



A study to assess the effectiveness of pre-intra-post-operative preparedness to prevent surgical site infection at Apollo Speciality hospitals, Trichy, India

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Abstract

Background of the study: Surgical site infections (SSIs) are the most common health-care-associated infections in developing countries. The prevention of these infections is complex and requires the integration of a range of preventive measures before, during, and after surgery.

Objective: The present study was aimed to assess the effectiveness of Pre-Intra-Post-operative preparedness to prevent Surgical Site Infection.

Research methodology: Systematic Review & analysis was adopted as research methodology. Structured audit tool on SSI Bundle was made to collect the data from the target population. 30 patients were selected for the study using convenient Sampling technique. Conclusion made with CDC & NHNS guidelines on SSI Bundle & the same was reinforced to focused group of nurses.

Results: The study findings stated that Among the preoperative preparedness, 94% of the patients were Euglycemic. Among Intra operative preparedness, Opening and closing of sterile doors are often noted as non-compliance in majority of clean, clean contaminated surgeries which was contributed to 30%. Among Post-Operative Preparedness, Post discharge instructions made was 100% but the details of the information were inadequate in 10% of the study participants. The findings of the study & solutions made were disseminated to the targeted nurses & the guidelines of CDC & NHNS were reinforced.

Conclusion: Considering the prevention of SSIs as a priority for patient safety, it's our responsibility as a health care worker to prevent it through our preparedness to utmost care.

Keywords: Effectiveness, surgical site infection, pre, intra & post-operative care, knowledge, SSI bundle

1. Introduction

Surgical site infections are caused by bacteria that get in through incisions made during surgery. Surgical site infections (SSIs) are the most common health-care-associated infections in developing countries, but they also represent a substantial epidemiological burden in high-income countries. The prevention of these infections is complex and requires the integration of a range of preventive measures before, during, and after surgery (WHO). An SSI typically occurs within 30 days after surgery. The CDC describes 3 types of surgical site infections: 1. Superficial incisional SSI. This infection occurs just in the area of the skin where the incision was made. 2. Deep incisional SSI. This infection occurs beneath the incision area in muscle and the tissues surrounding the muscles. 3. Organ or space SSI. This type of infection can be in any area of the body other than skin, muscle, and surrounding tissue that was involved in the surgery (CDC). The problem of surgical site infection (SSI), which contributes to significant morbidity and death, lengthens hospital stays, and ultimately raises healthcare expenditures, is still widespread and common. So we were also in need to

assess the preparedness of our nurses during pre, intra and post-operative phases while handling surgical patients. The present study was aimed to assess the effectiveness of Pre-Intra-Post-operative preparedness to prevent Surgical Site Infection at Apollo Speciality Hospitals, Trichy. The objective of the study was 1. To assess the Pre-operative preparedness to prevent Surgical Site Infection. 2. To assess the Intra-operative preparedness to prevent Surgical Site Infection. 3. To assess the Post-operative preparedness to prevent Surgical Site Infection. 4. To assess the prevalence of SSI. 5. To disseminate awareness among nurses regarding prevention of SSI. The Hypotheses of the study stated that the development and treatment of surgical wound infection has always been a limiting factor to the success of surgical treatment. SSI increases the risk of ALOS, morbidity & mortality.

2. Materials and Methods

Research Approach of this study was quantitative research. Systematic review & analysis was adopted as research design. Dependent variable of the study was Prevention of Surgical Site Infection. Independent variable of the study

was Pre, Intra & Post-operative Preparedness. Data collection was carried for the period of 3 months (February 2023 to April 2023). Permission was obtained from the Head of Department, Nursing, Apollo Speciality Hospitals, Trichy to conduct the study. Patient who was posted for clean and clean contaminated surgeries were included for data collection. Patients who were critically ill and Patients who had uncontrolled DM with infected wound were excluded from the study. Convenient sampling technique was used to select the sample size of 30 study participants. Structured audit tool was made to collect the data of patient to analyze from the target population (patients posted for clean, clean contaminated surgeries at Apollo Speciality Hospitals, Trichy). Tool consists of two sections. Section I - Assessment Criteria of Pre, Intra & Post-operative preparedness. This tool comprises of Pre, Intra & Postoperative preparedness assessment criteria. Under pre-op preparedness, Criteria like Blood sugar level, Antiseptic bath, Surgical Site Preparation, Antibiotic prophylaxis were audited. Under Intra operative preparedness, Sterility of the trolley, Appropriate PPE usage, Sterile draping, instruments washing methods, Infection control & preventive measures taken in OT & by the health care workers inside OT were audited. Under Post-Operative Preparedness, Surgical site dressing, ICD / other drain tube management, Patient family education (Maintaining personal hygiene, wound care, Hand hygiene techniques) were audited. As per CDC & NHSN Guidelines, the findings of the analyzed data will be concluded. Section II - Structured Questionnaire to assess the knowledge on SSI Bundle. This tool comprises of 10 important questions pertaining to SSI Bundle as per CDC guidelines (Antimicrobial solution used, right method of skin preparation, Ideal time for antibiotic prophylaxis, major/common source of organism causing SSI, factors increasing risk of SSI, type of SSI mentioned by CDC, inclusion criteria of SSI (days after surgery / after implant placement), sterilization methods and indicators, common cause of post-operative infections. The scoring

