

IMPLEMENTATION OF METHODOICAL GUIDELINES FOR TEACHING ASEPSIS AND ANTISEPSIS IN GENERAL SURGERY: A DESCRIPTIVE CROSS-SECTIONAL STUDY IN A TERTIARY CARE TEACHING HOSPITAL

Running Title: Teaching Asepsis and Antisepsis in General Surgery

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KEYWORDS	Abstract
<i>Asepsis,</i> <i>Antisepsis,</i> <i>Surgical Site Infection,</i> <i>Surgical Education,</i> <i>Patient Safety</i>	Background: Asepsis and antisepsis are fundamental principles of infection prevention in surgical practice. Effective teaching and implementation of these principles are essential for reducing surgical site infections (SSIs) and improving patient safety. Despite the availability of established guidelines, variations in educational practices may influence adherence to aseptic standards among healthcare trainees. Objectives: To evaluate the implementation of methodical teaching guidelines for asepsis and antisepsis in general surgery and to assess the knowledge, attitude, and practice of learners exposed to surgical training. Methods: A descriptive cross-sectional study was conducted in the General Surgery Department of a tertiary care teaching hospital among 100 participants, including undergraduate students, interns, postgraduate trainees, and faculty members. Participants were selected through purposive sampling. Data were collected using structured questionnaires, observation checklists, and faculty feedback forms, and analyzed using descriptive statistics. Results: Participants demonstrated positive attitudes toward aseptic practices, with practical performance improving through repeated operating theatre exposure. Higher compliance with aseptic protocols was observed during General and Eye Operation Theatre postings compared to ENT and Gynecology postings. Practice scores increased progressively from 79 in Month 2 to 90 in Month 12, reflecting enhanced competency through continuous exposure and supervised training. Conclusion: Methodical teaching and continuous training enhance adherence to aseptic and antiseptic practices, improving competency and supporting patient safety in surgical settings.
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1. INTRODUCTION

Surgical site infections remain one of the most common healthcare-associated infections worldwide and contribute significantly to postoperative morbidity, prolonged hospitalization, increased healthcare costs, and mortality.^{1,15} The prevention of these infections relies heavily on strict adherence to aseptic and antiseptic principles throughout the perioperative period.²

Asepsis refers to the absence of pathogenic microorganisms, while antisepsis involves the use of chemical agents to inhibit or destroy microorganisms present on living tissues.³ These concepts are essential components of infection control and form the foundation of safe surgical practice.^{4,1,17} Proper education and training of healthcare professionals in aseptic techniques are therefore critical for ensuring patient safety and maintaining high standards of surgical care.⁵

Recent advances in healthcare education have emphasized structured teaching approaches, including simulation-based learning, competency assessment, video-assisted instruction, and hands-on demonstrations.^{5,6,2} However, the effectiveness and consistency of implementing such educational guidelines in clinical settings remain inadequately explored. Understanding how these teaching methods influence knowledge and practice is essential for improving surgical training programs.^{7,14}

The present study was undertaken to evaluate the implementation of methodical guidelines for teaching asepsis and antisepsis in general surgery and to assess their impact on learner competence and compliance with infection prevention standards.^{8,16}

2. MATERIALS AND METHODS

2.1. Study Design:

Descriptive cross-sectional study.

2.2. Study Setting:

General Surgery Department of a tertiary care teaching hospital.

2.3. Study Duration:

One year.

2.4. Study Population:

The study included undergraduate students, interns, postgraduate surgical trainees, and faculty members involved in surgical education.

2.5. Sample Size:

A total of 100 participants were included:

- 30 Undergraduate students
- 30 Interns
- 30 Postgraduate trainees
- 10 Faculty members

2.6. Sampling Technique:

Purposive sampling.

2.7. Data Collection Tools:

1. Structured Knowledge, Attitude and Practice questionnaire.
2. Observation checklist for aseptic compliance.
3. Faculty feedback and interview schedule.
4. Institutional document review.

2.8. Data Analysis:

Data were entered into Microsoft Excel and

analyzed using descriptive statistics such as frequency, percentage, mean, and standard deviation.

2.9 Ethical Considerations:

Participation was voluntary. Informed consent was obtained from all participants, and confidentiality was maintained throughout the study.

