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Original Research Article

Awareness and Practices Towards Standard Precaution Among Nursing Staff

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Abstract: *Standard precautions are fundamental in preventing healthcare-associated infections and safeguarding health-care workers and patients. As front-line providers, nurses must possess adequate knowledge and demonstrate appropriate practices to ensure effective infection control.* ***Objective:*** *To evaluate the awareness and practices regarding standard precautions among nurses and identify key factors influencing their adherence to these practices.* ***Methods:*** *This descriptive cross-sectional study was conducted at Medicare Hospital, Multan, from February 2024 to February 2025. One hundred full-time registered nurses in patient care were enrolled through convenience sampling. Data were collected using a structured questionnaire comprising three sections: incidence of exposure to infectious materials (8 items), knowledge of standard precautions (20 items), and self-reported practices (20 items). Sociodemographic details were also recorded. Descriptive statistics, t-tests, and multiple regression analyses were performed using SPSS version 22.* ***Results:*** *The mean knowledge score was 15.33 ± 2.20 out of 20. Nurses with a master's degree scored significantly higher (17.08 ± 2.05) than those with a bachelor's (15.11 ± 2.24; p = 0.003). Emergency room nurses had the lowest knowledge and practice scores compared to those in paediatrics and gynaecology. The mean practice score was 48.22 out of 80. Regression analysis revealed that knowledge score (β = 0.308) and years of experience (β = 0.187) were significant predictors of practice quality, explaining 20% of its variance (R^2 = 0.20).* ***Conclusion:*** *Nurses demonstrated high knowledge and satisfactory practices regarding standard precautions. Given the positive association between knowledge and practice, structured and recurrent training programs should be emphasised to enhance infection prevention behaviours among nursing staff.*

Keywords: Awareness, Nurses, Nursing, Practices

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Introduction

Hospital-borne infections, also known as health-care-acquired infections, are among the serious challenges that health-care facilities face in pursuit of providing services. Hospitalised patients are at a greater risk of these infections, which can increase the morbidity and mortality.(1) WHO has recognised that reducing the incidence and risk of these infections is the first step to improve patients' safety.(2) For this purpose, standard precautions are set by the Center for Disease Control and Prevention to minimise the risk of infections.

Standard precautions instruct that blood, bodily waste, fluids, and secretions must be handled and processed through proper procedures and equipment to reduce the transmission to nurses or other patients. Nurses can be exposed to infection through contamination, needles and sharp objects and transport of contents. Therefore, it is significant for nurses to be aware of precautions to limit their exposure.(3) In addition, it is needed to combine knowledge with compliance for effective practices, as this seems to be lacking in the health-care sector due to factors including lack of resources, job factors, personal inefficiency, and management issues.(4)

Nurses' compliance has been shown to improve with incentives, education, training and leadership changes which can lead to behavioral, institutional and environmental shifts.(5) In Pakistan, limited studies have been conducted to observe the compliance and knowledge of nurses regarding standard precautions. This study was conducted to evaluate the level of awareness and practices regarding standard precautions in nurses and identify factors affecting practices.

Methodology

Registered nurses in the Nursing Department of Medicare Hospital, Multan were cross-sectionally analysed from February 2024 to February 2025. A total of 100 nurses working full-time and involved in standard care of patients were invited to participate. Nurses without a bachelors' degree and less than one year experience were excluded. Verbal consent was given by all participants to become a part of study. Institutional Review Board approval was obtained from the hospital.

A questionnaire was distributed among the nurses to record data. The questionnaire assessed the nurses on three dimensions and also collected sociodemographic information. The first part had eight items about standard precaution practice addressing the incidence of direct exposure or injury from bodily fluids, blood and infected instruments in the last six months. Questions about prior precautions training and urge to continue training or education. Nurses were asked if they were vaccinated and management of sharps disposal. The second part had 20 questions about basic information and procedures to assess knowledge about precautions. The responses could be made by selecting yes, no or don't know. One point was allocated if answered yes and no point was allocated if answered no or don't know. The maximum score was 20 with a higher score indicating higher level of knowledge.

