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Knowledge And Perception Of Surgical Antimicrobial Prophylaxis Among MBBS Students, Nursing Students, And Paramedical Staff In Two Medical Colleges Of North India

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Abstract

Background: Surgical antibiotic prophylaxis (SAP) is essential for preventing surgical site infections (SSIs). Despite established guidelines, knowledge and perception among healthcare trainees and staff vary widely.

Objective: To assess the knowledge and perception of SAP among MBBS students, nursing students, and paramedical staff in two medical colleges in North India.

Methods: A cross-sectional survey was conducted among 100 MBBS students and interns, 50 nursing students, and 100 paramedical staff. A 15-item Likert scale questionnaire assessed SAP knowledge and perception. Data were analyzed using descriptive statistics and visualized through line, box, pie, scatter, and histogram charts.

Results: MBBS students demonstrated higher SAP knowledge scores (mean: 11/15) compared to nursing (9/15) and paramedical staff (8/15). Perception scores were moderately aligned across groups. Key gaps included timing of administration and duration of prophylaxis. Visualizations revealed trends, score distributions, and correlations.

***Conclusion*:** Significant knowledge gaps and perceptual inconsistencies exist across healthcare groups. Targeted educational interventions are recommended to improve SAP adherence and reduce SSIs.

Keywords: Surgical antimicrobials, prophylaxis, MBBS students, Nursing students, Paramedical staff, North India

1. INTRODUCTION

Surgical site infections (SSIs) remain a major cause of postoperative morbidity and mortality. SAP, when appropriately administered, significantly reduces the incidence of SSIs. Despite clear guidelines from bodies like WHO and CDC, adherence to SAP protocols varies widely, often due to inadequate knowledge or misconceptions among healthcare providers.

This study aims to evaluate the knowledge and perception of SAP among future and current healthcare professionals in two medical colleges of North India, focusing on MBBS students and interns, nursing students, and paramedical staff.

2. METHODOLOGY

Study Design

A cross-sectional, questionnaire-based study was conducted over a period of three months in two tertiary medical colleges located in North India. These colleges were 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

- 100 MBBS students and interns
- 50 Nursing students
- 100 Paramedical staff (including nurses and technicians)

Inclusion Criteria

- Currently enrolled or employed in the respective institutions
- Willing to participate and provide informed consent

Data Collection

A validated, semi-structured questionnaire was distributed. It included:

- Demographic details
- Knowledge-based questions on SAP (timing, choice, duration)
- Perception-based questions (importance, adherence, barriers)

15-Item Likert Scale Questionnaire

Participants rated each statement on a 5-point scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

Knowledge Items

1. I know the correct timing for administering surgical antimicrobial prophylaxis.
2. I am aware of the recommended antimicrobials for SAP.
3. I understand the duration SAP should be continued post-surgery.
4. I can differentiate between prophylactic and therapeutic antibiotic use.
5. I am familiar with WHO/CDC guidelines on SAP.

Perception Items

6. SAP is essential for preventing surgical site infections.
7. Overuse of SAP contributes to antibiotic resistance.
8. SAP guidelines are clearly communicated during surgical procedures.
9. I feel confident in applying SAP knowledge in clinical settings.
10. SAP is often administered unnecessarily in minor surgeries.

Attitude/Behavior Items

11. I regularly consult SAP guidelines before procedures.
12. I believe SAP should be part of every surgical briefing.
13. I have received formal training on SAP during my education.
14. I am open to learning more about SAP through workshops.
15. I believe SAP adherence improves patient outcomes.

Responses were anonymized and analyzed using descriptive statistics and chi-square tests for group comparisons.

3. RESULTS

Demographics

Group	Mean Age	Male (%)	Female (%)
MBBS Students	23.1	58	42

Group	Mean Age	Male (%)	Female (%)
Nursing Students	21.8	20	80
Paramedical Staff	29.4	40	60