3. RESULTS

A total of 100 participants were enrolled in the study, comprising undergraduate students (30%), interns (30%), postgraduate trainees (30%), and faculty members (10%) (Table 1). Participants

were equally distributed across General Surgery, Gynecology, ENT, and Ophthalmology operation theatres (Table 2).

Assessment of practical competency demonstrated a progressive improvement throughout the study period. The mean practice score increased from 79 in Month 1 to 90 in Month 12, representing an overall improvement of 7.6% (Table 3; Figure 3). Higher compliance with aseptic practices was observed in General Surgery and Eye OT postings compared with ENT and Gynecology OT postings. These findings suggest that repeated clinical exposure and structured educational interventions positively influence the acquisition of aseptic skills among surgical trainees.

Table 1. Demographic Characteristics of Participants (N = 100)

Participant Category	Number (n)	Percentage (%)
Undergraduate Students	30	30.0
Interns	30	30.0
Postgraduate Trainees	30	30.0
Faculty Members	10	10.0
Total	100	100.0

Interpretation:

The study included 100 participants. Undergraduate students, interns, and postgraduate trainees each constituted 30% of the study population, while faculty members represented 10%.

Table 2. Distribution of Operation Theatre (OT) Postings

OT Posting Area	Number of Participants	Percentage (%)
General OT	25	25.0
Gynecology OT	25	25.0
ENT OT	25	25.0
Eye OT	25	25.0
Total	100	100.0

Interpretation:

Participants were equally distributed among the four operation theatre specialties, ensuring balanced exposure to different surgical environments.

Table 3. Monthly Trend in Mean Practice Scores

Study Month	Mean Practice Score
Month 2	79
Month 4	81
Month 6	83
Month 8	85
Month 12	90

Improvement Period	Increase in Score
Month 2 to Month 4	+2
Month 4 to Month 6	+2
Month 6 to Month 8	+2
Month 8 to Month 12	+2
Overall Improvement	+8

Interpretation:

A continuous increase in practice scores was observed throughout the study period, suggesting that repeated clinical exposure and structured teaching improved aseptic technique competency.

