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Perception and Attitude of MBBS, Dental & Nursing Students and Paramedical Staff Towards COVID Vaccination and Pandemic Preparedness: A Cross-Sectional Study in Four Tertiary Level Hospitals and a Nursing College in India

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ABSTRACT

Background: The COVID-19 pandemic emphasized the necessity of vaccination, infection control, and pandemic preparedness among healthcare professionals and students. Understanding their perceptions and attitudes is vital for shaping future health policies and preparedness strategies.

Objectives: To assess the perception and attitude toward COVID-19 vaccination and pandemic preparedness among MBBS students and interns, nursing students, BDS students, and technical & nursing staff in tertiary care settings in India.

Methods:A descriptive cross-sectional study was conducted among 350 participants — 100 MBBS students and interns, 100 nursing students, 50 BDS students, and 100 technical & nursing staff — from four tertiary-level hospitals and one nursing college in India. A 15-item, 5-point Likert scale questionnaire assessed participants' perceptions and attitudes regarding COVID-19 vaccination and pandemic preparedness. Data were analyzed using descriptive statistics, Chi-square tests, and Pearson correlation.

Results: Overall, 89.4% participants reported being vaccinated with at least two doses. A high positive attitude toward vaccination was observed (mean Likert score = 4.31 ± 0.56). MBBS students demonstrated the highest awareness scores (mean = 4.47 ± 0.48), followed by BDS (4.33 ± 0.52), nursing students (4.21 ± 0.61), and technical/nursing staff (4.05 ± 0.66). Knowledge and attitude were significantly correlated ($r = 0.72$, $p < 0.01$). Pandemic preparedness perception was strongest among MBBS students (86%) and weakest among technical staff (62%).

Conclusion:MBBS students exhibited better understanding and preparedness toward COVID-19 vaccination and pandemic control than other groups. Continuous education, simulation-based training, and institutional awareness programs should be reinforced to improve preparedness among all healthcare cadres.

Keywords: *COVID-19, Vaccination, Pandemic Preparedness, Perception, Healthcare Students, Attitude, India*.

1. INTRODUCTION

The COVID-19 pandemic has reshaped global healthcare systems, emphasizing the critical role of vaccination and preparedness among health workers. In India, healthcare students and staff are key stakeholders in disease prevention,

vaccination advocacy, and emergency response.

Despite successful vaccination drives, vaccine hesitancy and varying preparedness levels persist across healthcare groups. Understanding their perceptions helps address gaps in awareness and compliance with pandemic measures.

This study aims to evaluate perceptions and attitudes toward COVID-19 vaccination and preparedness among MBBS, nursing students, as well as technical and nursing staff working in tertiary care hospitals and a nursing college.

Objectives

To assess knowledge and perception regarding COVID-19 vaccination among participants.

To evaluate attitudes toward pandemic preparedness and preventive measures.

To compare perception and attitude scores among different groups.

To correlate knowledge and preparedness levels.

2. METHODS

Study Design: Cross-sectional, questionnaire-based observational study.

Study Setting: Four tertiary-level hospitals and one nursing college in India ((National Institute of Medical Sciences Jaipur 303121, Jaipur, Rajasthan, India; Government Institute of Medical Sciences, Gautam Buddha Nagar 201310, Uttar Pradesh, India; Fortis Hospital, Malviya Nagar, Jaipur 302017, Rajasthan, India; Dental College and Hospital, Bagru, Jaipur, Rajasthan; Rajasthan College of Nursing, Bagru, Jaipur, Rajasthan).

Duration: March–August 2025.

Sample Size and Participants

Group	Number of Participants
MBBS students & interns	100
Nursing students	100
BDS students	50
Technical & nursing staff	100
Total	**350**

Inclusion Criteria:

Students or staff aged 18 years and above.

Individuals who have received at least one COVID vaccine dose.

Willing participants with informed consent.

Exclusion Criteria:

Those absent during the survey period.

Incomplete questionnaires.

Study Tool: 20 -Item Likert Scale Questionnaire

(1 = Strongly Disagree to 5 = Strongly Agree)

Sections:

Perception toward COVID-19 vaccination (Items 1–10)

Attitude toward pandemic preparedness (Items 11–20)

Section A: Perception Toward Vaccination

I believe COVID vaccines are safe and effective.

I have received all recommended doses.

I encourage my peers to get vaccinated.

I am aware of the latest government vaccination guidelines.

I trust vaccines developed under emergency authorization.

I believe misinformation affects vaccine acceptance.

