Research Article

DOI: https://doi.org/10.64573/torgj2507006

The Operating Room Global Journal (TORGJ)

https://torgjournal.org/

ISSN: 3105-3262

Assessment of Knowledge and Practices of Operation Theatre Professionals Regarding Infection Control Protocols at PINS Hospital in Lahore.

*Abdul Wajid[1], Hafiza Tuba Razzaq[2], Naeem Ashraf[3], Abbas Ahmad[4], Muhammad Wajid Munir[5]

[1]*Punjab Institute of Neurosciences Lahore, Pakistan.*
[2]*Lahore General Hospital, Lahore, Pakistan.*
[3]*Shalamar Medical and Dental College Lahore, Pakistan.*
[4]*Faculty Of Allied Health Sciences, Superior University, Lahore, Pakistan.*
[5]*Chaudhry Pervaiz Elahi Institute of Cardiology Wazirabad, Pakistan.*

Corresponding Author:
Abdul Wajid
abdulwajidd1@gmail.com

Declaration:
Authors' Contribution: Equal contributions.
Conflict of Interest: No conflict of interest.
Funding: No funding received by the authors

Article History:
Received: 14-07-2025
Accepted: 09-11-2025
Available Online : 16-11-2025

QR access this Article

ABSTRACT

Background: Infections are the main reason for the high rates of patient mortality and morbidity in developing nations like Pakistan. Operating Theatres (OTs) are the main hospital areas where strict adherence to infection control protocols is required. Standard precautions, which are based on good practices, adequate knowledge, and healthy self-care practices, can lessen the impact of illnesses.

Objective: To assess the knowledge, attitude and practice of OT professionals regarding infection control protocols.

Methods: A cross-sectional study was conducted in PINS Hospital, Lahore. Ethical approval from the institutional review board committee was obtained. A well-structured questionnaire was used to gather data. 104 healthcare professionals, including OT technologists, nurses, anaesthesiologist, surgeons, house officers, OT managers and sweepers were chosen using a simple random sampling technique. Statistical value between variables was examined using the chi-square test. Data interpretation was done using SPSS version 27.

Results: knowledge, attitude and practice of 104 healthcare workers were assessed in the study. Out of 104 total participants, 5, 89 and 10 exhibited high, moderate and low awareness regarding infection control protocols, respectively. Regarding infection control protocols, 45 healthcare workers had a moderate practice rate, 10 had a high practice rate, and 49 had a poor practice rate. Conclusion: According to the study's findings, staff nurses and sweepers expressed a low level of infection control knowledge and practice, while surgeons expressed the highest.

Key words: knowledge, practices, infection control, neurological center, patient safety.

INTRODUCTION

Infection is the term used to describe the invasion and proliferation of germs within the body. The microbes could be bacteria, fungi, viruses, or other microorganisms. It can lead to infection and spread to any part of the body. One of the most significant issues facing healthcare facilities around the world is hospital-acquired infections. Among the exposed groups, it was the primary cause of both mortality and morbidity. Every individual, but especially healthcare workers, is susceptible to infection because they frequently come into contact with blood and body fluids [1]. Hospital-acquired infections currently affect about 1.4 million individuals globally, with the risk being 2–20 times higher in developing countries.

The World Health Organization estimates that 3 million people are exposed to blood-borne viruses annually, with 90% of all exposures occurring in underdeveloped countries. Blood-borne infections are a serious risk for healthcare workers in underdeveloped countries [2]. To avoid spreading germs from one patient to another, healthcare workers should wash their hands with soap and water, use an alcohol-based hand rub, and wear gloves before touching a patient. Gowns are used to prevent the transmission of microbes on healthcare personnel's attire. The patient's surroundings and medical equipment should be properly cleansed and disinfected in order to prevent transmission by indirect touch. By using a face mask or other suitable facial protection, healthcare professionals can lessen their exposure to infectious agents. Whether infection transmission can happen through airborne or droplet methods, such as using N95 respirators, masks, and eyeglasses, respectively [3].

Poor working environment, a lack of hand washing stations, a lack of personal protection equipment (PPEs), unsafe worker behaviors, and a lack of awareness regarding transmission are some of the challenges that healthcare professionals have observed. The training should emphasize the application of a number of common precautionary measures and enforce routine safe practices to protect HCWs. Consequently, methods to promote the use of standard precautions for infection prevention and control have been established [4].

