Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies NLM ID: 101716117

Journal home page: www.jamdsr.comdoi: 10.21276/jamdsrIndian Citation Index (ICI) Index Copernicus value = 100

(e) ISSN Online: 2321-9599;

(p) ISSN Print: 2348-6805

Original Research

A Study to Assess Awareness and Knowledge Regarding Surgical Site Infection in Surgery Ward Among Nursing Officers at SGT Hospital, Gurugram (Haryana)

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ABSTRACT:

Aim: This study investigates the awareness and knowledge regarding surgical site infections among nursing officers at SGT Hospital, Gurugram (Haryana). **Material and Methods:** A cross-sectional study was conducted using a self-administered questionnaire to assess nurses' knowledge of SSI definitions, risk factors, signs and symptoms, medical management, and nursing management strategies. Data were analyzed using descriptive statistics and correlation analysis. **Results:** A total of 110 nurses participated in the study, demonstrating a moderate overall knowledge level (mean score: 14.38 out of a possible 25). Strengths were observed in understanding SSI definitions (mean score: 3.13) and risk factors (mean score: 2.32). However, knowledge gaps were identified in critical areas for prevention, such as signs and symptoms (mean score: 1.81) and nursing management strategies (mean score: 3.70). A positive correlation was found between access to essential supplies and higher knowledge scores (p=0.001). **Conclusions:** Nurses at SGT Hospital demonstrated a moderate level of knowledge regarding SSIs, with specific weaknesses in recognizing signs and symptoms and implementing nursing management strategies. Limited access to essential supplies emerged as a crucial factor potentially hindering knowledge translation into practice.

Keywords: Knowledge, Surgical Site Infection, CDC,

Received: 22 October, 2024

Accepted: 25 November, 2024

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This article may be cited as: Yadav T, Raghav T, Malik S, Shivani, Sharma A. A Study to Assess Awareness and Knowledge Regarding Surgical Site Infection in Surgery Ward Among Nursing Officers at SGT Hospital, Gurugram (Haryana). J Adv Med Dent Scie Res 2024; 12(12):36-41.

INTRODUCTION

According to Centers for Disease Control and Prevention (CDC) in the United States "Surgical Site Infection (SSI) as an infection that occurs after surgery in the part of the body where the surgery took place.Surgical site infections present a major problem inhibiting postoperative in care, patients' recuperation, and imposing huge pressure on healthcare systems. They occur within the surgical incision or in tissues around it; thus, they lead to long stay at hospital, increased health care costs and possible complications.¹ It is important to note that SSIs prevention is significant for patient safety and resources. This article will discuss some salient areas of SSIs like risk factors, methods of reducing these infections and new outbreak control measures with a view to improving surgical outcomes while reducing its impact on individual patients as well as the wider health care facilities.Surgical site infections (SSIs) can

result in greater morbidity, longer hospital stays, and higher healthcare expenses. They are a major complication after surgical treatments.² An SSI happens when deep tissues or the location of the incision get infected by bacteria during or after surgery.³ Surgical site infections (SSIs) continue to be a problem in healthcare settings across the globe, despite advancements in surgical methods and infection prevention measures.Surgical site infections (SSIs) are a major risk associated with surgery that affect patients, healthcare professionals, and global healthcare systems in a big way. Any infection at or close to the site of a surgical incision that develops within 30 days after the procedure (or within a year if an implant was placed during the treatment) is referred to as a surgical site infection (SSI).^{4,5} These infections can range from superficial infections involving the skin and subcutaneous tissues to deeper

infections affecting organs or implanted devices, leading to substantial morbidity and mortality rates.

MATERIAL AND METHODS

A descriptive survey approach was deemed most suitable for this study. This approach excels at gathering information on the current state of knowledge, attitudes, or behaviors within a defined population. In this context, it allows us to assess the level of awareness and knowledge regarding SSI among nursing officers at SGT Hospital. The descriptive survey approach is particularly effective in providing a snapshot of the existing conditions, thereby enabling the identification of gaps in knowledge and areas for improvement. To achieve the research goals, a descriptive survey design was chosen. This design involves the development of a comprehensive survey instrument (questionnaire) to collect data from the target population. The questionnaire will be meticulously crafted to measure the nurses' knowledge of SSI prevention strategies, risk factors, and management for patient care. By utilizing a descriptive survey design, we can systematically capture a wide range of information related to SSI awareness and knowledge. The design also allows for the collection of data that can be easily quantified and analyzed, providing a clear understanding of the current state of SSI awareness and knowledge among nursing officers. The target population for this study encompasses all Nursing Officers currently employed at SGT Hospital, Budhera, Gurugram, Haryana.Convenient sampling will be employed to recruit participants for the study. This technique involves selecting readily available subjects from the population. A sample size of 110 nursing officers from SGT hospital was taken to assess the knowledge regarding surgical site infection.

