

A study to assess the knowledge regarding surgical site infection (SSI) protocol among nurses working in selected healthcare facility at Sasaram, Bihar

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Abstract—Background: Surgical site infections are a major healthcare problem, especially in developing countries, where rates can reach up to 25 percent. They arise from bacterial contamination influenced by patient and surgical factors. Effective prevention depends on evidence-based practices such as proper skin preparation, timely antibiotics, aseptic technique, and strong nursing competence. **Objectives:** To assess the knowledge of staff nurses regarding surgical site infection prevention and identify factors associated with their knowledge levels. **Methodology:** A non-experimental descriptive research design was used. The study included 102 staff nurses from a selected hospital in Bihar, selected through simple random sampling. Data were collected using a structured knowledge questionnaire on surgical site infection and preventive strategies. **Result:** Most nurses were 20–25 years old, with 56.9 percent male and 44.1 percent holding a B.Sc. Nursing degree. Knowledge showed significant associations with age, sex, educational status, hospital type, clinical area, previous surgical-unit experience, seminar attendance, and in-service education ($p < 0.05$). High scores were noted in pre-operative skin preparation (93.1%), surgical handwashing purpose (91.2%), and blood sugar control (90.2%). Lower scores were found in antiseptic selection (68.6%), dressing change timing (70.6%), and correct use of prophylactic antibiotics (71.6%). **Conclusion:** Nurses demonstrated overall adequate knowledge of surgical site infection prevention, with the highest competency among those working in OT and surgical units. Strengthening continuous education, ensuring resource availability, and regular supervision are essential to improve consistency in preventive practices.

Index Terms—SSI, knowledge, health care facility

I. BACKGROUND OF THE STUDY

Surgical site infections are a major healthcare concern, affecting up to 25% of surgeries in developing countries. They result from bacterial contamination and are influenced by patient and surgical risk factors. Prevention depends on evidence-based measures, including proper skin preparation, antibiotics, aseptic technique, and strong nursing knowledge and practice.

II. INTRODUCTION

Healthcare-associated infections are a major threat to patients. Surgical site infections are the second most common, occurring within 30 days after surgery and causing redness, fever, pain, and swelling.¹ million are affected by healthcare-associated infections each year. At least 5% of hospital patients acquire an infection, and surgical site infections are the most common, making up more than 30% of reported cases.² Surgical site infections reduce quality of life, increase patient discomfort, cause serious complications, and often lead to longer hospital stays and higher healthcare needs.³ Surgical site infections occur after surgery at the operative site and may involve only the skin. They affect about 5% of surgeries in developed countries and 5.5–25% in developing countries.⁴ Key strategies to reduce surgical site infections include proper patient and skin preparation, surgical hand antisepsis, timely antibiotic prophylaxis, temperature control, limited operating room traffic, careful technique, and effective postoperative wound care.⁵ Nurses, unlike other health care providers, spend most of their time with patients

and are responsible for the majority of SSI preventive measures.⁶ Nurses play a central role in preventing surgical site infections by ensuring correct antibiotic use, consistent hand hygiene, proper use of protective equipment, effective skin preparation, and full adherence to surgical safety checklists.⁷

III. METHODOLOGY

A non-experimental descriptive design was adopted.

- Design: descriptive research design.
- Population: Staff nurses of selected hospital of Bihar.
- Sample Size: 102 staff nurses.
- Sampling Technique: Simple random sampling by lottery method.
- Instruments: Structured Knowledge Questionnaire on Surgical site infection and preventive strategies.

IV. RESULT

Most respondents were 20–25 years old, with 56.9% male and 44.1% holding a B.Sc. Nursing degree. Participants were mainly from Medicine units (31.4%), Emergency and Casualty (28.4%), Surgery units (22.5%), and ICU (17.6%). A total of 84.3% had less than five years of experience, while 15.7% had five to ten years. Knowledge of SSI protocols showed significant associations with age ($p<0.001$), sex ($p<0.000$), professional education ($p<0.001$), hospital type ($p<0.001$), current working area ($p<0.001$), previous surgical-area experience ($p<0.05$), seminar participation ($p<0.05$), and in-service education ($p=0.001$).

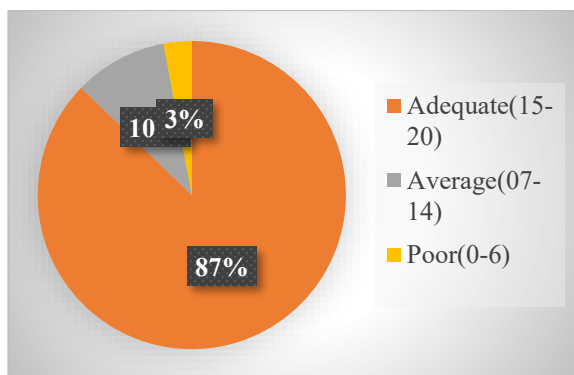


Figure 1 Level of knowledge regard SSI

The nurses performed best on questions about the most effective agent for pre-operative skin preparation (93.1%), the purpose of surgical handwashing (91.2%), and the optimal blood sugar level needed to support white blood cell function for SSI prevention (90.2%). The lowest scores were recorded for identifying the best antiseptic solution for disinfecting a dressing trolley (68.6%), the appropriate timing for changing a surgical dressing (70.6%), and the correct use of prophylactic antibiotics to prevent SSI (71.6%).

V. DISCUSSION

The study found nurses had strong SSI prevention knowledge, supported by guidelines and training. Gaps remained in antiseptic selection and resource-dependent practices. OT and surgical nurses showed the highest competency due to specialized training.

VI. CONCLUSION

The study found nurses had adequate SSI prevention knowledge, with OT and surgical nurses scoring highest. Continuous education, supervision, and adequate supplies are essential, though limited local research and questionnaire-based assessment were key limitations.

VII. RECCOMENDATION

- Strengthen continuous, evidence-based training on SSI prevention for all nursing staff.
- Ensure consistent availability of essential supplies and standardized SSI prevention guidelines.
- Implement regular monitoring and supervision to reinforce correct practices and identify gaps.

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