

TITLE

A Study on Infection Control Practices in the Operation Theatre: Challenges and Solutions.

INTRODUCTION:

Infection prevention and control (IPC) within the operation theatre (OT) is a cornerstone of patient safety and surgical quality. OTs, being sterile zones, demand the highest standards of asepsis. Failure to maintain infection control protocols can lead to surgical site infections (SSIs), which account for approximately 15%–30% of all healthcare-associated infections (HAIs), with significant implications on patient morbidity, mortality, and healthcare costs.

Despite national and international guidelines from bodies like WHO and CDC, adherence to IPC measures remains inconsistent across healthcare facilities, particularly in low- and middle-income countries (LMICs). In many institutions, lapses occur due to a combination of inadequate infrastructure, poor training, lack of awareness, and resource limitations.

This study aims to explore the real-time implementation of infection control practices in OTs, identify key barriers, and propose actionable solutions to improve patient outcomes and reduce HAIs. By shedding light on the practical challenges and possible interventions, this research seeks to contribute meaningfully to the body of evidence on OT infection control, with potential applications in policymaking and quality improvement.

RESEARCH QUESTION:

Q1. What are the prevailing infection control practices in the operation theatre?

Q2. What challenges hinder their effective implementation?

OBJECTIVES:

Primary Objective:

- To assess the current infection control practices followed in the operation theatres of the selected healthcare facility.

Secondary Objectives:

- To identify the major challenges faced by healthcare workers in adhering to standard infection control protocols.
- To evaluate the level of awareness and training among OT staff regarding IPC measures.
- To recommend practical and sustainable solutions for improving compliance with infection control guidelines.

HYPOTHESIS:

- Null Hypothesis (H_0): There is no significant gap in the knowledge and practice of infection control among OT personnel.
- Alternative Hypothesis (H_1): There exists a significant gap in the knowledge and practice of infection control among OT personnel.

MATERIAL AND METHODS:

STUDY DESIGN: descriptive observational study.

SETTING: The study will be conducted in the operation theatres of a tertiary care hospital (JAY PRABHA MEDANTA SUPERSPECIALITY HOSPITAL PATNA)

STUDY POPULATION: OT personnel including surgeons, anaesthetists, nursing staff, housekeeping staff, and infection control officers at Jay Prabha Medanta Patna.

Inclusion Criteria:

- OT staff working in the hospital from past one year.
- Consent to participate in the study.

Exclusion Criteria:

- Interns or rotational staff with less than 6 months of experience in OT.
- Personnel on leave or unavailable during the study period.

STUDY TOOLS:

- Observational checklists for qualitative insights.
- Standard IPC, Medanta SOPs, NABH checklist audit tools based on WHO/CDC guidelines.

DURATION OF STUDY: 2 months (16th April 2025 to 31st May 2025).

SAMPLE SIZE: Size = 95.

SAMPLING TECHNIQUE: Stratified random sampling ensuring proportional representation from different OT staff categories and different types of cases.

DATA COLLECTION PROCEDURE:

- Direct observation of surgical procedures using an IPC checklist.
- In-depth interviews with key informants (e.g., infection control nurse, OT supervisor).

Operational Definitions:

- **Compliance:** Adherence to established IPC guidelines during surgical procedures.
- **Surgical Site Infection (SSI):** Infections occurring within 90 days post-operation (or days for implants).
- **Aseptic Technique:** Practices used to prevent contamination during surgical procedures.
- **Hand Hygiene:** WHO's 5 moments of hand hygiene, including hand washing/sanitizing.
- **Sterilization:** The process to eliminate all forms of microbial life from surgical instruments.

DATA ANALYSIS PLAN:

Data will be analysed using SPSS Version 26.0.

- Descriptive statistics: Frequencies, percentages, means, standard deviations.
- Qualitative data will be thematically analyses.

ETHICAL CONSIDERATIONS:

- Ethical approval will be sought from the Institutional Ethics Committee.
- Informed written consent will be obtained from all participants.
- Anonymity and confidentiality will be strictly maintained.
- Data will be stored securely and used solely for academic purposes.
- Participants will have the right to withdraw at any stage without any consequence.

IMPLICATIONS OF RESEARCH:

This study will help healthcare administrators understand the practical gaps in infection control practices in OTs. The insights can be used to design targeted interventions such as staff training, resource allocation, and policy development to enhance IPC compliance. Furthermore, the research will contribute to the ongoing efforts in reducing the burden of HAIs and improving surgical outcomes. It will be particularly beneficial for hospital quality and infection control committees in aligning with NABH and JCI accreditation standards.

REFERENCES:

1. WHO Guidelines on Core Components of Infection Prevention and Control Programmes at the National and Acute Health Care Facility Level. Geneva: World Health Organization; 2016.

2. CDC. Guideline for Prevention of Surgical Site Infection. Centers for Disease Control and Prevention, 2017.
3. Allegranzi B, Pittet D. Role of hand hygiene in healthcare-associated infection prevention. *J Hosp Infect.* 2009;73(4):305–15.
4. Mehta A, Rosenthal VD, Mehta Y, et al. Device-associated infection rates in 20 cities of India, data summary for 2004–2013. *Int J Infect Control.* 2015;11(2).
5. Sax H, Allegranzi B, Uçkay I, et al. 'My five moments for hand hygiene': a user-centred design approach to understand, train, monitor and report hand hygiene. *J Hosp Infect.* 2007;67(1):9–21.