Original Article

# Effect of Educational Guidelines on Nurses' Knowledge and Practice Regarding Cesarean Section Site Infection in Tertiary Care Hospital Lahore



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## ABSTRACT

**Objective:** To evaluate the effect of educational Guidelines on the knowledge and practice of nurses regarding cesarean section site infection.

**Study Design:** Quasi-experimental study

**Place and Duration of Study:** This study was conducted at the Department of Obstetrics and Gynecology, Tertiary Care Hospital, Pakistan from December 2021 to April 2022.

**Materials and Methods:** Thirty six registered nurses were selected by convenience sampling from tertiary care hospital Lahore according to inclusion and exclusion criteria. A structured questionnaire was used to evaluate the pre-post data that contained 25 MCQ-based knowledge questions and 25 items containing like rt scale were used to assess the level of practice of nurses before and after guidelines-based educational intervention.

**Results:** A positive effect of educational guidelines on improving the knowledge and practice of nurses about cesarean section site infection (7.16±2.11; 52.61±7.73) (19.72±2.30; 92.08±4.52) in post-test respectively with a statistically significant p-value (P-value <0.001).

**Conclusion:** The education of nurses by educational guidelines has a significant effect on improving nurses' knowledge and practice about cesarean section site infection.


**Key Words:** Knowledge, Professional practice; Nurses; Cesarean section; Surgical site Infection

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## INTRODUCTION

Cesarean section (C-section) is the surgical procedure to save the lives of mothers and babies.[1] Surgical site infections (SSIs) defined by the Centers for the Disease Control & Prevention (CDC) are the infections related to surgical procedures and affect the incision site. This can be done with or without the involvement of surrounding tissues within 30 days of the surgery.

According to CDC's National Nosocomial Infection Surveillance System, 38% of all nosocomial infections after surgical procedures are SSIs.[2]

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This SSIs account for 1.9% of general surgeries while cesarean section accounts for 7-10% of surgical site infections.

According to the data from 150 countries, which indicated that 18.9% of cesarean sections occur worldwide, ranging from 6.0% to 27.2% in both developing and developed countries. Cesarean section rates in Bangladesh are 31%[1], and in India increased from 8.9% to 18% in 2016[2], and in Nepal increased to 16.7% respectively. Surgical site infection is the major complication of C-sections that accounts for up to 12% of cases after cesarean section. SSI following C-section is 3 to15 % worldwide[3]. Surgical site infections after C-section are 3. 5% to 28%, 6.3% to 11.2% in India and Bangladesh[4] respectively. Surgical site infection is the major complication of C-sections that accounts for up to 12% of cases after cesarean section. C-section site infection are 3.5% to 28%[1], 6.3%-11.2%[2] in India and Bangladesh respectively. In Nepal, SSIs reported from 7.3%-23%.[3]

C-section site infection increases the chances of readmission five times more than patients without SSI, and two times more likely to die[4] pain and burdened the health care system of the country. The mortality rate after SSIs is 3 to 5% and 75% of deaths in SSIs are directly attributable to SSI.[5] Many risk factors are reported in the literature for the development of surgical

site infections after cesarean. These include patient-related risk factors which are nutritional imbalance, diabetes mellitus, Overweight, coexistent infection, contamination with micro-organisms and length of pre-operative stay. Operation related risk factors are modifiable, they include surgical scrub duration, use of antiseptics, and proper sterilization of the instruments, surgical technique and ventilation of the operating room. A significant reduction occurs by following infection prevention and care in the operating room.[4]

A significant reduction occurs in the ratio of C-Section site infection by the incision management via using evidenced-based guidelines to change the perioperative surgical site care practices; and without change in the patient's risk factors. By using proper preoperative and post-operative incision management a significant and sustainable reduction in SSIs after cesarean can be maintained.[4]