The third part consisted to 20 questions to test the practices regarding standard precautions. The questions could be answered on a Liker scale from 0 to 4 with 0 being never and 4 being always. The minimum score possible was zero and maximum score possible was 80 with a higher score indicating good practice and high compliance.

Data analysis was done by employing SPSS 22. Sociodemographic information, knowledge score and practice score were calculated and presented by descriptive analysis. Association between level of knowledge and practices was assessed by Spearman's correlation. The level of knowledge and practices between demographic groups was compared by Mann-Whitney U test and Kruskal Wallis test. Multiple regression analysis was performed to evaluate factors affecting the nurses' practices regarding standard precautions. Statistical significance was taken at a p value of 0.05 or less.

Results

Among the 100 participants in the study, 80 (80%) were females. The mean age of nurses was 30 years. 88 (88%) nurses had a bachelors degree and 12 (12%) had a masters degree. 45 (45%) were staff nurses, 48 (48%) were supervisors and 7 (7%) were head nurses. 30 (30%) nurses worked in the medicine or surgical department, 30 (30%) worked in the ER, 10 (10%) attended operations and 25 (25%) worked in ICU or CCU.

The mean knowledge score was 15.33 ± 2.20 out of 20. 96 (96%) were aware about general concepts of standard precautions and 95 (95%) agreed that they were necessary for all patients. However, negative response was noted about precautions for patients with skin infections, TB, intestinal infection and Varicella. 92 (92%) knew about washing hands after handling blood or bodily fluids and between patients (93%). 88 (88%) agreed to wearing gloves during any contact with patient, 90 (90%) knew that mask is necessary if there is a chance of blood splatter but only 74 (74%) said that about use of googles.

Table 1 shows the distribution of knowledge score according to demographics. The knowledge scores did not differ between genders (p=0.988) and job titles (p=0.989). However, nurses with a masters' degree (17.08 ± 2.05) had a significantly higher knowledge score than nurses with a bachelors (15.11 ± 2.24) (p=0.003). Nurses attending the ER had the lowest score in comparison to other nurses working in other departments. Pediatric and gynecology nurses (16.77 ± 1.44) had the highest knowledge score. These results are not generalised since nurses with a masters and nurses in peds and gynecology were limited.

The mean practice score was 48.22 out of 80 with an above average response than the midpoint score of 40. Participants responded with always or sometimes to most of the questions except use of eyepatch and protective suit, cap and show shade while handing blood and bodily contents. 20 (20%) washed their hands after handling patients and after removing gloves. 25 (25%) wore gloves especially while dressing and handling patients with impaired skin and only 5% wore gloves while administering IM injections and venous puncture. Only 14% wore mask and 8% wore googles while handling blood and bodily fluids. Only 10% disposed used needles properly while 40% reported they occasionally recap them. Table 2 shows no significantly different in practices scores between genders, qualification and job titles. Nurses working in peds and gynecology had highest score and ER nurses had lowest score.

Table 3 shows the factors affecting the nurses' practices with >0.30 as a significant threshold. Practice was positively related to age, knowledge and experience. However, only knowledge and experience had a r value of 0.355 and 0.336, respectively, satisfying the threshold. Age was excluded from the regression analysis. Multiple regression analysis recognised knowledge score (ß= 0.308) and work experience (ß= 0.187) as determinants of nurses' practice with 20% of practice influenced by these factors.

