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Original Article

Nurses Knowledge and Attitude Regarding Infection Control Practices

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ABSTRACT

Background: Infection control practices are crucial in minimizing the risk of healthcare-associated infections (HAIs) in hospital settings. Adequate knowledge and positive attitudes among nurses towards these practices are essential for effective implementation and patient safety.

Objective: This study aimed to evaluate the knowledge and attitudes of nurses regarding infection control practices at a tertiary care hospital in Lahore, Pakistan.

Methods: A descriptive cross-sectional study was conducted involving 150 registered nurses from various departments including ICU, ER, and pediatric wards. Participants were selected using a convenient sampling technique. Data were collected via a validated questionnaire assessing knowledge and attitudes toward infection control practices. Descriptive statistics, frequency distributions, and reliability analysis (Cronbach's Alpha) were performed using SPSS version 25.

Results: The study revealed that 47.3% (71/150) of nurses had excellent knowledge, 22.0% (33/150) had good knowledge, and 30.7% (46/150) had poor knowledge about infection control. Regarding attitudes, 94.7% (142/150) of nurses exhibited a positive attitude towards infection control measures. The majority of participants were young, with 97.3% (146/150) between the ages of 21-30. Experience levels varied, with 81.3% (122/150) having between 1 to 3 years of experience.

Conclusion: The findings indicate that while there is a good level of knowledge and a very positive attitude towards infection control among nurses, continuous education and training are needed to address gaps in knowledge and ensure high standards of practice are maintained.

Keywords: Infection Control, Nurse's Knowledge, Attitude, Healthcare-associated Infections, Tertiary Care Hospital, Pakistan, Descriptive Cross-Sectional Study.

INTRODUCTION

Infection prevention is a critical component in healthcare, serving as a systematic process to create barriers between vulnerable hosts and harmful microorganisms (1). It encompasses a range of strategies, techniques, and activities aimed at reducing or minimizing the transmission of infectious diseases within healthcare facilities (2). Unfortunately, inadequate infection control measures can facilitate the spread of pathogens, potentially leading to healthcare-associated infections (HAI) (3). HAIs are infections that occur during the process of care in a hospital or other healthcare facility, which were neither present nor incubating at the time of admission (4).

Infection control practices include round-the-clock applications and implementations across all healthcare settings to mitigate infection transmission, from healthcare workers to patients and vice versa (5). These routine practices consist of a set of infection control strategies and standards designed to protect workers from exposure to potential sources of infectious diseases (6, 7). Key practices involve stringent hand hygiene, the use of personal protective equipment such as gloves, masks, and eyewear, respiratory hygiene/cough etiquette, sharps safety, safe injection practices, and the sterilization of instruments and devices (8). Despite these measures, the incidence of hospital infections has risen by 36 percent over the past two decades, underscoring a global challenge that affects both developed and developing countries, with 5%-10% of patients worldwide acquiring one or more infections in

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healthcare settings (9-12). Moreover, over 1.4 million people globally suffer from infections acquired in hospital settings, with a significantly higher risk of nosocomial infections reported in developing countries (13).

Nurses, who spend more time with patients than any other healthcare team members, are central to the implementation of infection control measures (14). They have the unique opportunity to influence the rate of hospital-acquired infections significantly. Their roles include educating patients, which can reduce infection risks or the severity of infections (15). Hence, nurses' compliance with infection control measures is crucial for preventing and controlling HAIs. This compliance is largely driven by their knowledge and attitudes toward infection control (16, 17).

There is a marked discrepancy in the infection rates and control measures between countries like Pakistan and those where the infection rates are not as high. Studies in countries with lower infection rates have reported that nurses generally possess good knowledge and demonstrate a positive attitude towards infection control. However, in Pakistan, where nurses contend with a high population density and the burden of both communicable and non-communicable diseases, the challenges are more formidable. The prevalence of hospital infections in Pakistan is notably high; out of 888 hospitalized patients, 116 (13.1%) exhibited symptoms of hospital infection, with bloodstream infections, pneumonia, and infections of the ear, eyes, nose, throat, skin, and soft tissues being most common.

Given these challenges, it is crucial to assess the knowledge and attitudes of nurses towards infection control practices within the Pakistani context. This study aims to evaluate these aspects, which are decisive in the effectiveness of infection control programs in healthcare facilities. The high burden of HAIs can often be attributed to insufficient knowledge and the inadequate application of basic infection control measures among healthcare staff. This research seeks to identify gaps in knowledge and practice that could be addressed to improve the quality of care and patient outcomes in settings with limited resources.

