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ASSESSMENT OF THE KNOWLEDGE OF INFECTION CONTROL MEASURES AMONG NURSES WORKING IN OPERATION ROOMS: A STUDY OF PUNJAB, PAKISTAN

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Abstract

Background: In operating rooms, infection is a serious problem. Numerous studies have demonstrated that nurses are susceptible to a range of hazards, such as needle stick and sharps accidents, which are common in operating rooms because of labor overload, inexperience, and cross-infection. To guarantee effective adherence to general precautions, nurses require extra attention.

Objective: The purpose of the study was to evaluate nurses' familiarity with infection control practices and ascertain how these practices related to their demographics.

Methodology: Two hundred nurses working in operating rooms at teaching hospitals participated in a descriptive cross-sectional study that was broken down as follows: The study was carried out from October 15, 2023, to February 15, 2024 in Jinnah Hospital, Lahore General Hospital, and Mayo Hospital. Samples were chosen using a nonprobability sampling strategy (purposive). Utilizing a self-report approach and a questionnaire, data were gathered. A questionnaire is divided into two sections: the first portion asks about demographic details. A pilot research was conducted to determine the reliability of the 45-item questionnaire on nurses' knowledge of infection control measures (ICM), which was subsequently submitted to a committee of experts made up of 30 experts. The data were examined using both a descriptive and an inferential statistical method.

Results: According to the data, 44.5% did not participate in training sessions. There was an association found between the knowledge and attitudes of nurses regarding infection control measures and certain socio-demographic characteristics, with 60.5% of nurses exhibiting moderate understanding regarding ICMs.

Conclusion: The study suggested that all hospital departments, especially the operating room staff, continue to receive instructional training on infection control methods from the continuous medical education unit.

Keywords: Nurses' Knowledge, Infection Control, Operation Rooms

Introduction

An infection contracted 48 to 72 hours after a patient is admitted to the hospital, three days after the patient departs the hospital, and 30 days following surgery—during which time the infectious agents are incubated—is referred to as a "nosocomial infection" or hospital-acquired illness (HAI). It is thought to be the biggest worldwide issue facing healthcare systems; hundreds of millions of patients worldwide, both in developed and developing nations, are thought to be impacted by HCAIs. About one in every 74 hospitalized patients in certain Australian general hospitals has a healthcare-associated infection (HCAI). Approximately 3.2 million patients had HAIs in total in 2011–2012. Each year, around 100,000 of these patients pass away in the US. According to Nasiri et al. (2019) and Sahiledengle et al. (2020), is 6% in Europe.

Pakistan is not an isolated country; countries all around the world are affected by this serious public health concern. It's risky and could even be lethal. The challenges and losses experienced by the patient, his family, and the healthcare system increase with the length of stay in the hospital. Healthcare providers must employ every tactic at their disposal to safeguard patients, their families, and themselves from infectious diseases. Thus, it is possible to limit the transmission of infection (Shitemo, 2020; Kerity & Naji, 2017).

Nonetheless, nurses are the professionals most at risk for work-related injuries and illnesses, such as non-intact skin, needle sticks, sharp objects, AIDS/HIV, and tuberculosis. The risk of infected blood is approximately (0.1–0.3%) for 47.4% of HIV, (2%) for HCV, and (6–60%) for HBV. Nurses are more likely than other healthcare workers to experience occupational hazards when working with patients who are hospitalized for extended periods and who come into contact with blood, bodily fluids, tissue membranes, and non-uninterested skin (Donati et al., 2019; Yazie et al., 2019).

Additionally, when providing patient care, nurses' hands are a major source of infection transmission. Enhancing nurses' understanding of infection control practices and their positive attitudes about them will improve their roles and performance as well as the communities' and patients' health and safety (Kalantarzadeh, 2014). During an operating procedure, a nurse's duties include ensuring the patient's safety, carrying out their scrub duties, washing their hands, arranging sterile supplies, tables, and a sterile field, preparing sutures, ligatures, and special equipment, and keeping themselves safe from stick injuries. Wearing double gloves and taking preventative measures can also help shield the surgical team from viral transmission. After any unintentional puncture, gloves should be replaced right away, and post-exposure prophylaxis should be implemented (Susan, Holly, & Dalllred, 2017).