Nurses play a pivotal role in preventing the surgical site infections in clinical settings throughout the continuum of care. SSI are reduced to 60% and nurses can modify the risk factors by some important change into daily routine care practices by following guidelines for surgical site infections such as hand hygiene, routine administration of antibiotic prophylaxis, hair removal, cleaning and proper intraoperative and postoperative care of the patients.[4]

In Pakistan, there is a frightful situation due to continuous increase in surgical site infections. A statistically significant relationship exists between the surgical site classification and use of guidelines; it shows guidelines are still ignored for caring the patients. Proper perioperative guidelines at the hospitals are the need of hour in Pakistan to reduce the high rates of surgical site infections.[6]

Since, nurses need to get the education about guidelines regarding C-Section site infection to improve the knowledge and practice of nurses for empowering the nurses, this influence the researcher to conduct the study.

# MATERIALS AND METHODS

This study was conducted by using the protocols of declaration of Helsinki. All the participants were well-informed and written consent was obtained. Institutional Review Board of University of Lahore had granted the approval (IRB-UOL-FAHS/972/2021) dated on 26-10-21 to conduct this study.

One group Pre-test Post-test (quasi-experimental) study was conducted from December 2021 to April 2022, Registered nurses were included from the labor room, gynecology and obstetrics department of tertiary care hospital Lahore Pakistan. 36 registered nurses were selected by using purposive sampling technique. Nurses who attended the recent training session on prevention of post cesarean infection, who had the plan to go on leave and who had the previous cesarean section were excluded from the study. To calculate the sample size, mean and standard deviation is used from the previously published articles. Sample size was 36 by adding 20% drop out rate and 80% power of the test.

Tool was adopted from the published research with permission.[5] Tool had three parts; Part A Demographic Variables, Part B Knowledge Assessment Questionnaire, Part C Practice Assessment Likert Scale

**Part A:** Demographic variables (age, gender and educational experience) were requested.

**Part B:** Knowledge level assessed by using multiple choices based questionnaire that contained the 25 questions before and after educational intervention. Right answer was marked as '1' and wrong answer marked as '0'. Knowledge was categorized by summing the scored obtained as; poor knowledge <60% (1-14 score) moderate knowledge between 60%-75% (15-19 scores) and good knowledge >75% (20-25 scores).

**Part C:** Nurse's practice checked by using 25 statements on the 5-point Likert Scale (1= strongly disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= strongly agree). Practice categorized into three by summing up the obtained scores as; poor practice <60% (25-58.3 scores on Likert scale), Moderate practice 60-75% (58.4-91.7 scores on Likert scale) and Good practice >75% (91.8-125 scores on Likert scale).

Questionnaire's reliability and validity checked by the pilot study. Knowledge questionnaire validated by five field experts and had the Content Validity Index (CVI) of 0.90. Cronbach's alpha of 0.818 showed the internal consistency. Practice questionnaire validated by five field experts and had the Content Validity Index (CVI) of 0.92; and Cronbach's alpha of 0.818 showed the internal consistency.

Educational intervention was given to the nurses by making small groups including 3-5 nurses and also carried out with 1 nurse according to availability and working schedule. 10 Weeks educational training was given by using PowerPoint lectures cum audio-visual demonstration and videos regarding the Cesarean Section site infection, classification of surgical site infection, criteria to diagnose surgical site infections and guidelines to reduce the surgical site infections after cesarean section. Total 15 sessions were conducted by taking 3 sessions per week. 2 weeks were given for the implication of knowledge and 4 weeks were given for practice improvement.

SPSS 20.0 used for statistical analysis. Demographic and professional variables assessed by frequency and percentages. Data collected in the form of whole numbers and twice i.e. before and after educational intervention. Mean difference calculated by paired t-test with $P \leq 0.05$ considered as significant.

# RESULTS

The most of the nurses 30 (83.3%) had Diploma in Nursing. More than half of the nurses 20(55.6%) had working experience between 1-5 years; 21(58.3%) were 25-30 years of age (Table 1).

The mean in pre-teaching indicates all nurses had poor level of knowledge while in post-teaching, majority of the nurses had good level of knowledge and practice. This showed a statistically significant differences in mean knowledge and practice scores after intervention with P-value <0.05 (Table 2).