MATERIAL AND METHODS

To evaluate the knowledge and attitudes of nurses towards infection control practices, a descriptive cross-sectional study design was adopted. The population for this study consisted of registered nurses employed at a tertiary care hospital in Lahore, Pakistan. Eligible participants were those with at least one year of professional experience, specifically nurses working in intensive care units (ICU), emergency rooms (ER), medical, surgical, and pediatric departments. Using convenient sampling, a total sample size of 150 nurses was determined via Slovin's formula, ensuring a representative distribution across the mentioned departments (13).

Data collection commenced after obtaining necessary approvals from the institutional review boards of both the institution overseeing the research and the hospital where the study was conducted, in adherence with the Declaration of Helsinki principles concerning ethical research on human subjects. Consent was secured from all participants, who were assured of data privacy and confidentiality before the distribution of the questionnaires.

The survey instrument was an adapted version of a pre-existing questionnaire designed to measure nurses' knowledge and attitudes regarding infection control. The knowledge component comprised 12 items scored on a nominal scale. Scores above 80%, between 60% and 80%, and below 60% were categorized as excellent, good, and poor knowledge, respectively. For attitudes, a 5-point Likert scale ranging from 'completely agree' to 'absolutely disagree' was employed. The total possible score ranged from 5 to 60, with scores above 40 indicating a positive attitude, reflective of agreement on at least eight different items (3, 14, 18).

Following data collection, responses were analyzed using SPSS version 25. The data were subjected to descriptive statistics to determine frequencies and percentages. The normality of the data was verified, and reliability and validity of the tool were assessed to confirm its appropriateness for the local context. Results were visually represented through bar graphs for qualitative variables and detailed tables for quantitative assessments. This rigorous methodological approach ensured the reliability and validity of the study findings, contributing to a comprehensive understanding of the prevailing knowledge and attitudes towards infection control among nurses in a high-demand healthcare setting in Pakistan.

RESULTS

The results of the study indicate a diverse demographic and professional makeup among the participating nurses at the tertiary care hospital in Lahore, Pakistan. The majority of participants were young, with 97.3% (146 nurses) aged between 21 and 30 years, and a smaller group, only 2.7% (4 nurses), aged between 31 and 40 years (Table 1). This younger demographic predominance is reflective of the current workforce distribution in healthcare settings in the region.

In terms of educational qualifications, the vast majority of nurses held a Bachelor of Science in Nursing (BSN) Post RN degree, representing 88.0% (132 nurses) of the total. Those with a diploma in General Nursing and Midwifery accounted for 9.3% (14 nurses), and a minority held a generic BSN degree, comprising only 2.7% (4 nurses) of the sample (Table 1).

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Table 1: Demographic and Professional Characteristics of Participants (N=150)

Characteristics	Categories	Frequency	Percent
Age	21-30 years	146	97.3%
	31-40 years	4	2.7%
Qualification	Diploma in General Nursing and Midwifery	14	9.3%
	BSN Generic	4	2.7%
	BSN Post RN	132	88.0%
Shift	Morning	142	94.7%
	Evening	8	5.3%
Experience (Years)	1-3	122	81.3%
	4-6	24	16.0%
	7-10	4	2.7%
Department	Medical Wards	51	34.0%
	Emergency	75	50.0%
	Pediatric Wards	24	16.0%
Length of Service (Years)	Up to 1 year	87	58.0%
	2-5 years	46	30.7%
	6-10 years	13	8.7%
	More than 10 years	4	2.7%
Nature of Employment	Contractual	38	25.3%
	Permanent	64	42.7%
	Others	48	32.0%

Table 2: Knowledge Assessment

Knowledge Level	Frequency	Percent	Cumulative Percent
Excellent	71	47.3%	47.3%
Good	33	22.0%	69.3%
Poor	46	30.7%	100.0%

Table 3: Attitude Towards Infection Control

Attitude	Frequency	Percent
Positive	142	94.7%
Negative	8	5.3%

Work shifts among the nurses were predominantly in the morning, with 94.7% (142 nurses) working these hours, while the evening shifts were less common, staffed by only 5.3% (8 nurses) (Table 1). The experience levels varied, with a significant proportion of the nurses, 81.3% (122 nurses), having between 1 to 3 years of experience. Fewer had 4 to 6 years of experience, at 16.0% (24 nurses), and only 2.7% (4 nurses) had between 7 to 10 years of experience (Table 1).