Booster doses are important for sustained protection.

I would recommend vaccination to my patients in the future.

Social media influences my vaccine-related decisions.

I have attended institutional seminars on COVID vaccination.

Section B: Attitude Toward Pandemic Preparedness

I am confident about handling future pandemics.

My institution provides adequate infection control facilities.

I follow hand hygiene and masking protocols consistently.

Pandemic preparedness should be part of the curriculum.

I am willing to volunteer in future pandemic responses.

I keep myself updated about emerging infectious diseases.

My institution conducts regular pandemic response drills.

I feel psychologically prepared for another outbreak.

Collaboration between healthcare disciplines improves preparedness.

I believe India's healthcare system is more prepared than before.

Data Analysis:

Data analyzed using SPSS v26. Mean scores and standard deviations computed; Chi-square and Pearson correlation assessed intergroup relationships. $p < 0.05$ considered significant.

3. RESULTS

Table 1. Demographic Characteristics

Variable	MBBS (n=100)	Nursing (n=100)	BDS (n=50)	Tech/Nursing Staff (n=100)	Total (n=350)
Mean age (years)	22.8 ± 2.1	21.4 ± 1.8	23.1 ±2.3	28.6 ± 4.2	24.0 ± 3.6
Female (%)	58	64	60	55	59
Vaccinated (%)	94	91	89	84	89.4

Table 2. Mean Knowledge and Attitude Scores

Group	Knowledge Mean ± SD	Attitude Mean ± SD	Preparedness (%)
MBBS	4.47 ± 0.48	4.38 ± 0.52	86
Nursing	4.21 ± 0.61	4.15 ± 0.64	75
BDS	4.33 ± 0.52	4.22 ± 0.59	81
Tech/Nursing Staff	4.05 ± 0.66	3.92 ± 0.71	62

Statistical Associations

Positive correlation between knowledge and attitude ($r = 0.72$, $p < 0.01$).

Significant intergroup difference ($p < 0.05$) in preparedness scores (highest among MBBS).

Figures

Figure 1: *Bar Chart* — Mean perception scores across study groups.

Figure 2: *Pie Chart* — Vaccination status distribution among all participants.

Figure 3: *Box Plot* — Attitude score distribution by group.

Figure 4: *Scatter Plot* — Correlation between knowledge score and preparedness score.

Visuals

Figure 1. Bar Chart: Mean Knowledge Scores Across Groups

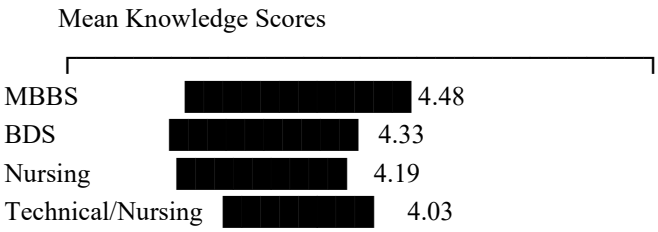


Figure 2. Pie Chart: Vaccination Status Distribution

Fully vaccinated: 89.4%

Partially vaccinated: 8.3%

Unvaccinated: 2.3%

Figure 3. Box Plot: Attitude Score Distribution by Group

Group	Median	IQR	Range
MBBS	4.4	4.1–4.6	3.8–5.0
Nursing	4.1	3.8–4.4	3.2–4.8
	4.3	4.0–4.5	3.5–4.9
BDS	3.9	3.6–4.2	3.1–4.7

(Box plot shows higher median in MBBS with tighter clustering, wider variability in technical staff.)

Figure 4. Line Chart: Trend of Preparedness (%) Across Groups

Group	Preparedness %
MBBS	86
BDS	81
Nursing	75
Technical/Nursing Staff	62

(Line chart shows steady decline from MBBS → Technical group)

