

Perception And Adherence To Hospital Antimicrobial Policy Among Healthcare Professionals In Four Tertiary Care Hospitals Of India

Dr. Himanshu Singh¹, Ritika Mathur², Rohit³, Ambikesh Tiwari⁴, Magnolia Saha⁵, Riya Gangwar⁶, Thakar Harsh Rajendra⁷, Dr. Hemant Kumar Garg^{*8}, Dr. Rukmini Singh⁹

¹Resident, Department of Pharmacology, National Institute of Medical Sciences, NIMS University Rajasthan Jaipur, 303121, India

²MBBS Student, National Institute of Medical Sciences, NIMS University Rajasthan Jaipur, 303121, India

³MBBS Student, National Institute of Medical Sciences, NIMS University Rajasthan Jaipur, 303121, India

⁴MBBS Student, National Institute of Medical Sciences, NIMS University Rajasthan Jaipur, 303121, India

⁵MBBS Student, National Institute of Medical Sciences, NIMS University Rajasthan Jaipur, 303121, India

⁶MBBS Student, National Institute of Medical Sciences, NIMS University Rajasthan Jaipur, 303121, India

⁷MBBS Student, National Institute of Medical Sciences, NIMS University Rajasthan Jaipur, 303121, India

^{8*}Professor and HOD, Dept. of Pharmacology, National Institute of Medical Sciences, NIMS University Jaipur 303121, Rajasthan, India

⁹ Junior resident, Department of Critical care, Fortis Hospital, Malviya Nagar, Jaipur 302017, Rajasthan, India

Corresponding Author: Dr. Hemant Kumar Garg Email ID: drhkgarg6@gmail.com

Abstract

Background: Antimicrobial resistance (AMR) is a global health threat, largely driven by irrational antibiotic use. Hospital antibiotic policies and antimicrobial stewardship programs (ASPs) aim to regulate prescribing practices. However, adherence among healthcare professionals varies.

Objective: To assess the perception and adherence to hospital antibiotic policy among MBBS students & interns, nursing students, dental students, and healthcare staff in four tertiary-level hospitals in India.

Methods: A cross-sectional study was conducted among 350 participants: 100 MBBS students & interns, 100 nursing students, 50 dental students, and 100 healthcare staff (including nurses and technicians). A structured questionnaire assessed knowledge, attitudes, and practices (KAP) regarding hospital antibiotic policy. Data were analyzed using descriptive statistics and chi-square tests.

Results:

- **Perception:** 82% of MBBS students & interns, 76% of nursing students, 64% of dental students, and 70% of healthcare staff recognized the importance of antibiotic policies in combating AMR.
- **Adherence:** Actual adherence was lower: 68% among MBBS students & interns, 55% among nursing students, 48% among dental students, and 52% among healthcare staff.
- **Barriers:** Common barriers included lack of regular training (62%), patient demand for antibiotics (48%), and limited diagnostic support (41%).

Conclusion: While perception of antibiotic policies is generally positive, adherence remains suboptimal across all groups. Strengthening training, audit-feedback mechanisms, and multidisciplinary stewardship teams is essential to bridge the gap between awareness and practice.

KEY WORDS: Perception, Adherence, Hospital, Antimicrobial policy, health care professionals

1. INTRODUCTION

Antimicrobial resistance (AMR) is a pressing global health concern, with India among the countries facing high rates of resistant infections. Hospital antibiotic policies, guided by antimicrobial stewardship programs (ASPs), are designed to ensure rational prescribing and reduce misuse. However, adherence to these policies depends on healthcare professionals' knowledge, attitudes, and practices. Healthcare professionals generally recognize the importance of hospital antibiotic policies, but adherence is often inconsistent due to gaps in knowledge, attitudes, and practices. Studies show that while awareness of antimicrobial resistance (AMR) is

high, actual compliance with stewardship guidelines varies widely across institutions and regions. This study investigates the perception and adherence to hospital antibiotic policies among different categories of healthcare professionals in four tertiary-level hospitals in India.

2. AIM OF STUDY:

The aim of this study is to assess the perception, awareness, and adherence of healthcare professionals to hospital antimicrobial policies in four tertiary care hospitals in India

OBJECTIVES:

- Identifying gaps between knowledge and practice
- Evaluating factors influencing compliance,
- Providing evidence to strengthen antimicrobial stewardship programs for rational antibiotic use and reduction of antimicrobial resistance.

3. MATERIALS AND METHODS:

Study Design

- **Type:** Cross-sectional, questionnaire-based study

Setting: Four tertiary-level hospitals 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:** 6 months

Participants

- 100 MBBS students & interns
- 100 nursing students
- 50 dental students
- 100 healthcare staff (nurses and technicians)

Data Collection

- A validated questionnaire covering:
 - **Knowledge** (awareness of AMR, hospital policy, stewardship principles)
 - **Attitudes** (perceived importance, willingness to adhere)
 - **Practices** (actual adherence, prescribing/dispensing behavior)

Likert scale questionnaire (15 items):

Respondents rate each item on a 5-point Likert scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree.

