

PERSONAL PROTECTIVE EQUIPMENT USE AMONG NURSES IN CRITICAL CARE UNITS. A COMPARATIVE STUDY OF PRIVATE AND PUBLIC SECTOR TEACHING HOSPITALS

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ABSTRACT

OBJECTIVE

Communicable respiratory illness is horrifying cause of morbidity among nurses. One of the key reasons for occupational transmission of this illness is the failure to implement appropriate barrier precautions, particularly facial protection and other personnel protective equipment. The objective of this study was to determine the knowledge, attitude and practice regarding personal protective equipment (PPE) among critical care nurses of public and private sector teaching hospitals.

METHODOLOGY

Quantitative descriptive cross sectional study design was used in this study. A total of 123 critical care nurses participated in the study. Likert scale was utilized to assess knowledge attitude and practice of critical care nurses. The questionnaire consisted of 27 items regarding the use of personal protective equipment (PPE). There were 3 subscales namely, Knowledge, Attitude and Practice.

RESULTS

The findings of this study revealed that almost 93.5% nurses had good knowledge about PPE while 6.5% had poor, whereas 95% of participants showed positive response regarding the use of PPE at workplace, while 5% showed negative attitude toward the use of PPE. Finally, a total of 40% had good practice, 50% had average and remaining 10% percent had poor practice of using PPE.

CONCLUSION

The use of personal protective equipment reduces the hospital acquired infection, overall mortality rate as well as hospital stay of patients. In this study we have found that critical care nurses had positive attitude towards the use of personal protective equipment, which is satisfactory.

KEYWORDS: Infection Control; Knowledge, Nurses, Nurses Safety, Healthcare Recommendation, Intensive Care

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INTRODUCTION

Infection control measures are based on how an infectious agent is transmitted and include standard, contact, droplet, and airborne precautions. Infection in hospitals and other healthcare settings is a concern for health services across the world and major public health problem which is receiving considerable attention and the consequences related to this are very serious which cause major health risks that leads to morbidity, mortality and cost.^{1,2} As an essential social activity,

workplace plays a fundamental role living conditions. It entails positive effects when it is capable of attending to workers basic needs for subsistence, creation and cooperation.³ On the other hand, when performing work, health workers are constantly exposed to risks present in the work environment, which can interfere directly in their health conditions. When the hazard could not be removed or controlled adequately, Personal Protective Equipment (PPE) ought to be used if the work process was to continue. Personal Protective Equipment is being used to reduce or minimize exposure or contacts to physical, chemical or biological agents (Canadian Center for Occupational Health and Safety Resource (CCOHSR)).^{2,4} Personal Protective Equipment is designed to prevent occupational exposure to hazards. The employees need to have access to PPE at no cost including correct sizes and type that take allergic conditions into consideration. Personal Protective Equipment can only be an effective control strategy if appropriate and reliable equipment is provided and if employees consistently use it.⁵ The International Mine Action Standard (IMAS) indicated that it was the responsibility of the employer and employee to ensure the effective use of PPE. Personal Protective Equipment should be provided to employees which are required to be appropriate to the risk level. The employees should use PPE in accordance with the requirement specified by the employer and manufacturer (International Mine Action Standard).⁶ Among health professionals, nurses are exposed to different risks, caused by chemical, physical, biological, psychosocial and ergonomic agents. These are more exposed to biological material due to their professional routine.⁷ Healthcare facilities like other high risk work places are characterized by a high level of exposure to hazardous agents which significantly endangers the health and life of health care workers (HCWs).⁸ Hazards are an inherent property of a substance, agent, and source of energy or situation that has the potential of causing undesirable consequences, while risk is the probability that damage life and health. In this regard occupational hazards refer to workplace activities that have the potential to cause or increase the risk of injury or ill health.⁹ In the light of the significance of the use of PPE, it is important to assess the knowledge, attitude toward PPE and current practice among nurses of critical care units. The findings of this study will provide critical information to the hospitals' administration, health department and nurses for enhancing nursing care to control infection regarding the use of PPE. Therefore, the

objective of the current study was to determine the knowledge, attitude and practice regarding PPE among critical care nurses in Public and Private sectors hospitals of Peshawar.