Inclusion

- Nursing Officers of SGT Hospital.
- Nursing Officers who are available at time of data collection.

Exclusion

- Nursing Officers who are not willing to participate.
- Nursing Officers who are not available at the time of data collection.

Data analysis

Analysis and interpretation of data was done according to the objectives using descriptive and

inferential statistics. The level of significance chosen was at $p \le 0.05$.

RESULTS

The distribution of participants across different age groups shows that the majority, 60.9%, are between 22-25 years old, indicating a young demographic. Participants aged 26-30 years make up 26.4%, while those 21 and below constitute 2.7%. Only 8.2% of participants are in the 31-35 age range, and the smallest group, 1.8%, is 35 and above. This suggests a predominantly vounger population in the study.Gender distribution among the participants shows that females comprise 59.1%, while males account for 40.9%. This indicates a slightly higher representation of females in the study, reflecting gender demographics that may be typical for the population under study. The majority of participants, 49.1%, hold a B.Sc Nursing degree, indicating a high level of educational attainment in the field of nursing. GNM graduates make up 36.4%, while those with a Post Basic B.Sc Nursing account for 12.7%. A small percentage, 1.8%, have an M.Sc Nursing degree, highlighting that most participants have a solid foundational education in nursing. Most participants, 60.9%, have 0-3 years of experience, suggesting a largely inexperienced cohort. Those with 4-6 years of experience make up 26.4%, while 5.5% have 7-9 years, and 7.3% have 10 years or more. This distribution indicates that the majority are relatively new to their professional roles. A significant majority, 73.6%, have not received training on SSI, while 26.4% have. This highlights a potential gap in specific training that could impact the knowledge and practices related to SSI among the participants. The data shows that 85.5% of participants report having limited supplies, whereas 13.6% have proper supplies. 0.9 of the participants reported having no supplies available. This suggests that the majority face constraints in resources, which could affect their performance and outcomes. The majority of participants, 83.6%, deal with patient stays of more than 5 days, while 16.4% handle shorter stays of less than 5 days. This indicates that most participants are involved in longer-term patient care, which may have implications for their workload and the type of care they provide.Most participants, 84,5%, have no relation with any infection control department, while 15.5% do. This suggests that the majority of participants may not be directly involved in infection control activities, which could influence their knowledge and practices regarding infection prevention and control.

 Table No 1: Demographic Profile Of The Subjects (N=110)

Variables	Opts	Percentage(%)	Frequency(f)
Age	21 and below	2.7%	3
	22-25 years	60.9%	67
	26-30 years	26.4%	29
	31-35 years	8.2%	9

	35 and above	1.8%	2
Gender	Male	40.9%	45
	Female	59.1%	65
Education	GNM	36.4%	40
	B.Sc Nursing	49.1%	54
	Post Basic B.Sc Nursing	12.7%	14
	M.Sc Nursing	1.8%	2
Experience	0-3 years	60.9%	67
	4-6 years	26.4%	29
	7-9 years	5.5%	6
	10 years and above	7.3%	8
Any Training on SSI	Yes	26.4%	29
	No	73.6%	81
Availability of Supply	Proper	13.6%	15
	Limited	85.5%	94
	Not available	0.9%	1
Duration of Patient Stay	More then 5 days	83.6%	92
	Less then 5 days	16.4%	18
Relation With Any Infection	Yes	15.5%	17
Control Department	No	84.5%	93

Table no 2: Frequency and Percentage distribution level of knowledge (N=110)

LEVEL OF SCORES N= 110	PERCENTAGE	FREQUENCY
ADEQUATE KNOWLEDGE. (17-25)	29.1%	32
MODERATE KNOWLEDGE. (9-16)	65.5%	72
INADEQUATE KNOWLEDGE. (0-8)	5.5%	6
Maximum =25 Minimum=0		

The criteria measure of knowledge scores for 110 respondents shows that a significant majority, 65.5%, have moderate knowledge (scores ranging from 9-16). Meanwhile, 29.1% of respondents have adequate knowledge (scores ranging from 17-25). A small portion, 5.5%, have inadequate knowledge (scores ranging from 0-8). The maximum score achievable is 25, while the minimum is 0. This indicates that while most respondents have a fair level of understanding, there is room for improvement in achieving higher knowledge scores among the surveyed group.

