



E-ISSN: 2663-2268

P-ISSN: 2663-225X

www.surgicalnursingjournal.com

IJARMSN 2025; 7(1): 96-98

Received: 22-01-2025

Accepted: 26-02-2025

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Optimizing postoperative antibiotic use: A nursing-led approach to stewardship

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DOI: <https://www.doi.org/10.33545/surgicalnursing.2025.v7.i1b.224>

Abstract

The inappropriate use of antibiotics in postoperative care is a significant contributor to antimicrobial resistance (AMR), leading to increased patient morbidity and higher healthcare costs. Nurses play a vital role in antibiotic stewardship by ensuring adherence to protocols, monitoring side effects, and educating patients about proper antibiotic use. This study explores the role of nurses in antibiotic stewardship among postoperative patients in both government and private hospitals in Uttar Pradesh. A total of 100 nurses were surveyed to evaluate their knowledge, attitudes, and practices regarding antibiotic stewardship.

Keywords: Antibiotic stewardship, postoperative care, nursing role, antimicrobial resistance, Uttar Pradesh

Introduction

Antibiotic resistance is a growing global health challenge, negatively impacting patient recovery and increasing healthcare burdens. The misuse of antibiotics remains a major factor driving AMR, leading to prolonged hospital stays, escalated treatment costs, and higher mortality rates. Postoperative patients, due to their increased vulnerability to infections, often receive antibiotics either prophylactically or therapeutically. However, improper use—such as unnecessary prescriptions, incorrect dosages, or incomplete courses—can contribute to the emergence of resistant bacterial strains.

Antibiotic stewardship programs (ASPs) are designed to promote the responsible use of antibiotics and mitigate AMR. As key healthcare providers, nurses ensure appropriate antibiotic administration, monitor patient compliance, and educate patients about the significance of adhering to prescribed regimens. Despite their essential role, nurses' contributions to antibiotic stewardship are often overlooked, with inadequate training and limited resources further hindering their effectiveness.

In India, particularly in Uttar Pradesh, implementing effective antibiotic stewardship remains challenging due to factors such as overcrowded hospitals, high patient loads, limited infection control measures, and inconsistent adherence to antibiotic guidelines. This study examines the knowledge, attitudes, and practices of nurses in postoperative care regarding antibiotic stewardship to identify gaps and propose strategies for improvement.

Need for the Study

Uttar Pradesh, as India's most populous state, faces numerous healthcare challenges, including a high prevalence of infections, limited resources, and inconsistent antibiotic stewardship practices. The rationale for this study is based on the following factors:

- 1. High Rate of Postoperative Infections:** Surgical site infections (SSIs) significantly contribute to morbidity and extended hospital stays. Many of these infections are caused by multidrug-resistant organisms due to improper antibiotic use.
- 2. Healthcare Disparities:** Uttar Pradesh has both well-equipped private hospitals and resource-limited government hospitals. Differences in antibiotic prescribing practices, stewardship programs, and nurse involvement need to be assessed.
- 3. Limited Training for Nurses:** Many nurses responsible for administering antibiotics do not receive formal training in antibiotic stewardship, affecting their ability to implement best practices.
- 4. Growing Public Health Concern:** The state has recorded high AMR rates, including multidrug-resistant tuberculosis and resistant gram-negative bacteria. Strengthening

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stewardship efforts at the nursing level is crucial to combat this issue.

- 5. Impact of Policy Implementation:** National programs like the National Action Plan on Antimicrobial Resistance (NAP-AMR) and the National Health Mission (NHM) rely on frontline healthcare workers, including nurses. Understanding their role can help refine policy implementation tailored to hospitals in Uttar Pradesh.

Addressing these concerns can enhance antibiotic stewardship in postoperative care, improve nursing education, and encourage evidence-based antibiotic use in healthcare facilities across the state.