METHODOLOGY

Quantitative descriptive cross-sectional study was conducted in Rehman Medical Institute (RMI), North West General Hospital (NWGH), Hayatabad Medical Complex (HMC) and Lady Reading Hospital (LRH), Peshawar for 04 months duration, from April 2019 to July 2019. Ethical approval was obtained. The sample size of the study was 123 critical care nurses; an online Raosoft Sample Size Calculator was used. A convenient sampling technique was utilized for the selection of participants. Informed consents were obtained from the participants of the study after explaining the purpose of data collection. All those intensive care unit nurses who had at least one-year critical care experience were included in this study. Those nurses who were at managerial level were excluded from the study. Self-administered questionnaire was used to collect data. The pilot study was also conducted on 10% of the sample size. The questionnaire was divided into two sections, the first section included demographic data (name, age, gender), institution of the nurses. Second section comprised of 27 questions regarding knowledge (10 items), attitude (5 items) and practice (12 items) of the nurses. Written informed consent was read and signed by participants before completing the questionnaire. Anonymity, privacy and confidentiality of participants was protected. Data were analyzed through statistical package for social sciences (SPSS) version 22. In descriptive statistic, data were calculated for frequencies and percentages that were later on presented in the form of tables, graphs and charts. While in inferential statistics the data were interpreted for its significant associations and comparison.

RESULTS

A total of 123 critical care nurses participated in the study. Among them 41 (33.3%) were males and 82 (66.7%) were females. The mean age of the participants was 26.01±4.106 (Min = 19, Max = 37). Of the participants 61 (49.6%) were working in private hospitals and the remaining 62 (50.4%) were working in public sector hospitals (Table 1).

Table 1: Demographic Data

	f	%age
Gender		
Male	41	33.3 %
Female	82	66.7%
Age		
Mean age	26.01	
Minimum age	17	
Maximum age	37	
Hospital Set Up		
Public sector hospitals	62	50.4%
Private sector hospitals	61	49.6%

The findings regarding knowledge revealed mean score of 07 ± 1.513 with median score of 7.00. The maximum knowledge score was 8 and minimum score was 0. The questions in the knowledge section were presented in a single numeric number. Participants who got 4 to 8 marks were included in good score margin, while score less than 4 was categorized in low score margin. The result also showed that almost 93.5% (115) participants out of 123 had good knowledge personal protective equipment's. while 6.6% (8) had poor knowledge (Table 2). The mean attitude score of nurses was 9.2 ± 2.00 with median value of 10.00. Of the total participants 117(95.1%) showed positive attitudes toward use of PPE, while only 6(4.9%) showed negative attitudes toward use of PPE in their daily nursing practices (Table 2). The answers showed that 49(40%) participants always use PPE during their interaction with patients, whereas 62(50%) of the participants stated that they use PPE most of the time when approaching to a patient for care. On the other hands, only 12(10%) of the participants replied that they are either sometime or never use PPE in their everyday nursing practices (Table 2).

Table 2: Knowledge, Attitude and Practice of Nurses in Private and Public Sector Hospitals

	Hospital		Total
	Private	Public	
Knowledge			
Good Knowledge	60 (98.3%)	55 (88.7%)	115 (93.4%)
Poor knowledge	01 (1.7%)	07 (11.3%)	08 (6.6%)
Total	61 (100%)	62 (100%)	123 (100%)
Attitude			
Positive Attitude	61 (100%)	56 (90.3%)	117 (95.1%)
Negative Attitude	0 (0%)	06 (9.7%)	06 (4.9%)
Total	61 (100%)	62 (100%)	123 (100%)
Practice			
Good Practice	24 (39%)	25 (40%)	49 (40%)
Average Practice	31 (51%)	31 (51%)	62 (50%)
Practice Poor	06 (10 %)	06 (09%)	12 (10%)
Total	61 (100%)	62(100%)	123(100%)

Moreover, the association between private sector hospital nurse's knowledge and public sector hospital nurse's knowledge were compared through chi square test. The findings showed that

there was significant difference between knowledge of nurses working in private sector hospital and public sector hospital (p-value =.030). The level of attitude of nurses in relation to use of PPE was also higher in private sector practicing nurses as compared to public sector hospital nurses. Chi- square test showed significant difference between the attitude of nurses of private sector hospital and nurses of public sector hospital nurses (p-value=0.014). No significant difference was observed between public and private sector hospitals in the practice domain (p-value = 0.807) (Table 3).

