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Knowledge and Practice of Standard Infection Control Precautions among Staff Nurses at Isra University Hospital, Hyderabad

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ABSTRACT

Purpose: *The purpose of this research was to assess the knowledge and practice of standard infection control precautions among staff nurses at Isra University Hospital in Hyderabad.*

Design/Methodology/Approach: *This descriptive cross-sectional study was conducted from July to September 2024, 60 nurses were chosen for the study using non-probability convenience sampling. Data was collected using a standardized questionnaire, and IBM SPSS Statistics Version 23 was used for analysis.*

Results: *According to the findings, 38.3% of participants were female and 61.7% were male. The majority of staff nurses have good knowledge of infection control precautions; 85% of them recognize the standard precautions for all patients. However, there were gaps in the practices, as only 68% of respondents acknowledged the need for isolation precautions, and fewer participants followed protocols like wearing gloves during patient assessments (55%) and blood collection (45%).*

Conclusion: *The study showed that staff nurses had good knowledge and practice of basic standard infection control precautions, but observed moderate compliance with specific practices, especially contact and isolation precautions. The findings of this research suggest that targeted training is required to close compliance gaps, improve patient safety, and improve general measures to prevent infections.*

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Introduction

Healthcare associated infections (HAIs) are a major concern to the safety and health of people globally. Hospital-associated infections affect millions of patients every year and lead to enhanced morbidity, mortality, and health costs(Stewart et al., 2021). These consist of bloodstream infections, surgical site infections, respiratory tract infections, and urinary tract

infections, all of which are prevalent in several healthcare settings due to patient susceptibility and high-risk procedures (Biscione et al., 2023). Of all the healthcare workers, staff nurses are most likely to contract infectious diseases due to their direct patient contact as they are in direct contact with patients; their secretions, and tools that are contaminated with the same(Baranowska-Tateno et al., 2024). Staff nurses are at the frontline in giving quality and safe care to the patients, and therefore they need to maintain strict procedures on the measures that help in preventing the spread of infective agents, among both firstly the patients and secondly other healthcare workers(Garlasco et al., 2024). Infection control is the prevention of pathogen transmission to caregivers and patients, clients, or the community through knowledge, precautions, measures, and barriers. Standard infection prevention controls (SIPs) or standard precautions refer to protective measures developed and enforced to control the spread of infections(Lynch et al., 2024). These measures are advised for usage with every patient, including those without any infection, to prevent exposure to bloodborne pathogens, airborne communicable diseases, and several other infections in healthcare workers(ALHAZOOM et al.). Routine measures include hand washing; wearing of gloves and gowns; appropriate disposal of needles and sharps; cleaning of the physical surroundings; and wearing of masks or respirators if needed(Alnajrani, 2024). These steps have, therefore, received broad support from official health agencies including the CDC and the WHO to minimize the spread of infections in healthcare facilities. However, there have been some revelations made in the course of research one of which indicates that non-adherence to standard precaution measures is a major concern in healthcare facilities(Alnajrani, 2024). Implementation barriers include lack of knowledge, lack of training, workload, and barriers in the environment, which prevent constant infection control practice(Cheng et al., 2024).

However, inadequate supply of PPE, improper removal and disposal of soiled materials and equipment, and noncompliance with hand antisepsis measures at the correct time are factors that contribute to cross-contamination and acquisition of healthcare-associated infections. The infection control challenges common in healthcare facilities include; time constraints, unsatisfactory staffing ratio of patients per nurse, and care or motivation/correct awareness(Lompo et al., 2024; Organization, 2024). Nurses have a significant role to play in the prevention and control of infection because they directly care for patients, deliver, prescribe, or obtain medication, support procedures or orders, and perform diagnostic tests(Mutsonziwa et al., 2024). Therefore, they are the ones more inclined to contact possible carriers of the sickness. According to research, the spread of illnesses contracted in hospitals is significantly increased when nurses are not knowledgeable about or follow protocols for preventing infections. (Campo & Remon, 2024). Hence, enhancing the awareness and practice of infection prevention measures among the staff nurses need to be pursued to reduce the prevention of infections bad enhance patient safety. Staff nurses work in different fields of healthcare services and such including; general medical ward, intensive care unit, emergency department, operating rooms. This is especially critical because healthcare delivery in various regions varies greatly; consequently, it is necessary to evaluate their understanding of infection control procedures and their adherence to them. The purpose of this research is to assess the knowledge and practice of staff nurses of Isra University Hospital, Hyderabad about standard infection control precautions. The results share important and current information regarding patient safety practices and define the areas of concern, it will also help to demonstrate to management the need for additional training and revisions of the policy to provide a safer environment in healthcare.