Table 10.5. Descriptive statistics of knowledge(11–110)							
Descriptive statistics	Mean	Median	S.D.	Maximum	Minimum	Range	Mean %
Knowledge score	14.38	15	3.54	23	2	21	57.53
Maximum=25 Minim							

Table No 3: Descriptive statistics of knowledge(N=110)

The knowledge scores of 110 respondents show an average score of 14.38 out of 25, with a median of 15 and a standard deviation of 3.54. Scores ranged from 2 to 23, indicating some variability in knowledge levels. On average, respondents achieved 57.53% of the maximum possible score, suggesting a moderate level of knowledge overall.

Table 4. level of Knowledge				
Metric	Value			
Mean	14.38			
Median	15.00			
Standard Deviation (S.D.)	3.543			
Maximum	23.00			
Minimum	2.00			
Range	21.00			

Table No 5: Table Showing Association of Scores and Demographic Variables(N=110)

Demographic data		Leve	ls of knowled	ge (n=110)	Associat knowled	ion with lge score
Variables	Opts	ЫX ХКЕ	ΤШMZC	A E N N	Chi Test	P Value
Age	21 and below	2	1	0	4.025	0.855

	22-25 years	18	44	5			
	26-30 years	8	20	1			
	31-35 years	3	6	0			
	35 and above	1	1	0			
Condor	Male	14	29	2	0.261	0.878	
Gender	Female	18	43	4	0.201	0.878	
	GNM	10	28	2			
Education	B.Sc Nursing	19	32	3	2 257	0.763	
Education	Post Basic B.Sc Nursing	2	11	1	5.557		
	M.Sc Nursing	1	1	0			
	0-3 years	19	43	5		0.779	
Experience	4-6 years	10	18	1	3.232		
Experience	7-9 years	2	4	0			
	10 years and above	1	7	0			
Any Training on SSI	Yes	9	17	3	2.050	0.257	
Any framing on SSI	No	23	55	3	2.039	0.557	
	Proper	5	9	1			
Availability of Supply	Limited	27	63	4	17.822	0.001	
	Not available	0	0	1			
Duration of Patient More then 5 days		26	61	5	0.106	0.007	
Stay	Stay Less then 5 days		11	1	0.196	0.907	
Relation With Any	Yes	5	10	2			
Infection Control Department	No	27	62	4	1.604	0.449	

The association between demographic variables and knowledge scores among 110 respondents shows that most variables, including age, gender, education, experience, training on SSI, duration of patient stay, and relation with any infection control department, do not significantly impact knowledge scores. The only significant factor is the availability of supply (p=0.001), indicating that proper supply availability is associated with higher knowledge scores. All other factors had p-values greater than 0.05, indicating no significant association with knowledge levels.

Variables	Opts	Mean%	Mean	SD	Ν
	21 and below	65.33	16.3	2.08	3
	22-25 years	56.42	14.1	3.58	67
Age	26-30 years	58.21	14.6	3.59	29
	31-35 years	60.89	15.2	3.63	9
	35 and above	58.00	14.5	4.95	2
Condor	Male	58.93	14.7	3.72	45
Gender	Female	56.55	14.1	3.42	65
	GNM	56.50	14.1	3.55	40
Education	B.Sc Nursing	58.81	14.7	3.59	54
	Post Basic B.Sc Nursing	55.71	13.9	3.20	14
	M.Sc Nursing	56.00	14.0	7.07	2
	0-3 years	56.36	14.1	3.68	67
Experience	4-6 years	60.00	15.0	3.71	29
Experience	7-9 years	60.67	15.2	2.64	6
	10 years and above	56.00	14.0	2.20	8
Any Training on SSI	Yes	53.66	13.4	4.66	29
Any fraining on 551	No	58.91	14.7	3.00	81
	Proper	55.47	13.9	4.42	15
Availability of Supply	Limited	58.21	14.6	3.31	94
	Not available	24.00	6.0		1
Duration of Patient Stay	More then 5 days	57.83	14.5	3.56	92
Duration of Fatient Stay	Less then 5 days	56.00	14.0	3.55	18
Relation With Any Infection Control	Yes	53.18	13.3	5.18	17
Department	No	58.32	14.6	3.15	93

Table No 6: Table Showing Descriptive Stats of Demographic Variables .

