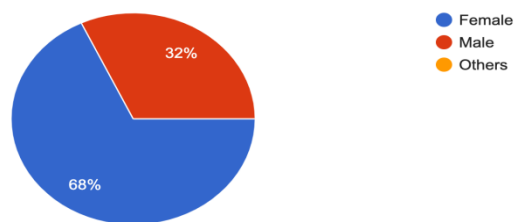


Figure 1.2: Pie chart showing the age distribution of the respondents

2. What is your current age?
100 responses

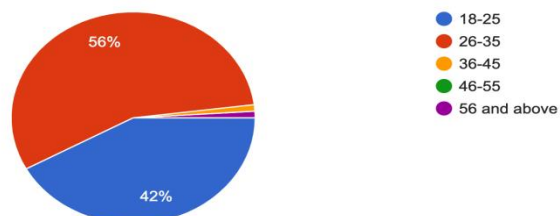


Figure 1.3: Highest education level of the respondents

3.What is your highest education?
100 responses

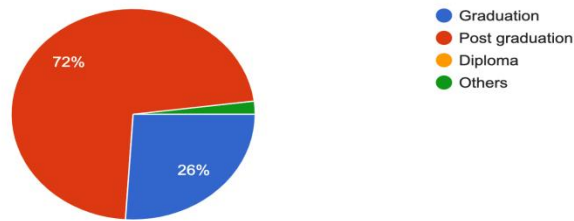


Figure 1.4: Professions of the respondents

4.What is your profession?
100 responses

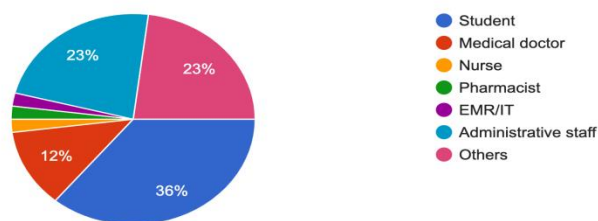
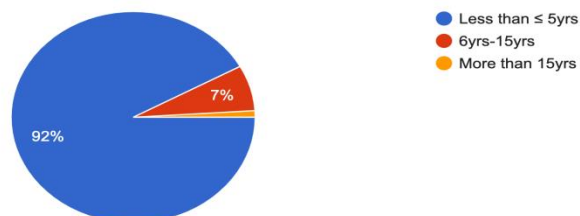


Figure 1.5: Years of work experience of the respondents

5.How many years of work experience do you have?
100 responses



In a survey of 100 healthcare professionals, predominantly young (56% aged 26-35) and highly educated (72% with post-graduate degrees), 68% were female and 32%

male. Most respondents (92%) had less than 5 years of experience, encompassing roles such as students (36%), administrative staff (23%), and medical doctors (12%). This demographic's show awareness of AI is crucial for tackling healthcare challenges such as low doctor-patient ratios and inefficiencies.

Awareness Level of AI

Figure 2.1: The respondents awareness of AI

6.Do you know what Artificial Intelligence (AI) is?
100 responses

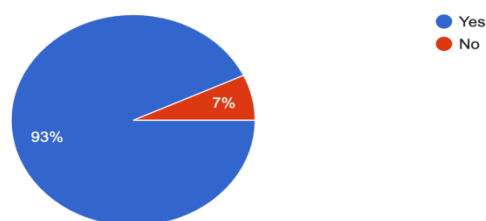


Figure 2.2: Respondents who have used AI-powered health chatbots

7.Have you ever used AI-powered health chatbots?
100 responses

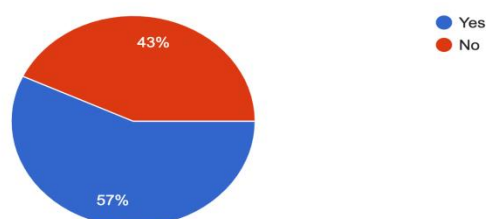


Figure 2.3: Respondents who know any AI applications in the medical field

8.Do you know any app of Artificial Intelligence in the medical field?
100 responses