Research Methodology

A descriptive cross-sectional research was done on a collection of nurses. A non-probability (purposive) sample of (200) nurses was chosen depending on some criteria to assess their knowledge of infection control measures. The operating rooms at Lahore Teaching Hospitals served as a rich field for data collection for the study, which was carried out in three hospitals: the Jinnah Hospital, the Lahore General Hospital, and the Mayo Hospital Operating Room.

he instrument, which consists of two sections, was built based on several earlier studies and publications to fulfill the objectives of the current investigation.

Section I: This section is made up of seven components, which include the nurses' demographic information (age, gender, educational attainment, years of experience, years of experience in operating rooms, training programs on infection control, and marital status). Evaluation of Nurses' Knowledge of Surgical Room Infection Control Procedures (Part II). This section is an MCQ questionnaire with forty-five questions. The answers to all knowledge questionnaire items have been categorized as "correct" or "incorrect." This section is broken down into six areas, which include:

1. General Nurses' knowledge related to hospital-acquired infections (HAIs) and their prevention (12) questions.
2. Nurses' Knowledge related to hand hygiene (5) questions.
3. Nurses' Knowledge related to Personal Protective Equipment (PPE) (6) questions.
4. Nurses' Knowledge related to safe handling of equipment and instruments (8) questions.

5. Nurses' Knowledge related to sterilization and disinfection (8) questions.
6. Nurses' Knowledge related to waste management (6) questions.

Ensuring that the results of a study instrument are nearly identical when administered to the same subjects at multiple periods is known as instrument dependability. After verifying the study tool's apparent validity with the same subjects a second time, the researcher used it on a randomly selected exploratory sample of twenty nurses made up of 10% of the initial sample, some of whose members were later removed from the original sample used for the final investigation.

The nurses completed the data collection form in order to gather the data after getting approval from the facility. To take part in this study, the researcher gets both written and verbal agreement from each nurse. It takes about thirty to thirty-five minutes to complete the instrument's questions with each participant.

The researcher used Microsoft Excel (2016) and SPSS version (25) to deal with the data and analyze it statistically, find the relationships between the variables, and obtain the final research results based on a series of statistical tests. This was done in order to statistically analyze the data collected from the study sample and arrive at the results.

Results

Table 1. Socio-economic Characteristics of the Respondents

Socio-economic Characteristics		**Frequency**	**Percentage**
Age (years) (M± SD= 27.79±4.18)	21-25	60	30.0
	26-30	107	53.5
	31-35	11	5.5
	≥35	22	11.0
Gender	Male	86	43.0
	Female	114	57.0
Marital Status	Single	84	42.0
	Married	116	58.0
Education Level	Diploma Nursing	65	11.5
	Bachelor	112	32.5
	MSN	23	56.0
Years' Experience	<5 years	104	52.0
	5-10 years	73	36.5
	>10 years	23	11.5
Experience in Current Workplace	<5 years	173	86.5
	5-10 years	27	13.5
Number of Training Courses	No	89	44.5
	1-2 sessions	81	40.5
	>2 sessions	30	15.0

The results indicate the average age of the participants, which is 27 (±4.18). The largest percentage of participants (n=107; 53.5%) were found to be between the ages of 25 and 30. In terms of gender, compared to the male nurses in the sample, more than half of the female nurses (n=114; 57%) were included in the study. When comparing married (n=116; 58%) nurses to patients who were still single, the nurses showed findings related to marital status. In terms of educational attainment, the majority of nurses (n=112; 56%) were bachelor's degree holders. According to the years of experience associated findings, the nurses (n = 104; 52%) and (n = 173; 86.5%) had less than five years of experience in the nursing profession and in their current job, respectively. The results clearly show that nurses do not attend training sessions (n=89; 44.5%) in terms of training courses.