Figure 1. Participant Distribution by Category

X-axis: Participant Category

Y-axis: Number of Participants

Category	Frequency
UG Students	30
Interns	30
PG Trainees	30
Faculty	10

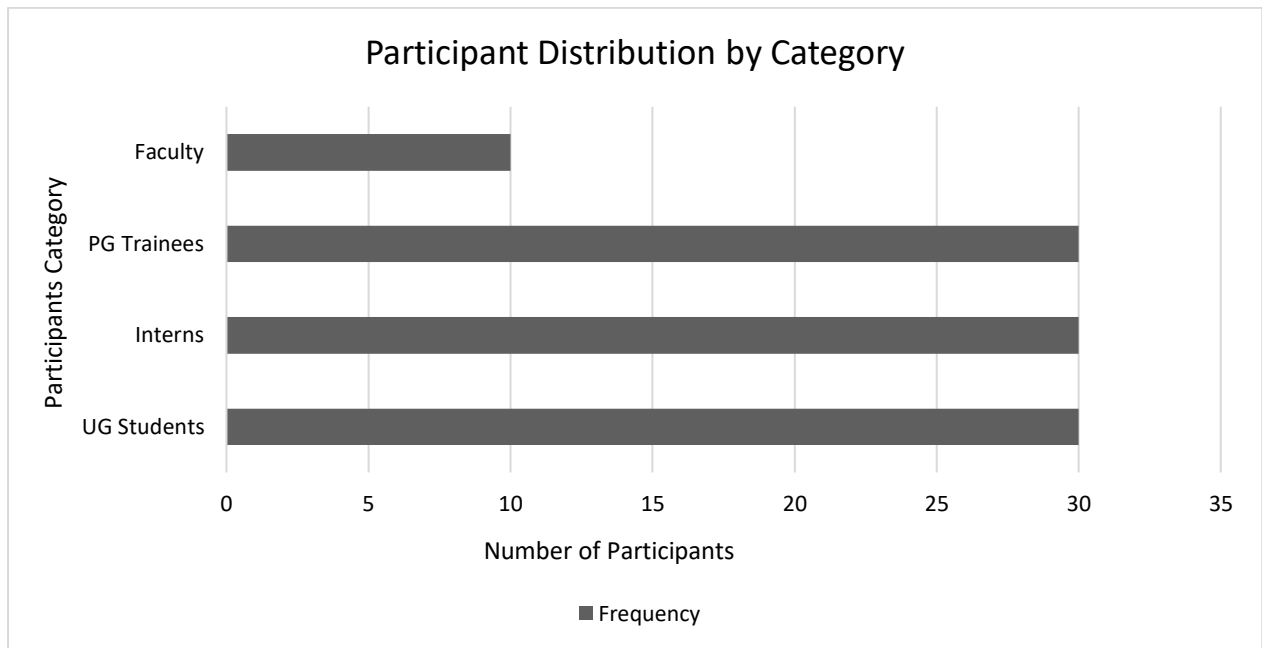


Fig 1. states that distribution of study participants according to their academic and professional status.

Figure 2. Distribution of OT Postings

- General OT – 25%
- Gynecology OT – 25%
- ENT OT – 25%
- Eye OT – 25%

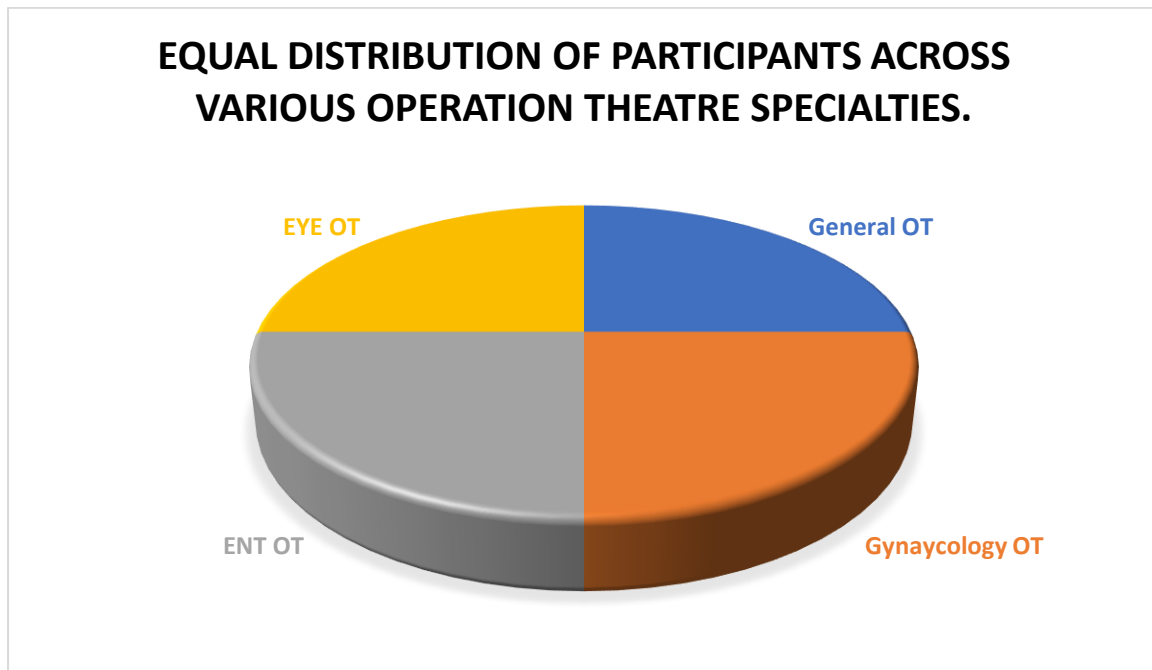


Fig 2 presents that equal distribution of participants across various operation theatre specialties.

