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ASSESSMENT OF KNOWLEDGE AMONG NURSES REGARDING SPREAD OF NOSOCOMIAL INFECTION AT LIAQUAT MEDICAL HOSPITAL JAMSHORO HYD

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Keywords

Nosocomial Infections, Hospital-Acquired Infections (HAIs), Infection Control, Nurses' Knowledge, Healthcare-Associated Infection Prevention, Hand Hygiene

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Abstract

Background: *Nosocomial infections (NIs) are hospital-acquired infections that emerge within 48 hours of patient's admission, posing serious risks to the patient's safety. Nurses play a key role in infection prevention, yet their knowledge may vary based on clinical experience, education, and departmental placement. This study aims to assess how these factors influence nurses' infection control knowledge.*

Objective: *This study aimed to assess the knowledge among registered nurses regarding the prevention and transmission of nosocomial infections at Liaquat Medical Hospital (LUH), Hyderabad/Jamshoro.*

Methodology: *Descriptive cross-sectional study was conducted on 103 registered nurses using a a pre-performed questionnaire. The tool assessed knowledge related to infection transmission, hand hygiene, personal protective equipment, and standard infection control protocols. Data was analyzed through (SPSS version. 27 software)*

Results: *Out of total 103 registered nurses, 33% had high levels of knowledge related to Noso common infection, 35% had moderate knowledge while remaining 32% exhibited low awareness regarding the prevention and spread of nosocomial infection at LUH Hyderabad/Jamshoro. I this study the educational status of participants significantly associated with nosocomial infection are also known as hospital acquired infection with p-value (0.00), Furthermore, a considerable* ***number of nurses*** *reported not receiving any refresher training in infection prevention.*

Conclusion: *The study highlights the need for continuous refresher training at Hospitals to enhance nurses' knowledge regarding infection control and prevention. Addressing existing knowledge gaps is essential to minimize the risk of hospital acquired infection and ensure safe healthcare practice.*

INTRODUCTION

Nosocomial infections, also referred to as healthcare-associated infections (HAIs), pose a serious global challenge for healthcare systems. These infections typically develop within 48 hours of hospital admission, three days post-discharge, or within 30 days of undergoing surgery. Common types of HAIs include catheter-associated urinary tract infections (CAUTIs), central line-associated bloodstream infections (CLABSIs), surgical site infections (SSIs), ventilator-associated pneumonia (VAP), and hospital-acquired pneumonia (HAP). The incidence of these infections is steadily increasing and is a significant contributor to mortality among hospitalized patients. Evidence shows that most HAIs occur in intensive care units (ICUs). Healthcare professionals, especially nurses and frontline staff, play a pivotal role in

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preventing and managing these infections. Therefore, it is crucial for nurses to be well-informed about nosocomial infections to safeguard both themselves and their patients. According to the Centers for Disease Control and Prevention (CDC), hand hygiene remains the most effective, simple, and cost-efficient method to prevent the spread of nosocomial infections. Preventing HAIs is a multifaceted process that depends on key factors such as knowledge of infection control protocols, adherence to procedures, and maintaining hospital hygiene standards. This includes breaking the chain of infections and strictly following aseptic techniques, particularly for patients undergoing surgical procedures. Several studies highlight a significant disconnect between theoretical knowledge of nosocomial infections and its practical application in daily clinical settings. Therefore, it is essential that nursing staff possess in-depth knowledge, particularly in infection prevention strategies, and continuously update their skills based on current scientific evidence and guidelines

Objective: This study aimed to assess the knowledge of nurses regarding the prevention and transmission of nosocomial infections at Liaquat Medical Hospital, Jamshoro, and to identify areas of misconception.

Literature Review:

Studies in different countries expose extensive disparities in nurses' knowledge and practice related to hospital acquired infection (HAIs). A study conducted in Bangladesh Lundsted et al. (as cited in Rehana, 2024) reported that 33.6% of nurses had poor knowledge, 40.8% had average knowledge, and only 25.6% had good knowledge. This indicated a critical need for improving education about infection control, especially in low resource healthcare environments. In India a well-developed infection control team and a supportive institutional climate were noted as key facilitators. However, Gupta et al. (as cited in Mangal 2024) found that overall score for infection control practices remains low. The average knowledge score was 51%, with major gaps in understanding the care of devices 74%, nursing isolation precautions 60%, and hand rub indicators 55%. In Ethiopia, a study conducted in Bahir Dar found that 52.5% of nurses showed good knowledge, and 48.6% showed good practice related to infection prevention (Savina et al., 2025). A study from Saudi Arabia highlighted that nearly 75% of the global burden of nosocomial infection occurs in developing countries (Obiero et al., 2025 as cited in Abdullah, 2020). Similarly, research in Ghana estimated that 1.7 million patients globally contract nosocomial infection each year, with an annual increase of approximately 0.06% (Samuel et al.,2023). Recent findings from Pakistan and Iran revealed that nurses scored only 43% in both knowledge and practice related to HAIs prevention, which may contribute to the rapid spread of this infection. (Elham et al.,2023). According to C ardo et al. (2010, as cited in Nini, 2021), existing literature reveals wide variations in nurses' knowledge and practices regarding HAI prevention. The World Health Organization (2011, as cited in Paulin, 2024) estimated that approximately 2.5% of HIV cases, and 40% of hepatitis B and C infections among healthcare workers, result from bloodborne exposure and nosocomial infections. Regional data indicate high numbers of infection warnings: Bangladesh (1,039,268), Bhutan (16,070), India (7,831,401), and Pakistan (1,170,561). Furthermore, in the U.S., 13.16% of nosocomial infections between 2000 and 2002 resulted in patient deaths, underscoring the need for improved hospital safety (Badsha et al., 2023). Historically, Dr. Semmelweis was the first to advocate for hand hygiene in healthcare settings during the 19th century. His contribution laid the foundation for modern infection control, and current research supports that proper hand hygiene significantly reduces hospital-acquired infections (Rabiya et al., 2025).

Methodology Study Design

This study exploited a descriptive cross-sectional design to assess the knowledge of nosocomial infections among nurses at Liaquat Medical Hospital Hyderabad/ Jamshoro.

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Inclusion criteria
Nurses have at least 6 months' experience.
Exclusion criteria
Nurses have less than 6 months' experience.
Student nurses.
Paramedical staff.

Sampling Technique
Nonprobability convenance sampling.

SAMPLE SIZE:
A total of 103 registered staff nurses participated in the study (n = 103). These participants were selected based on the inclusion criteria and their voluntary.

DEMOGRAPHICAL VERIABLES
1 Age
2 Gender
3 Marital Status
4 level of education
5 Experience
6 working area

VARIABLES OF SPECIAL INTERST:

1 Awareness of nosocomial infection.
2 Compliance with Infection Control Practices.
3 Previous Infection Control Training Received.
4 hospital environments.

Data Collection Tool
The data was collected from a pre-performed questionnaire, the questionnaire consisted of a total of 18 items, which were divided into two categories 1st had demographics data and 2nd had other questions regarding nosocomial infection. Questionnaire was adopted by (Ume-farwa, et al., 2024).

Data Analysis
A descriptive statistic was used for analyzing the data. The whole Data was analyzed through (SPSS version. 27 software).

Ethical consideration
Data collection initiates following formal approval from medical superintendent (MS) of Liaquat Medical Hospital Jamshoro/ Hyderabad.

Results
Table 1 showed Demographic Variables

Variables	N	Percentage%
Marital status	**103**	**100%**
Single	42	40.8%
Married	59	57.3%
Widowed	2	1.9%
Age		
20-25	32	31.1%
26-30	18	17.5%
31-35	29	28.2%
36-40	14	13.6%
Above 40	10	9.7%
Gender		
Male	35	34%
Female	68	66%
Experience		
Less than 1 year	23	22.3%
1-3 years	31	30.1%

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3-7 years	27	26.2%
More than 7 years	22	21.4%
Working area		
ICU	6	5.8%
Gynae	12	11.7%
Medicine	24	23.3%
Surgery	26	25.2%
Emergency	10	9.7%
Other	25	24.3%
Level of Education		
Diploma	19	18.4%
BScN	44	42.7%
Post-Rn	35	34.0%
Msn	4	3.9%
Other	1	1.0%

The study involved 103 registered nurses, showed that majority were female 66% while 34% were male, in term of martial status 57.3% were married 40.8% were single and 1.9% were widowed.

Educational qualification indicated that 42.7% held BSN, 34% had post-Rn BSN, 18.4% possessed a diploma in nursing, 3.9% had and MSN and 1% had other qualifications. Regarding professional experience 22.3% had less than 1 year, 30.1% had between one to three years, 26.2% had four to seven years of experience. Concerning work areas, 5.8% were assigned to ICU, 11.7% to gynecology,25.2% to surgery, 9.7% to emergency and 24.3% to other units.

