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# A Study of Surgical Site Infection at a Tertiary Care Hospital in Northwest Part of Bangladesh

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**Abstract** **Original Research Article**

***Background:*** Surgical Site Infection (SSI) is a hospital-acquired infection occurring within 30 days of surgery or within 90 days after implant placement. It is a major global public health concern, contributing to increased morbidity, mortality, healthcare costs, and prolonged hospital stays. Rising antibiotic resistance has further complicated its management. ***Objectives:*** To determine the incidence of Surgical Site Infections and identify associated risk factors among patients undergoing surgery at a tertiary care hospital. ***Materials and Methods****:* This prospective observational study was conducted from September 2024 to May 2025 in the Department of Surgery, Dinajpur Medical College Hospital, Dinajpur, Bangladesh. A total of 230 patients undergoing elective and emergency surgeries were enrolled and followed from admission up to 30 days postoperatively. Wounds were examined regularly to detect SSIs and assess related risk factors. ***Result:*** Among 230 patients, 165 (71.74%) were male and 65 (28.26%) were female. The most common age group was 51–60 years (35.65%). Elective surgeries accounted for 194 (84.35%) cases and emergency surgeries for 36 (15.65%). The overall SSI rate was 16.9% (39 cases), with higher incidence in emergency surgeries (33%) than elective surgeries (13.91%). Patients without antibiotic prophylaxis had a 4.4-fold higher risk of developing SSI. Staphylococcus aureus was the most frequently isolated organism (44.44%), while Escherichia coli predominated in abdominal surgeries. ***Conclusion:*** SSI significantly increases morbidity, mortality, and healthcare burden. Major risk factors include pre-existing infections, low serum albumin, extreme age, obesity, smoking, comorbidities, prolonged surgery duration, and inadequate surgical preparation and tissue handling. Appropriate preventive measures, including antibiotic prophylaxis, are essential to reduce SSI incidence.
**Keywords:** Surgical site infection (SSI), Emergency surgery, Elective surgery, Wound infection, Risk factors.



## INTRODUCTION

Infections after surgery have evermore been an egregious complication of surgery and traumatic victims, still a significant issue in all surgical specialties in hospital settings and have been documented for 4000-5000 years [i]. Surgical site infections (SSIs) are characterized by the invasion and multiplication of organisms in any part of the body tissues resulting from any surgery. The US Centres for Diseases Control (CDC) definition insists on a 30-day follow-up period for non-prosthetic surgery, which is extended to one year when the implant is used. SSIs are the second most common nosocomial (hospital-acquired) infections, despite enormous advancement in asepsis, sensitive antimicrobial medications, sterilization and modern surgical techniques. According to the National Nosocomial Infection Surveillance (NNIS) system and the Centres for Disease Control and Prevention (CDC), SSI accounted for 14% to 16% of all nosocomial infections and earlier it was the most common healthcare-associated infections among surgical patients in the United States (USA) [ii]. The rising treatment costs, a significant rate of morbidity and death in patients associated with surgical procedures are caused by these infections and have become a major public health problem globally [iii,iv]. The incidence of SSIs may vary from hospital to hospital in different countries. Developed countries have a lower incidence of SSIs ranging from 2% to 6.4% [v]. In developing countries, such as the subcontinent countries like India and Bangladesh, the incidence of SSIs is higher ranging from 5.5% to 25% [vi,vii]. The increase in acquired antimicrobial resistance, which can then spread to other surrounding patients, has an impact on the cost of hospitalization nearly doubles when developed SSIs, and become a therapeutic challenge for physicians worldwide. In Bangladesh, a study principally conducted with surgical patients showed that the prevalence of postoperative wound infection in medical college hospitals in Bangladesh ranged from 6% to 18% [7]. A retrospective study conducted in Shere-E- Bangla Medical College Hospital (SBMCH) showed that the incidence of SSI was 28.49% [7]. In addition, another retrospective study conducted in Comilla Medical College Hospital found that the incidence of SSI was 22.05%. A prospective study in two medical college hospitals found that overall SSI incidence was 11% [viii].

