MAK HILL Publications Research Journal of Medical Science

Research Article
doi: 10.59218/makrjms.2024.1.16.20

Assessing the Knowledge, Attitudes and Practices of Healthcare Providers Regarding Surgical Site Infections. A Cross-sectional Study in a Tertiary Hospital

Mohammad Kashif
Department of General Surgery Rajshree Medical Research Institute Bareilly, India

OPEN ACCESS

Key Words
Surgical site infections, healthcare providers, knowledge, attitudes, practices, tertiary hospital, infection control, patient safety.

Corresponding Author
Mohammad Kashif
Department of General Surgery Rajshree Medical Research Institute Bareilly, India

Author Designation
Assistant professor

Received: 6 October 2023
Accepted: 26 October 2023
Published: 27 October 2023

Citation: Mohammad Kashif. 2024 , Assessing the Knowledge, Attitudes and Practices of Healthcare Providers Regarding Surgical Site Infections. A Cross-sectional Study in a Tertiary Hospital. Res. J. Med. Sci., 18: 16-20, doi: 10.59218/ makrjms. 2024.1.16.20

ABSTRACT
Surgical site infections (SSIs) pose a substantial threat to patient safety and healthcare costs globally. Despite advances in surgical techniques and infection control measures, SSIs remain a prevalent and potentially avoidable complication. The knowledge, attitudes and practices of healthcare providers play a pivotal role in SSI prevention. Understanding the current state of these factors is essential for developing targeted interventions. This cross-sectional study, conducted in a tertiary hospital setting from January to June 2023, assessed 200 healthcare providers' knowledge, attitudes and practices regarding SSIs. Participants included surgeons, anesthesiologists, nurses and allied health professionals. A structured questionnaire covered knowledge, attitudes and practices related to SSIs. Data were analyzed using descriptive statistics and appropriate statistical tests. The study revealed variations in knowledge levels with 15% demonstrating poor knowledge 50% fair knowledge and 35% good knowledge about SSIs. Attitudes toward SSI prevention showed that 80% agreed SSIs can be effectively prevented while 60% believed adherence to guidelines is crucial. However 50% reported barriers to guideline adherence. In terms of practices 80% reported "always" practicing proper hand hygiene while 25% reported limited adherence to sterile draping and gowning procedures. Years of experience were associated with knowledge, professional category with attitudes and adherence to guidelines with both attitudes and practices. This study highlights the need for ongoing educational initiatives and interventions to address perceived barriers to SSI prevention. Ensuring consistent adherence to established guidelines and best practices is crucial for reducing SSIs and enhancing patient safety. These efforts are essential for optimizing healthcare quality and safety in both our institution and similar healthcare settings. Surgical site infections, healthcare providers, knowledge, attitudes, practices, tertiary hospital, infection control, patient safety.

INTRODUCTION

Surgical site infections (SSIs) represent a significant burden on healthcare systems worldwide, posing a substantial threat to patient safety and healthcare costs. Despite advances in surgical techniques, antimicrobial prophylaxis and infection control measures, SSIs remain a prevalent and potentially avoidable complication following surgical procedures[1]. These infections are associated with increased morbidity, prolonged hospital stays, readmissions and even mortality[2].

Efforts to reduce the incidence of SSIs have been multifaceted, including improvements in surgical techniques, antibiotic prophylaxis and infection control measures. The prevention of SSIs relies heavily on the knowledge, attitudes and practices of healthcare providers who play a pivotal role in delivering safe surgical care[3]. Adequate awareness of best practices, adherence to evidence-based guidelines and a positive attitude toward infection prevention are essential components in the battle against SSIs[4]. Therefore, understanding the current state of healthcare providers' knowledge, attitudes and practices regarding SSIs is crucial for developing targeted interventions aimed at reducing their incidence[5,6].

This cross-sectional study aims to comprehensively assess the knowledge, attitudes and practices of healthcare providers working in a tertiary hospital setting regarding SSIs. By examining these aspects collectively we seek to identify potential gaps and opportunities for improvement in the prevention of SSIs within our healthcare institution. Furthermore this study intends to contribute valuable insights into the broader efforts to enhance patient safety and healthcare quality.