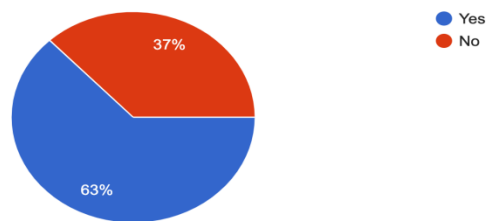


Figure 2.4: Respondents who reported AI being used in their organization

9.Is AI being used in your organization?
100 responses

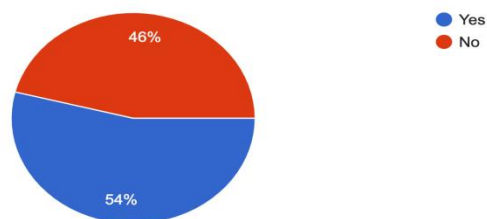


Figure 2.5: The openness of respondents to adopting new AI technologies in their practice

10.How open are you to adopting new AI technologies in your practice?
100 responses

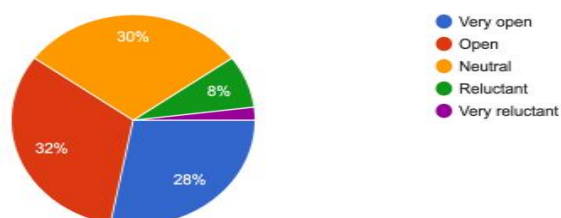
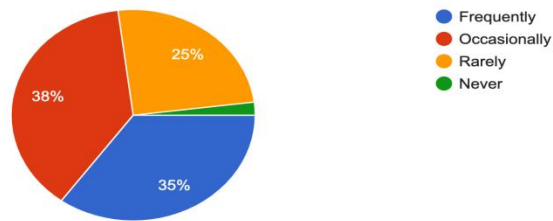


Figure 2.6: How often respondents read about AI advancements in healthcare

11.How often do you read about AI advancements in healthcare?

100 responses



The survey reveals a strong AI awareness among healthcare professionals, with 93% acknowledging its presence. A notable 57% have utilized AI-powered health chatbots, and 63% are knowledgeable about AI applications in medicine. Within their workplaces, 54% reported active AI utilization. . When it comes to staying informed about AI advancements in healthcare, 35% frequently read about them, 38% do so occasionally, while 25% do it rarely, and only 2% never engage with such information.

Healthcare professionals Attitudes towards AI

Figure 3.1: Percentage of how useful respondents think AI could be at their workplace

12.How useful could Artificial Intelligence be at your workplace?

100 responses

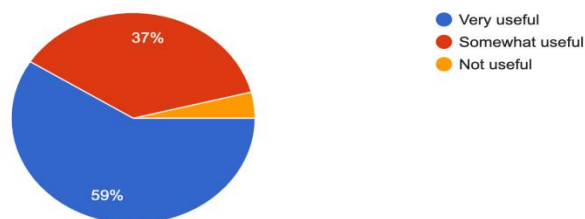


Figure 3.2: Percentage of how worried respondents are that AI will replace them at their job

13.How worried are you that AI will replace you at your job?

100 responses

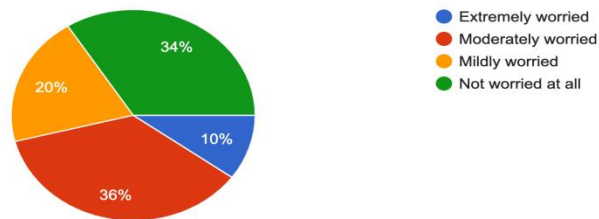


Figure 3.3: Percentage of respondents who feel that using AI can make them feel less stressed

14.Do you feel that using Artificial Intelligence can make you feel less stressed?

100 responses

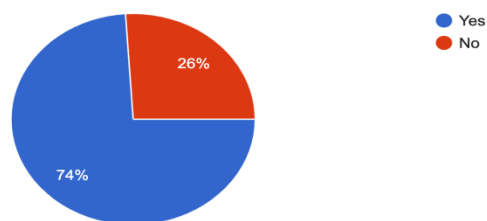


Figure 3.4: Percentage of respondents who have attended a session of AI training

15.Have you ever attended a session of AI training?