Microorganisms causing infection in the human body, are primarily prevented by intact skin epithelial surfaces. These are broken down into trauma and surgery. In addition to these mechanical barriers, there are other protective mechanisms like humoral: antibodies, complement and opsonins; cellular: phagocytic cells, macrophages, polymorphonuclear cells and killer lymphocytes, may be compromised by surgical intervention and treatment. Reduced host resistance to infection has several causes like Metabolic: malnutrition (including obesity), diabetes, uremia and jaundice; Disseminated disease: cancer and acquired immunodeficiency syndrome (AIDS); Iatrogenic: radiotherapy, chemotherapy and steroids.

There are many risk factors for increased risk of wound infection at the operation site like Malnutrition (obesity, weight loss); Metabolic disease (diabetes, uremia, jaundice); Immunosuppression (cancer, AIDS, steroids, chemotherapy and radiotherapy); Colonization and translocation in the gastrointestinal tract; Poor perfusion (systemic shock or local ischemia); Foreign body material; Poor surgical technique (dead space, haematoma). Factors that determine whether a wound will become infected include host response, virulence and inoculum of an infective agent, vascularity and health of tissue being invaded (including local ischemia as well as systemic shock), presence of dead or foreign tissue, presence of antibiotics during the 'decisive period', to foreign materials of any kind, including sutures and drains. If there is a silk suture in tissue, the critical number of organisms needed to start an infection is reduced logarithmically. Silk is responsible for developing suture abscesses at the surgical wound area, for this reason, avoiding the wound closure on the skin. These principles are important in prosthetic orthopedic and vascular surgery when large quantities of foreign material (prostheses and grafts) are deliberately left in the wound [1]. In addition, recent evidence suggests that nasal carriage with Stay aureus is associated with a twofold to nine-fold increased risk of surgical site and catheter-related infections in surgical patient [ix]. Sources of infection that contaminated the surgical wound and causes SSI, Primary: acquired from a community or endogenous source (such as that following a perforated peptic ulcer) and Secondary or exogenous (HAI): acquired operation such as poor operation theater management, associated with the surgical wound, insertion of medical devices such as an intravenous drip, urinary catheter, wound drain or in the ward (e.g. poor hand-washing compliance) or from contamination at or after surgery (such as an anastomotic leak) [1].

# METHODS

This prospective, observational study was carried out from September 2024 to May 2025 in the Department of Surgery, Dinajpur Medical College Hospital, Dinajpur, Bangladesh. Patients who will undergo any surgical procedures, both as elective cases or in emergency, will be included. Postoperatively patients will follow inwards and after discharge in the outpatient department on the 5th, 7th and 30th day. The wounds will be assessed for development of surgical site infection. In infected wounds, the purulent discharge will send for culture and sensitivity. A total of 230 patients who underwent surgical procedure, included in this study. Data will be collected by a predesigned data collection sheet with appropriate ethical clearance and consent from patients or legal guardians and analyzed by using SPSS version 23. Descriptive statistics are used for presenting quantitative and qualitative variables.

All patients with SSI were initially diagnosed clinically by history like a history of operation, fever, unusual pain in the operation site, malaise and examination including redness, swelling, raised local temperature, tenderness and purulent discharge from the wound. After confirmation, a discharge or wound swab is sent for culture to detect the causative organisms and sensitivity to antimicrobial drugs.

**Inclusion criteria:**

- Patients with a history of underwent operation (Elective or Emergency) of either gender
- Who operated in another hospital, developed SSIs afterward reported Dinajpur Medical College Hospital, Bangladesh.
- Patients with no history of infection at the surgical site.

**Exclusion criteria:**

- Patients under 12 years were excluded as they were referred to the Pediatric Surgery Department.
- Patients who underwent second surgery at the same site for any reason.
- Patients on immunosuppression therapy or any known immunodeficiency disease.
- Patients are on antibiotics already for any other infections or infections elsewhere in the body.
- Refuse to give consent.