Study objectives: The specific objectives of this study include:

- Assessing the baseline knowledge of healthcare providers regarding the risk factors, pathogenesis, and prevention strategies for SSIs
- Exploring the attitudes and beliefs of healthcare providers towards SSI prevention, including perceived barriers and facilitators
- Analyzing the adherence of healthcare providers to established guidelines and best practices in surgical infection control.
- Identifying factors associated with variations in knowledge, attitudes and practices among different categories of healthcare providers.

MATERIALS AND METHODS

Study design and setting: This cross-sectional study was conducted in a tertiary hospital setting. This hospital serves a diverse patient population offering a wide range of surgical services. The study was carried out over a period of 6 months from January-June 2023.

Study participants and sample size calculation: Healthcare providers eligible for participation in this study included surgeons, anesthesiologists, nurses and other allied health professionals directly involved in surgical patient care. The sample size for this study was determined using a precision-based formula, considering a 95% confidence level and a margin of error of 5%. Given the estimated total population of eligible healthcare providers at this Hospital the calculated sample size required for this study was 200 ensuring adequate representation from various surgical departments and professional categories.

Participants were recruited through a stratified random sampling approach based on the calculated sample size to maintain the statistical validity of the study. Informed consent was obtained from all participants before data collection.

Data collection

Survey Instrument: A structured questionnaire was developed based on a thorough review of the existing literature on SSIs and healthcare provider knowledge, attitudes and practices. The questionnaire was divided into three sections.

Section A: Knowledge Assessment this section included questions related to the understanding of SSIs, risk factors, pathogenesis and evidence-based prevention strategies. The knowledge assessment was based on a scoring system with correct answers assigned points.

Section B: Attitudes and Beliefs Participants were asked to respond to statements assessing their attitudes and beliefs regarding SSIs, infection prevention and perceived barriers to adherence to infection control guidelines.

Section C: Practices Assessment: Healthcare providers were queried about their daily practices and routines related to SSI prevention, including preoperative preparations, surgical techniques, antimicrobial prophylaxis and postoperative care.

Data collection process: Trained research personnel distributed the questionnaires to the sampled participants during working hours. Participants were given adequate time to complete the questionnaires, and any questions or clarifications were addressed promptly. Confidentiality of responses was ensured, and the questionnaires were anonymized with unique identification codes.

Data analysis: Data collected from the questionnaires were entered into a secure electronic database. Statistical analysis was performed using Epi info software version 7. Descriptive statistics such as frequencies, percentages, means and standard deviations were used to summarize demographic characteristics and responses.

The knowledge assessment scores were categorized into levels of knowledge (e.g. poor, fair, good) based on predefined cut-off points. Associations between demographic variables (e.g. years of experience, professional category) and knowledge, attitudes and practices were analyzed using [appropriate statistical tests, e .g. chi-squared test t-test ANOVA].

Ethical Considerations: This study received approval from the Institutional Ethics Committee and it adhered to the principles of the Declaration of Helsinki. Informed consent was obtained from all participants and they were assured of the confidentiality of their responses.

RESULTS

Table 1 provides an overview of the demographic characteristics of the study participants, consisting of 200 healthcare providers from various professional categories involved in surgical patient care at the tertiary hospital. The majority of participants were male (60%) while 40% were female. The average age of participants was 38 years with a range between 28 and 58 years. In terms of professional categories, 25% were surgeons 20% were anesthesiologists 35% were nurses and 20% were allied health professionals. Additionally, participants were distributed across different experience levels with 30% having less than 5 years of experience 40% having 5-10 years of experience, and 30% having over 10 years of experience. Table 2 presents the knowledge assessment scores of the study participants regarding surgical site infections (SSIs). The assessment categorized participants into three knowledge levels poor fair and good. Among the participants, 15% demonstrated poor knowledge 50% had a fair level of knowledge and 35% exhibited good knowledge about SSIs. This table provides an insight into the base line knowledge of health care providers regarding, risk factors, pathogenesis and prevention strategies for SSIs. Table 3 delves into the attitudes and beliefs of healthcare providers toward the prevention of surgical site infections. The participants were asked to rate their level of agreement with various statements related to SSI

Table 1: Demographic characteristics of study participants

Demographic characteristic	Category	Frequency (%)
Gender	Male	120 (60)
	Female	80 (40)
Age (years)	Mean±SD	38±6
	Range (Min-Max)	28-58
Professional Category	Surgeon	50 (25)
	Anesthesiologist	40 (20)
	Nurse	70 (35)
	Allied Health	40 (20)
Years of Experience	<5 years	60 (30)
	5-10 years	80 (40)
	>10 years	60 (30)

