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Original Research Article

KNOWLEDGE, ATTITUDE AND PRACTICES REGARDING SURGICAL SITE INFECTION PREVENTION AMONG STAFF NURSES IN SIR GANGARAM HOSPITAL, LAHORE

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Abstract: *Surgical site infections (SSIs) are a significant contributor to healthcare-associated infections, leading to increased morbidity and prolonged hospital stays. Effective prevention strategies rely on healthcare professionals' knowledge, attitudes, and practices (KAP), particularly among nurses directly involved in patient care.* ***Objective:*** *To assess the knowledge, attitudes, and practices regarding SSI prevention among staff nurses at Sir Ganga Ram Hospital, Lahore.* ***Methods:*** *A descriptive cross-sectional study was conducted among 120 nurses using a pre-validated structured questionnaire. Data were analyzed using SPSS version 26, with results presented as frequencies and percentages.* ***Results:*** *The majority of nurses (85%) had adequate knowledge about SSIs, with high awareness of blood sugar control (83.3%) and aseptic techniques (80.8%). Positive attitudes were prevalent, with 81.9% scoring well, and most participants agreeing on the importance of sterile materials (98.3%) and frequent dressing changes (92.5%). Adherence to good practices was noted in 87.7% of nurses, particularly in areas like skin preparation with alcohol and chlorhexidine (90%). However, gaps were identified in knowledge of specimen collection methods (64.2%) and in organizing training sessions for SSI prevention (25%).* ***Conclusion:*** *Nurses at Sir Ganga Ram Hospital demonstrated good KAP regarding SSI prevention, but gaps in specific practices highlight the need for targeted training and systemic improvements. Enhanced education and resource allocation can improve adherence to evidence-based guidelines, ultimately reducing the burden of SSIs in healthcare settings.*

Keywords: Surgical Site Infection, Knowledge, Attitudes, Practices, Nurses, Infection Prevention, Pakistan

Introduction

Surgical site infections (SSIs) are among the most common healthcare-associated infections (HAIs), significantly contributing to morbidity, and prolonged hospital stays, and increased healthcare costs globally. In Pakistan, where healthcare systems often face resource constraints and inconsistent adherence to infection control practices, the burden of SSIs is disproportionately high (1, 2). Effective SSI prevention requires a comprehensive approach encompassing proper knowledge, positive attitudes, and adherence to best practices among healthcare professionals, particularly nurses, who are directly involved in patient care (3).

Nurses play a pivotal role in preventing SSIs through practices such as maintaining aseptic techniques, adhering to hand hygiene protocols, and ensuring proper pre- and post-operative care. However, in Pakistan, studies indicate significant knowledge gaps and inconsistent adherence to evidence-based guidelines among nursing staff, highlighting the need for targeted interventions (4, 5). Factors such as inadequate training, high workloads, and limited availability of protective equipment further exacerbate the challenges (6).

Internationally, guidelines from organizations such as the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) provide evidence-based recommendations for SSI prevention. These include proper timing of prophylactic antibiotics, pre-operative skin preparation, and adherence to sterile techniques. While these guidelines are applicable universally, their implementation in resource-limited settings like Pakistan often remains suboptimal due to infrastructural and systemic barriers (7, 8).

Local studies have underscored the need for enhancing nurses' knowledge and practices regarding infection control. For instance, Ahmed et al. reported that a significant proportion of nurses in Pakistani hospitals lacked awareness of proper hand hygiene protocols and the timing of prophylactic antibiotics, contributing to higher SSI rates (9). Similarly, a study by Waheed et al. emphasized the importance of continuous professional education and organizational support in fostering a culture of safety and adherence to infection control measures (10).

This study aims to assess the knowledge, attitude, and practices (KAP) regarding SSI prevention among staff nurses at Sir Ganga Ram Hospital, Lahore. By identifying gaps and barriers, the findings will inform targeted interventions to improve infection control practices and reduce the incidence of SSIs in Pakistan's healthcare system.

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Methodology

The study employed a descriptive cross-sectional design to assess the knowledge, attitudes, and practices (KAP) regarding surgical site infection (SSI) prevention among nurses at Sir Ganga Ram Hospital, Lahore. This design was chosen to provide a snapshot of the participants' current understanding and practices related to SSI prevention. The target population included staff nurses working in the surgical and gynecology departments of the hospital.