The data analysis reveals that the highest mean knowledge score (16.3) is among those aged 21 and below, though this group is small (N=3). Males have a slightly higher mean score (14.5) than females (14.1). B.Sc Nursing graduates have the highest mean score (14.7). Experience shows varied results, with those having 4-6 years of experience scoring highest (15.0). Availability of supply significantly impacts scores, with proper supply leading to a mean score of 15.0. Training on SSI and relation with an infection control department appear to have less impact on mean scores. Overall, the mean score is moderate, indicating a fair level of knowledge across the surveyed variables.

Descriptive Statistics	Definitio n related questions	Risk Factors related question s	Causes related question s	Signs and Symptom s related questions	Medical Managemen t related questions	Nursing Managemen t related questions	Overal l
Mean	3.13	2.32	3.00	1.81	0.43	3.70	14.38
S.D.	0.836	0.918	1.381	0.873	0.497	1.571	3.543
Median	3	3	3	2	0	4	15
Maximum	4	3	5	3	1	8	23
Minimum	1	0	0	0	0	0	2
Range	3	3	5	3	1	8	21
Mean %	78.18	77.27	60.00	60.30	42.73	41.11	57.53

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The descriptive statistics for knowledge scores across different question categories reveal the following insights: Respondents scored highest on definition-related questions with a mean of 3.13 and a mean percentage of 78.18%. Risk factors-related questions also had a high mean score of 2.32 (77.27%). Causes-related questions had a mean score of 3.00 (60.00%). Scores for signs and symptoms-related questions were lower, with a mean of 1.81 (60.30%). Medical management-related questions had the lowest mean score of 0.43 (42.73%), while nursing management-related questions had a mean score of 3.70 (41.11%). Overall, the mean score was 14.38, with a mean percentage of 57.53%, indicating moderate knowledge levels among respondents.

DISCUSSION

The study focused on evaluating the awareness and knowledge of surgical site infections (SSIs) among nursing officers in the surgical ward at SGT Hospital, Gurugram, Haryana. The objective was to assess the knowledge of the nurses regarding SSIs at SGT Hospital. The study found that nurses at SGT Hospital demonstrated a moderate level of overall knowledge regarding SSIs, which aligns with findings from Wen Feng, Wipa Sae-Sia, et al. (2023). They found that nurses had low levels of knowledge but positive attitudes and good practices, highlighting a need for more frequent training to enhance SSI prevention.⁶ Similarly, Shilpi Gupta, Vikas Manchanda, et al. (2020) observed moderate knowledge levels among nurses in a different setting, underscoring the need for targeted educational interventions.⁷Nurses at SGT Hospital generally scored highest on questions related to SSI definitions and risk factors, indicating a basic understanding of these aspects. However, there were knowledge gaps in critical areas such as signs and symptoms, medical management, and nursing management strategies. This is consistent with the findings of Seidelman, J.L., Mantyh, C.R., et al. (2023), who emphasized that despite advancements, SSIs remain a significant challenge, and targeted education is crucial.8 Also, the study by Nivitha Mohan, Dhanalakshmi Gnanasekar, et al. (2023) highlights specific risk factors and the need for targeted interventions, aligning with the observed knowledge gaps.9 The study identified gaps in knowledge, particularly in understanding specific SSI prevention strategies. This finding is consistent with the work of Kolade, Oluwakemi, et al. (2023), who noted that despite high knowledge levels, attitudes and practices were lacking.¹⁰Additionally, Wahbi Albishi, Marwan Ahmad Albeshri, et al. (2023) highlighted gaps in awareness among medical physicians, suggesting that similar issues might be present among nursing staff.¹¹ The study also aligns with findings from Long, D.R., Cifu, A., et al. (2024), suggested that integrating antimicrobial who stewardship and microbiome sciences could enhance SSI prevention strategies.¹² The study found a positive correlation between access to essential supplies and higher knowledge scores for SSI prevention. This aligns with research by Tamene Tesfave. MergaDheresa, et al. (2020), which highlighted that better practices were associated with having proper resources and training.¹³ Moreover, the study's findings are consistent with those of Camilla Wistrand, Karin Falk-Brynhildsen, et al. (2017), who emphasized the need for adherence to standardized guidelines and protocols to enhance SSI prevention.¹⁴

CONCLUSION

This study highlights that nursing officers in the surgery ward at SGT Hospital, Gurugram, possess moderate awareness and knowledge regarding surgical site infections (SSIs). While participants demonstrated a good understanding of SSI definitions and risk factors, significant knowledge gaps were identified in areas such as clinical signs, medical management, and nursing interventions. These findings underscore the need for targeted educational programs and regular training to enhance knowledge and bridge existing gaps. Strengthening awareness and adherence to evidence-based SSI prevention protocols can improve patient outcomes and reduce infection rates.

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