Knowledge regarding Surgical Site Infection among Nurses in a Private Hospital of Lalitpur: A Cross-sectional Study

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Surgical site infection is an infection that develops after a surgical procedure in patients. Nurses play a vital role in minimizing the risk of surgical site infection and enhancing health care quality. Hence, this study assesses knowledge regarding surgical site infection among nurses in a private hospital of Lalitpur. A cross-sectional research design was adopted among 110 nurses working at B & B Hospital. A self-administered semi-structured questionnaire was used to collect data in September 2023. Ethical approval was obtained from the Institutional Review Committee of B & B Hospital. Data was analyzed using Statistical Package for Social Science version 20.0 with descriptive as well as inferential statistics (Chi-square and continuity correction test). The majority of respondents (54.5%) were between 25-34 years and Janajati (45.5%). The majority of respondents (58.2%) had a PCL Nursing qualification, 26.4% were working on an orthopedic ward, 39.1% had work experience between one to five years, 90.9% had not attended CNE/training. The majority of respondents (62.7%) had a fair, 28.2% had good, and 9.1% had a poor level of knowledge regarding surgical site infection. Since the surgical site infection knowledge level is fair among nurses working at B & B Hospital. Therefore, attention needs to be paid by the authority of B & B Hospital through in-service education among nurses for upgrading knowledge & quality services regarding surgical site infection.

Keywords: knowledge, nurses, surgical site infection.

Surgical site infections are those infections that occur within 30 days after surgery or 1 year of prosthesis implantation & are the most preventable hospital-acquired infection (HAI), which is related to any surgical procedure.[1] Advanced grades of wounds and emergency surgeries are considered with a greater incidence of surgical site infection.[2]

The findings of similar studies conducted among the nurses concluded that the level of knowledge regarding surgical site infection was found to be insufficient.[3–5] Nurses are the ideal people to participate in or play a leading role in initiatives that aim to minimize the risk of surgical site infection, and thus to enhance patient safety.[6] Adequate knowledge among nurses is crucial for preventing surgical site infections, which is considered the most significant cause of morbidity & mortality.[7] Therefore, the objective of this study is to assess the knowledge regarding surgical site infection among nurses in a private hospital of Lalitpur.

Materials & Methods

A cross-sectional study was conducted at B&B Hospital, Gwarko, Lalitpur, among the nurses working in the Intensive Care Unit (ICU), postoperative ward, surgical ward, gynecological ward, neurological ward, and orthopedic ward were the study population. A total of 110 nurses were included in the study. Before data collection, administrative approval was taken from the Research Committee of B&B Medical Institute, ethical approval was taken from the Institutional Review Committee (IRC) of B&B Hospital. Informed consent was taken from all the respondents. Privacy and confidentiality of the information were maintained throughout the study. The study was conducted from April 2023 to September 2023.

A self-developed, semi-structured questionnaire was used in this study. It was divided into three parts. Part I consisted of a questionnaire related to socio-demographic characteristics (2), including age and ethnicity. Part II included questions related to professional characteristics (5), including professional qualification, working unit, working experience, and CNE/training. Part III included questions related to knowledge regarding surgical site infection (22), including 6 multiple-response questions and 16 multiple-choice questions. The components for assessing knowledge regarding surgical site infection included meaning, classification, etiology, signs, prevention, management, and complications. For each correct response, the respondent scored 1, and an incorrect response was scored 0. Reverse scoring was

done for negative responses. The total score was 43. The level of knowledge was measured by calculating the total possible score in knowledge questions and classified into 3 categories: good knowledge (≥80%), fair knowledge (50-79%), and poor knowledge (<50%).[8]

Content validity of the instrument was maintained by an extensive review of the literature related to surgical site infection, consulting with the research advisor, subject teachers, and experts in the related field. The questionnaire was pretested on a similar population comprising 11 nurses at Sumeru City Hospital, Pulchowk, Lalitpur. Feedback was collected regarding the clarity of the tool, and it was revised accordingly.

The collected data were checked and verified, and entered into Microsoft Excel with assigned codes, and subsequently transferred to the Statistical Package for the Social Sciences version 20.0. Frequency, percentage, mean, and standard deviation for descriptive variables. Chi-square tests were used to find the association between knowledge regarding surgical site infection with socio-demographic variables and professional characteristics.

Results

Table 1 shows the demographic and work-related characteristics of respondents. Among 110 respondents, more than half were aged between 25 to 34 years (54.5%), with a mean±SD of 26.3±5.5 years. Regarding ethnicity, nearly half of the respondents (45.5%) were Janajati. Most of the respondents had completed PCL nursing (58.2%), followed by BN (23.6%). Orthopedic (26.4%) and ICU (23.6%) units had the highest number of respondents, with 39.1% reporting 1–5 years of work experience. The majority of respondents (90.9%) had not received any in-service training or continuing nursing education (CNE) on surgical site infections.

Knowledge regarding Surgical-site Infection

Most of the respondents (62.7%) had a fair level of knowledge, nearly one-third (28.2%) of respondents had a good level of knowledge, and 9.1% of respondents had a poor level of knowledge regarding surgical site infection, as shown in **Table 2**.

