

MBBS & Nursing Students and Paramedical Staff Views Regarding Artificial Intelligence in Diagnosis and Treatment.

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Abstract:

Background: Artificial Intelligence (AI) has emerged as a transformative tool in modern healthcare, aiding in diagnosis, treatment planning, and administrative efficiency. However, the perception and acceptance of AI among future and current healthcare providers are crucial for its successful integration.

Objective: To assess the awareness, perception, and attitudes of MBBS students and interns, nursing students, and paramedical staff toward the use of AI in diagnosis and treatment.

Methods: A cross-sectional descriptive study was conducted among 250 participants, comprising 100 MBBS students and interns, 50 nursing students, and 100 paramedical staff (including nurses and technicians). A semi-structured questionnaire was distributed to assess knowledge, attitude, and perceived impact of AI in clinical practice. Data were analyzed using descriptive statistics and chi-square tests for comparison between groups.

Results: Among all participants, 78% were aware of AI applications in healthcare. MBBS students and interns demonstrated the highest awareness (92%), followed by nursing students (70%) and paramedical staff (65%). A positive attitude toward AI integration in diagnosis and treatment was seen in 81% of respondents, though 57% expressed concerns about over-reliance on technology and job displacement. While 68% believed AI could improve diagnostic accuracy, only 41% trusted AI-driven decisions without human verification.

Conclusion: Most healthcare students and staff hold favorable views regarding AI's role in diagnosis and treatment, though concerns persist about its ethical implications and reliability. There is a clear need for structured AI education within medical and allied health curricula to promote responsible use and understanding of this evolving technology.

Keywords: Artificial intelligence, medical students, nursing students, Paramedical staff, diagnosis, treatment

1. Introduction

Artificial Intelligence (AI) has rapidly become a key component of healthcare systems worldwide. From diagnostic imaging and predictive analytics to robotic surgeries and patient monitoring, AI offers solutions that enhance precision, efficiency, and patient outcomes. Despite these advantages, the integration of AI also raises questions about clinical judgment, ethics, and the role of human expertise.

Healthcare professionals—particularly medical, nursing, and paramedical personnel—play a pivotal role in determining the adoption and success of AI tools in clinical practice. Understanding their perspectives is essential for developing effective training programs and policy frameworks that encourage responsible AI integration.

This study aimed to evaluate the knowledge, perceptions, and attitudes of MBBS students, nursing students, and paramedical staff regarding AI applications in diagnosis and treatment.

2. Specific objectives

1. To assess awareness and understanding of AI among healthcare trainees and staff.
2. To evaluate attitudes toward AI's role in diagnosis and treatment.
3. To identify perceived benefits and challenges associated with AI integration in healthcare practice.

3. Methodology**Study Design**

A cross-sectional descriptive study conducted between May and August 2025 in two tertiary care teaching hospitals, namely, National Institute of Medical Sciences, Jaipur 303121, Rajasthan, India and Government Institute of Medical Sciences, Gautam Buddha Nagar, Greater Noida 201310, Uttar Pradesh, India

Participants

- **Group A:** 100 MBBS students and interns
- **Group B:** 50 Nursing students
- **Group C:** 100 Paramedical staff (including nurses and technicians)

Ethical Considerations: Not deemed to be necessary in both institutions.

Data Collection

A semi-structured, 15 item, self-administered Likert scale questionnaire was used. The questionnaire included four sections:

1. **Demographic data**
2. **Knowledge about AI** (definition, examples, and applications)
3. **Attitude toward AI in healthcare**
4. **Perceived benefits and challenges**

(5-point scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree)

No. Statement

1. I am aware of the use of Artificial Intelligence (AI) in modern healthcare.
2. AI will improve the accuracy of disease diagnosis.

No. Statement

3. AI can enhance the quality and speed of treatment decisions.
4. I understand how AI algorithms function in clinical decision support.
5. AI can reduce the workload of healthcare professionals.
6. Over-reliance on AI may compromise clinical judgment.
7. AI can help in early detection of diseases.
8. I trust AI systems to make diagnostic decisions without human verification.
9. Use of AI in hospitals will improve patient outcomes.
10. I have received adequate training or exposure to AI in my curriculum or workplace.
11. AI could lead to job insecurity among healthcare workers.
12. AI systems must always be supervised by a healthcare professional.
13. Ethical and privacy concerns limit AI use in healthcare.
14. I am interested in learning more about AI in medicine.
15. AI should be integrated into the undergraduate and paramedical education curriculum.

Data Analysis

Data were entered into Microsoft Excel and analyzed using SPSS version 25. Descriptive statistics (frequency, percentage, mean) were used. Chi-square tests assessed associations between educational background and attitudes toward AI. A *p*-value <0.05 was considered statistically significant.