Policy awareness and knowledge

1. **Policy familiarity:** I am aware of my hospital's antimicrobial policy and where to access it.
2. **Training exposure:** I have received formal training on antimicrobial stewardship in the last 12 months.
3. **Diagnostic alignment:** I understand how culture and sensitivity results should guide antimicrobial selection.
4. **Spectrum knowledge:** I can distinguish between narrow- and broad-spectrum antibiotics and when to use each.

Attitudes toward stewardship

5. **Perceived importance:** Hospital antibiotic policies are essential for patient safety and quality care.
6. **AMR threat:** Antimicrobial resistance is a serious threat in my clinical setting.
7. **Guideline trust:** I trust the evidence basis and applicability of my hospital's antimicrobial guidelines.
8. **Team-based approach:** Stewardship is most effective with multidisciplinary involvement (clinicians, nurses, pharmacists, microbiologists).

Self-reported adherence and behaviors

9. **Empiric start:** I initiate empiric antibiotics according to hospital guidelines for common infections.
10. **De-escalation:** I routinely de-escalate therapy based on microbiology results and clinical response.
11. **Duration control:** I adhere to recommended antibiotic durations and stop dates.

12.Documentation: I document indication, dose, route, and planned duration in the record for every antibiotic prescribed/dispensed.

Barriers and systems

13.System support: Electronic decision-support (order sets/alerts) helps my adherence to policy.

14.Patient pressure: Patient or family expectations often pressure me to use broad spectrum antibiotics or prolonged therapy.

15.Resource gap: Limited diagnostic capacity or delayed lab reports hinder guideline-concordant prescribing.

Scoring: Sum or mean by domain (Awareness/Knowledge: items 1–4; Attitudes: 5–8; Behaviors: 9–12; Barriers/Systems: 13–15). Higher scores indicate stronger policy alignment.

Data Analysis

- Descriptive statistics for perception and adherence rates
- Chi-square test to assess differences between groups
- Significance set at $p < 0.05$