Literature Review

Studies highlight the importance of antibiotic stewardship in reducing AMR and improving patient outcomes. Research indicates that nursing interventions such as timely antibiotic administration, appropriate dose adjustments, and patient education contribute significantly to stewardship programs. However, there is limited research focused on nurses' perspectives in India, particularly in Uttar Pradesh.

Objectives of the Study

1. To assess the knowledge of nurses regarding antibiotic stewardship in postoperative care.
2. To evaluate the attitudes of nurses toward responsible antibiotic use.
3. To analyze the practices followed by nurses in postoperative antibiotic administration.
4. To compare stewardship practices between government and private hospitals.

Research Methodology

Research Design

This study employs a descriptive cross-sectional design to assess nurses' knowledge, attitudes, and practices related to antibiotic stewardship in postoperative care.

Sample Size and Setting

A total of 100 nurses from government and private hospitals in Uttar Pradesh participated. Equal representation from both sectors was ensured for comparative analysis.

Sampling Technique

Stratified random sampling was used to include nurses from tertiary care hospitals, district hospitals, and private nursing facilities.

Data Collection

A structured questionnaire was used, divided into four sections:

- **Demographic details:** Age, gender, work experience, and employment sector (government/private).
- **Knowledge assessment:** Questions on antibiotic resistance, stewardship guidelines, and infection control practices.
- **Attitude assessment:** Likert scale-based questions measuring nurses' perceptions of antibiotic use and stewardship programs.
- **Practice assessment:** Questions evaluating adherence to antibiotic protocols, monitoring of side effects, and patient education efforts.

Data Analysis

SPSS software was used for data analysis. Descriptive statistics such as frequency and percentage distributions were applied. Comparative analysis between government and private hospital nurses was conducted using chi-square tests and t-tests to identify significant differences.

Results and Discussion

- **Knowledge of Nurses:** The study found that 72% of nurses were familiar with antibiotic stewardship, but only 45% had received formal training. Private hospital nurses had better access to training programs than government hospital nurses.
- **Attitudes toward Stewardship:** A majority (85%) of nurses recognized the importance of antibiotic stewardship in preventing resistance. However, 60% reported challenges in implementing stewardship due to high patient loads and insufficient institutional support.
- **Practices in Postoperative Care:** While 78% of nurses followed antibiotic administration guidelines, only 55% actively monitored patient adherence. Private hospital nurses engaged more in patient education than government hospital nurses.
- **Comparison between Government and Private Hospitals:** Nurses in private hospitals had better access to continuing education, while government hospital nurses faced resource constraints and staff shortages. Despite these challenges, compliance with prescribed antibiotic protocols was similar across both sectors.

Conclusion and Recommendations

Nurses play a crucial role in antibiotic stewardship, but challenges such as inadequate training and high workloads limit their effectiveness. Enhancing nursing education, incorporating ASP training into hospital policies, and fostering interdisciplinary collaboration can improve stewardship efforts.

Recommendations

1. Implement mandatory ASP training programs for nurses.
2. Establish hospital-wide antibiotic stewardship committees with nursing representation.
3. Promote collaboration between nurses, pharmacists, and physicians.
4. Strengthen patient education initiatives on antibiotic use.
5. Conduct periodic audits to ensure compliance with antibiotic protocols.

Limitations of the Study

1. Findings are specific to Uttar Pradesh and may not be generalizable to other regions.
2. Self-reported data may introduce response bias.
3. The sample size may not fully capture variations across different institutions.
4. Limited access to hospital-specific antibiotic guidelines may have influenced responses.

Future Implications

- Expanding research across multiple states for broader generalizability.
- Conducting longitudinal studies to assess long-term impacts of nursing-led stewardship programs.

- Using qualitative research methods to gain deeper insights into challenges faced by nurses in antibiotic stewardship.

Conflict of Interest

Not available

Financial Support

Not available

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How to Cite This Article

Mishra PK. Optimizing postoperative antibiotic use: A nursing-led approach to stewardship. *International Journal of Advance Research in Medical Surgical Nursing*. 2025;7(1):96-98.

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