# RESULT

**Table 1: Distribution by Age (n=230)**

| Age Groups in Years | Surgical procedure | |
|---|---|---|
| | Frequency | Percentage |
| 12-20 | 16 | 6.95 |
| 21-30 | 11 | 4.78 |
| 31-40 | 23 | 10.00 |
| 41-50 | 62 | 26.90 |
| 51-60 | 82 | 35.67 |
| >60 | 36 | 15.7 |
| **Total** | 230 | 100 |

A total of 230 Cases (n=230) of SSIs, 165 male (71.74%) and female 65 (28.26%) were included in this study over 6 months of the study period, they were divided into 6 age groups, the most common group was 51-60 years 82 (35.67%). [Table 1]

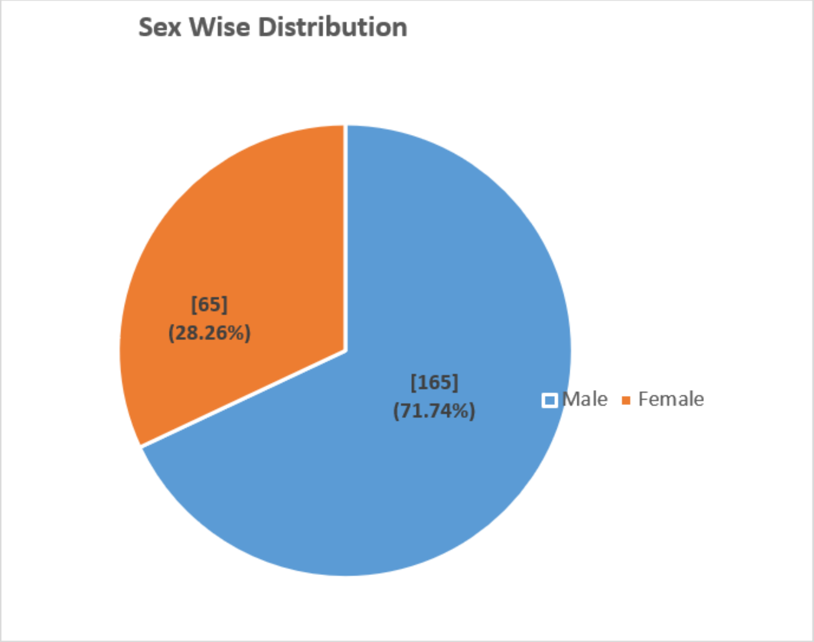


**Figure-I: Distribution by Sex (n=230)**

The figure illustrates the sex-wise distribution of the study participants (n=230). The majority of participants were male, comprising 165 individuals (71.74%), while females accounted for 65 individuals (28.26%). This indicates a predominance of male patients in the study population.

**Table 2: Infection rate correlation with preoperative hospital stay:**

| Preoperative hospital stay (Days) | No of Patients | No Infected Patient | Percentage |
|---|---|---|---|
| Emergency | 36 | 12 | 33 |
| 0-1 | 13 | 1 | 7.6 |
| 2-6 | 156 | 17 | 10.89 |
| 7-12 | 25 | 9 | 36 |
| Total | 230 | 39 | 16.9 |

The table shows that the incidence of SSI increased with longer preoperative hospital stay. Patients admitted for 7–12 days before surgery had the highest infection rate (36.0%), followed by emergency cases (33.0%). In contrast, patients with a preoperative stay of 0–1 day had the lowest SSI rate (7.6%). The overall SSI rate was 16.9%. [Table 2]

**Table 3: Relation between SSIs with Comorbidities and smoking:**

| Comorbidities | No Patients | Developed SSIs | Percentage |
|---|---|---|---|
| DM | 63 | 17 | 26.98 |
| HTN | 70 | 11 | 15.71 |
| Anaemia | 20 | 5 | 25 |
| Smoking | 46 | 6 | 13.04 |