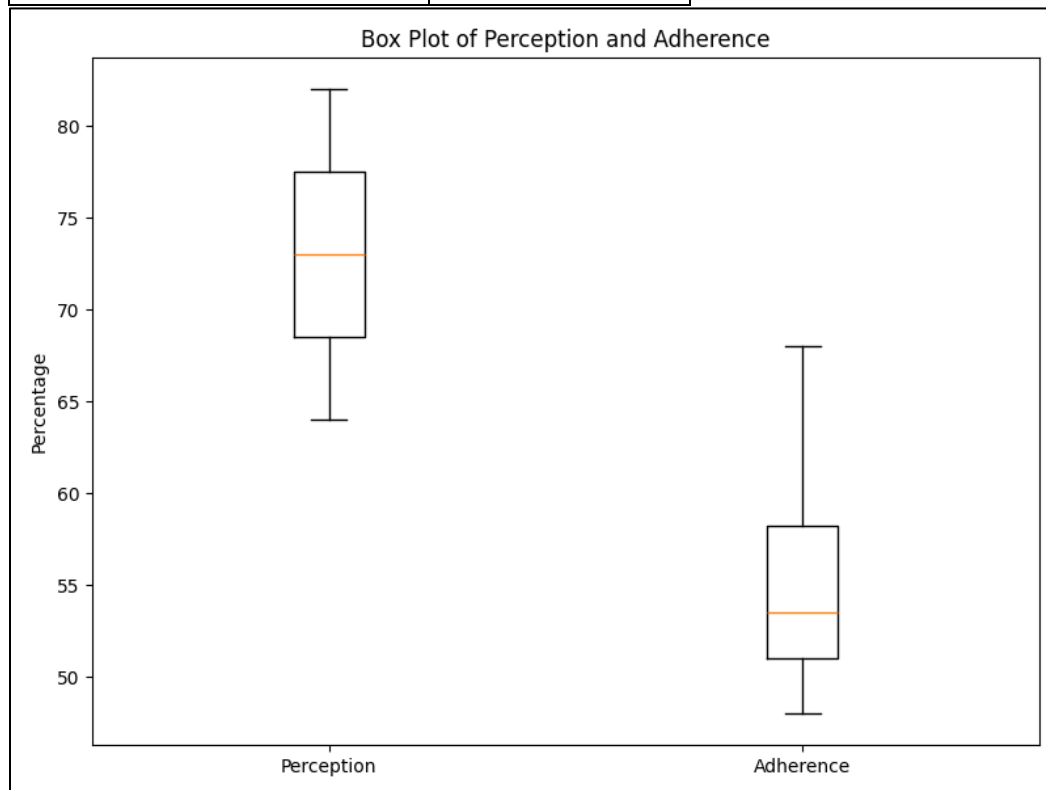
5. RESULTS

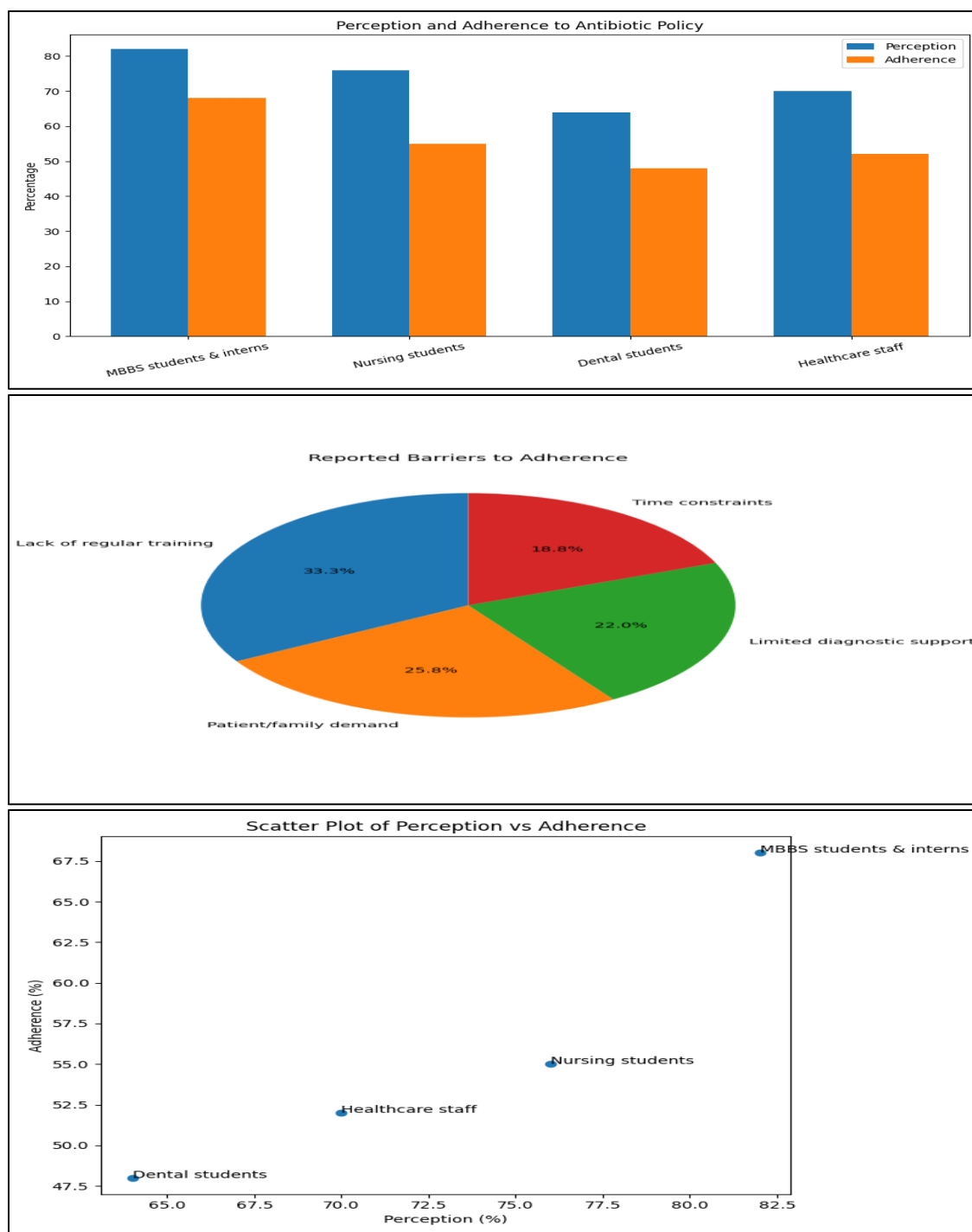
Participant Demographics

- Total: 350 participants
- Mean age: 24.6 years (range 20–45)
- Gender distribution: 58% female, 42% male

Adherence to Policy

Group	Adherence (%)
MBBS students & interns	68
Nursing students	55
Dental students	48
Healthcare staff	52





Reported Barriers

- Lack of regular training: 62%
- Patient/family demand for antibiotics: 48%
- Limited diagnostic support: 41%
- Time constraints in busy wards: 35%

6. DISCUSSION

This study highlights a **gap between perception and adherence** to hospital antibiotic policies. While most participants recognized the importance of stewardship, actual compliance was significantly lower.

- **MBBS students & interns** showed the highest perception and adherence, likely due to recent exposure to updated curricula.