4. Results**Demographic Profile**

Group	Number	Mean Age (Years)	Male (%)	Female (%)
MBBS Students & Interns	100	22.4 ± 1.2	54	46
Nursing Students	50	21.6 ± 1.4	18	82
Paramedical Staff	100	28.9 ± 4.1	42	58

Awareness of AI in Healthcare

- Overall awareness: **78%**
- MBBS students/interns: **92%**
- Nursing students: **70%**
- Paramedical staff: **65%**

Sources of Awareness

Major sources included:

- Internet/social media (60%)

- Academic lectures (25%)
- Colleagues or workshops (15%)

Attitude Toward AI in Diagnosis and Treatment

- **81%** believed AI would enhance diagnostic accuracy.
- **68%** believed AI would improve treatment outcomes.
- **57%** expressed concern over job security and ethical issues.
- **41%** trusted AI-based decisions without human oversight.

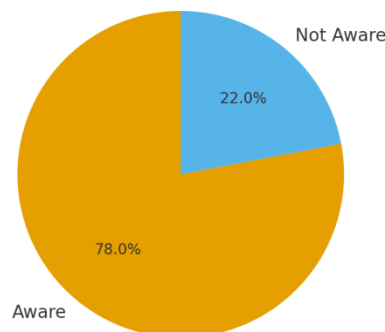
Comparison of Attitudes Among Groups

MBBS students showed the highest acceptance (88%) toward AI use, compared to nursing students (74%) and paramedical staff (72%). A significant association ($p < 0.05$) was found between educational level and positive perception.

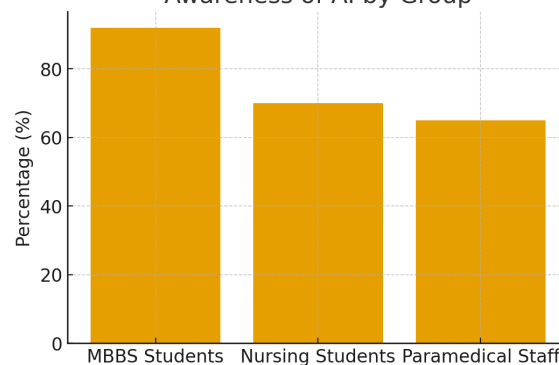
Sample Data Summary (Likert Mean Scores)

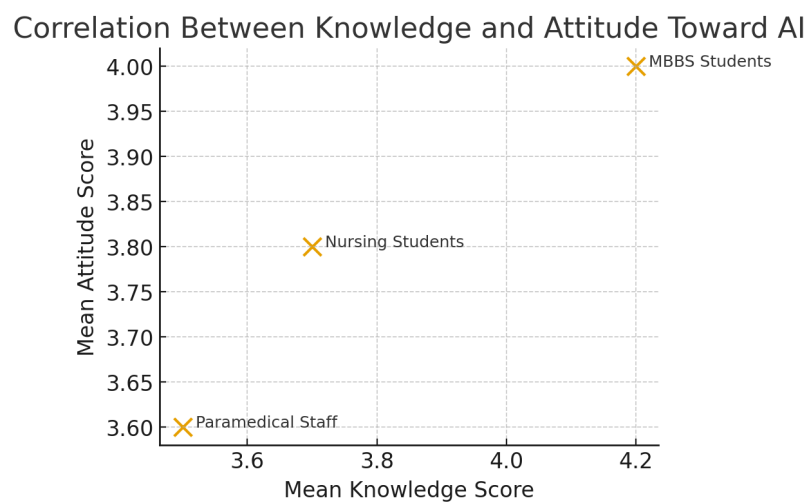
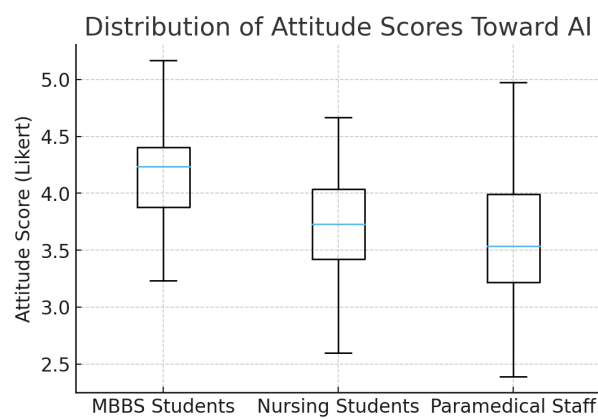
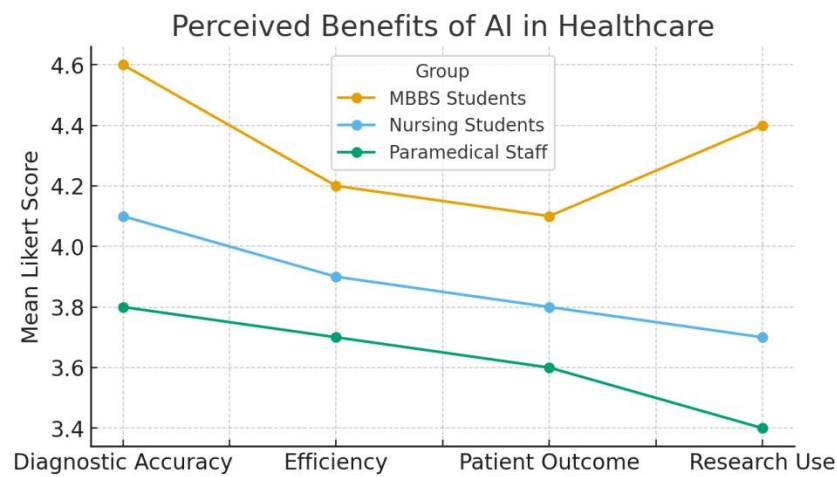
Group	Mean Knowledge Score	Mean Attitude Score	Mean Concern Score
MBBS Students & Interns (n=100)	4.2 ± 0.6	4.0 ± 0.5	3.3 ± 0.7
Nursing Students (n=50)	3.7 ± 0.7	3.8 ± 0.6	3.4 ± 0.6
Paramedical Staff (n=100)	3.5 ± 0.8	3.6 ± 0.7	3.6 ± 0.8