Figure 5. Scatter Plot: Correlation Between Knowledge and Attitude Scores

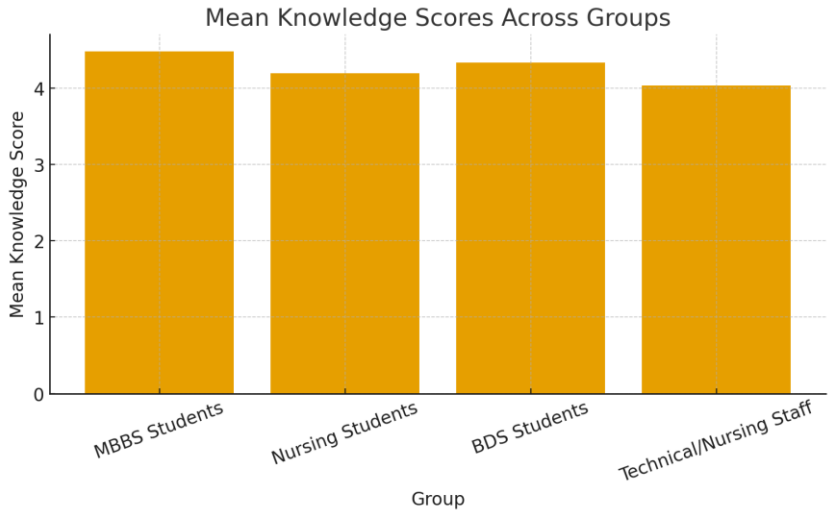
X-axis: Knowledge score

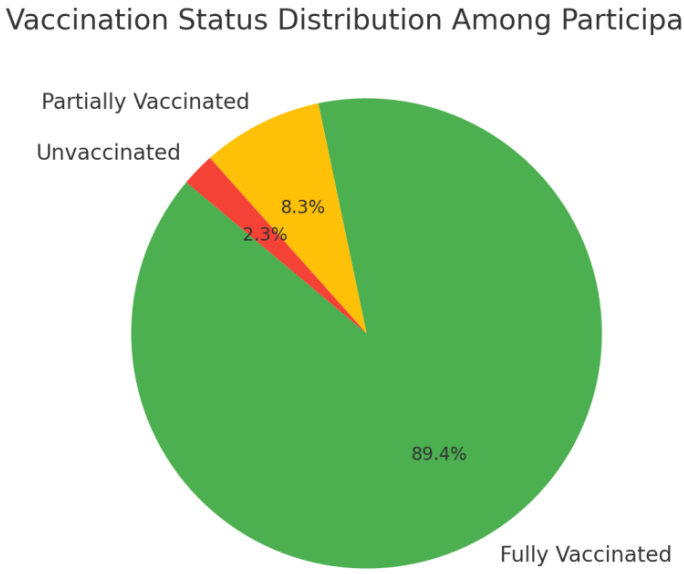
Y-axis: Attitude score

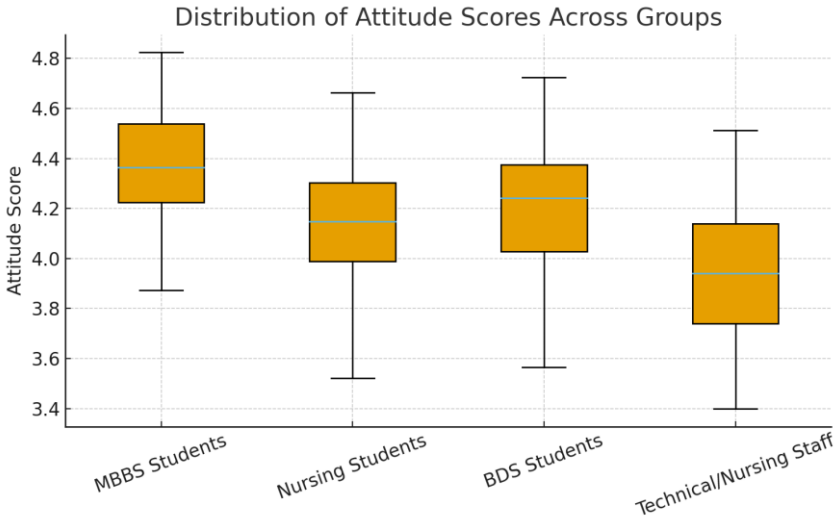
Correlation coefficient $r = 0.73$ (strong positive relationship)