Healthcare equipment and the contaminated hands of healthcare workers have been connected to HAIs. When healthcare workers fail to properly wash their hands after treating a patient, bacteria that can cause infection are transmitted from one patient to the next [5]. Activities include the creation of guidelines and standard protocols for operating rooms. Hand hygiene, use of personal protective equipment, proper use and disposal of sharps/needles, safe handling and disposal of clinical waste, spillages of blood, and body fluids, and the decontamination of equipment and surroundings are all necessary standard safety practices to control the spread of infection [6]. When it comes to worldwide concern morbidity, mortality, duration of hospital stays, and total direct and indirect expenditures, surgical site infections (SSIs) represent a significant clinical issue.

The knowledge, attitudes, and awareness of infection prevention and control strategies among surgeons vary widely [7]. Teaching and encouraging healthcare workers to follow standard operating precautions (SOPs), which are a set of infection prevention measures that apply to all patients regardless of infection status, is crucial to lowering occupational risks for HCWs [8]. In order to prevent nosocomial infections from spreading among hospitalized patients, strict adherence to infection prevention protocols is crucial and important. One of the primary goals of anesthetic practice should be the prevention of infections by limiting the spread of infection-causing organisms from patient to anesthetist or between patients [9]. Effective implementation of infection prevention strategies in healthcare facilities results in a notable reduction of more than 30.0% in infections linked to healthcare. Poor adherence to safety measures is caused by insufficient protective equipment and a dismissive work environment [10].

The World Health Organization states that one of the primary markers of HAIs is inadequate knowledge and practice. Knowledge is required to change practices, and good practices are a powerful catalyst for change [11].Evidence regarding

the degree of knowledge and behaviors among healthcare workers in the research area is currently lacking, despite the fact that safety is an essential part of delivering high-quality healthcare. Already available literature has focused on infection-related knowledge and practices of health care professionals in general, with no study targeted to the OT team. To date, no data has been published at PINS hospital, a central institution in the region for neurological care. This research was therefore conducted to assess healthcare professionals' safety-related knowledge and practice scores directly. Unlike previous studies, this research was conducted encompassing the whole OT team, rather than focusing on a single cadre.

OBJECTIVE

To assess the knowledge and practice of operating theatre professionals regarding infection control protocols.

LITERATURE REVIEW

A study was conducted at Indus Hospital, Korangi Campus and Sheikh Saeed Memory Campus. This study involved 33 healthcare providers. They gave them guidelines on hand hygiene practices according to the World Health Organization (WHO). 16.0% of them carefully followed the guidelines, but 83.0% did not follow the guidelines. Failure of hand hygiene practice was high in all age groups [12]. Another study was conducted in the Operation Theater of Teaching Hospital, Bharatpur. The results showed that only 36.7% of the medical staff met the requirements for surgical gowning and gloving. The two mistakes made in the research were not picking up the folded gown in its entirety from the wrapper (31.1%) and not holding the gown close to the neck so that it may contact with potentially contaminated things(18.9%) [13].

A parallel study was conducted at Gondar University referral hospital in northwest Ethiopia. This study covered 282 students of both genders. 176 Nurses, 31 Doctors, and 40 laboratorians working as health care workers. 126 of them took training regarding infection prevention and safety. 156 participants were vaccinated for HBV[14]. A study was conducted in 24 operating rooms of 11 hospitals in the city of Izmir, Turkey. The outcomes were recorded and contrasted against evidence-based recommendations [15]. Data indicated that the recommendation was not being followed. Hand/forearm antisepsis and the use of surgical gowns and drapes were the areas where the recommendation was followed the most. A similar study was conducted by a pre-test questionnaire using online-based techniques. Only 67 (47.5%) of respondents showed good practices against infection prevention, whereas half (49.6%) of anesthetists were deemed to be informed. 22.0% of participants stated that there was an adequate quantity of infection prevention materials. Knowledge of infection prevention was strongly correlated with in-service training. Working eight hours or less per day, having access to resources for infection control, and following infection control recommendations were all factors in the practice of infection prevention [16].

