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ASSESSMENT OF SSI PREVENTION KNOWLEDGE AND PRACTICES AMONG NURSES AND MIDWIVES IN PAKISTAN

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Abstract

This cross-sectional study, conducted from December 15, 2023, to October 11, 2024, assessed awareness and practices regarding surgical site infection (SSI) prevention among 324 nurses at the University of Lahore Teaching Hospital, Pakistan. Participants included nurses working in obstetrics, gynecology, orthopaedic, surgical, and operation theater wards. Data were analyzed using SPSS version 21 with descriptive and inferential statistics, including chi-square tests. Most participants were female, married, aged 26–30, held nursing degrees, and worked in the OT. Overall, 82.41% demonstrated acceptable awareness of SSI prevention, with no major subgroup differences. Significant associations were found between awareness and practice ($p = 0.007$), and between ward type and practice level ($p < 0.0001$), with the orthopaedic ward showing the highest rate of inadequate practices.

INTRODUCTION

A major global public health problem, healthcare-associated infections (HAIs) impact millions of people each year. According to recent estimates, about 5% of hospitalized patients in wealthy nations contract a HAI while they are there. However, in poor places like Africa, where a thorough analysis has revealed that the frequency of HAIs frequently exceeds that of high-income countries, the burden is considerably greater[1].Surgical site infections (SSIs), which make up more than 30% of all cases, are routinely considered to be the most prevalent kind of HAI. SSIs are defined as infections that must be connected to the surgical operation and happen within 30 days after surgery, or within a year if an implant is involved. While a research from Ethiopia that focused on obstetric procedures found a higher prevalence of 11.4%, a systematic review from Korea indicated an SSI incidence of up to 9.7%[2].

The emergence of SSIs has been associated with certain risk factors. Smoking, obesity, hypoxia, immunosuppression, advanced age, malnourishment, metabolic problems, and extended hospital stays prior to surgery are examples of intrinsic variables. The following are examples of extrinsic or modifiable factors: inadequate prophylactic antibiotic administration, inappropriate skin antisepsis, preoperative hair removal, poor skin preparation techniques, substandard instrument sterilization, improper use of surgical drains, ineffective surgical hand antisepsis, and improper wound dressing techniques[3].In addition to being essential to the multidisciplinary approach to patient care, nurses are in a unique position to make a substantial contribution to the prevention of SSI. They are able to follow surgery patients, apply infection control methods, and uphold evidence-based practices because of their ongoing presence in clinical settings. This being said, a number of studies have revealed that many nurses are not well informed on SSI prevention and do not always follow established protocols. This disparity emphasizes the critical need for continuing

education, skill enhancement, and institutional support to enable nurses to successfully lower the rate of SSIs and advance patient safety[4].Several important elements impacting nurses' knowledge and behaviors in preventing surgical site infections (SSIs) are identified by evidence from the literature currently in publication. These include workload, years of clinical experience, nursing education level, infection prevention training, and compliance with infection control and patient safety procedures. Furthermore, several research have shown that clinical practice does not effectively apply the current evidence-based guidelines[5].

In order to lower the prevalence of SSIs, the World Health Organization (WHO) provides a number of important suggestions in its guidelines for safe surgery. Prophylactic antibiotics should be administered within 60 minutes of the surgical incision, surgical instruments should be properly sterilized using sterility indicators, presurgical skin antisepsis should be taken seriously, and the surgical safety checklist should be followed consistently[6].Surgical site infections are a major issue that has been shown to have a major influence on patient safety and the quality of healthcare[7].Developing nations like Pakistan have a high incidence rate of surgical site infections. Medical personnel may be the source of these illnesses, according to several research. Nurses make up the bulk of healthcare workers, and they are more likely to contract diseases themselves as well as spread them to others[8].

The awareness and practices of nurses and midwives in Pakistani public hospitals about the prevention of surgical site infections are examined in this study. First of all, this course will benefit me throughout my clinical rotations by enhancing my understanding and application of surgical site infection prevention[9,10].Additionally, by determining the gaps in nurses' knowledge and practices about surgical site infection prevention, the research findings will help the organization create and plan training programs. Effective nursing techniques and expertise can help improve patient care and perhaps lower hospital infection rates. Additionally, the findings of the study will support future nursing research[11].

Material & Methods:

A cross-sectional research was carried out from December 15, 2023 to October 11, 2024 among 324 nurses at University of Lahore Teaching Hospital Lahore, Pakistan. Participants in the research comprised all nurses who volunteered to work directly with patients in obstetrics, gynecology, orthopaedic, surgical, and operation theater (OT) wards and units. With the use of SPSS software version 21, data was examined using both descriptive and inferential statistics. Frequencies and percentages were computed for every research variable. To gauge the degree of correlation between the dependent and independent variables, chi square product moment correlation was used. The Institutional Review Board of Jinnah Hospital, Lahore provided ethical approval. Participating nurses were informed of the study's objectives and procedures, and their signed agreement was sought prior to the collection of both quantitative and qualitative data. Additionally, the participants were made aware of their freedom to quit from the research at any moment or to continue participating. The participants' verbal consent was acquired before each interview was recorded. A coding number was used to ensure that all information was kept private and anonymous. Participants' recorded data were safely stored in an archive.