100 responses

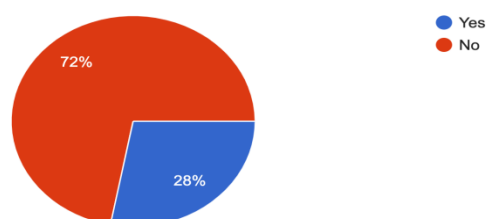


Figure 3.5:Percentage of respondents who believe AI should be included in medical education

16. Should AI be included in medical education?

100 responses

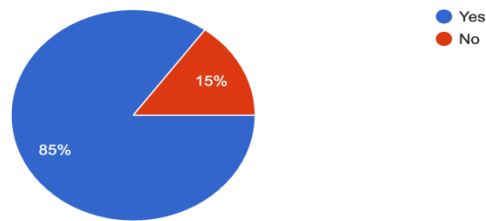
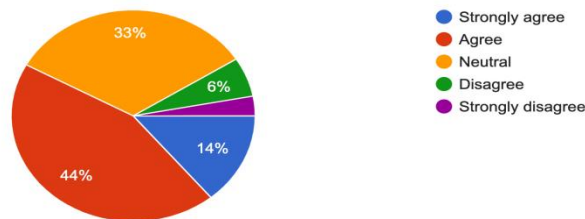


Figure 3.6: Percentage of respondents' belief in AI's ability to reduce medical errors

17. Do you believe AI can reduce medical errors?

100 responses



Key findings from the survey of healthcare professionals reveal a mix of attitudes towards AI adoption and its potential impacts. Concerns about job security vary, with 66% expressing some level of worry about AI replacing them, while 74% believe AI can alleviate workplace stress. A significant majority, 96%, find AI useful to varying degrees in their roles. Engagement with AI education sessions is moderate, with 28% having attended such sessions. There is strong support, at 85%, for integrating AI into medical education.

Perception of AI

Figure 4.1: Respondents' views on which areas AI is most useful in healthcare

20. Which of the following do you think AI is more useful in healthcare settings?

100 responses

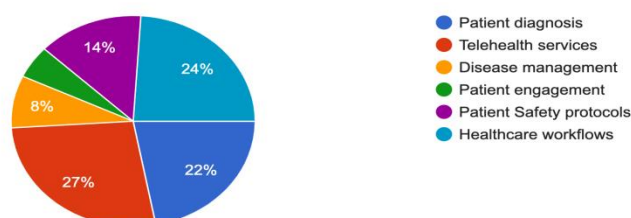


Figure 4.2: Respondents aware of AI technologies for managing health insurance claims

21. Are you aware of AI technologies for managing health insurance claims?

100 responses

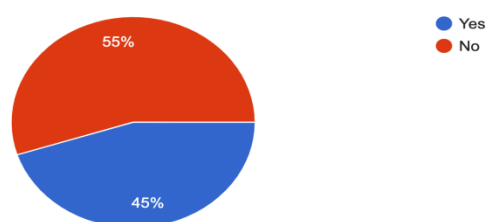


Figure 4.3: Respondents' familiarity with the ethical considerations of AI in healthcare

22. How familiar are you with the ethical considerations of AI in healthcare?

100 responses

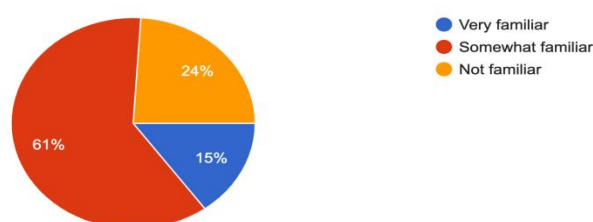


Figure 4.4: Respondents who are worried about completely trusting AI algorithms with patients' lives

23.Are you particularly worried about completely trusting AI algorithms with patients lives?
100 responses

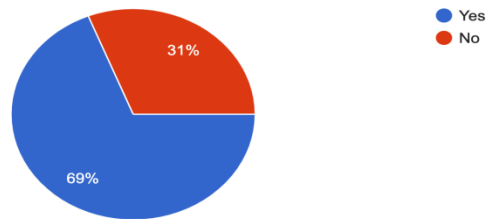


Figure 4.5: Those who responded, suggesting that AI would improve the management of patients' data

24.Do you think patients data management would be improved if managed by AI?
100 responses

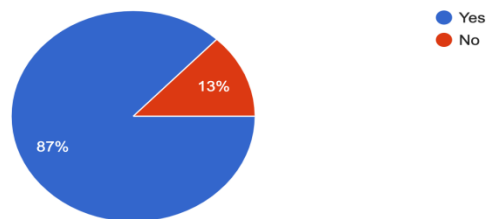


Figure 4.6: Those who think AI System would be better at diagnosis and treatment compared to the Doctors.