Research Objective

To assess the knowledge and practices of standard infection control precautions among staff nurses at Isra University Hospital, Hyderabad.

Research Methodology

Study Design and: Descriptive cross-sectional research was carried out at

Study Setting and Duration: This study was carried out at Isra University Hospital Hyderabad from July to September 2024.

Population and Sample Size: The total population consisted of all staff nurses both males and females working at the above specified hospital. The sample size was estimated using Raosoft online software where with a 5% margin of error and 95% confidence level the actual sample size was estimated to be 60 participants.

Sampling Method: Convenient non-probability sampling method.

Analysis of Data: IBM SPSS Statistics Version 23 was used to apply descriptive statistics, such as means, standard deviations, percentages, and frequencies.

Inclusion and Exclusion Criteria:

- **Inclusion Criteria:**
  - All staff nurses, both male and female, who agreed to take part and present within the time frame for collecting data.
- **Exclusion Criteria:**
  - Staff nurses who weren't accessible when the data was being collected.
  - The nurses who declined to take part.

Ethical Considerations:

The study was voluntary, and participants were asked to give their verbal or written consent to participate. Participants were advised of their right to withdraw participation in the study at any moment without providing a reason, and their identities were kept confidential.

Results

Table 1: Demographic Analysis (n=60)

Variable	Category	Frequency (n)	Percent (%)
Age in Years	20-25	32	53.3%
	26-30	16	26.7%
	31-35	5	8.3%
	36-40	5	8.3%
	Above 40	1	1.7%
Gender	Male	37	61.7%
	Female	23	38.3%
Years of Experience	Less than 1 year	34	68%
	1-3 years	9	18%
	4-7 years	5	10%
	More than 7 years	2	4%
	Intensive Care Unit	10	16.7%

Area of Working	Medicine	16	26.7%
	Surgery	8	13.3%
	Emergency Room	6	10%
	Others	20	33.3%

According to the demographic statistics, the majority of participants (61.7%) were male and the majority (53.3%) were between the ages of 20 and 25. 68% of nurses had less than a year's experience, while 18% had one to more than three years. 33% of them worked in "Others" (probably specialist units), followed by medicine (26.7%), intensive care (16.7%), surgery (13.3%), and emergency room (10%).

Table 2: Knowledge and Adherence To Standard Infection Control Precautions (n=60)

Statement		Yes	No	Mean	St. Devi.
Standard precautions apply to all patients, regardless of diagnosis or infection status.	Freq	51	69	1.15	.360
	%	85%	15%		
HIV, Hepatitis B, and C can spread through touch.	Freq	24	36	1.60	-494
	%	40%	60%		
Isolation precautions are part of standard precautions.	Freq	41	19	1.31	.469
	%	68%	37. %		
Hand washing after patient environment contact is one of the 5 moments of hand hygiene.	Freq	51	9	1.15	.360
	%	85%	15%		
Alcohol-based rubs should be used after removing powdered gloves	Freq	47	13	1.21	.415
	%	78.3%	21.7%		
Hand hygiene is required before and after patient care.	Freq	51	9	1.15	.360
	%	85%	15%		
Hands should be washed before and after handling potentially infectious materials, even with gloves.	Freq	46	14	1.23	.426
	%	76.7%	23.3%		
PPE protects clothing and is crucial for infection control.	Freq	47	13	1.21	.415
	%	78.3%	21.7%		
Gloves must be worn when handling potentially infectious materials.	Freq	49	11	1.18	.390
	%	81.7%	18%		
Gloves should be changed when moving from a contaminated to a clean body site.	Freq	46	14	1.23	.426
	%	76.7%	23.3%		
Surgical masks protect against splashes or sprays of blood and body fluids.	Freq	48	12	1.20	.403
	%	80%	20%		
N95 respirators are needed for aerosol-generating procedures (e.g., intubation).	Freq	45	15	1.25	.4036
	%	75.0	25.0		
Goggles should be worn when needed to avoid exposure to the eyes.	Freq	43	17	1.28	.454
	%	71.7%	28.3%		
Gowns or aprons protect clothing from blood and body fluid splashes.	Freq	46	14	1.23	.426
	%	76.7%	23.3%		
Gowns and gloves should be worn in	Freq	34	24	1.44	.534