The table shows the distribution of SSIs among patients with different comorbidities. The highest SSI rate was observed among patients with diabetes mellitus (26.98%), followed by anaemia (25.0%), hypertension (15.71%), and smoking (13.04%). These findings suggest that diabetes and anaemia were associated with a higher risk of developing surgical site infections. [Table 3]

**Table 4: Peri-operative and operative variables of SSIs:**

| **Distribution of infection according to the type of surgery:** | | | | |
|---|---|---|---|---|
| **Type of Surgery** | **Elective** | **SSIs** | **Emergency** | **SSIs** |
| Hernioplasty | 73 | 07 | 06 | 04 |
| Appendectomy | 57 | 09 | 09 | 01 |
| Cholecystectomy | 49 | 09 | 01 | 00 |
| Peptic perforation | 00 | 00 | 05 | 02 |
| Intestinal perforation | 00 | 00 | 04 | 02 |
| Blunt trauma abdomen | 00 | 00 | 05 | 01 |
| Intestinal obstruction | 00 | 00 | 06 | 02 |
| Mastectomy | 15 | 02 | 00 | 00 |
| **Total** | 194 | 27 | 36 | 12 |
| **Nature of Surgery (Routine/Emergency):** | | | | |
| | **No of Operation** | | **SSIs (+) Ve Group** | **SSIs (-) Ve Group** |
| Elective | 194 (84.35%) | | 27 (13.91%) | 167 (86.02%) |
| Emergency | 36 (15.65%) | | 12 (33.33%) | 24 (66.66%) |
| Total | 230 | | 39 (16.95%) | 191 (83.04%) |
| **Rate of SSI by Wound Classification:** | | | | |
| **Class** | **No of Patients** | **Infections** | **Infection Rate (%)** | |
| Clean | 66 | 2 | 3.03 | |
| Clean contaminated | 55 | 5 | 9.09 | |
| Contaminated | 52 | 10 | 19.23 | |
| Dirty / Infected | 57 | 22 | 38.59 | |
| **Extend of the wound Infection:** | | | | |
| **Type** | **Frequency** | | **Percentage** | |
| Superficial | 24 | | 61.53 | |
| Deep | 15 | | 38.5 | |
| Organ | 00 | | 00 | |
| **Presence of Drain Tube:** | | | | |
| **Frequency of SSIs** | | | **Percentage** | |
| Yes | 19 | | 48.71 | |
| No | 20 | | 51.28 | |
| **Preoperative Skin Cleansing:** | | | | |
| **SSIs (+) ve Group** | | | **SSIs (-) ve Group** | |
| Properly Made (227) | 37(16.29%) | | 190(83.7%) | |
| Not Properly made (3) | 2(66.66%) | | 01(33.33%) | |

The table shows that SSIs were more common in emergency surgeries (33.33%) than elective surgeries (13.91%). Infection rates increased with wound contamination, reaching the highest level in dirty/infected wounds (38.59%). Most SSIs were superficial (61.53%), while deep infections accounted for 38.5%. Patients with inadequate preoperative skin cleansing had a markedly higher SSI rate (66.66%) compared to those with proper skin preparation (16.29%). [Table 4]

**Table 5: Association of Duration of Surgery, ASA Score, Prophylactic Antibiotic Use, Blood Transfusion, and Microbiological Profile with Surgical Site Infections (SSIs) among Study Participants (n=230)**