25.Do you think AI systems would be superior to the doctors in making diagnosis and treatments?
100 responses

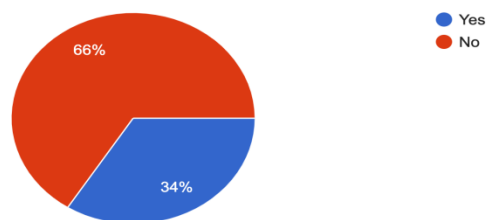


Figure 4.7: Percentage of respondents who believe there may be serious privacy issues with the use of AI

26. Do you think there may be serious privacy issues with the use of AI?
100 responses

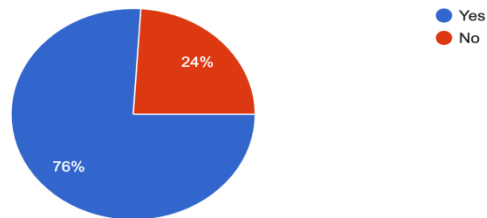


Figure 4.8: Percentage of respondents who believe inclusion of AI that current problems faced by the healthcare system, such as a low doctor-patient ratio, lack of efficiency and accuracy, and financial burden, can be solved.

27. Do you think inclusion of AI can solve the current problems faced by the healthcare system (low doctor-patient ratio, lack of efficiency and accuracy, financial burden)?
100 responses

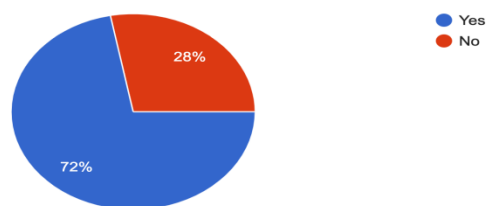


Figure 4.9: Respondents who believe AI can improve patient outcomes

28. Do you think AI can improve patient outcomes?
100 responses

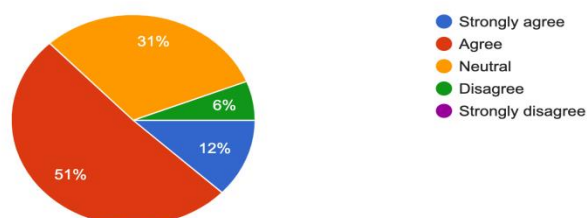


Figure 4.10: Respondents who believe AI can assist in personalized medicine

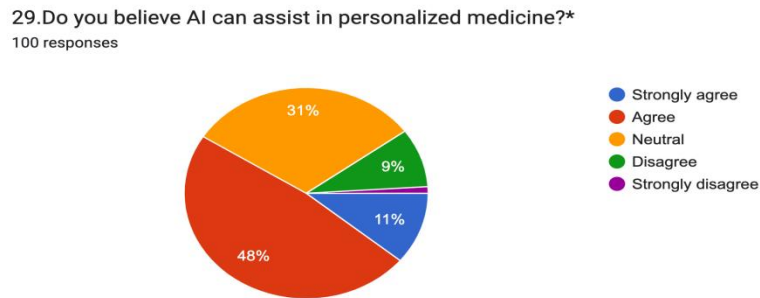


Figure 4.11: Respondents who believe AI can help in reducing healthcare costs

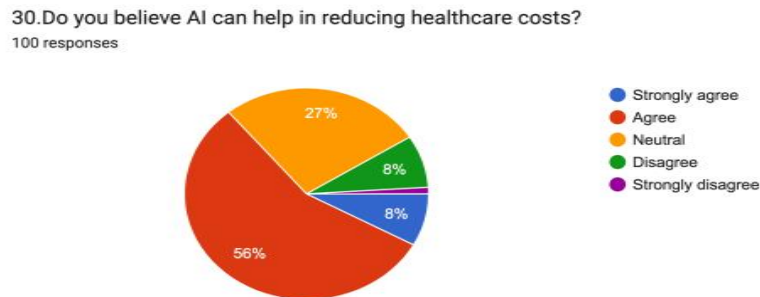
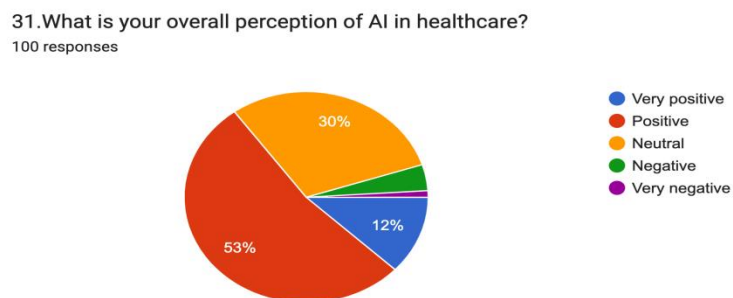