A study was conducted among HCWs in two tertiary care-level hospitals in Nigeria. A total of 290 HCWs (76.0% response rate) took part in the study, including 32 laboratory scientists, 147 nurses, and 111 physicians. Although the scores for knowledge and attitude about common precautions were above 90.0% overall, the median practice score was only 50.8%. The majority of workers complained of lacking resources to practice recommended measures and of having poor awareness about injection safety. Compared to doctors and nurses with more experience, house officers, laboratory scientists, and junior cadres of nurses demonstrated less understanding of and adherence to conventional precautions [17]. A similar study was conducted using two groups produced via a two-step group analysis. 54% and 46% of participants made groups 1 and 2, respectively. In comparison to group 2 respondents, group 1 subjects were younger, had greater educational levels, and held more senior positions. They cited good information, optimistic attitudes, and effective practices. Subjects in group 2 were distinguished by very little knowledge, a poor attitude, and behaviors. With the exception of attitudes towards selecting personal protective equipment ($p = 0.095$) and behaviors on the use of gowns and eye shields ($p = 0.759$), there were significant variations in practices for conventional and transmission-based precautions among groups. Staff members from group 2 had attitudes that were very significant but only moderately connected with practices ($P=0.05$) [18].

A similar study showed that after surgery vaginal swab was placed before the operation. The results showed that vaginal swab was present in 88 of the 291 patients that was transferred to the operating room. According to the policy, the theatre personnel are informed of the swab's presence by using one of three methods (verbally, in writing, or by transferring opened swab packs). In the post-intervention period, 56 women with vaginal packs in place were transported from the operating room to the high-dependency unit; 52 of these women had stickers in place to serve as a continual reminder to staff of the

vaginal pack's existence. Only one near miss has occurred in the 15 months since the interventions were put into place, compared to a baseline of four in two months (33.3% vs. 1.1%); its significance value was (P= 0.0001). Since the initiative was started, there have been no incidents involving retained swabs [19].

According to a study conducted in Pakistan, 78 nurses had strong awareness of IPC precautions, whereas 116 nurses had low understanding. Of the doctors, 76 lacked good knowledge, whereas 121 possessed it. Sweepers and other support personnel, 39 employees are well-versed in standard measures when handling infectious material, while 59 employees are not. Regarding IPC-related practices, 122 have safe practices and 70 have unsafe practices. When caring for patients, 61 doctors adhere to safe procedures while 135 engage in risky ones. Of the supporting workers, 44 adhered to safe infection control procedures, while 53 engaged in risky behaviour. Only 199 healthcare professionals have strong knowledge overall, whereas 332 have inadequate knowledge. While 244 healthcare professionals adhere to safe methods, 283 use unsafe practices in infection control [20].

This study was carried out in a tertiary care hospital in Lahore to assess nurses' knowledge levels. Of the 48 participants (36.9%) in this study, it was found that nurses had a low degree of aseptic technique understanding. At the same time, 41 nurses (31.5%) had a high degree of expertise, while 41 nurses (31.5%) had a moderate level of understanding. Despite the fact that many nurses had high or acceptable knowledge, this suggests that a significant portion still lacked enough understanding [21].

METHODOLOGY

Study design and setting

A Cross-sectional study was conducted in PINS Lahore.

Sampling Technique

A non-probability simple random sampling technique was used to collect the sample size. By using Cochran's formula, and selecting a margin of error of 5% and a prevalence ratio of 0.07 sample size of 104 was calculated. After the approval of the chairman ethical review board committee's, reference number 1920/IRB/PINS/Approval/2024, data was gathered from operating room staff members after they were informed of the study's purpose and asked to participate voluntarily. All participants had the right to withdraw at any stage of the study. To safeguard the privacy of the participants, no personal identifiers were noted. Data was gathered using ID numbers only. Health care personnel were given a well-structured questionnaire to complete, which was based on hospital-standard infection control procedures.

The study included nurses, anaesthesiologists, house officers, surgeons, sweepers, OT technologists, and managers. The study did not include healthcare workers who were on maternity or annual leave during the study period. Additionally, those medical professionals who declined to answer the questionnaire were not included in the study. The percentage of the total possible score was used to categorize the various levels of knowledge. Participants were categorized as having low knowledge if their overall score was less than 50%. Participants with scores above 75% were classified as having high knowledge, while those with scores between 50% and 75% were deemed to have moderate knowledge.