A convenience sampling technique was used to recruit participants. The inclusion criteria specified that participants should be registered nurses with at least one year of professional experience. Nurses who were on extended leave or unwilling to participate were excluded from the study. Data collection was conducted over a specified period to ensure adequate representation of the nursing staff.

Data were collected using a pre-validated structured questionnaire designed to evaluate KAP regarding SSI prevention. The questionnaire comprised four sections: demographic information, knowledge, attitudes, and practices. The knowledge section included questions on infection control protocols, such as aseptic techniques, pre-operative shaving, and prophylactic antibiotic timing. The attitude section assessed perceptions and beliefs about the importance of SSI prevention measures, while the practice section examined adherence to infection control practices, including hand hygiene and proper wound dressing techniques.

Ethical approval for the study was obtained from the hospital's ethics review board. All participants provided informed consent after being briefed about the study's purpose, procedures, and confidentiality measures. Participation was entirely voluntary, and nurses were informed of their right to withdraw from the study at any time without repercussions.

The data collection process involved the distribution of questionnaires during work shifts. Trained research assistants were available to clarify any questions or concerns raised by participants. Completed questionnaires were collected, reviewed for completeness, and anonymized to ensure data confidentiality.

Data were analyzed using SPSS version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated to summarize demographic characteristics and responses related to knowledge, attitudes, and practices. Inferential statistics were used to identify relationships between demographic variables and KAP scores.

Results

This study assessed the knowledge, attitude, and practices (KAP) regarding surgical site infection (SSI) prevention among staff nurses at Sir Ganga Ram Hospital, Lahore. The findings highlight varying levels of knowledge, attitudes, and practices among participants and their adherence to infection control measures. Key results are summarized below with corresponding tables referenced for detailed data.

Participants were predominantly from the surgical department (57.5%) and gynecology department (42.5%). The majority were aged 30–40 years (50%), followed by 20–30 years (42.5%), with only 7.5% above 40 years. Regarding professional status, 45.8% held diplomas in nursing, 30.8% had Post RN degrees, and 23.3% were generic nurses (Table 1).

Among participants, 85% reported knowledge about SSIs, and 72.5% were aware of the best methods for pre-operative shaving and antibiotic timing. Additionally, 83.3% understood the importance of maintaining normal blood sugar levels, and 80.8% recognized the significance of white blood cell levels in preventing SSIs. However, knowledge gaps were evident in aseptic techniques and specimen collection, with 80.8% and 64.2% of participants reporting awareness, respectively (Table 2).

The study revealed a predominantly positive attitude toward SSI prevention, with 81.9% of participants scoring positive. Most participants agreed on the importance of using sterile materials (98.3%) and frequently changing damp dressings (92.5%). Additionally, 91.7% emphasized the necessity of handwashing before and after dressing changes. However, a smaller proportion (25%) strongly recommended organizing training on SSI prevention (Table 3).

The results demonstrated strong adherence to best practices, with 87.7% of participants scoring well in practice evaluations. Most participants agreed on the use of alcohol and chlorhexidine for skin preparation (90%) and the need for prescribed glucose tests before and after surgery in diabetic patients (83.3%). Despite these positive trends, a minority of participants demonstrated poor practices, with 12.3% scoring below expectations (Table 4).

Table 1: Demographic Characteristics of Participants

Characteristic	Category	Frequency	Percentage (%)
Department	Surgical	69	57.5
	Gynecology	51	42.5
Age (Years)	20–30	51	42.5
	30–40	60	50.0
	Above 40	9	7.5
Professional Status	Diploma in Nursing	55	45.8
	Post RN Degree	37	30.8
	Generic Nursing	28	23.3

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Table 2: Knowledge Regarding SSI

Item	Yes (%)	No (%)	To Some Extent (%)
Knowledge of SSIs	85.0	15.0	-
Best methods for pre-operative shaving	72.5	27.5	-
Knowledge of prophylaxis timing	72.5	28.0	-
Blood sugar levels for SSI prevention	83.3	14.2	-
Aseptic techniques during dressing	80.8	19.1	-
Specimen collection methods	64.2	25.0	10.8