Table 1: Level Of Knowledge Regarding Standard Precaution In Nursing Demographics

Variables	Knowledge score	Kruskal Wallis Test (x^2)	P value	Mann-Whitney U test (p-value)
Gender				
Male	15.29 ± 3.01			0.988
Female	15.18 ± 3.32			
Qualification				
Bachelors	15.11 ± 2.24			0.003
Masters	17.08 ± 2.05			
Job title				
Registered nurse	15.30 ± 2.17	0.010	0.989	
Supervisor	15.17 ± 2.24			
Head nurse	15.72 ± 1.96			
Department				
Medicine/ Surgery	15.43 ± 2.96	21.320	<0.001	ER vs Medicine= 0.001
Emergency	13.96 ± 2.25			ER vs ICU= 0.003
ICU/CCU	15.61 ± 3.19			ER vs Pediatrics= <0.001
Gynecology/ pediatrics	16.77 ± 1.44			ER vs Operation= 0.003
Operation	16.16 ± 1.82			

Table 2: Level Of Practice Regarding Standard Precaution In Nursing Demographics

Variables	Practice score	Kruskal Wallis Test (x^2)	P value	Mann-Whitney U test (p-value)
Gender				
Male	48.81 ± 11.18			0.550
Female	47.73 ± 11.55			
Qualification				
Bachelors	47.73 ± 12.03			0.139
Masters	52.70 ± 14.63			
Job title				
Registered nurse	49.21 ± 11.26	2.156	0.344	
Supervisor	46.83 ± 12.05			
Head nurse	51.37 ± 16.08			
Department				
Medicine/ Surgery	47.12 ± 10.57	29.446	<0.001	ER vs Medicine= <0.001
Emergency	43.75 ± 11.08			ER vs ICU= 0.005
ICU/CCU	48.88 ± 10.60			Medicine vs Pediatrics= 0.001

Gynecology/ pediatrics	56.53 ± 14.95			Medicine vs Operation= 0.003
Operation	54.34 ± 9.99			ER vs Operation= <0.001
				ICU vs Pediatrics= 0.019
				ICU vs Operation= 0.003

Table 3: Association between Study Variables by Spearman's Correlation

	Knowledge	Practice	Age	Experience
Knowledge	1.0			
Practice	0.355	1.0		
Age	0.258	0.255	1.0	
Experience	0.465	0.336	0.940	1.0

Discussion

This study was conducted to assess the awareness and practices of nurses regarding standard precautions. The results showed a high level of awareness and above average practices among the participants. Knowledge and work experience act as determinants of these parameters. These findings comply with some previous literature and contradict with others.(6-8)

The mean knowledge score was 15.33 ± 2.20 out of 20. 96 (96%) were aware about general concepts of standard precautions and 95 (95%) agreed that they were necessary for all patients. However, negative response was noted about precautions for patients with skin infections, TB, intestinal infection and Varicella. This is similar to findings of other studies. (9, 10)

An intermediate level of good practices was noted in our study with a mean score of 48.22 out of 80. This level of practices is high in comparison to other studies conducting on assessing compliance to standard guidelines.(11, 12) This also highlights the impact of knowledge on practices as previous research also reported this association with an average to high practices as our study.(13, 14) 25 (25%) wore gloves nurses in present study especially while dressing and handling patients with impaired skin and only 5% wore gloves while administering IM injections and venous puncture. These results is completely opposite than other regions as highest compliance for gloves for reported while taking blood and venous puncture.(15)

Practice was positively associated with age, knowledge and experience. The strongest relationship was noted with knowledge indicating that increasing knowledge through education and training can improve the practice level. Other studies agree with this correlation and association with age and experience.(16, 17)

Conclusion

A high level of knowledge and satisfactory level of practices was observed in nurses regarding standard precautions. Considering the relation between knowledge and practice, training programs must be encouraged to improve proper performance.

Declarations

Data Availability statement

All data generated or analysed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-MCH-7855-23)

Consent for publication

Approved

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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

NH (Post RN BSN final year)
Manuscript drafting, Study Design,
FA (Post RN BSN final year)
Review of Literature, Data entry, Data analysis, and drafting articles.
AQ (Post RN BSN final year)
Conception of Study, Development of Research Methodology Design,
AF (Vice Principal)
Study Design, manuscript review, critical input.

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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