Data analysis

Data interpretation was done using SPSS version 29. For healthcare personnel with low, moderate, and high levels of knowledge, frequency and percentage were calculated. The significance level between the profession and knowledge and practices categories was examined using the chi-squared test. A P value was deemed significant if it was less than 0.05.

RESULTS

Table 1.1: Distribution Of Knowledge Level Among Health Care Workers

Knowledge	Frequency	Percentage
Low	10	9.6%
Moderate	89	85.6%
High	5	4.8%
Total	**104**	**100.0%**

Out of 104 healthcare personnel, the study found that 10 (9.6%) had low knowledge, 89 (85.6%) had intermediate knowledge, and 5 (4.8%) had high knowledge. (Table 1.1).

Table 1.2: Distribution Of Level of Practices Among Health Care Workers

Practice	Frequency	Percentage
Low	49	47.1%
Moderate	45	43.3%
High	10	9.6%
Total	**104**	**100.0%**

10 participants (9.6%) had a high degree of adherence to infection control standards, 45 participants (43.3%) had a moderate level, and 49 participants (47.1%) had a poor level. (Table 1.2).

Table 1.3: Knowledge Distribution of Health Care Professionals: Low, Moderate, and High

Professionals	Knowledge			Total	P value
	Low	Moderate	High		
Surgeon	1(4.3%)	21(91.3%)	1(4.3%)	23(100.0%)	**0.966**
Anesthesiologist	3(12.0%)	20(80.0%)	2(8.0%)	25(100.0%)	
OT Technologist	2(12.5%)	13(81.2%)	1(6.2%)	16(100.0%)	
OT manager	0(0.0%)	2(100.0%)	0(0.0%)	2(100.0%)	
Staff nurse	1(7.7%)	12(92.3%)	0(0.0%)	13(100.0%)	
HO	3(13.0%)	19(82.6%)	1(4.3%)	23(100.0%)	
Sweepers	0(0.0%)	2(100.0%)	0(0.0%)	2(100.0%)	
Total	**10(9.6%)**	**89(85.6%)**	**5(4.8%)**	**104(100.0%)**	

According to the study, just one surgeon had a high degree of expertise regarding infection prevention, while twenty-one had a moderate level and one had a low level. Two of the sixteen OT technologists had a low degree of knowledge, thirteen had a moderate level, and one had a higher level. (Table 1.3)

Table 1.4: Standard Practices Distribution of Health Care Professionals: Low, Moderate, and High

Professionals	Practice			Total	P value
	Low	Moderate	High		
Surgeon	9(39.1%)	11(47.8%)	3(13.0%)	23(100.0%)	
Anesthesiologist	13(52.0%)	9(36.0%)	3(12.0%)	25(100.0%)	
OT Technologist	6(37.5%)	8(50.0%)	2(12.5%)	16(100.0%)	

OT manager	2(100.0%)	0(0.0%)	0(0.0%)	2(100.0%)	
Staff nurse	7(53.8%)	6(46.2%)	0(0.0%)	13(100.0%)	
HOs	11(47.8%)	10(43.5%)	2(8.7%)	23(100.0%)	**0.786**
Sweepers	1(50.0%)	1(50.0%)	0(0.0%)	2(100.0%)	
Total	**49(47.1%)**	**45(43.3%)**	**10(9.6%)**	**104(100.0%)**	

Nine surgeons implemented standard measures against infection prevention during patient care at a low level, eleven at a moderate level, and three at a high level, according to the study. Six of the sixteen OT technologists had low levels of standard practice application in the operating room, eight had moderate levels, and two had higher levels. (Table 1.4)

DISCUSSION

Bacteria, viruses, fungi, and microbes are examples of pathogens that can infect and spread to any region of the body. Infection was one of the main issues that healthcare facilities around the world were dealing with. It was essential to make sure that experts have the requisite information regarding infection control procedures in the operating room. They must understand the significance of infection control and the possible dangers of using subpar procedures. Nevertheless, efficient measures to prevent infections also heavily depend on practices, not merely rely on information [22]. Training, experience, and the importance of infection control are some of the factors that can affect their attitudes. Assessing whether healthcare professionals are putting their knowledge and procedures into practice was crucial. Finding any weaknesses or difficulties in the way infection control procedures are being implemented can lead to better practices and, eventually, increased patient safety.