Table 2. Overall Nurses' Knowledge Related to Infection Control Measures

Nurses' Knowledge	Frequency	Percentage	M ±SD
Poor (M=45-60)	79	39.5	61.82±5.03
Fair (M=61-75)	121	60.5	
Good (M=76-90)	0	0.0	

M: Mean score, SD=Standard Deviation

Based on the score's overall mean and standard deviation. The results showed that, on average, nurses (60.5%) had a fair degree of knowledge about infection control methods, with an average score of 9.77(±2.19).

Table 3. Association between Socio-economic Characteristics and Nurses' Knowledge

Nurses' Knowledge		Sum of Squares	d.f	Mean Square	F	P-Value ≤ 0.05
Age	Between Groups	.078	3	.026	2.106	.101
	Within Groups	2.411	196	.012		
Marital Status	Between Groups	.002	1	.002	.122	.727
	Within Groups	2.487	198	.013		
Education Level	Between Groups	.161	2	.080	6.802	.001
	Within Groups	2.328	197	.012		
Years of Experience	Between Groups	.499	2	.250	24.720	.001
	Within Groups	1.989	197	.010		
Experience in Current Workplace	Between Groups	.007	1	.007	.592	.443
	Within Groups	2.481	198	.013		
Number of Training Courses	Between Groups	.859	2	.430	51.953	.001
	Within Groups	1.629	197	.008		

d.f: Degree of freedom, F: F-statistic

The results showed that there were no noteworthy variations in the nurses' understanding of infection control strategies between age groups (p=0.101). The results showed that there were no notable variations in the nurses' knowledge (p=0.727) on infection control strategies related to their marital status. The results showed that nurses' understanding of infection control measures varied significantly depending on their educational background (p=0.001).

The results showed that there were notable variations in nurses' years of experience-related understanding of infection control methods (p=0.001). Higher mean knowledge scores are linked to the disparities favoring individuals with more than ten years of experience.

The results showed that there were no notable variations in nurses' understanding of infection control practices based on their experience in the current workplace (p=0.443).

The results showed that nurses' understanding of infection control methods varied significantly (p=0.001) depending on how many training courses they had taken. Nurses who participated in more than two training sessions had a markedly higher understanding of infection control procedures.

Discussion

The results showed that while 39.5% of nurses had inadequate understanding of "infection control measures," more than half (60.5%) of nurses had fair knowledge, with an average score of 9.77(±2.19). The study found that different educational backgrounds, brief infection control and prevention training sessions for recently assigned nurses, and non-continuous training programs for trainee nurses were the main reasons why participants did not learn the necessary information.

The results of a study conducted in Baghdad corroborate our findings; a knowledge gap developed as a result of the nation's wartime circumstances and the lack of easily accessible medical supplies and

educational opportunities (Jubouri, Al-2014). Conversely, a study conducted in India with one hundred nurses was done by Rochwani & Sharma, 2019. It assessed nurses' knowledge of conventional precautions, and the results were in conflict with the current study; it found that most sample members had satisfactory overall knowledge ratings. These findings are the consequence of the study participants' extensive years of job experience and access to training programs.

The present investigation's results were in line with those of a study carried out in Palestinian hospitals, which found no relationship between nurses' general understanding of infection control measures and personal characteristics (age and years of experience), except the training program, which ran counter to the current findings. Furthermore, a study by Datta et al. (2018) disproved this finding by showing a substantial correlation between nurses' age and their familiarity with safe injection techniques.

Conclusion

Females with one to five years of operating room experience and training courses completed made up the majority of the study sample. According to the current study, 60.5% of the study samples had a fair understanding of infection control procedures. The general level of nurses' knowledge of infection control practices and certain sociodemographic factors, including years of experience, years of education, and training programs, varies significantly. Age, marital status, and years of operating room experience, however, did not significantly affect the results.

According to a study, all hospital departments should properly activate the continuous medical education unit's activity to offer educational courses about infection control procedures, particularly for operating room staff. This department would be responsible for continuously monitoring the use of all contemporary infection control methods. Future research projects should be carried out to enhance the skills and understanding of nursing staff members about infection control procedures in all hospital departments, with a focus on operating rooms.

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