International Journal of Community Medicine and Public Health
Kiran A et al. Int J Community Med Public Health. 2019 Oct;6(10):4447-4449
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20194510

Original Research Article

Study on utilization of personal protective equipments by paramedical staffs: an institutional study at RIMS, Ranchi

Asha Kiran[1], Sushma Kumari[2], Manisha Kujur[1]*, Vivek Kashyap[1]

[1]Department of Preventive and Social Medicine, [2]Department of Transfusion Medicine and Blood Bank, RIMS, Ranchi, Jharkhand, India

Received: 31 July 2019
Revised: 08 September 2019
Accepted: 09 September 2019

***Correspondence:**
Dr. Manisha Kujur,
E-mail: kujurmanisha96@gmail.com

ABSTRACT

Background: Personal protective equipment (PPE) continues to play an integral role in prevention of transmission of infection in the healthcare setting. The objective of this study is to determine the level of knowledge, attitude and practice of universal precautions for control of infection among health care workers.
Methods: Cross sectional study were conducted at Rajendra Institute of Medical Sciences, Ranchi during the period of November 2018 to January 2019. 151 paramedical staffs were included as study population. Sampling method was consecutive sampling.
Results: The present study included 151 paramedical staffs, based on our criteria about knowledge of PPEs, 88.7% (134) of participants had the knowledge, while 11.3% (17) did not have. 77% (116) of paramedical staffs received formal training while 23.2% (35) didn't. 95.68% had the knowledge about PPEs who received training (116), while out of untrained person 65.71% already had knowledge about PPEs which is statistically significant. Departments which always use PPEs are emergency (50%) followed by pathology (16.6%) and Neurosurgery (13.3%) which is statistically significant. Those who frequently use PPEs, 89.6% had knowledge while 10.4% did not have. 85.4% of paramedical staff change gloves between procedures on same patient. Non availability of PPEs inhibit maximum percentage of Paramedical staffs 72% towards use of PPEs followed by lack of information and education 12% and uncomfortable PPEs 5%.
Conclusions: Proper training should be provided to healthcare workers for universal precaution. Information about universal precaution can be spread in the form of posters in different wards.

Keywords: Personal protective equipment, Paramedical staffs, KAP

INTRODUCTION

Hospital acquired (nosocomial) infections are common in developing countries with healthcare workers often dying from these infections. In many countries, the health system depends heavily on just a few health workers. This human resource is precious. Thus, any effort that protects a country's health personal also protects its health system and its long term investment in health.

Personal protective equipment (PPE) continues to play an integral role in prevention of transmission of infection in the healthcare setting.[1] PPEs provide physical barrier between microbes and wearer. PPEs are designed to protect employees from serious workplace injuries or illnesses resulting from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. They include gloves, surgical masks, head covers, lead aprons, isolation gowns, needle

destroyers, hand disinfectants, safety glasses, safety shoes etc. The Work Health and Safety Regulations, 2012 (SA) states that it is the responsibility of each healthcare worker (HCW) to be familiar with and comply with these protective measures at all times when there is an identified risk of exposure to BBF (blood body fluid). All healthcare settings, regardless of the level of care provided, must make infection prevention a priority and must be equipped to observe standard precautions.[2] Since no data is available on this subject, as no previous researches has been published on the foresaid. By conducting this research to make aware the authorities about the status of utilization of PPEs in our institute. Protection of workers from workplace hazards is crucial to reduce mortality and morbidity in the workplace.

Aims and objectives

To determine the level of knowledge, attitude and practice of universal precautions for control of infection among Health care workers of RIMS, Ranchi.

METHODS

Descriptive Hospital based cross sectional study done in Rajendra Institute of Medical Sciences, Ranchi during the period of November 2018 to January 2019. All paramedical staffs including nurses, physician's assistants, lab technicians, dental and OT assistants of RIMS, Ranchi were study population. Sampling method was Consecutive sampling. A total of 210 paramedical staffs were investigated during our study out of which 181 gave consent to participate from which only 151 respondents completed our questionnaire, so the sample size is 151. Paramedical staffs of all categories who consent to participate and were present at the time of study were included. Exclusion criteria for sampling were newly recruited paramedical staffs (<6 months experience), those who were not willing to participate and those who were not present at the time of study were excluded from the study. We prepared pre-tested semi-structured questionnaires which were put to the respondents during visits and their responses were noted down after taking their consents (Table 1).