According to this study, 89 out of 104 medical professionals had a high percentage of moderate knowledge. Regarding standard practices, 49 healthcare professionals execute them to a low degree. Among healthcare workers, surgeons have the highest levels of infection control practice and knowledge. However, the knowledge and practices of infection control were lowest among staff nurses and sweepers. Knowledge and standard procedures do not statistically significantly correlate with the type of profession.

A previous study was conducted (12) to assess the knowledge and practices of OT professionals regarding infection control protocols. The findings of this study, which involved 33 healthcare professionals who worked in operating rooms, showed that over 46 % of them lacked sufficient knowledge and practice of hand hygiene. The others are highly knowledgeable and skilled. The surgeons' extensive training and expertise were emulated by other medical professionals. Our findings were supported by another study that found no correlation between profession type and knowledge. These earlier findings were significant in relation to this one [23].

A study was conducted in 2021 that analyzed infection knowledge and practices among healthcare workers. The results showed that only 36.7% of the medical staff met the requirements for surgical gowning and gloving. The total 42 results revealed that high levels (31.1%) and low levels (18.9%) of knowledge and practice of gowning and gloving. This study is correlated with this study, that all health care workers in OT had moderate levels (47.8%) and low levels (12.5%) of gowning and gloving in the OT regarding infection control protocols [24]. The awareness and understanding of injection safety were ascertained by another related investigation. He mentioned the 290 healthcare workers who worked in the operating room. The total outcome of standard safety measures for injections and sharps was 50.7%. Furthermore, the study we conducted found that 84.6% of the 104 participants in the operating room are aware of the proper, prompt actions that should be taken in the event of a sharp injury and how to dispose of sharps after giving a patient medication [25]. According to a single-centre aligned study, sweepers don't know much about infection control and don't follow best practices when doing their jobs [26].

Lack of educational training, educational background, and updating programs are the reasons why nurses and sweepers have the lowest knowledge scores. Higher patient loads, a stressful work environment, and uncooperative patient and attendant behaviour are the reasons for lower practice scores. Lower practice scores might also be attributed to inaccurate equipment and poor staff communication. Knowledge by itself does not ensure behavioral change, and putting it into practice requires sufficient motivation, encouraging supervision, and a supportive atmosphere. Effective infection control in the operating room required a thorough strategy that included both knowledge and practices. It is possible to improve patient safety and overall healthcare results by emphasizing education, cultivating positive attitudes, and consistently assessing and refining methods [27].

CONCLUSION

According to the study's findings, surgeons had the highest levels of infection control knowledge and practice among healthcare professionals, followed by anesthesiologists and HOs. Staff nurses and sweepers had the lowest levels of infection control knowledge and practices. There was no significant association found among employment roles within the health care team and practices. In the same way, knowledge of infection control protocols and the occupational category of health care workers are not statistically significant.

RECOMENDATIONS

It is crucial to give operating room personnel ongoing education and training in order to solve these problems. Provide workers with monthly and quarterly training, establish standard operating room protocols for all employees, and put them into practice to raise the bar for operating protocols. This could help bridge any knowledge gaps and ensure proper implementation of infection control protocols. By taking health care workers' attitudes into account, this study can be further expanded. The study will be expanded by determining the years of experience of the employees and then examining their knowledge and practices.

LIMITATIONS

The single-centred study reflects non-negligible findings that cannot be applied to other contexts. Different types of Bias, like selection and reporting bias, are possible. Shorter study conduction time also reflects the presence of bias. The research sample was too small to adequately reflect the overall findings, especially the subgroups of health care workers.

CONFLICT OF INTEREST

There are no disclosed conflicts of interest for any of the writers.