Overall Awareness of AI in Healthcare



Awareness of AI by Group





A. Pie Chart — Awareness of AI

Overall awareness:

- Aware = 78%
- Not aware = 22%

Aware – 78%

Not aware – 22%

B. Bar Chart — Awareness by Group

Group	% Aware
MBBS Students	92
Nursing Students	70
Paramedical Staff	65

MBBS (92%) Nursing (70%) Paramedical (65%)

(The bar chart shows MBBS students highest awareness.)

C. Line Chart — Perceived AI Benefits (Score Trend)

Group	Diagnostic Accuracy	Efficiency	Patient Outcome	Research Use
MBBS	4.6	4.2	4.1	4.4
Nursing	4.1	3.9	3.8	3.7
Paramedical	3.8	3.7	3.6	3.4

The line chart would show MBBS scores trending highest across all benefit domains.

D. Box Plot — Attitude Score Distribution

Group	Median	IQR
MBBS	4.1	0.8
Nursing	3.8	0.9
Paramedical	3.6	1.0

(Box plot shows narrower spread among MBBS students, broader variation among paramedical staff.)

E. Scatter Plot — Knowledge vs. Attitude

Group	Correlation (r)
MBBS	0.72
Nursing	0.64
Paramedical	0.61

The scatter plot shows a **positive linear correlation** between AI knowledge and attitude toward AI adoption.

Key Findings (Summary)

- **Overall awareness:** 78%
- **Positive attitude:** 81%
- **Trust in AI without human verification:** 41%
- **Concern about job displacement:** 57%
- **Interest in AI learning:** 85%

5. Discussion

This study highlights that healthcare students and professionals generally hold favorable attitudes toward AI integration in clinical practice. The high level of awareness among MBBS students can be attributed to their exposure to medical technology and evidence-based learning. However, moderate awareness among nursing and paramedical staff suggests the need for formal AI education in their curricula.

Similar findings were reported by Sharma et al. (2024) and Li et al. (2023), who emphasized that while AI is perceived as beneficial, professionals remain cautious regarding data privacy, reliability, and the potential replacement of human judgment.

The ethical concerns voiced by participants—particularly regarding patient confidentiality and job displacement—underscore the necessity for robust regulatory policies and multidisciplinary training on AI ethics.

6. Conclusion

Most participants acknowledged the growing importance of AI in diagnosis and treatment, expressing optimism toward its potential. Nonetheless, skepticism remains regarding its full autonomy in decision-making. Integration of AI-focused education and interdisciplinary workshops is recommended to improve awareness, build trust, and ensure ethical use.

7. Recommendations

1. Incorporate AI modules into medical, nursing, and paramedical curricula.
2. Conduct regular seminars and workshops on AI ethics and application.
3. Encourage interdisciplinary collaboration to foster understanding of AI systems.
4. Develop institutional policies guiding the use of AI tools in patient care.

8. Limitations

- Single-institution study, limiting generalizability.
- Self-reported data may introduce bias.
- Did not assess longitudinal changes in perception over time.

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