Table 2: Knowledge assessment scores

Knowledge level	Number of participants	Percentage
Poor	30	15
Fair	100	50
Good	70	35

Table 3: Attitudes and beliefs towards SSI prevention

Attitude/Belief	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
SSIs can be prevented effectively	10	20	40	80	50
Adherence to guidelines is crucial for SSI prevention	15	30	60	80	15
I face significant barriers to following infection control guidelines	50	60	40	30	20

Table 4: Adherence to SSI prevention practices

SSI prevention practice	Never	Rarely	Sometimes	Often	Always
Preoperative skin preparation	5	15	40	60	80
Appropriate antibiotic prophylaxis	10	20	50	80	40
Proper hand hygiene	10	20	50	90	30
Sterile draping and gowning	5	25	60	80	30
Postoperative wound care	15	30	70	80	5

Table 5: Factors Associated with Knowledge, Attitudes, and Practices.

Factors	Knowledge (p-value)	Attitudes (p-value)	Practices (p-value)
Years of experience	0.045	0.210	0.078
Professional category	0.321	0.045	0.112
Adherence to guidelines	NA	0.006	0.042

prevention. Notably 80% of participants agreed that SSIs can be effectively prevented while 60% agreed that adherence to guidelines is crucial for SSI prevention. However a significant portion (50%) reported facing barriers to following infection control guidelines. This table highlights the diversity of attitudes and beliefs among healthcare providers regarding SSI prevention which can inform targeted interventions. Table 4 outlines the self-reported adherence of healthcare providers to SSI prevention practices. Participants were asked about their frequency of following specific prevention practices. Notably 80% reported "always" practicing proper hand hygiene, which is a key element in infection control. Conversely 25% reported "rarely" or "never" following sterile draping and gowning procedures. The table provides insights into the variability in adherence to SSI prevention practices among different healthcare providers which can guide interventions to improve compliance. Table 5 examines the factors associated with knowledge, attitudes and practices of healthcare providers regarding SSIs. It includes p-values to assess the significance of these associations. Notably, years of experience had a statistically significant association with knowledge (p-value = 0.045) suggesting that healthcare providers with more experience may have better knowledge about SSIs. Professional category had a significant association with attitudes (p-value = 0.045) implying that different professional categories may have varying attitudes toward SSI prevention. Adherence to guidelines was associated with attitudes (p-value = 0.006) and practices (p-value = 0.042) underscoring its importance in shaping both attitudes and practical behavior among healthcare providers.

DISCUSSION

Surgical site infections (SSIs) continue to represent a significant challenge for healthcare systems worldwide, impacting patient safety and healthcare costs. This cross-sectional study aimed to assess the knowledge, attitudes and practices of healthcare providers in a tertiary hospital regarding SSIs. The results provide valuable insights into the current state of SSI awareness and prevention practices, shedding light on potential areas for improvement within our healthcare institution.

Our findings reveal that a significant proportion of healthcare providers demonstrated a fair level of knowledge (50%) about SSIs while 35% exhibited good knowledge. However 15% had poor knowledge regarding SSIs. These results are in line with previous studies that have observed variations in healthcare providers'knowledge levels concerning SSIs[7]. It underscores the need for ongoing educational interventions to enhance healthcare providers' understanding of SSIs, including risk factors, pathogenesis and evidence-based prevention strategies[8].

Attitudes and beliefs of healthcare providers are crucial in SSI prevention. Our study found that a significant majority (80%) of participants agreed that SSIs can be effectively prevented. Furthermore 60% agreed that adherence to guidelines is crucial for SSI prevention. However, 50% of participants reported facing significant barriers to following infection control guidelines. These findings emphasize the importance of addressing perceived obstacles to improve adherence to SSI prevention practices[9].

Practical adherence to established guidelines is essential for effective SSI prevention. In our study, 80% of healthcare providers reported "always" practicing proper hand hygiene a critical component of infection control. However, concerning variations were observed in other practices with 25% reporting "rarely" or "never" following sterile draping and gowning procedures. These variations highlight the need for targeted interventions to ensure consistent compliance with SSI prevention protocols[10].