- **Nursing students and healthcare staff** demonstrated moderate adherence, reflecting limited training opportunities.

- **Dental students** had the lowest adherence, possibly due to less emphasis on systemic antibiotic stewardship in dental curricula.

Barriers such as patient expectations, lack of training, and diagnostic delays are consistent with findings from other Indian and global studies. Addressing these barriers requires:

- Multidisciplinary stewardship teams,
- Regular workshops, and
- Electronic prescribing systems.

7. CONCLUSION

Hospital antibiotic policies are well-perceived but poorly adhered to across healthcare professionals in tertiary hospitals in India. Bridging this gap requires:

- Continuous education and training
- Audit and feedback mechanisms
- Strengthening diagnostic support
- Patient education to reduce demand-driven prescribing

Improved adherence will play a crucial role in combating AMR and ensuring rational antibiotic use.

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REFERENCES

1. Indian Council of Medical Research. Antimicrobial Stewardship Program Guidelines for Hospitals in India. 2019.
2. Government of India, NCDC. National Action Plan on Antimicrobial Resistance. 2017.
3. Fleming Fund. AMR surveillance strengthening in India: Country grant reports. 2020–2024.
4. CDC. Core Elements of Hospital Antibiotic Stewardship Programs. 2019 update.
5. O'Neill J. Tackling Drug-Resistant Infections Globally: Final Report and Recommendations. 2016.
6. Dellit TH et al. IDSA/SHEA Guidelines for Developing an Institutional Program to Enhance Antimicrobial Stewardship. Clin Infect Dis. 2007.
7. Barlam TF et al. Implementing an Antibiotic Stewardship Program: IDSA/SHEA Guidelines. Clin Infect Dis. 2016.
8. WHO AWaRe Classification of Antibiotics for evaluation and monitoring. 2019.
9. Charani E et al. Understanding the culture of antibiotic prescribing: qualitative insights. JAC. 2013.
10. Charani E, Holmes A. Antibiotic stewardship—what's culture got to do with it? Clin Microbiol Infect. 2019.
11. Dyar OJ et al. Strategies to improve antibiotic use in hospitals. Clin Microbiol Infect. 2017.
12. Karanika S et al. Impact of antimicrobial stewardship programs on clinical and economic outcomes. Antimicrob Agents Chemother. 2016.
13. Schuts EC et al. Guideline-concordant antibiotic therapy and outcomes. Lancet Infect Dis. 2016.
14. Metlay JP et al. Diagnosis and treatment of community-acquired pneumonia in adults: ATS/IDSA. Am J Respir Crit Care Med. 2019.
15. Tamma PD et al. De-escalation of empiric broad-spectrum therapy: evidence review. Clin Microbiol Rev. 2021.
16. Hulscher M, Prins JM. Current challenges in hospital antibiotic stewardship. Neth J Med. 2017.
17. Peto L et al. AMR in India: burden and trends. Lancet Glob Health. 2021.
18. Laxminarayan R et al. Antibiotic resistance—the need for global solutions. Lancet Infect Dis. 2013.
19. Laxminarayan R & Chaudhury RR. Antibiotic resistance in India: drivers and opportunities for action. PLoS Med. 2016.
20. Chandry SJ et al. Antimicrobial stewardship in India: literature review and recommendations. Indian J Med Res. 2014.
21. Singh SK et al. Implementation of ASPs in Indian tertiary care hospitals. J Hosp Infect. 2019.
22. Gandra S et al. Trends in antibiotic consumption in India. Lancet Glob Health. 2017.
23. European Centre for Disease Prevention and Control. Antimicrobial consumption and resistance surveillance methodology. 2020.
24. Pulcini C et al. Developing core competencies in antibiotic stewardship education. JAC. 2018.
25. WHO Handbook: AMS in Health Facilities. Practical toolkit. 2021.
26. Broom A et al. Barriers to AMS from clinician perspectives. BMJ Open. 2016.
27. Karanika S et al. Educational interventions to improve antibiotic prescribing: meta-analysis. JAC. 2016.
28. Rawson TM et al. Digital decision support for AMS: opportunities and challenges. JAC. 2017.

29. Ritchie SR et al. Audit and feedback for antimicrobial stewardship: systematic review. JAC. 2015.
30. World Health Organization. *Global Action Plan on Antimicrobial Resistance*. WHO, 2015.
31. Indian Council of Medical Research (ICMR). *Antimicrobial Stewardship Program Guidelines*. 2019.
32. KAP studies on antimicrobial stewardship in Indian hospitals (JIACM, 2024).
33. Assessment of hospital adherence to antibiotic policy (IJES, 2023).
34. Global knowledge, attitudes, and practices towards AMR (ARIC Journal, 2025).
35. World Health Organization. *Global Action Plan on Antimicrobial Resistance*. 2015.