

Awareness And Understanding Of Laparoscopic Versus Open Surgery Among Surgical Patients, Medical & Nursing Students, And Paraclinical Staff: A Cross-Sectional Study In Two Indian Medical Colleges

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Abstract

Background: Minimally invasive laparoscopic surgery has revolutionized surgical practice, yet awareness and understanding of its benefits and limitations vary across healthcare stakeholders.

Objective: To assess and compare the awareness and understanding of laparoscopic versus open surgery among MBBS students, nursing students, nurses, and technical staff in two tertiary care teaching hospitals.

Methods: A cross-sectional survey was conducted among 250 participants using a validated Likert-scale questionnaire. Descriptive and inferential statistics were applied using SPSS v26.

Results: MBBS students and interns demonstrated significantly higher awareness scores (mean = 4.2/5) compared to nurses (3.6/5), nursing students (3.8/5), and technical staff (3.2/5). Understanding of procedural differences, recovery time, and complication risks was highest among medical students.

Conclusion: Targeted educational interventions are needed to bridge knowledge gaps among non-physician healthcare workers to ensure informed surgical care and interdisciplinary collaboration.

Keywords: Laparoscopic surgery, open surgery, medical students, nursing students, nurses, technicians

INTRODUCTION

Laparoscopic surgery, characterized by minimal invasiveness, reduced postoperative pain, and faster recovery, has become the standard for many abdominal procedures. Despite its widespread adoption, misconceptions and limited understanding persist among healthcare workers and patients, potentially affecting surgical decision-making and postoperative care.

This study aims to evaluate the awareness and understanding of laparoscopic versus open surgery among key stakeholders—MBBS students and interns, nursing students, nurses, and technical staff—across two medical colleges and their affiliated hospitals in India.

METHODS

Study Design and Setting

A descriptive cross-sectional study was conducted between May and July 2025 in two tertiary care Medical Colleges and their teaching hospitals, namely, National Institute of Medical Sciences, Jaipur, Rajasthan, India and Government Institute of Medical Sciences, Gautam Buddha Nagar, Uttar Pradesh, India.

Participants and sampling

A total of 250 participants were recruited:

- 100 MBBS students and interns (final-year and recent graduates)
- 50 nursing students (3rd and 4th year)
- 50 staff nurses (with ≥ 2 years clinical experience)
- 50 technical staff (OT technicians, radiology, and laboratory personnel)

Inclusion criteria: Presently studying students and presently employed staff of two Medical college & Hospitals. These participants belonged to National Institute of Medical Sciences and Research, Jaipur, Rajasthan - 303121, India and Government Institute of Medical Sciences, Gautam Buddha Nagar, Greater Noida, Uttar Pradesh - 201310, India.

Exclusion criteria: Administrative staff, pharmacy staff and pharmacists (to keep sample focused) and staff on long term leave.

Instrument Development

A structured questionnaire was developed and validated through expert review and pilot testing. It included:

- **Demographics**
- **Awareness Scale (10 items):** e.g., familiarity with laparoscopic procedures, perceived advantages
- **Understanding Scale (10 items):** e.g., knowledge of indications, contraindications, recovery profiles

Responses were recorded on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Cronbach's alpha for internal consistency was 0.87.

15-Item Likert-Scale Questionnaire

Title: *Awareness and Understanding of Laparoscopic vs Open Surgery*

Instructions: Please rate your agreement with the following statements on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree).

Section A: Awareness (Items 1–7)

1. I am familiar with the concept of laparoscopic surgery.
2. I have seen or assisted in a laparoscopic procedure.
3. I understand the basic differences between laparoscopic and open surgery.
4. Laparoscopic surgery is commonly practiced in my institution.
5. I believe laparoscopic surgery is safer than open surgery.
6. I am aware of the types of surgeries that can be done laparoscopically.
7. I have received formal education or training on laparoscopic techniques.

Section B: Understanding (Items 8–15)

8. Laparoscopic surgery generally results in shorter hospital stays.
9. Patients experience less postoperative pain with laparoscopic surgery.
10. Laparoscopic procedures carry fewer risks of infection.
11. Open surgery is preferred in emergency abdominal cases.
12. Laparoscopic surgery requires specialized equipment and training.
13. Cost and accessibility limit the use of laparoscopic surgery in rural areas.
14. Laparoscopic surgery may not be suitable for all patients.
15. I can confidently explain the pros and cons of both surgical approaches to others.