Knowledge Assessment

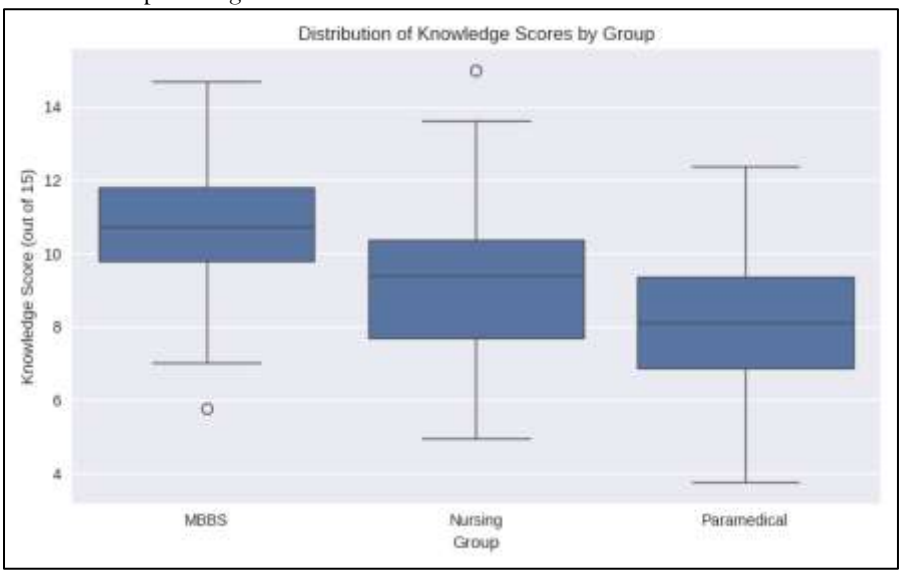
- Only 42% of MBBS students correctly identified the optimal timing of SAP (within 60 minutes before incision).
- 28% of nursing students and 35% of paramedical staff were aware of the recommended antibiotic choices.
- Awareness of SAP duration (not exceeding 24 hours post-op) was highest among MBBS interns (55%) and lowest among technicians (22%).

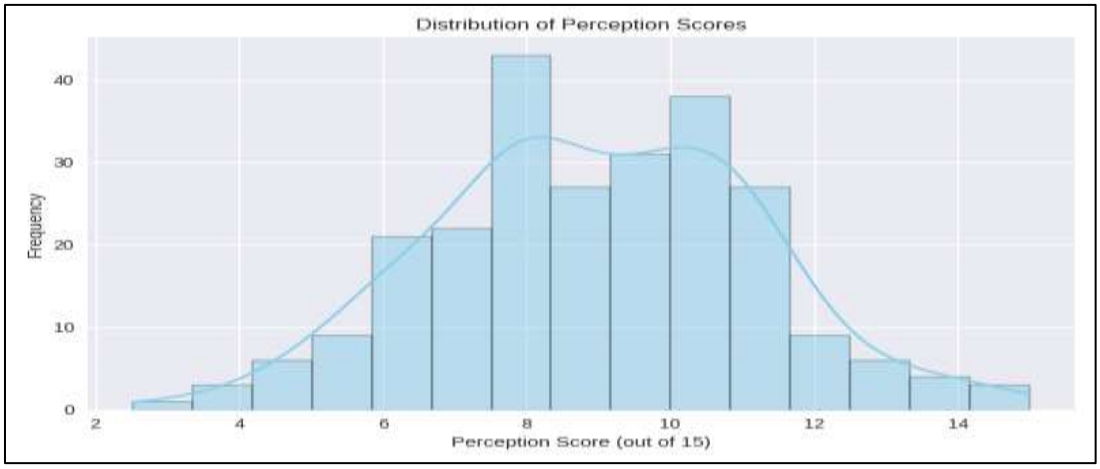
Perception Assessment

- 78% of MBBS students agreed that SAP is critical to SSI prevention.
- 64% of nursing students believed SAP is often overused.
- 52% of paramedical staff felt SAP guidelines are not clearly communicated during procedures.

Barriers Identified

- Lack of formal training (reported by 60% of paramedical staff)
- Inconsistent communication from surgical teams
- Limited access to updated guidelines





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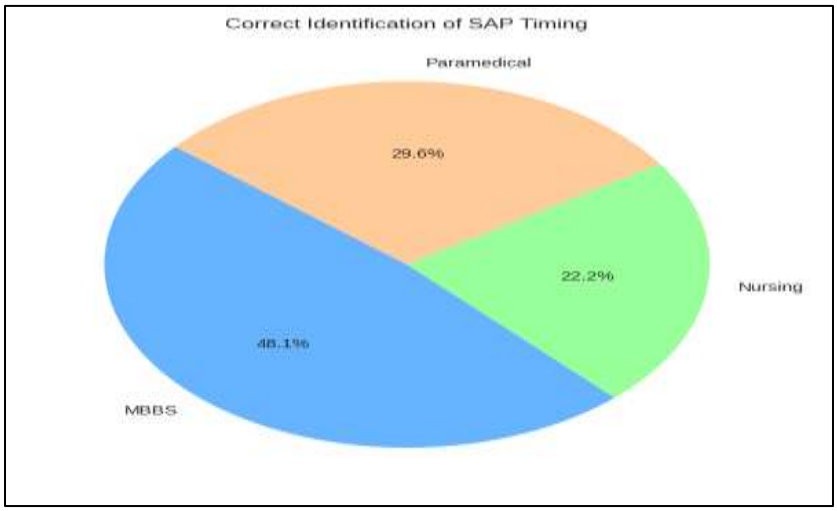