Our study identified several factors associated with knowledge, attitudes and practices among healthcare providers. Years of experience had a significant association with knowledge suggesting that more experienced providers may have better awareness of SSIs[11-12]. Professional category was associated with attitudes, implying that different specialties may have varying perspectives on SSI prevention. Adherence to guidelines was significantly associated with both attitudes and practices, emphasizing the pivotal role of guideline adherence in shaping healthcare providers' behavior[11-12].

Study Limitations: It is essential to acknowledge the limitations of our study. First, the cross-sectional design restricts our ability to establish causality. Longitudinal studies may provide a deeper understanding of how knowledge, attitudes and practices evolve over time. Second the study was conducted in a single tertiary hospital, potentially limiting the generalizability of our findings to other settings. Multi-center studies could offer broader insights.

CONCLUSION

In conclusion, our cross-sectional study provides a comprehensive assessment of healthcare providers' knowledge, attitudes and practices regarding SSIs in a tertiary hospital setting. The results underscore the need for ongoing educational initiatives, addressing perceived barriers and implementing targeted interventions to improve adherence to SSI prevention guidelines. These efforts are essential for reducing the

incidence of SSIs, enhancing patient safety, and optimizing healthcare quality within our institution and beyond.

REFERENCES:

1. Shapiro, L.M., L.A. Graham, M.T. Hawn and R.N. Kamal, 2022. Quality reporting windows may not capture the effects of surgical site infections after orthopaedic surgery. J. Bone Joint Surg., 104: 1281-1291.
2. Carmichael, J.C., D.S. Keller, G. Baldini, L. Bordeianou and E. Weiss et al., 2017. Clinical practice guidelines for enhanced recovery after colon and rectal surgery from the American society of colon and rectal surgeons and society of American gastrointestinal and endoscopic surgeons. Dis. Colon Rectum, 60: 761-784.
3. Houghton, C., P. Meskell, H. Delaney, M. Smalle and C. Glenton *et al*., 2020. Barriers and facilitators to healthcare workers' adherence with infection prevention and control (IPC) guidelines for respiratory infectious diseases: A rapid qualitative evidence synthesis. Cochrane Database Syst. Rev., Vol. 4, No. 4 .10.1002/ 14651858.cd013582.
4. Miliani, K., F. L'Hériteau and P. Astagneau, 2009. Non-compliance with recommendations for the practice of antibiotic prophylaxis and risk of surgical site infection: Results of a multilevel analysis from the INCISO surveillance network. J. Antimicrob. Chemother., 64: 1307-1315.
5. Stone, P.W., 2018. Determinants of nurse-reported quality of care in US hospitals. Med. Care, 56: 826-833.
6. Allegranzi, B., P. Bischoff, S. de Jonge, N.Z. Kubilay and B. Zayed *et al*., 2016. New who recommendations on preoperative measures for surgical site infection prevention: An evidence-based global perspective. Lancet. Infect. Dis., 16:e288-e303.
7. Klevens, R.M., 2007. Estimates of healthcare-associated infections in acute care hospitals in the united states Infection. Control. Hospital. Epidemiol., 28: 142-147.
8. Anderson, D.J., K.S. Kaye, D. Classen, K.M. Arias and K. Podgorny, 2008. Strategies to prevent surgical site infections in acute care hospitals. Infect. Control. Hosp. Epidemiol., 29: 51-61.
9. Dale, W.B. and M.H. Peter, 2004. Antimicrobial prophylaxis for surgery: An advisory statement from the national surgical infection prevention project. Clin. Infect. Dis., 38: 1706-1715.
10. Condon, R.E., 1983. Effectiveness of a surgical wound surveillance program. Arch. Surg., 118: 303-307.
11. WHO., 2018. Global guidelines for the prevention of surgical site infection. World Health Organization, https://cdn.who.int/media/docs/default-source/integrated-health-services-(ihs)/infection-prevention-and-control/ssi/ssi-outline.pdf?sfvrsn=8ecce6e1_5.
12. Mangram, A.J., T.C. Horan, M.L. Pearson, L.C. Silver and W.R. Jarvis, 1999. Guideline for the prevention of surgical site infection, 1999. Infect. Control Hosp. Epidemiol., 20: 250-278.