The study also examined the departmental distribution of the nurses, with half working in emergency departments (50%, 75 nurses), followed by 34.0% (51 nurses) in medical wards, and 16.0% (24 nurses) in pediatric wards (Table 1). The length of service revealed that a majority, 58.0% (87 nurses), had been in their current positions for up to one year. Those with 2 to 5 years of service made up 30.7% (46 nurses), and a smaller group had 6 to 10 years of service, at 8.7% (13 nurses). Nurses with more than 10 years of service were notably few, only 2.7% (4 nurses) (Table 1).

Regarding the nature of employment, permanent positions were held by 42.7% (64 nurses), while 25.3% (38 nurses) were on contractual terms, and the remaining 32.0% (48 nurses) fell into other employment categories (Table 1).

The evaluation of nurses' knowledge about infection control practices showed that 47.3% (71 nurses) had excellent knowledge, 22.0% (33 nurses) had good knowledge, and 30.7% (46 nurses) displayed poor knowledge (Table 2). This suggests a need for ongoing education and training in infection control practices among nearly a third of the workforce.

Attitudinally, the majority of nurses exhibited a positive outlook towards infection control measures, with 94.7% (142 nurses) scoring above the threshold indicative of a positive attitude. Only a small fraction, 5.3% (8 nurses), showed a negative attitude towards

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infection control practices (Table 3). This high level of positive attitude is encouraging, as it is crucial for the effective implementation of infection control measures in healthcare settings.

DISCUSSION

The study aimed to assess the knowledge and attitudes of nurses towards infection control practices at a tertiary care hospital in Lahore, Pakistan, using a descriptive cross-sectional design. The results demonstrated a predominantly young and female workforce, with most nurses having relatively short lengths of service and experience primarily in critical care areas such as emergency and medical wards. Notably, the majority exhibited a positive attitude towards infection control measures, which is essential for the effective implementation of such practices (14).

The data revealed that a significant proportion of nurses demonstrated good knowledge regarding infection control, with nearly half of the participants achieving an 'excellent' knowledge rating. This positive finding aligns with previous studies, such as one conducted in Iran in 2019, which also reported satisfactory levels of knowledge and attitudes among healthcare professionals (18). The high level of agreement on the importance of adhering to infection control guidelines and the recognition of the effectiveness of hand hygiene underscore the nurses' understanding of the basic principles of infection prevention (17-19).

However, the study also highlighted areas for improvement, particularly in terms of compliance with certain infection control practices. For instance, a notable percentage of respondents believed that wearing gloves obviates the need for handwashing, a misconception that could undermine the effectiveness of infection control measures. This indicates a gap in practical understanding that could be addressed through targeted education and training.

In discussing the strengths of the study, it is worth noting that the high response rate and the diverse departments from which participants were drawn provide a comprehensive overview of the attitudes and knowledge prevalent among nurses in this hospital setting. The use of a validated questionnaire enhanced the reliability of the results, though the Cronbach's Alpha values indicated moderate reliability, suggesting that some of the survey items might require refinement for better consistency (16).

The study's limitations include its cross-sectional design and the use of convenience sampling, which might limit the generalizability of the findings to other settings or regions. The focus on a single hospital also restricts the applicability of the results to broader contexts. Moreover, the relatively small sample size could affect the robustness of the statistical analyses and the conclusions drawn from them (20).

Given these findings and limitations, it is recommended that further research be conducted in multiple centers to confirm these results and to explore the impact of different educational strategies on nurses' practical skills in infection control. Interventions should focus on addressing identified knowledge gaps and misconceptions, particularly regarding the use of personal protective equipment and hand hygiene practices. Additionally, considering the influence of workload and staffing levels on adherence to infection prevention measures, as highlighted by the nurses' responses, healthcare administrators should evaluate and optimize staffing policies to facilitate better infection control practices (17).

CONCLUSION

In conclusion, while the nurses in this study generally showed good knowledge and positive attitudes towards infection control, there is a need to continually reinforce these aspects through ongoing education and practical training. Addressing the barriers to effective infection control, such as workload and staffing challenges, could further enhance the safety and quality of patient care in hospital settings.

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