**Table No.1: Demographic characteristics of studied sample (n=36)**

| Variable | No. | % |
|---|---|---|
| **Age (years)** | | |
| < 25 | 2 | 5.6 |
| 25 – 30 | 21 | 58.63 |
| 31-35 | 11 | 30.6 |
| 36-40 | 2 | 5.6 |
| **Qualification** | | |
| Diploma in Nursing | 30 | 83.3 |
| BSc in Nursing | 6 | 16.7 |
| **Working Experience (years)** | | |
| 1 - 5 | 20 | 55.6 |
| 6 – 10 | 14 | 38.9 |
| 11- 15 | 2 | 5.6 |

**Table No.2: Comparison of pre and post intervention knowledge and practice scores of nurses regarding cesarean section site infection (n=36)**

| Variable | Pre-intervention | Post-intervention | Mean difference | t-test | p-value |
|---|---|---|---|---|---|
| Knowledge | 7.16±2.11 | 19.72±2.30 | -12.55 | -27.17 | <0.001 |
| Practice | 52.61±7.73 | 92.08 ±4.52 | -39.47 | -24.99 | <0.001 |

# DISCUSSION

Nurses provide the care to the patients 24/7 in the health care facilities. Knowledge and practice of the nurses are the basic pillars to control the infections that in result enhance the patient care. This study has the same findings as the previous study conducted at Allied hospital Faisalabad that nurses had the poor knowledge and practice about reduction in surgical site infections, which highlights the positive correlation between knowledge and practice of nurses. So, educational programs should be arranged by the Nursing administrators to enhance the knowledge and as the result practice for reduction in surgical site infection.[7]

In the current study, it is revealed that nurses' knowledge and practice has the positive correlation and educational training enhances the mean and standard deviation with statistically significant difference. In this regard, the results had been contrary with institution-based cross sectional study conducted in the Ethiopia[8], that knowledge of the nurses was good while nursing practice to reduce surgical site infection was unsatisfactory. Therefore it is the urgent need to bring knowledge into practice by educational programs and in-service training.

The results are supported by the quasi experimental study of Elsharkawy in Egypt[5] for determining the effectiveness of educational module at the 4 weeks of post teaching which revealed the significant improvement in the mean scores (23.06±.86 & 121.78±2.79) for knowledge and practice of nurses respectively.

This study is in line with a mixed method study performed in Bangladesh[9] which indicated that insufficient knowledge and Lack of guidelines implementation as the major gaps to prevent the surgical site infections.

The results of present study supported by the study carried out in the Jordan[10] that there is a significant difference in the knowledge of nurses for prevention of surgical site infections whom attended the training program and who didn't. Furthermore, surgical site infection measures based on the guidelines with continuous educational programs causes a significant increase in knowledge.

In comparison to the study conducted in Italy to investigate the knowledge practice and attitude of nurses about disinfecting procedures[11] which make it evident that less percentage of nurses had moderate knowledge and mostly nurses had the poor practice for reducing surgical site infections.

Similar results were shown by the study conducted in India that maternity nurses has inadequate level of knowledge with (19.6±2.14) and inappropriate practices for surgical procedures (17.25±4.93) and ('r' value 0.565) moderately positive correlation exist between knowledge and practice of nurses. It also indicated that education in the form of informative booklet is helpful in improving knowledge and practice of nurses.[12].

# CONCLUSION

The effect of educational guidelines in improving nurses' knowledge and practice regarding cesarean section site infection has a significant positive impact.

**Author's Contribution:**

| | |
|---|---|
| Concept & Design of Study: | Saba Nazir |
| Drafting: | Kabir Ozigi Abdullahi, Muhammad Afzal |
| Data Analysis: | Muhammad Afzal, Sadia Khan |
| Revisiting Critically: | Saba Nazir, Kabir Ozigi Abdullahi |
| Final Approval of version: | Saba Nazir |

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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