Table No 2: Showed That Knowledge Regarding Nosocomial Infection

Statement	Strongly disagree		Disagree		Agree		Strongly agree		Natural	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
1 I am fully aware of nosocomial infection.	11	10.7	5	4.9	34	52.4	32	31.1	1	1.0
2 Nosocomial infections are also known as hospital acquired infection?	8	7.8	9	8.7	52	50.5	34	33.0	0	0.0
3 Nosocomial infections occur during 48 to 72 hours after admission or during a specific period 3 to 10 days after dismissal?	4	3.9	13	12.6	59	57.3	27	26.2	0	0..0
4 nosocomial infections may be transmitted via medical equipment such as syringes, thermometer, needles, catheters, stethoscope etc.....	2	1.9	11	10.7	45	43.7	45	43.7	0	0.0

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5 nosocomial infections can be transmitted from one person to another through direct and indirect contact, droplets, air and a common vehicle?	5	4.9	21	20.4	46	44.7	31	30.0	0	0.0
6 health care workers are immune to nosocomial infection?	8	7.8	26	25.2	41	39.8	28	27.2	0	0.0
7 invasive procedures increase the risk of nosocomial infections?	5	4.9	16	15.5	47	47.6	35	34.0	0	0.0

The findings showed that most nurses were aware of nosocomial infections through their mixed level of understanding. A significant recognition that these infections are hospital acquired and commonly developed within 48-72 hours after admission or up to 10 days following discharge. Participants also noted medical equipment and procedures as well as direct and indirect contact droplets, and air are important sources of transmission. Although this knowledge has some misconceptions continued. A notable number of nurses believed that healthcare workers are immune to nosocomial infection which indicates a gap in understanding. On the other hand, most participants agreed that invasive procedures increase the risk of such infection. Overall, the results showed that nurses have a basic awareness of nosocomial infection but certain areas particularly misconception about immunity and prevention require further investigation through tanning and educational programs.

Table no 3: showed awareness and practice regarding infection control.

Statements	**Yes**		**No**	
	Freq	%	**Freq**	%
8 Did you hear about infection prevention?	97	94.2	6	5.8
9 can gloves provide complete protection against acquired or transmitting infection?	75	72.8	28	27.2
10 can washing your hands with soap or an alcohol-based antiseptic decrease the risk of transmission of nosocomial infection?	94	91.3	9	8.7
11 Is the use of an alcohol-based antiseptic for hand hygiene as effective as soap and water if hands are not visibly dirty?	87	84.6	16	15.4
12 Should gloves be worn if blood or body fluid exposure is anticipated?	89	86.4	14	13.6
13 Is there a need to wash hands before doing procedures that do not involve bodily fluids?	81	78.6	22	21.4
14 Is there a need to wear the same pair of gloves for multiple patients if there is no visible contamination?	47	45.6	56	54.4
15 Do you know specific waste disposal buckets according to the level of their contamination	66	64.1	37	35.9

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16 Do you know the written formula for preparing 0.5% chlorine solution?	51	49.5	53	50.5

The study highlights that most nurses were aware of infection prevention, and practice especially in relation to hand hygiene the use of gloves during exposure to blood and body fluid and need for handwashing before medical procedure. They were also aware that alcohol-based antiseptics can work as an effective alternate for soap and water when hand is not visibly contaminated. However, findings also showed several misconceptions and knowledge gaps. Some nurses assume that gloves alone are enough to prevent infections while others believed that the same pair of gloves could be reused for multiple patients whether no contamination was visible. Limited awareness was observed regarding proper segregation of medical waste, preparation of chloride solution. Overall findings showed adequate awareness of basic infection prevention strategies their knowledge of advanced infection control procedure was missing this emphasizes the importance of the continue professional education and regular training program to strengthen infection control practice.

Table no 4 showed nurses awareness regarding disinfection practices and transmission risk.

Statement	**10 mints**		**1 hour**		**2 hours**		**Others**			
	Freq	%	**Freq**	%	**Freq**	%	**Freq**	%		
17 for how long should instrument or equipment be disinfected?	31	30.1	12	11.7	31	30.1	29	28.2		
18 Which of the following diseases is transmitted by needles stick injury? (more than one answer is possible)	HBV		HCV		TB		HIV		OTHER	
	7	6.8	17	16.5	9	8.7	39	37.9	**Freq** 31	% 30.1

The results highlighted that nurses showed mixed responses regarding the suitable duration for disinfecting instruments. While many were able to identify HIV and other infections as risks from needles stick, injury awareness about all possible diseases was not uniform. Overall, the finding suggests a need for clearer guidelines and refresher training on disinfection standards and occupation hazards.