Figure 4.12: Respondents about overall perception of AI in healthcare



76% of respondents worry about privacy issues with AI, while 24% do not. 72% believe AI can solve healthcare problems like low doctor-patient ratios and inefficiency, with 28% disagreeing. Regarding patient outcomes, 63% think AI can improve them, while 31% are neutral, and 6% disagree. For personalized medicine, 59%

see AI as helpful, 31% are neutral, and 10% disagree. Additionally, 64% believe AI can reduce healthcare costs, with 27% neutral, and 8% disagreeing. Overall, 65% have a positive view of AI in healthcare, 30% are neutral, and 5% have a negative view.

CHAPTER 5

Discussion:

The survey conducted among 100 healthcare professionals, who are predominantly young and highly educated, offers valuable insights into their awareness and perceptions of AI in the healthcare sector. A substantial 93% of respondents are aware of AI, and 57% have experience using AI-powered health chatbots, indicating a broad recognition of AI's potential in the field. Furthermore, 63% are knowledgeable about AI applications in healthcare, with 54% reporting active AI use in their workplaces.

Despite diverse attitudes toward adopting new AI technologies—ranging from enthusiastic to hesitant—there is a clear trend toward staying informed about AI advancements, with 73% reading about these developments at least occasionally. Many professionals see AI as a means to alleviate workplace stress, with 74% supporting this view, and 96% finding AI beneficial in their roles. However, job security remains a concern, with 66% worried about being replaced by AI.

The survey identifies key areas where AI is considered most useful, notably telehealth services (27%), healthcare workflows (24%), and patient diagnosis (22%). There are concerns about privacy and fear from loss of trust in AI with patients' lives: while 76% consider the privacy issues, 69% are ill at ease with complete reliance on AI algorithms.

There is strong support for integrating AI into medical education, with 85% in favor, indicating readiness toward new technologies at a very high level. Furthermore, 58% of them believe that AI can help reduce medical errors, which reflects a cautious optimism regarding its impact on patient safety. About 87% of the responding believed that AI would help in better management of data pertaining to patients, and 64% said it would help in the reduction of health care costs.

The findings, all taken together, indicate that the majority—65 percent—are positive about AI in healthcare, while 30 percent are neutral, and only 5 percent holding a negative view. Results were indicative of interest in the potential benefits and concern over the implementation and ethical issues related to AI in healthcare.

CHAPTER 6

Conclusion:

The poll of 100 young, highly educated health professionals will turn out to have an extremely strong awareness and realization of AI's potential in healthcare, particularly about telehealth, workflows, and patient diagnosis. While there are misgivings about job security and privacy, the overall attitude remains very distinctly positive, with many believing AI can enhance data management, reduce costs, and alleviate stress. Support for integrating AI in medical education is very high, thus proving the readiness to these technologies need to be embraced, though ethical considerations and trust issues must be addressed for successful implementation. On the safety of patients, 58% agree that AI can help reduce medical errors, thus showing cautious optimism about the role AI would play in improving healthcare practice. Attitudes to adopting new AI technologies range from enthusiastic to very hesitant. The results underscore a general recognition of potential perspectives of AI in health care, while there is variable readiness among professionals to adopt these technologies.

References :

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7861214/#s3title>

https://journals.lww.com/annals-of-medicine-and-surgery/fulltext/2024/05000/investigating_awareness_of_artificial_intelligence.46.aspx

<https://www.mdpi.com/1648-9144/59/5/828>

<https://www.dovepress.com/knowledge-attitude-and-practice-toward-artificial-intelligence-among-h-peer-reviewed-fulltext-article-AMEP>

<https://www.cureus.com/articles/240468-knowledge-awareness-and-practice-of-artificial-intelligence-and-types-of-realities-among-healthcare-professionals-a-nationwide-survey-from-pakistan#!/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11060211/>

<https://www.frontiersin.org/journals/artificial-intelligence/articles/10.3389/frai.2020.578983/full>