situations requiring contact precautions.	%	56.7%	40%	

The table also expounds on the extent to which healthcare staff follows some key infection control measures. The levels are quite high concerning the basic practices among participants comprising: applying standard precautions across all patients (85%, mean 1.15, SD .36) and washing hands before and after patient handling (85%, mean 1.15, SD .36). Likewise, regarding the usage of gloves to handle the infectious materials, high percentage score was achieved (81.7%, mean 1.18, SD.39) and the percentage of usage of PPE to protect clothing (78.3%, mean 1.21, SD.415) are also established quite well in many routine practices. However, there are areas where there are the same scores such as wearing gowns and gloves where only 56.7 % of the staff put on the gowns and gloves when contact precaution is required, mean= 1.44 SD=.534 and only 68% of the staff knew that isolation precautions are part of standard precautions, mean = 1.31 SD=.469. These discrepancies suggest that while general preventive measures are effectively upheld, additional focus might be needed on specific preventive measures such as contact and isolation procedures to ensure thorough and consistent infection control.

Table 3: Practice and Compliance with Infection Control Measures (n=60)

STATEMENT		Always	Sometimes	Never	Mean	St. Devi.
Washes hand after taking off the gloves?	Freq	39	17	3	1.41	.618
	%	65%	28.3%	6.7%		
Wears gloves when dressing wound?	Freq	39	18	3	1.40	.588
	%	65%	30%	5%		
After using needles and blades, dispose of them in a sharps disposal box or container.	Freq	42	13	5	1.38	.740
	%	70%	21.7%	8.3%		
Do you wear gloves when drawing blood samples?	Freq	27	29	4	1.61	.613
	%	45%	48.3%	6.7%		
Do you wear gloves during patient assessment?	Freq	33	19	8	1.58	.719
	%	55%	31.3%	13.3%		

The table depicts the level of compliance with measures in place by healthcare staff. This is particularly evidenced in tasks such as hand washing after removing gloves; 65% of respondents stated that they always washed their hands by this procedure (mean = 1.41, SD = .618) similarly, wearing gloves in wound dressing; 65% of the respondents reported to always wear gloves in this practice (mean 1.40, SD .588)). Likewise, staff often dispose of the needles and blades in sharps containers at a frequency of 70% (mean 1.38, SD.740). However, practices like wearing gloves while drawing blood and during patient assessment and treatment have been recorded to be done less frequently. Most staff do not adhere to the use of gloves during their practice commonly when drawing blood, only 45% of staff always wear gloves (mean 1.61, SD.613) while 55% wear gloves during patient assessment (mean 1.58, SD.719). They indicate that some standard infection control measures are fairly well practiced, while other areas such as assessing patients and collecting blood samples require a more standardized approach.

Discussion

The findings of the study show that although staff nurses generally follow basic infection control procedures, there are notable discrepancies in adherence to some particular preventative measures. High adherence to general precautions was noted, including hand hygiene before and after patient contact (85%) and universal application of standard precautions (85%). These findings are consistent with recent research showing that institutional training and continuous awareness campaigns have established basic hygiene practices(Campo & Remon, 2024; Chakma et al., 2024). Personal protective equipment (PPE) to protect clothing (78.3%) and gloves for handling potentially infectious items (81.7%) is also consistent, supporting this trend and demonstrating how well these essential elements of infection control are implemented into daily routines. However, areas that need more careful application, including wearing gloves and gowns for contact precautions, had lower adherence rates (56.7%), which is consistent with research findings (Albougami & Banawas, 2024) which shows similar challenges in making sure more specialized procedures are followed. To be more specific, just 68% of staff members recognized isolation precautions as part of standard protocols, indicating gaps in knowledge and application. According to research by (Fortunka et al., 2024) this disparity is also evident, indicating that although healthcare professionals frequently comprehend general precautions, adherence can be affected when situational judgment is needed. This could be because of differences in training or perceived risk levels. Additionally, there were differences in adherence to hand hygiene and glove use during particular procedures. Although the majority of staff reported maintaining good hand hygiene after taking off their gloves (65%), there was less adherence to wearing gloves during completing blood sample collection (45%) and assessment of patients (55%). These results are in line with recent research showing that lower adherence to infection control guidelines is frequently observed for specific operations, particularly those considered low-risk(Ahmed et al., 2024; Salih & Allo, 2024). This variation implies that additional research needs to be conducted to emphasize the importance of these safety measures in reducing the risk of cross-contamination.

Conclusion

In conclusion, the study showed that staff nurses had good knowledge and practice of basic standard infection control precautions, but observed moderate compliance with specific practices, especially contact and isolation precautions. The findings of this research suggest that targeted training is required to close compliance gaps, improve patient safety, and improve general measures to prevent infections.

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Disclosure/Conflict of Interest

No competing interests were identified for this work. This study did not involve any funding.

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