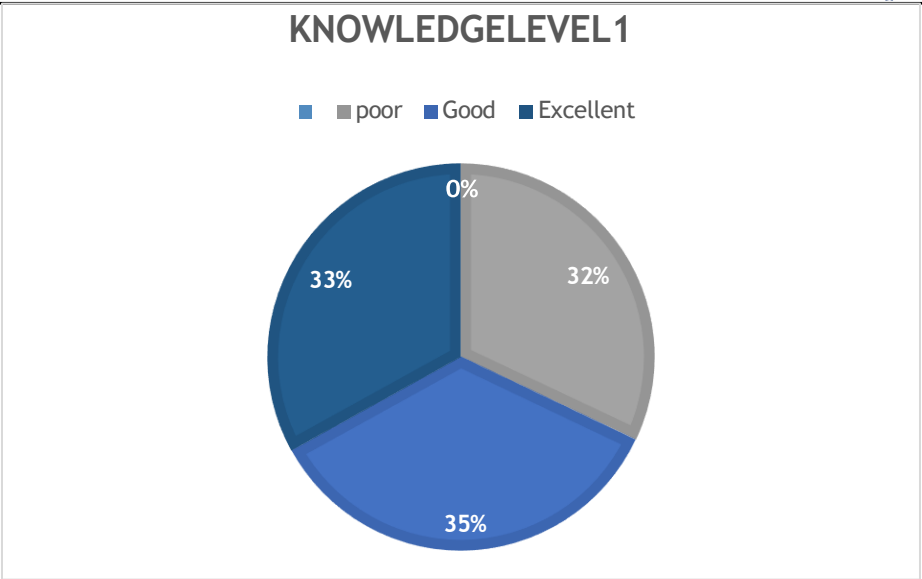
Table no 5 showed distribution of nurses' knowledge level regarding nosocomial infection.

Levels	Frequency	Percent	Valid percent
Poor	33	32.0	32.0
Good	36	35.0	35.0
Excellent	34	33.0	33.0
Total	103	100.0	100.0

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Discussion

The present study was conducted to assess the knowledge of nurses regarding the spread and prevention of nosocomial infection at Liaquat University Hospital Jamshoro/Hyderabad. The results showed that 33% of participants had excellent, 35% had good knowledge, while 32% were found to have poor knowledge about nosocomial infection. These findings show a diverse level of understanding among staff and highlight the need for improved infection control education. The findings are comparable to a study conducted in Northern Ethiopia, where overall knowledge level of nurses HAIs was 52.5% (Nini,2021). In comparison a study in Bangladesh reported that 33.6% of nurses had poor knowledge 40.8% had average knowledge and only 25.6% had good knowledge indicating a similar trend where a significant proportion of nurses lacked adequate understanding of infection prevention. (Rehema,2024). These findings support the present study's results where nearly one third of participants had poor knowledge and only a minority achieved excellent knowledge.

Moreover, the current study's outcomes are somewhat batter than those reported in Pakistan and Iran, where nurses scored only 43% in both knowledge and practice regarding nosocomial infection prevention (Elham, et al.,). This suggests that while gap still exists, the knowledge among nurses in current study may be relatively improved compared to previous findings of the region. Similarly, a study in India noted and average knowledge score of 51% with notable gap in area such as dives care 74%, isolation precaution 60% and hand rub many nurses lacked understandings of advance infection control measures, including the handling of invasive devices and the implementation of isolation protocols. Furthermore, the literature reveals that a lack of formal training in a recuring issue, which also appeared in this study many participants had not received structured training on infection prevention, a factor also observed in Saudia Arabia and Pakistan where poor knowledge has been linked to insufficient educational efforts (Abdullah, 2020; Elham et al., 2023). Overall, the current study reinforces the urgent need for continuous education, training, workshop and updated infection control policies literature reveal a consistent pattern of knowledge deficiencies among nurses globally, especially in developing countries.

Conclusion

This study revealed that nurses at Liaquat Medical University Hospital Jamshoro/Hyderabad possessed different levels of knowledge about preventing nosocomial

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infection. While some exhibited a sound understanding, many reflected inadequate practices. These deficiencies underscore the importance of continuous training and refresher educational programs to enhance hospital acquired infection prevention and ensure better patient outcomes.

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