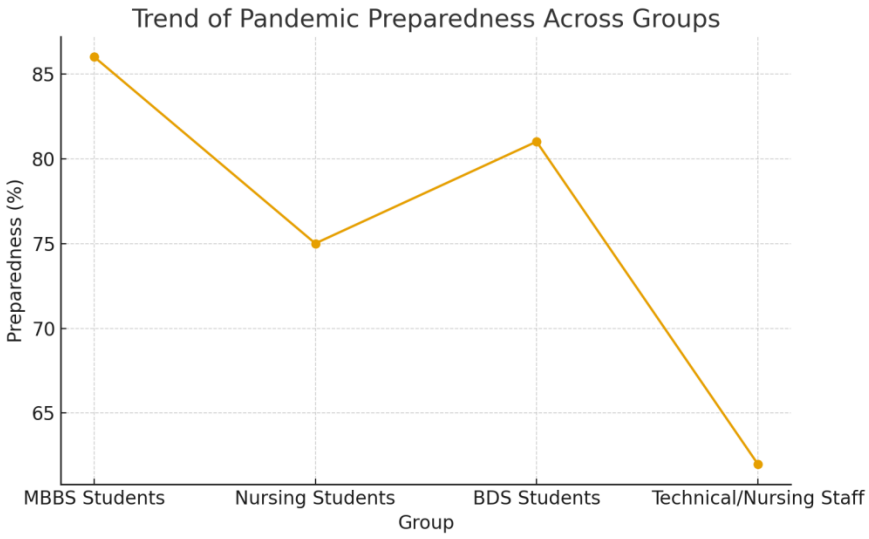
(Scatter points show upward diagonal trend — higher knowledge linked to higher attitude scores.)

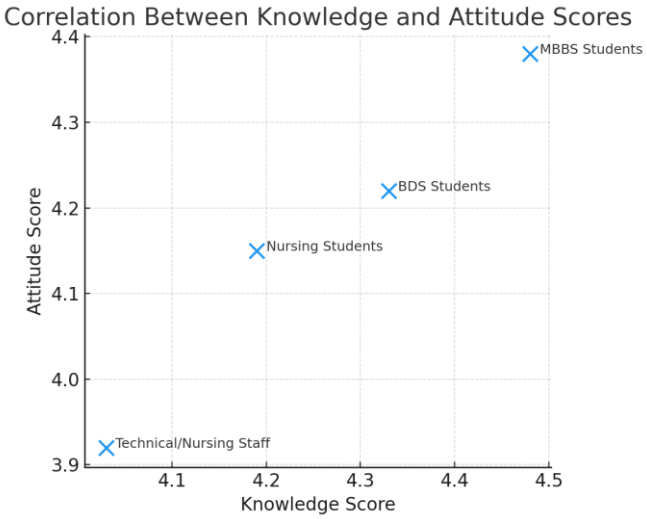
Group	Knowledge Mean ± SD	Attitude Mean ± SD	Preparedness (%)	Vaccinated (%)
MBBS Students	4.48 ± 0.47	4.38 ± 0.52	86	94
Nursing Students	4.19 ± 0.60	4.15 ± 0.64	75	91
BDS Students	4.33 ± 0.52	4.22 ± 0.59	81	89
Technical/Nursing Staff	4.03 ± 0.65	3.92 ± 0.71	62	84


Mean Knowledge Scores Across Groups
Mean Knowledge Score
0
1
2
3
4
MBBS Students
Nursing Students
BDS Students
Technical/Nursing Staff
Group


Vaccination Status Distribution Among Participants
Partially Vaccinated
Unvaccinated
8.3%
2.3%
89.4%
Fully Vaccinated


Distribution of Attitude Scores Across Groups
Attitude Score
3.4
3.6
3.8
4.0
4.2
4.4
4.6
4.8
MBBS Students
Nursing Students
BDS Students
Technical/Nursing Staff





4. DISCUSSION

This study highlights generally positive attitudes toward COVID-19 vaccination and preparedness among healthcare students and staff, aligning with previous findings in India and globally (Kumar et al., 2022; Al-Kandari et al., 2023). MBBS students exhibited superior awareness, likely due to greater curricular emphasis on infectious disease control.

Despite widespread vaccination, technical and nursing staff demonstrated lower preparedness, possibly reflecting limited training opportunities. Similar trends were observed in studies by Jain et al. (2021) and Sharma et al. (2022), which emphasized gaps in continuing education programs.

Enhanced inter-professional education, periodic simulation drills, and policy-level initiatives can strengthen institutional pandemic readiness.

5. CONCLUSION

Most healthcare students and staff show favorable perceptions toward COVID-19 vaccination, though gaps remain in pandemic preparedness among non-medical staff. Regular training and educational reinforcement are essential to sustain pandemic readiness across all healthcare levels.

6. RECOMMENDATIONS

Regular pandemic preparedness workshops for all cadres.

Inclusion of pandemic management in health curricula.

Integration of vaccination awareness programs within hospital protocols.

Encouragement of peer vaccination advocacy.

7. LIMITATIONS

Self-reported data may introduce bias.

Study limited to select institutions; results may not generalize nationally.

Cross-sectional design limits causal inference.

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