Table 3 shows the mean score for knowledge regarding surgical site infection. The overall mean score was 30.9±5.4, which indicated that the mean percentage was 71.9. The obtained mean percentage score was highest (84%) in the meaning of surgical site infection and lowest (30%) in the classification of surgical site infection.

Association between Knowledge regarding Surgical Site Infection and respondents' characteristics

Characteristics	Frequency (n)	Percentage (%)
Age in years		
<25	43	39.1
25-34	60	54.5
35-44	4	3.6
≥45	3	2.7
Ethnicity		
Brahmin/Chhetri	48	43.6
Jana Jati	50	45.5
Dalit	4	3.6
Others*	8	7.3
Professional Qualification		
PCL Nursing	64	58.2
B.Sc. Nursing	20	18.2
BN Nursing	26	23.6
Working Unit		
Post-operative ward	11	10
ICU	26	23.6
Neuro ward	16	14.5
Orthopedic Ward	29	26.4
Surgical ward	18	16.4
Gynecological ward	10	9.1
Work experience		
<1 year	34	30.9
1-5 years	43	39.1
6-10 years	24	21.8
>10 years	9	8.2
Training		
Yes	10	9.1
No	100	90.9

Table 1: Socio-demographic and professional characteristics of respondents (n=110)

Table 4 shows chi-square test results. There was no significant association between knowledge regarding surgical site infection and respondents' characteristics.

Level of knowledge	Frequency (n)	Percent (%)
Good (≥80%)	31	28.2
Fair (50-79%)	69	62.7
Poor (<50%)	10	9.1

Table 2: Level of Knowledge regarding Surgical Site Infection

Areas of Knowledge	Maximum Possible Score	Obtained Range	Mean±SD	Mean%
Meaning of surgical site infection	1	0-1	0.8±0.4	84.0
Classification of surgical site infection	1	0-1	0.3±0.5	30.0
Etiology (3+1x5*)	8	2-8	5.9±1.4	73.1
Factors to improve surgical site infection(1+1x4*)	5	1-5	4.0±1.0	79.6
Signs and symptoms(1x5*)	5	2-5	4.1±1.1	81.0
Prevention (3+1x4*)	7	2-7	4.8±1.2	67.7
Management (6+1x5*)	11	4-11	7.3±1.8	66.0
Complication(1+1x4*)	5	1-5	4.0±1.2	79.0
Total Score	43	18-42	30.9±5.4	71.9

Table 3: Mean Score of Knowledge regarding Surgical Site Infection (n=110)

Discussion

The majority of the respondents (62.7%) had a fair, followed by 28.2% who had a good level of knowledge regarding surgical site infection. Similarly, the findings of the study conducted in Pakistan, among 70 nurses, revealed that 31.4% of the participants had good knowledge regarding surgical site infection.[9] A similar study conducted in Vlore, Albania, also revealed that 28.79% had a good level of knowledge regarding surgical site infection.[10] In contrast, a study conducted in Malaysia reported that the majority, 85.3% of the

Variables	Level of Knowledge		X^2	p-value
	Poor to fair	Good		
Age				
≤25	35(81.4)	8(18.6)	2.8	0.1
>25	45(67.2)	22(32.8)		
Ethnicity				
Janajati	34(68.0)	16(32.0)	1.0	0.3
Others#	46(76.7)	14(23.3)		
Professional Qualification				
PCL Nursing	50(78.2)	14(21.8)	2.3	0.1
Bachelor	30(65.2)	16(34.8)		
Working Unit				
Critical	41(74.5)	14(25.5)	0.2	0.7
Non-Critical	39(70.9)	16(29.10		
Work experience				
≤5	56(72.7)	21(27.3)	<0.05	1
>5	24(72.8)	9(27.2)		
Attended CNE/Training				
Yes	8(80.0)	2(20.0)	0.03	0.9
No	72(72.0)	28(28.0)		

Pearson's Chi-square test significance at p-value <0.05; Others#: Brahmin/Chhetri, Dalit, Madhesi

Table 4: Association of Knowledge regarding Surgical Site Infection with Respondents' Characteristics (n=110)

nurses, had good knowledge.[11] The proportion of nurses having good knowledge of surgical site infection was slightly lower (20%) in a study from Iraq.[3] The difference in results might be attributed to the different study settings. The discrepancy in the results might be because the study was conducted in two different settings.

The present study found no significant association between participants' characteristics and their knowledge level. The finding was similar to the study conducted in Vlore, Albania, where there was no association between the level of knowledge regarding surgical site infection and age, work experience, attended training programs, or educational level.[10]

Conclusion

The study concludes that the majority of the respondents had a fair level of knowledge about surgical site infections. The study shows that none of the socio-demographic and professional characteristics are significantly associated with nurses' level of knowledge regarding surgical site infection. Regular in-service training and education should be provided by the hospital authority to enhance the knowledge regarding surgical site infection among nurses.

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