Results:

The demographic and professional attributes of the participants are displayed in Table 1. The participants were almost all between the ages of 26 and 30. Most were married (91.97%), female (75.61%), and had a nursing diploma (75.92%). The majority of responders (49.38%) were assigned to the OT unit, while those who worked in the surgical ward (25.62%) came in second. Over half of the nurses (78.4%) had worked in their particular wards or units for less than 10 years, and 57.72% had been there for less than four years.

Variables	Frequency (n)	Percentage (%)

Age		
18-24 years old	20	6.17%
25-29 years old	140	43.20%
30-34 years old	80	24.69%
35-39 years old	40	12.34%
40-44 years old	25	7.71%
More than 45 years old	19	5.86%
Gender		
Male	79	24.38%
Female	245	75.61%
Marital Status		
Single	18	5.55%
Married	298	91.97%
Divorced/ widowed	8	2.47%
Education		
Diploma	246	75.92%
Degree	61	18.83%
Master	17	5.25%
Working Area		
Surgical ward	83	25.62%
Obs & Gynea Ward	34	10.49%
Orthopedic ward	47	14.51%
Operation Theater	160	49.38%
Working Tenure		
Less than 4 years	187	57.72%
5-9 years	67	20.68%
10-14 years	35	10.80%
15-19 years	21	6.48%
above 20 years	14	4.32%

Table 1: Demographic Characters of Respondents

The majority of nurses and midwives, according to the survey, showed high awareness about preventing surgical site infections (SSI), with 267 respondents (82.41%) fulfilling the requirements for appropriate awareness (Table 2). There were no statistically significant variations in SSI prevention knowledge amongst the various nursing subgroups, supporting the idea that Pakistani hospital nurses and midvives are well-versed in SSI prevention strategies.

Prevention of SSI	Poor		Good	
	Frequency	Percentage	Frequency	Percentage
Awareness	57	17.60%	267	82.41%
Practice	11	3.40%	313	96.60%

Table 2: Awareness and practices toward prevention of SSI

In Table 3, Correlation between SSI preventive practice and awareness has a p-value of 0.007.This suggests a statistically significant link ($p < 0.05$) between nurses and midvives improved practice and their level of awareness.

Awareness	Practice		P-Value
	Inadequate	Adequate	0.007
Poor	7(46.67%)	50(16.18%)	
Good	8(53.33%)	259(83.82%)	

Table 3: Association between awareness with practice towards prevention of SSI

In figure 1, A chi-square test revealed a p-value < 0.0001, indicating a statistically significant correlation between ward type and practice level (inadequate vs. adequate). The Orthopaedic ward had the largest percentage of inadequate practice 20 (42.55%), followed by the Surgical ward 6 (12.77%), the Obs & Gynea ward 9 (19.15%), and the Operation Theater 12 (25.53%). In contrast, the surgical ward 77 (27.80%) and operation theater 148 (53.43%) had the highest percentage of appropriate practices.

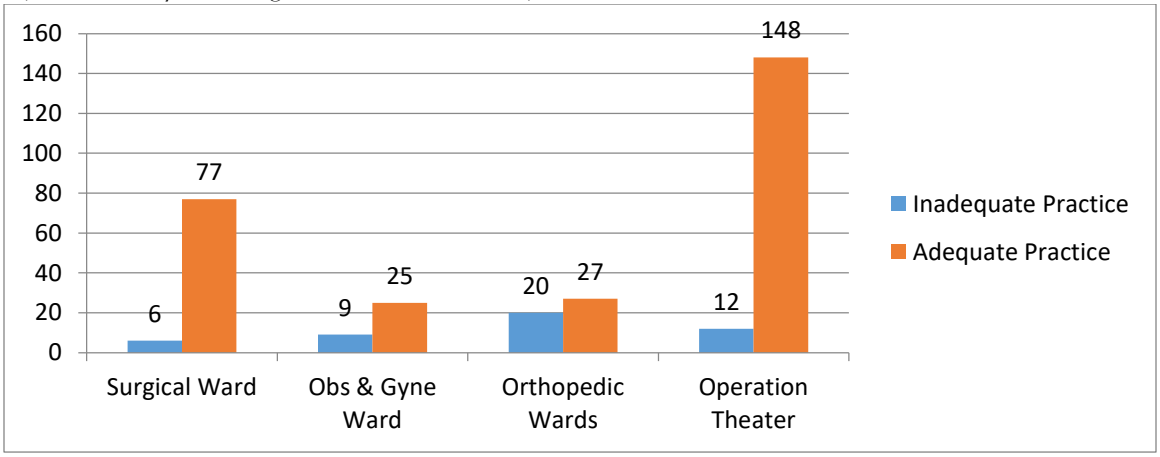

Figure 1: Association between awareness with demographic characters towards prevention of SSI

Discussion:

According to the current study, 324 nurses who worked in obstetrics and gynecology, orthopaedic, surgical, and operation theater wards showed strong knowledge and practices regarding surgical site infection (SSI) prevention. Indicating a continuously high standard of SSI prevention methods among Pakistani nurses and midvives, there was no statistically significant difference in knowledge and practice levels[12]. Their comprehension of crucial elements, including preoperative skin preparation, the goal of surgical hand antisepsis, and the function of prophylactic antibiotics in SSI prevention, was very noteworthy. These results demonstrate the proficiency and readiness of Pakistani nurses and Midwives to follow evidence-based SSI prevention guidelines. This is because infection prevention and control techniques are a top concern in every healthcare facility to provide a healthy workplace, and recommendations for policies and procedures on these practices are readily available. It is backed by multi-tiered committees that supervise and coordinate at various levels as part of sound governance. Preventing SSI in Pakistan is also greatly aided by the outstanding encouragement and support of nurses and hospital management, particularly in the form of well-organized continuing education[13,14].

This study supports other research that agreed that nurses would be exposed to a body of information on SSI Prevention through ongoing educational programs and professional training pertaining to surgical infections (Kolade OA et al,. 2017)[15].However, because evidence-based practices for SSI prevention are not specifically covered in Indonesia's three-year certified diploma in midwifery curriculum, the nurses' knowledge of SSI prevention in this study differs from that of the Novelia et al. (2017) study conducted in Indonesia[16].

According to Qasem and Hweidi (2017) and Sadaf, Inayat, Afzal, and Hussain (2018), nurses were more likely to lack sufficient knowledge about SSI prevention due to a lack of specialized courses on evidence-based guidelines for SSI prevention and misconceptions resulting from an incorrect assessment of their educational and learning needs.The absence of research sources for nurses to update and use evidence-based practices, as well as a lack of motivation from hospital management and nurses themselves, were other factors mentioned by Qasem and Hweidi (2017) and Sadaf et al. (2018).

so adding to the inconsistency between their study and the one being conducted now[17,18].

In order to prevent surgical site infections, the nurses in this study were especially careful to wash their hands both before and after changing wound dressings, to touch the surgical site, to wear a face mask while cleaning surgical wound dressings, to clean and disinfect the dressing trolley's surface with antiseptic solution, and to dispose of soiled materials properly after applying wound dressings. This demonstrates the effectiveness of the measures taken by these institutions, particularly by the nursing staff, to avoid SSI. The plan was to conduct hands-on audits like the National Operating Room Nursing Audit and daily monitoring[19].

Even though these institutions had sufficient information and procedures for preventing surgical site infections, it was noted that the nurses' understanding of the most effective pre-operative shaving techniques was lacking. But according to the guidelines, the ideal way was clipper shaving. Because of their limited resources, most hospitals would utilize razors for pre-operative shaving, which causes confusion. It is acknowledged that the hospital administration and the order of importance in providing the required consumables determine the availability of hospital equipment. These results are comparable to those of research conducted by Desalew et al. (2019) and Oluwakemi et al. (2017). According to their analysis, inadequate measures to avoid SSIs are caused by a scarcity of consumables[20].

The optimal agents for pre-operative skin preparation were not well understood by the nurses in this investigation. Despite the fact that the SSI Prevention Guideline states that Chlorohexidine Gluconate washing reduces the rate of MRSA colonization in hospital settings (Metha et al., 2013; Simor et al., 2007), the majority of respondents were unable to properly answer this question. This is explained by the fact that Povidone-iodine (PVP-I) was utilized in the majority of hospital cleaning operations, which left the respondents perplexed[21]. This study demonstrated that respondents' inability to accurately answer some questions resulted from their lack of exposure to the given rules. Additionally, nurses do not regularly perform the knowledge and practice questions associated with SSI prevention, such as the laboratory question for evaluating the patient's nutritional status, the pre-operative shaving immediately prior to surgery, and the assessment of patients' body mass index (BMI) before and after surgery. A questionnaire was also used to assess the nurses' practices in this investigation. Therefore, the findings would not accurately represent the actual practice (Bogdanova Popov B et al., 2017). It is advised to improve nurses' understanding and guarantee more pleasant evaluation by utilizing visibility and graphical teaching resources[22].

According to the current study, nurses' awareness of SSI prevention was related to their workplace. It was discovered that compared to the nurses in the other wards/units, the OT and surgical nurses had a larger percentage of good knowledge. This is the outcome of particular supervision and training, including the use of Safe Surgery Saves Life (SSSL) techniques in the OT to prevent SSI. Reducing HAIs, the world's biggest healthcare issue, requires improving nurses' understanding of and adherence to SSI Prevention measures.

Conclusion:

The study highlights the significance of ongoing education, proper supervision, frequent monitoring, and the availability of necessary materials in order to maintain and improve these competences. Improving patient safety and SSI prevention requires continuous training and the institutional use of evidence-based standards. However, the accuracy and generalizability of the results may be impacted by constraints including the use of convenience sampling and the dependence on self-reported data.

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