Data Collection

Participants completed the questionnaire anonymously during scheduled academic or departmental sessions. Informed consent was obtained.

Statistical Analysis

Data were analyzed using SPSS v26:

- Descriptive statistics (mean, SD, frequencies)
- ANOVA to compare group scores
- Post-hoc Tukey's test for intergroup differences
- $p < 0.05$ considered statistically significant

Ethical approval: Not deemed necessary

RESULTS

Demographics

Group	Mean Age (years)	Male (%)	Female (%)
MBBS Students	23.1 $\pm$ 1.2	58	42
Nursing Students	21.8 $\pm$ 1.0	12	88
Nurses	29.4 $\pm$ 3.5	10	90
Technical Staff	31.2 $\pm$ 4.1	72	28

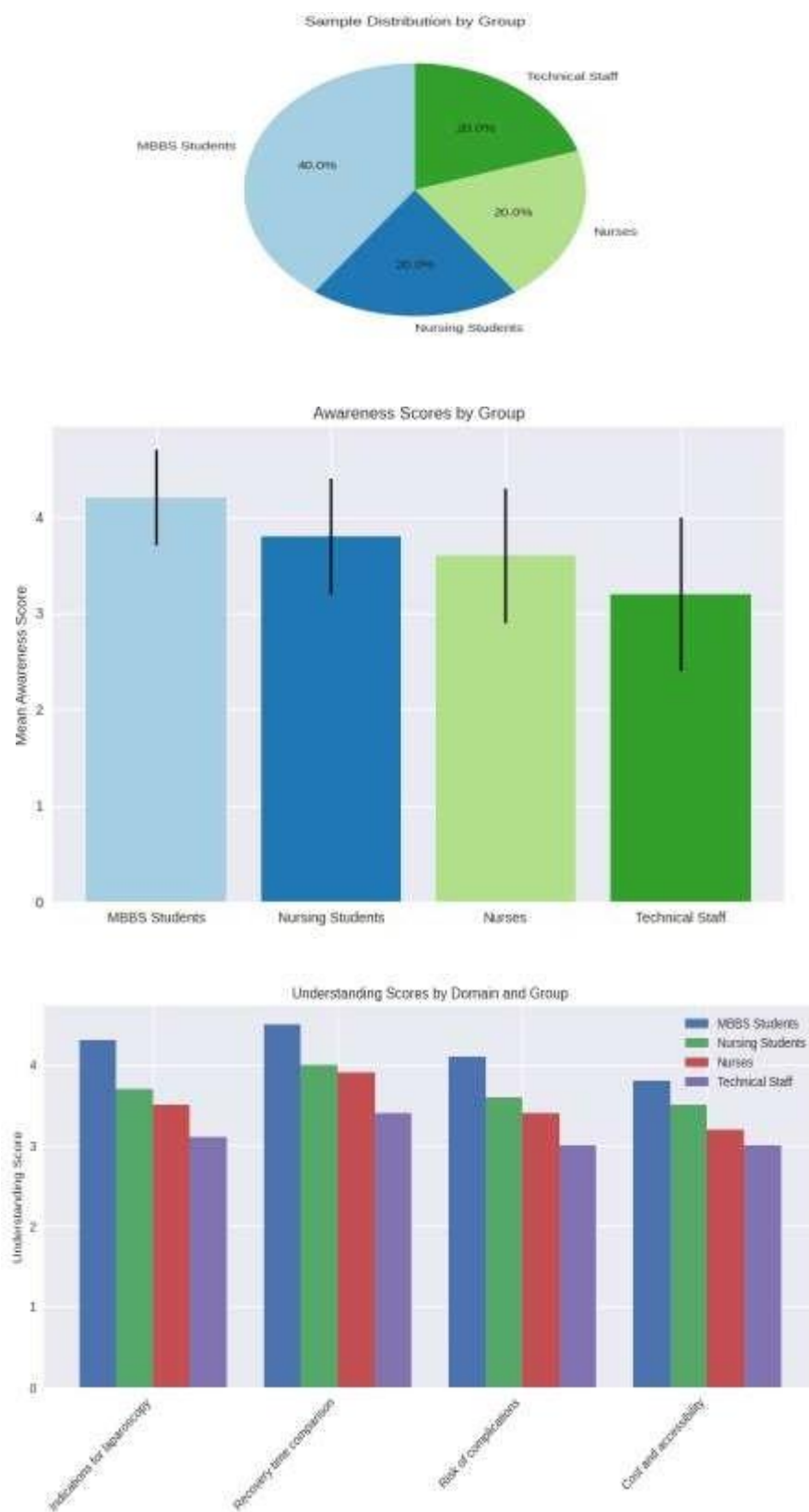
Awareness Scores

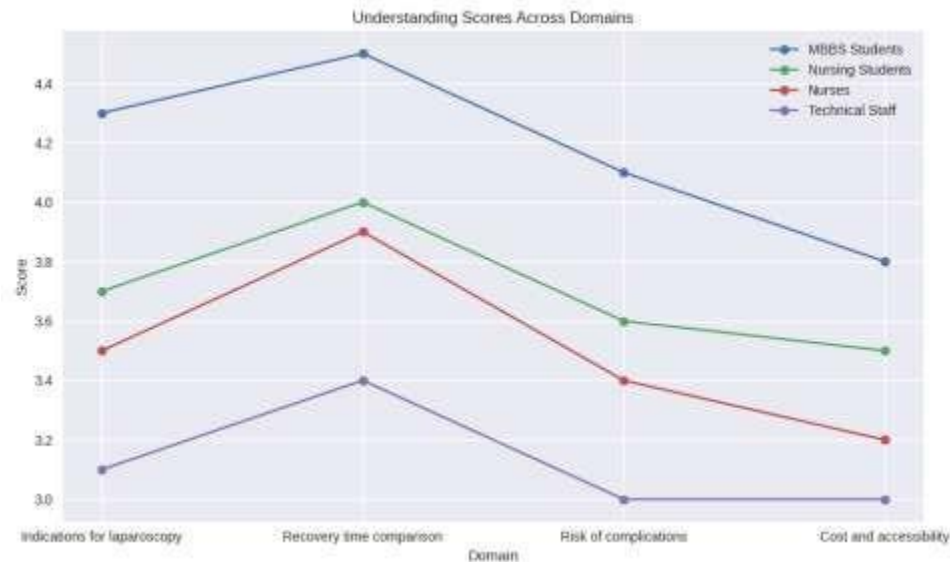
Group	Mean Score (out of 5)
MBBS Students	4.2 $\pm$ 0.5
Nursing Students	3.8 $\pm$ 0.6
Nurses	3.6 $\pm$ 0.7
Technical Staff	3.2 $\pm$ 0.8

ANOVA: $F(3,246) = 12.34, p < 0.001$ **Post-hoc:** MBBS students significantly higher than all other groups.

Understanding Scores

Domain	MBBS	Nursing Students	Nurses	Technical Staff
Indications for laparoscopy	4.3	3.7	3.5	3.1
Recovery time comparison	4.5	4.0	3.9	3.4
Risk of complications	4.1	3.6	3.4	3.0
Cost and accessibility	3.8	3.5	3.2	3.0





DISCUSSION

The findings highlight a significant disparity in awareness and understanding of laparoscopic surgery across healthcare roles. MBBS students and interns, due to their academic exposure and clinical rotations, exhibited superior knowledge. In contrast, technical staff and nurses showed limited understanding, particularly regarding procedural indications and postoperative outcomes.

This gap may hinder interdisciplinary communication and patient education, especially in perioperative settings. Incorporating structured surgical education modules into nursing and paramedical curricula could enhance team-based care and patient safety.

CONCLUSION

Awareness and understanding of laparoscopic surgery are unevenly distributed among healthcare stakeholders. Medical students are well-informed, but nurses and technical staff require targeted educational interventions. Strengthening interdisciplinary surgical literacy is essential for optimizing patient outcomes and collaborative care.

Recommendations

- Integrate laparoscopic surgery modules into nursing and paramedical training.
- Conduct regular CME workshops for hospital staff.
- Develop visual aids and infographics for patient and staff education.
- Promote interdisciplinary simulation-based learning.

Limitations

- Single-region study may limit generalizability.
- Self-reported data subject to response bias.
- No direct assessment of patient outcomes linked to staff awareness.

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