Figure 3. Trend of Mean Practice Scores During Study Period

Month	Score
Month 2	79
Month 4	81
Month 6	83
Month 8	85
Month 12	90

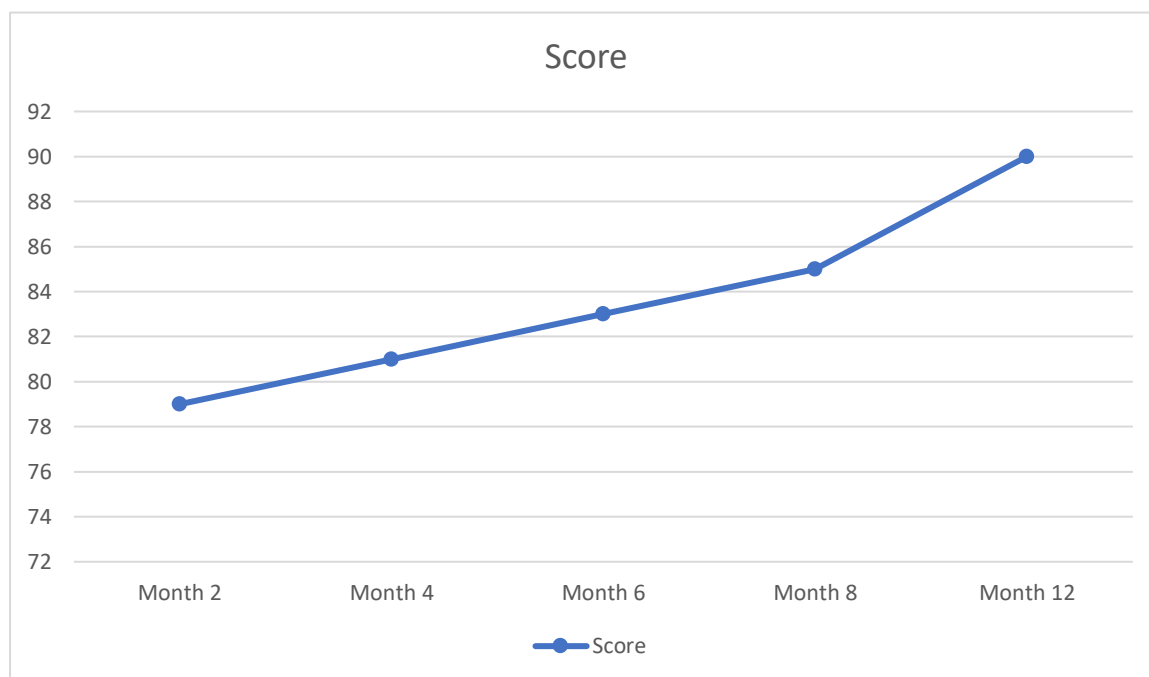


Fig 3. demonstrates progressive improvement in practice scores during the study period, reflecting the positive impact of repeated OT exposure and structured teaching interventions.

4. DISCUSSION

The present study highlights the significance of structured educational approaches in improving compliance with aseptic and antiseptic practices.⁹ Participants exposed to repeated demonstrations and supervised training exhibited better practical performance and adherence to established protocols.^{10,18}

These findings are consistent with previous studies that reported improved skill acquisition through structured teaching interventions and simulation-based training.^{11,20} The study also identified

limitations in certain specialty areas where inconsistent supervision and limited practical reinforcement affected compliance levels.^{12,19}

The results suggest that educational interventions should move beyond theoretical instruction and incorporate continuous competency-based assessment, simulation exercises, and regular feedback mechanisms to strengthen infection control practices among surgical trainees.^{13,1}

5. CONCLUSION

The results of this study show that surgical trainees' comprehension and implementation of aseptic and antiseptic principles are greatly enhanced by methodical teaching guidelines. Practical competency in the operating room is strengthened and adherence to infection prevention policies is improved by structured teaching, repeated clinical exposure, and supervised practice.

The study's progressive improvement in practice scores emphasizes the importance of ongoing education and practical experience in acquiring critical surgical skills. Surgical education can further strengthen these procedures and guarantee ongoing adherence to aseptic standards by incorporating simulation-based instruction, organized demonstrations, and frequent competency evaluations.

All things considered, a well-thought-out and methodical teaching strategy can support enhanced patient safety, better infection control procedures, and the training of skilled medical personnel in surgical settings.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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DECLARATION FOR USING ARTIFICIAL INTELLIGENCE-

The authors declare that artificial intelligence (AI) tools were used solely to assist in language refinement, grammar correction, and improvement of the manuscript. The AI tools did not contribute to the study design, data collection, data analysis, interpretation of results, or generation of original scientific content.

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