REFERENCES

1. Ogoina D, Pondei K, Adetunji B, Chima G, Isichei C, Gidado S. Knowledge, attitude and practice of standard precautions of infection control by hospital workers in two tertiary hospitals in Nigeria. Journal of infection prevention. 2015;16(1):16-22.
2. Belyhun Y, Maier M, Mulu A, Diro E, Liebert UG. Hepatitis viruses in Ethiopia: a systematic review and meta-analysis. BMC infectious diseases. 2016;16:1-14.
3. Negash FB, Hailemichael A, Haileslassie E, Hawaz E, Zerai S, Tesfamariam Z, et al. Prevalence, response and associated factors of needlestick injury among health care workers in Orotta National Referral Hospital, Eritrea. BMC Health Services Research. 2024;24(1):853.
4. Gastaldi S, Festa MG, Nieddu A, Zavagno G, Cau E, Barbieri C, et al. Identification of essential contents and a standard framework for the development of an Infection Prevention and Control manual for healthcare facilities: A scoping review. American Journal of Infection Control. 2024;52(3):358-64.

5. Ernawati Y, Muhith A, Zahroh C. Compliance with "Five Moments For Hand Hygiene" in Reducing the Incidence of Healthcare Associates Infections (HAIs): A Systematic Review. Journal of Applied Nursing and Health. 2024;6(2):557-69.
6. Moralejo D, El Dib R, Prata RA, Barretti P, Corrêa I. Improving adherence to Standard Precautions for the control of health care-associated infections. Cochrane Database of Systematic Reviews. 2018(2).
7. Zhang Y. The Impact of Optimizing Details in the Operating Room on the Level of Knowledge, Attitude, and Practice of Hospital Infection Prevention and Control by Surgeons, as Well as the Effectiveness of Infection Control. Surgical Science. 2024;15(7):421-9.
8. Zhou J, Otter JA, Price JR, Cimpeanu C, Meno Garcia D, Kinross J, et al. Investigating severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) surface and air contamination in an acute healthcare setting during the peak of the coronavirus disease 2019 (COVID-19) pandemic in London. Clinical Infectious Diseases. 2021;73(7):e1870-e7.
9. Murri R, De Angelis G, Antenucci L, Fiori B, Rinaldi R, Fantoni M, et al. A machine learning predictive model of bloodstream infection in hospitalized patients. Diagnostics. 2024;14(4):445.
10. Berdida DJE, Grande RAN. Nurses' safety climate, quality of care, and standard precautions adherence and compliance: A cross-sectional study. Journal of Nursing Scholarship. 2024;56(3):442-54.
11. Jiang F, Jiang Y, Zhi H, Dong Y, Li H, Ma S, et al. Artificial intelligence in healthcare: past, present and future. Stroke and vascular neurology. 2017;2(4).
12. Rizwan Z, Mughal T, Mohsin S, Najjad NAR. An Assessment of Hand Hygiene Practices among Health Care Providers in Operation Theatre. Pakistan Journal of Medical & Health Sciences. 2023;17(03):198-.
13. Biddhya K, Bista B. Practice of gowning and gloving technique among health personnel at operation theatre of teaching hospital, Bharatpur. Journal of Chitwan Medical College. 2022;12(1):57-61.
14. Yazie TD, Sharew GB, Abebe W. Knowledge, attitude, and practice of healthcare professionals regarding infection prevention at Gondar University referral hospital, northwest Ethiopia: a cross-sectional study. BMC research notes. 2019;12(1):563.
15. Çam R, Korkmaz FD. Examination of Opinions of Physicians and Nurses About Intensive Care Unit Visits and Their Professional Collaborations: A Cross-sectional Study.
16. Yetneberk T, Firde M, Adem S, Fitiwi G, Belayneh T. An investigation of infection prevention practices among anesthetists. Perioperative Care and Operating Room Management. 2021;24:100172.
17. Ogoina D, Pondei K, Adetunji B, Chima G, Isichei C, Gidado S. Knowledge, attitude and practice of standard precautions of infection control by hospital workers in two tertiary hospitals in Nigeria. J Infect Prev. 2015;16(1):16-22.
18. Chan MF, Ho A, Day MC. Investigating the knowledge, attitudes and practice patterns of operating room staff towards standard and transmission-based precautions: results of a cluster analysis. Journal of clinical nursing. 2008;17(8):1051-62.