Table 3: Knowledge, Attitude and Practice among Public & Private Sector Hospitals

	Overall n (%)	Public Sector Hospital n (%)	Private Sector Hospital n (%)	P- Value
Knowledge				
Good Knowledge (≥ 4)	115 (93.4)	55 (88.7)	60 (98.3)	0.032
Poor knowledge (< 4)	08 (6.6)	07(11.3)	01 (1.7)	
Attitude				
Positive Attitude	117 (95.1)	56 (90.3)	61 (100)	0.014
Negative Attitude	06 (4.9)	06 (9.7)	0 (0)	
Practice				
Good Practice	49 (40)	25 (40)	24 (39)	0.807
Average Practice	62 (50)	31 (51)	31 (51)	
Poor Practice	12 (10)	06 (09)	06 (10)	

Chi-squared test applied. P value ≤ 0.05 considered significant.

DISCUSSIONS

Health care facilities are work places where nosocomial infections predominate and disease pathogens are harbored by fomites and pests. The situation could be aggravated by absence of appropriate protective measures, excessive workload, inadequate training of workers on safety practices, among others, especially in developing countries. Healthcare workers are prone to occupational hazards, injuries and diseases.^{10,11} On the basis of collected data it is concluded that the use of personal protective equipment is one of the most important measure especially at health side. The overall purpose of this study was to describe nurse's knowledge, attitude and practice regarding personal protective equipment in health care setting. Different study recommended use of protective equipment.¹² In our study 33% participants were male and 67% were female. The

study showed that almost 93.5% nurses have good knowledge about personal protective equipment while 6.5% have poor knowledge related to importance of personal protective equipment's. On this result organization and institution may conduct teaching and awareness session regarding use of personal protective equipment in health care setting. The previous study show that (98.3 %) believed that prevention and control of hazards in the healthcare facilities should be a shared responsibility between the hospital management and staff.⁴ One of the study from Saudi Arabia also showed that there is a strong evidence of positive relationship between awareness of the respondents with PPE.¹³ Staff training and provision of protective equipment is mandatory to reduce their risk of exposure to occupational hazard. Based on research examining healthcare workers adherence to practices to prevent the transmission of blood borne diseases, it was hypothesized that organizational level factors and other safety climate dimensions would be most predictive of nurses adherence to recommend use of personal protective equipment. One study show the knowledge, attitude and practice of personal protective equipment two-fifth (38 %) had positive rating in KAP while 7 % had negative rating in KAP scales. In addition, an FGD participant said "health care workers had the tendency to keep quiet due to minimal expectations from the hospital management and therefore undermine the reported the use of PPE in the hospital environment."⁹ In our study 95% of the participants show positive response regarding the use of PPE at work place while 5% have showed negative attitude toward use of PPE. Similarly a study from UK stated that there was a high awareness of PPE guidance at 84.4%, but only 52.4% of staff reported adequate PPE provision. 67.9% were still keen to come to work, despite very high levels of anxiety relating to contracting COVID-19 despite wearing PPE.¹⁴ Finally regarding practices total of 40% have good practice, 50% have average and remaining 10% percent have poor practice of using PPE. The findings demonstrated that the healthcare workers had an overall good knowledge and a positive attitude but a poor practice regarding PPE.¹⁵ A new organizational model of adherence to PPE should be introduced to increase the use of PPE in health care setting to minimize injuries and illness and also to improve staff performance.

LIMITATIONS

This study used convenient sampling technique

and selected a small sample size. Hence generalization may be made with caution.

CONCLUSION

Over all this study shows that there is significant difference in the knowledge and attitude level of private sector hospital nurses as compared to public sector hospitals nurses. In addition, there is no significant difference between practice level in both public sector hospital nurses and private sector hospitals nurses regarding use personal protective equipment's. In fact, PPE play an important role in preventing a variety of communicable diseases in both patient and staffs and its impact can be manifested in term of reducing patients stay in the hospitals as well as minimizing cost of treatment. Similarly, reducing burden of disease prevalence and occurrence in both health care staff and general population. It has been recommended that both private and public sector hospital need to introduce policies directed toward strict use PPE and arrangement of refresher courses for staff nurses for the meaningful and fruitful outcomes in favor of both patients and hospital staffs.

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