| **Duration of Surgery:** | | | | |
|---|---|---|---|---|
| **Hours** | **No of Operation** | **Percentage (%)** | **No of SSIs** | **Percentage (%)** |
| <1 | 97 | 42.17 | 14 | 14.43 |
| 1-2 | 85 | 36.95 | 14 | 16.47 |
| 2-3 | 27 | 11.73 | 05 | 18.51 |
| 2-4 | 17 | 7.39 | 04 | 23.52 |
| >4 | 04 | 1.74 | 02 | 50 |
| **Infection Rate with ASA Score:** | | | | |
| ASA score | **No of Patients** | | **No of SSIs** | |
| l | 09 | | 00 (00%) | |
| ll | 117 | | 07 (5.98%) | |
| lll | 104 | | 32 (30.77%) | |
| **Prophylactic Antibiotics Before Operation:** | | | | |
| Antibiotics | **SSIs + Group** | | **SSIs - Group** | |
| Yes | 2 (4.54%) | | 42 (95.45%) | |
| No | 37 (20%) | | 149 (80%) | |
| **Blood Transfusion:** | | | | |
| **Unit of Blood** | **No Patients** | **SSIs + Group** | **SSIs - Group** | |
| None | 188 | 21 (11.177%) | 167 (88.82%) | |
| 1 Unit | 27 | 10 (37.03%) | 17 (62.96%) | |
| 2 Units | 12 | 06 (50%) | 06 (50%) | |
| 3 Units | 03 | 02 (66.66%) | 01 (33.33%) | |
| **Organisms Responsible for SSIs (n=39):** | | | | |
| **Gram-Positive Bacteria** | | | | |
| **Organisms** | **Frequency** | | **Percentage (%)** | |
| Staphylococcus aureas | 16 | | 41.02 | |
| Bacteroids | 03 | | 7.69 | |

This table presents the relationship between selected perioperative risk factors and the occurrence of surgical site infections. Higher SSI rates were observed with increasing duration of surgery, higher ASA scores, absence of prophylactic antibiotic use, and greater blood transfusion requirements. The table also summarizes the bacterial organisms isolated from infected surgical wounds, with Staphylococcus aureus being the most commonly identified pathogen. [Table 5]

**Table 6: Distribution of Gram-Negative Bacterial Isolates Responsible for Surgical Site Infections (n=39)**

| **Gram Negative Bacteria** | | |
|---|---|---|
| **Organisms** | **Frequency** | **Percentage (%)** |
| Escherichia coli | 13 | 33.33 |
| Pseudomonas aeruginosa | 03 | 7.69 |
| Klebsiella spp. | 04 | 10.25 |

This table presents the distribution of Gram-negative bacterial isolates identified from surgical site infections among the study participants. Escherichia coli was the most frequently isolated Gram-negative organism, accounting for 33.33% of cases, followed by Klebsiella spp. (10.25%) and Pseudomonas aeruginosa (7.69%). These findings indicate that Gram-negative bacteria, particularly E. coli, play a significant role in the development of surgical site infections, especially following abdominal surgical procedures. [Table 6]

# DISCUSSION

Surgical site infections comprise more of surgical complications, increasing globally even with the most modern facilities. Recent updates from various studies reported that SSIs rate 19.4% to 36.5% worldwide, whereas in India ranges from 3% to 12%. Surgical site infection remains a common global problem for patients who underwent operative procedures, contributes to significant morbidity and fatality, prolongs stay in hospital and therefore increases health care cost, estimated annual cost of $3.3 billion in the United States and extends the length of hospital stay by 9.7 days with the cost of hospitalization increased by more than $ 20,000per admission. In this study total of 230 patients underwent various surgical procedures and 39 (16.9%) patients developed surgical site infection. The rate of development of SSIs is 15.1% in the study conducted by A. Duran *et al*, and another study conducted by Watanabe *et al*, the incidence was 15.5% [3,10]. According to gender, 165 males (71.74%) and females 65 (28.26%) underwent various surgical procedures, this result is similar to the study of N Mohan *et al* [x]. This study found that advanced age raises the postoperative SSIs may be due to high BMI and more diabetics in victim >40 years may be the main two factors, most common age group is 51-60 years age group 82 (35.67%)

is supported by the study conducted by MJ Islam *et al* [xi].