interpretation was made as follows adequate knowledge if score falls between 76-100%, moderate knowledge if score falls between 51-75% & Inadequate knowledge if score falls <50%. Descriptive statistics (measures of frequency – frequency & percentage) was used to analyze the data.

3. Results

The major findings of the study were as follows: Among the preoperative preparedness, 94% percentage of the patients were Euglycemic (less than 200mg/dl). 100% of the patient’s surgical site was prepared with clippers. Among all 30 study participants, all (100%) had taken Antiseptic bath (chlorhexidine bath) - Minimum 2 showers done within 24 hrs. prior to the procedure. All 30 study participants were administered with prophylactic antibiotic 1 hour prior to the skin incision (100%). Among Intra operative preparedness, Sterile handling of doctors, scrub nurse, circulatory nurse & technicians were 100%. All OT room has Laminar flow; rate of infection is very minimal in all OTs (100%). Opening and closing of sterile doors are often noted as non-compliance in majority of clean, clean contaminated surgeries which was contributed to 30%. Among Post-Operative Preparedness, Surgical site was maintained healthy (100%). Post discharge instructions made was 100% but the details of the information were inadequate in 10% of the study participants. After surgery continual surveillance on post-op-wound alternative days in wards & after discharge in OPDs (on 5th /7th POD) followed by surveillance of 30 days through phone calls (Post discharge assessment) was 100%. These findings of the study & solutions made were disseminated to the targeted nurses (nursing handling surgical patients / in the process of SSI surveillance) as per guidelines of CDC & NHNS were reinforced to those nurses. The knowledge level of the nurses was assessed before and after the training sessions. The analysed report of knowledge assessment was depicted in the below 2 tables.

Table 1: Frequency and Percentage Distribution of Knowledge status of nurses on SSI bundle Pre & Post training on SSI Bundle based on CDC & NHSN Guidelines N=60

Knowledge Status	Frequency and Percentage Distribution of Knowledge status of Nurses on SSI bundle Pre & Post training on SSI Bundle according to the Area of working			
	Pretest Average (in percentage)		Post Test Average (in percentage)	
	f	%	f	%
Post-Operative ward	20	62%	20	94%
Post-Operative ICU	15	68%	15	96%
Operation Theatre	15	59%	15	88%
Out Patient Departments	10	52%	10	82%

Table 2. Comparison of Pretest Average & Posttest Average (in percentage) of knowledge status of Nurses on SSI bundle. N=60

Knowledge Status	Comparision of Pretest Average & Posttest Average Percentage of Knowledge status of Nurses on SSI bundle			
	Pretest Average (in percentage)		Post Test Average (in percentage)	
	f	%	f	%
Overall Average	60	60%	60	90%

4. Discussion and Conclusion

The data presented in the table 1 depicts that the frequency and percentage distribution of knowledge status of nurses on SSI bundle Pre & Post training on SSI Bundle according to the area of working. The highest average percentage of

knowledge 68% was obtained by the post-operative ICU nurses in pretest followed by post-operative ward nurses scored 62%, followed by operation theatre nurses scored 59% & outpatient departments scored 52%. In the post test, the average percentage of knowledge status of nurses on SSI

bundle with respect to area of experience as follows, the highest score obtained by postoperative ICU nurses 96% followed by post-operative ward nurses scored 94%, operation theatre nurses scored 88% & outpatient department nurses scored 82%.

The data presented in Table 2 elicits that the average posttest score (90%) on knowledge status of nurses on SSI bundles as per CDC & NHNS guidelines was greater than the average pretest score (60%). The overall findings of the study clearly shown the importance of pre, intra and post-operative preparedness of nurses, nurses' knowledge on the standard guidelines (CDC & NHNS) & maintenance to the surgical site infection prevention bundle had an impact in the prevention of SSI. The study was limited to patients who had undergone contaminated, dirty/infection surgeries and patients who had uncontrolled Diabetes Mellitus with infected wounds. An extensive experimental study can be conducted for larger number of samples in the health care settings. Frequent audits can be done on SSI bundle compliance to address preparedness of nurses in pre, intra & post-operative period thereby preventing SSI. Considering the prevention of SSIs as a priority for patient safety, it's our responsibility as a health care worker to prevent it through our preparedness with utmost care.

Conflict of Interest

Not available

Financial Support

Not available

5. References

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