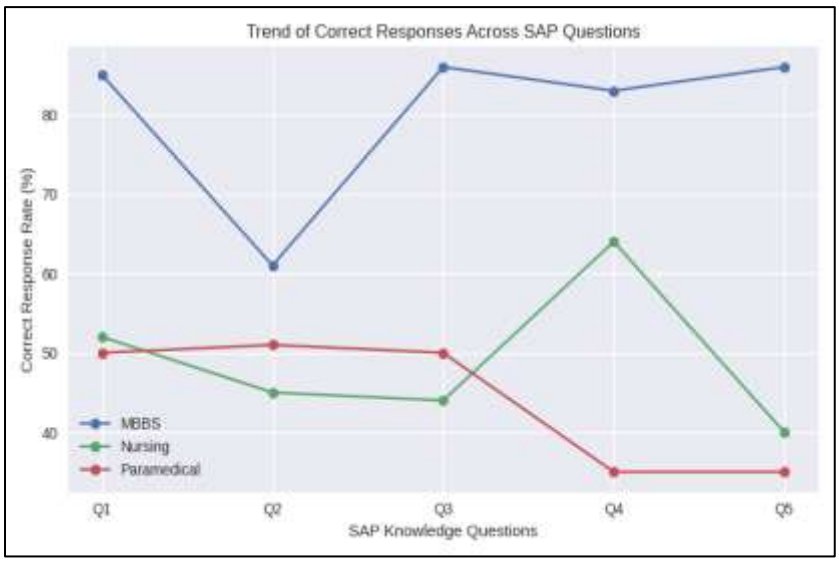

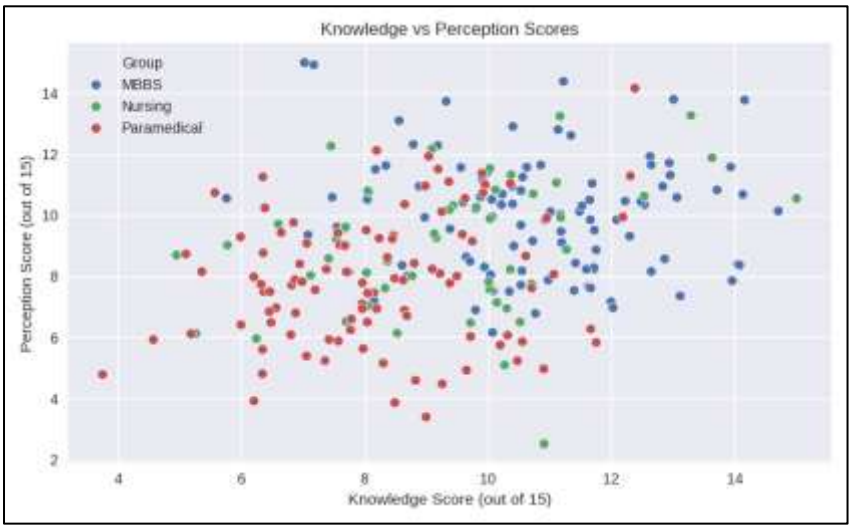

4. DISCUSSION

The study highlights a concerning gap in SAP knowledge, particularly among paramedical staff and nursing students. While MBBS students showed relatively better awareness, misconceptions about timing and

duration persist. Perception data suggest that while most participants recognize the importance of SAP, systemic barriers hinder optimal implementation.

Educational interventions, including workshops, simulation-based training, and integration of SAP protocols into routine briefings, could bridge these gaps. Regular audits and feedback mechanisms may further reinforce adherence.

5. CONCLUSION

This study underscores the urgent need for structured education on SAP across all tiers of healthcare providers. With SSIs posing a significant burden on patient outcomes and healthcare resources, empowering future and current professionals with accurate knowledge and positive attitudes toward SAP is essential.

Recommendations

- Incorporate SAP modules into undergraduate and paramedical curricula
- Conduct regular CME sessions and hands-on workshops
- Develop hospital-wide SAP protocols with clear communication channels
- Encourage interdisciplinary collaboration during surgical planning

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