The development of SSIs after various surgical procedures is related to many important factors like type and duration of surgery, operative techniques, control of comorbidities and preoperative preparation of the surgical site. A total of 230 patients underwent various surgical procedures, among them Hernioplasty (79) Appendectomy (66) Cholecystectomy (50) Peptic perforation (05) Intestinal perforation (04) Blunt abdominal trauma (05) Intestinal Obstruction 06 Mastectomy [15]. Regarding the nature of the operation routine 194 (84.35%) and emergency 36 (15.65%). SSI development rate in routine cases 27 (13.91%) and in emergency operations 12 (33.33%), this result is supported by the study of A Rahim *et al* conducted in a district-level hospital in Bangladesh [xii]. Here a total of 230 patients underwent surgical procedures and the rate of development of SSIs is 16.95% (39), similar to the result of the study conducted by Patel *et al* [14].

The incidence of SSI differs broadly from hospital to hospital, from developed countries to developing countries and from different geographic locations [xiii]. The rate of SSI in the USA is 3.03%, in Canada 4.7% and in different hospitals of the Indian subcontinent from 6.09% to 38.7% [xiv]. Despite advances in various sterilization procedures, modern surgical techniques and available highly sensitive antimicrobial agents. SSIs still cause high morbidity and mortality, readmission, prolonged hospital stay and higher costs of treatment all over the world [xv].

It is now proven that a momentous association between the American Society of Anesthesiologists (ASA) grade and the occurrence of SSIs. Higher ASA has been recognized as predictors of surgical complications including infections and outcomes of operation, indicative of a patient's overall health status and comorbidities. In our Study, the chance of SSIs in ASA-II is 7 (5.98%) and ASA-III is 32 (30.77%). As per our study, an ASA score is more than 2 is associated with a high rate of infection, the same findings were also found in the study of Patel *et al* [xvi].

According to this study, SSIs carried a significant association with comorbidities. Diabetes Mellitus (DM) is conceded globally as a jeopardy factor for the development and progression of SSIs due to impaired neutrophil chemotaxis and phagocytosis [xvii]. Diabetes Mellitus (DM) 63 (27.39%), hypertension (HTN) 70 (30.43%), Anaemia 20 (8.69%) and Smoking 46 (20%). This result is similar to the study of H Jatiliya *et al* [xviii]. The rate of development of SSIs among patients with comorbidities and a history of DM 17 (26.98%), HTN 11 (15.71%), severe Anaemia 5 (25%), Smoking 6 (13.04%) which is supported by the study of MJ Islam *et al* [12].

After proper control of preoperative co-morbidities and other risk factors, preoperative length of hospital stay stands as a serious predicting factor for SSIs, because the hospital environment itself harbors infectious agents. The danger of developing SSIs increased by Patients with ≥ 7 days preoperative hospitalization suffered 652.2% higher risk for deep/organ-space infection and 39.4% higher risk for superficial infection than with 1–2 days preoperative hospitalization[xix]. In our study rate of infection increased with an increase in preoperative hospital stay, Emergency cases is 33.33% (12/36), 0-1 days is 7.6% (1/13), in patients with 2-6 days is 10.89% (17/156) and in 7-12 days is 36% (9/25), coincide with the study of Patel *et al* [15]. Preoperative skin cleansing will reduce >95% of bacterial count, Our study showed that in patients who did not preoperative skin cleansing properly SSIs were significantly higher 66.66% (2/3) than those who undergo skin cleansing 16.29% (37/227), also showed the same result by the study of A Duran *et al* [1,10].

Carvalho *et al* showed that surgical wound class (contaminated and dirty wounds) had a meaningful association with SSI [xx]. Here is the rate of SSIs in clean 2 (3.03%), clean contaminated 5 (9.09%), contaminated 10 (19.23%), dirty/infected wound 22 (38.59%) showed an increased chance of developing SSI when compared to clean wounds, supported by SI Khan *et al* and Patel *et al* [14,21].