Table 3: Attitudes toward SSI Prevention

Item	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)
Use of sterile materials	39.2	59.2	0.8	0.8
Changing damp dressings frequently	26.7	65.8	5.0	2.5
Handwashing before and after dressing	37.5	54.2	5.8	2.5
Organizing SSI prevention training	25.0	51.7	22.5	0.8

Table 4: Practices Regarding SSI

Item	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)
Alcohol and chlorhexidine for skin prep	26.7	63.3	6.7	3.3
Glucose testing before and after surgery	31.7	51.7	13.3	3.3
Handwashing before wearing sterile gloves	33.3	56.7	5.0	5.0

Discussion

This study evaluated the knowledge, attitudes, and practices (KAP) regarding surgical site infection (SSI) prevention among nurses at Sir Ganga Ram Hospital, Lahore. The findings revealed significant knowledge and positive attitudes among the majority of participants, but notable gaps in practices related to SSI prevention. These results are consistent with several prior studies, both in Pakistan and internationally, highlighting the multifaceted challenges in achieving optimal infection control in healthcare settings.

The study found that 85% of nurses were aware of SSIs and their prevention, with high awareness levels regarding blood sugar control (83.3%) and aseptic techniques (80.8%). These findings are comparable to those of Ahmed et al., who reported a similarly high level of knowledge among healthcare workers in Pakistani hospitals regarding key infection prevention strategies (11). However, gaps were observed in specific areas such as specimen collection methods, with only 64.2% demonstrating adequate knowledge. This aligns with Nisa et al., who highlighted deficiencies in specialized knowledge among nurses, particularly in resource-limited settings (12).

Positive attitudes were a prominent feature, with 81.9% of participants scoring well on this metric. Most nurses strongly agreed on the importance of using sterile materials (98.3%) and frequently changing damp dressings (92.5%). These findings resonate with global studies, such as Leaper and Edmiston's work, which emphasized that healthcare providers' attitudes significantly influence compliance with infection control protocols (13). However, only 25% of participants strongly recommended organizing training on SSI prevention, suggesting room for improvement in fostering proactive learning environments, as also noted by Waheed et al. (14).

Practices related to SSI prevention were generally strong, with 87.7% of nurses adhering to recommended protocols, including the use of alcohol and chlorhexidine for skin preparation (90%). These results are consistent with Raza et al., who observed similar trends in Pakistani hospitals where nurses demonstrated satisfactory practices when adequately trained and resourced (15). Nevertheless, the 12.3% of participants scoring poorly in practice evaluations underscores the need for targeted interventions to address barriers such as high workloads and limited access to supplies, as documented by Khan et al .(16).

The study highlights a critical gap in continuing education and professional development opportunities for nurses. Only 25% of participants strongly advocated for training sessions, which aligns with findings from Ahmed et al., who stressed that regular workshops and refresher courses significantly enhance infection control practices (17). International guidelines, such as those from the World Health Organization (WHO), emphasize the importance of ongoing education to reinforce best practices and ensure consistency in infection prevention efforts (18).

The findings of this study underscore the interplay between knowledge, attitudes, and practices in influencing SSI prevention. While knowledge and attitudes were generally favorable, gaps in specific practices highlight the need for systemic improvements in training, resource allocation, and organizational support. Addressing these challenges can enhance adherence to evidence-based guidelines and ultimately reduce the burden of SSIs in healthcare settings.

Conclusion

This study highlights that while nurses at Sir Ganga Ram Hospital, Lahore, demonstrated good knowledge and positive attitudes toward surgical site infection (SSI) prevention, there were notable gaps in practices, particularly in areas requiring advanced training and adherence to evidence-based protocols. Addressing these gaps through targeted education, resource allocation, and reinforcement of infection control measures is crucial for reducing SSI rates and improving patient outcomes in healthcare settings. Systemic improvements, such as regular training sessions and enhanced resource availability, are essential to foster a culture of safety and adherence to best practices.

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Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
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Conflict of interest

The authors declared absence of a conflict of interest.

Author Contribution

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Coordination of collaborative efforts.
Study Design, Review of Literature.
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Conception of Study, Development of Research Methodology Design, Study Design,
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Manuscript revisions, critical input. Coordination of collaborative efforts. Data acquisition, analysis.
Manuscript drafting.

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