19. Lean K, Page BF, Vincent C. Improving communication at handover and transfer reduces retained swabs in maternity services. European Journal of Obstetrics & Gynecology and Reproductive Biology. 2018;220:50-6.
20. Kiddeer M, Abbas A, Basit A, Ahmad T, Masood I. Assessment of knowledge, attitude and practices regarding standard precautions of infection prevention and control and associated factors among healthcare personnel working at tertiary care hospitals in Punjab, Pakistan. Infection Prevention in Practice. 2025:100464.
21. Khan S, Saddique H, Jabeen R. Knowledge and Practices of Nurses Regarding Aseptic Techniques for Infection Prevention in Operating Room at Tertiary Care Hospital. Journal of Health and Rehabilitation Research. 2024;4(2):149-53.
22. Mazhar L, Safdar A, Nisa WT, Nadeem F, Zahid J, Shakir A, et al. Exploring the Knowledge and Practices of Standard Infection Control Precautions among BSc Nursing Students. The Critical Review of Social Sciences Studies. 2025;3(2):2360-9.
23. Abu Awwad D, Hill S, Lewis S, Jimenez Y. Knowledge, attitudes and practice of infection prevention and control in the CT suite. BMC Health Services Research. 2023;23(1):741.
24. Aktaş FO, Damar HT. Determining operating room nurses' knowledge and use of evidence-based recommendations on preventing surgical site infections. Journal of PeriAnesthesia Nursing. 2022;37(3):404-10.
25. Akhtar T, Buriro NA, Ahmed F, Noonari AA, Siyal FJ. Knowledge and practices of nurses regarding injection safety at Bahawal Victoria Hospital (Bvh) Bahawalpur, Punjab. Independent Journal of Allied Health Sciences. 2019;2(01):42-8.
26. Shaikh DA. "Garbage in, Health Out": An Insight into Knowledge, Attitude, and Practices Related to Health Problems and Preventive Measures among Sanitation Workers in Maharashtra.
27. Gomila A, Carratalà J, Badia JM, Camprubí D, Piriz M, Shaw E, et al. Preoperative oral antibiotic prophylaxis reduces Pseudomonas aeruginosa surgical site infections after elective colorectal surgery: a multicenter prospective cohort study. BMC Infectious Diseases. 2018;18:1-9.

Cite:

- **APA (7th edition):** Wajid, A., Razzaq, H. T., Ashraf, N., Ahmad, A., & Munir, M. W. (2025, November 16). *Assessment of knowledge and practices of operation theatre professionals regarding infection control protocols at PINS Hospital in Lahore. The Operating Room Global Journal (TORGJ), 1*(1). https://doi.org/10.64573/torgj2507006

- **Harvard**: Wajid, A., Razzaq, H.T., Ashraf, N., Ahmad, A. and Munir, M.W., 2025. Assessment of knowledge and practices of operation theatre professionals regarding infection control protocols at PINS Hospital in Lahore. *The Operating Room Global Journal (TORGJ)*, **1**(1), Published 16 November. Available at: https://doi.org/10.64573/torgj2507006

- **Vancouver**: Wajid A, Razzaq HT, Ashraf N, Ahmad A, Munir MW. Assessment of knowledge and practices of operation theatre professionals regarding infection control protocols at PINS Hospital in Lahore. *The Operating Room Global Journal (TORGJ).* 2025 Nov 16;1(1). https://doi.org/10.64573/torgj2507006

- **MLA (9th edition)**: Wajid, Abdul, Hafiza Tuba Razzaq, Naeem Ashraf, Abbas Ahmad, and Muhammad Wajid Munir. "Assessment of Knowledge and Practices of Operation Theatre Professionals Regarding Infection Control Protocols at PINS Hospital in Lahore." *The Operating Room Global Journal (TORGJ)*, vol. 1, no. 1, 16 Nov. 2025, https://doi.org/10.64573/torgj2507006

- **Chicago (Author–Date)**: Wajid, Abdul, Hafiza Tuba Razzaq, Naeem Ashraf, Abbas Ahmad, and Muhammad Wajid Munir. 2025. "Assessment of Knowledge and Practices of Operation Theatre Professionals Regarding Infection Control Protocols at PINS Hospital in Lahore." *The Operating Room Global Journal (TORGJ)* 1 (1), November 16. https://doi.org/10.64573/torgj2507006