Prolonged operative time danger the development of risk of SSI, which determines the surgical outcome and health care economics, we should focus efforts on decreasing operative time [xxi]. Here is the rate of SSI on the duration of operation < 1 hour 14.43%, 1-2 hours 16.47%, 2-3 hours 18.51%, 3-4 hours 23.52% and > 4 hours 50%, indicating that more chance of SSI on the prolonged duration of surgery showed the same result by the studies conducted by SI Khan *et al* [20] and K Alamrew *et al* [xxii].

According to the centre for Disease Control and Prevention (CDC), SSIs are Superficial incisional SSI-involve skin and subcutaneous tissue, where incisions are made, Deep incisional SSI-involve fascial and muscle layers, Organ SSI-any portion of the body deep to fascial and muscle layers that are opened or manipulated during the operative procedure. In our study superficial SSIs 24 (61.53%) deep SSIs 15 (38.46%) and organ SSIs is 00 (00%), supported by the study of N Mohan *et al* [11].

Drains are not without complications. The placement of a drain can cause several complications, including postoperative pain, visceral injury, surgical site infection, bleeding or malposition. Prospective studies in general and colorectal surgery have shown a higher surgical site infection risk when drains are inserted intraoperatively. In this study rate of SSIs without drainage is 48.71% and with drainage is 51.28%, this result is similar to the study of A Ahmad *et al* [xxiii].

Transfusion of Blood was extensively practiced in surgery as a lifesaver, but it causes transfusion-related immunomodulation can lead to feeble immunity and predispose patients to SSIs. It was determined that a three-fold rise rate of nosocomial infection after blood transfusion [xxiv]. In our study, the SSI rate in one unit is 11.17%, in two units 37.03%, and in three units 66.66%, which is supported by A Duran *et al* [10]. So, blood transfusion should be avoided as much as possible, as Hemodynamically stable patients can tolerate haemoglobin values >7g/dl postoperative period [xxv].

In this tertiary care teaching hospital prophylactic antibiotics were not routinely used preoperatively. The patients who had features of infection or other risk factors received antimicrobial agents prophylactically before surgery. The rate of SSIs in patients who received antibiotics is 2 (4.54%) and in those who had not 37 (20%), with a similar result shown in the study of Naveen *et al* [xxvi].

Wound swab culture from a deeper part of the infected surgical sites revealed an organism in 100% of cases, here Pseudomonas aeruginosa and Escherichia coli were both common in abdominopelvic wounds, while Staphylococcus species, Streptococcus and Enterobacter were isolated from extra-abdominal surgical sites. In our study S. aureas 16 (41.02%), followed by E.coli 13 (33.33%), Bacteroids 3 (7.69%), P.aeruginosa 3 (7.69%), Klebsiella spp 4 (10.25%). Compared to this study, Escherichia coli (43%) followed by Staphylococcus aureus (33%) and Pseudomonas aeruginosa (11%) were found by Elahi M *et al* the most predominant isolated organism in their study [xxvii].

# Conclusion

SSIs are a significant postoperative complication that has a serious impact on both morbidity and fatality. The incidence of SSIs among elective and emergency (more) postoperative patients in tertiary care hospitals is high compared to that in developed countries. Risk factors for SSIs at the operation site like Malnutrition, metabolic disease, immunosuppression, colonization and translocation in the gastrointestinal tract, poor perfusion, foreign body material and poor surgical technique. Factors that determine whether a wound will become infected include host response, virulence and inoculum of an infective agent, vascularity and health of tissue being invaded, presence of dead or foreign tissue and presence of antibiotics during the 'decisive period', to foreign materials of any kind, including sutures and drains. Proper nursing care, proper preoperative preparation of the patient, sterilization of surgical instruments and equipment, OT discipline and strict handling of postoperative patients to control such life-threatening infections. Continue SSIs surveillance, periodical medical audit and quality control exercises to monitor and report the infections after surgery to prevent and control infection rates at surgical wounds to an acceptable level. To formulate a proven and affordable protocol (institutional antibiotic policy) for the prevention, early detection and better management of SSIs.

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