Table 1: Knowledge about PPEs of paramedical staffs.

Questions	Criteria	Score
If there is requirement of protection at working place	Yes	1
	No	0
Types of PPEs used at working place	>3	1
	<3	0
When to use the above mentioned PPEs	Know	1
	Don't know	0
Diseases which can be prevented by these PPEs	≥3	1
	<3	0
Total		4

Table 2: Assessment of knowledge scoring.

Scoring out of 4	Knowledge
<2	No
≥2	Yes

Statistical analysis was performed with the help of statistical package for social sciences (SPSS) software. Chi square (χ^2) test was used to find associations and compare different proportions. p value <0.05 was taken to be statistically significant.

Overall scores of each participant were calculated as shown in Table 2.

RESULTS

The present study included 151 paramedical staffs, among maximum no. of nurses (43%) followed by lab technicians (22.5%) and physicians assistants (13.2%). Females 72.8% dominated the examined participants with maximum frequency in 23-27 years of age group. Maximum staffs were from ophthalmology department (15.9%), followed by central laboratory (11.3%) and medicine department (10.6%), based on our criteria about knowledge of PPEs 88.7% (134) of participants had the knowledge while 11.3% (17) did not have (Table 1). 77% (116) of paramedical staffs received formal training while 23.2% (35) didn't. All those who received training (116), 95.68% had the knowledge about PPEs and 4.31% had no knowledge, while out of untrained person, 34.28% had no knowledge and 65.71% already had knowledge about PPEs. P value is <0.05, meaning relation is statistically significant (Table 3).

Departments which always use PPEs are Emergency (50%), Neurosurgery (13.3%), Obstetrics and Gynaecology (8.3%), Pathology (16.6%) and Radiology (10%). Most departments frequently use PPEs. p value is 0.002 which is statistically significant. Those who frequently use PPEs, 89.6% had knowledge while 10.4% did not have (p value is 0.6 which means our relation is statistically insignificant). 85.4% of paramedical staff changes gloves between procedures on same patient (Table 4). Non availability of PPEs inhibit maximum percentage of Paramedical staffs 72% towards use of PPEs followed by lack of information and education 12% and uncomfortable PPEs 5%.

Table 3: Relation between training received and knowledge about PPEs (n=151).

Training	Knowledge		Total	P value
	No	Yes		
No	12	23	35	
YES	5	111	116	0.001
Total	17	134	151	

Table 4: Practices among Paramedical staffs towards PPEs usage (n=151).

Practices of paramedical staffs	Frequency	%
Change gloves between procedure on same patient	129	85.4
Use correct size gloves	108	71.4
Upper end of masks completely fits over the nose	122	80.8
Hair cover completely covers your hair	121	80.1
Tie gown at the back	53	35.4

DISCUSSION

Present study set out to assess the use of PPEs among health workers in a tertiary care institution setting. In our study maximum participants belong to 23-27 years of age group, in which females were more than males. In study Abukhelaif et al also found that more than 40 years female predominant.[9] Nursing is a female dominated profession hence most of the participants were females. We found that 77% Staff got trained and we noted in a study that 85% of the nursing staff was trained in universal health precaution. All those who received training (116), 95.68% had the knowledge about PPEs. In a study by Devalia et al all the nurses knew that HIV is transmitted by parenteral route while only 20 nurses (39%) knew that Hepatitis C is also transmitted through blood.[10] 85.4% of paramedical staff were changed gloves in between two procedures which was slightly differ from Lakshmi et al where gloves were not changed between patients in 95.3%.[11] It may be due to feel little sense of urgency on the issue in the absence of a life-threatening infection. Availability of PPEs important factor for utilization of PPE. In most of the situations more than one PPE is required for protection e.g., facemask, gloves and coveralls may be necessary at same time for standard precaution. We found that 72% reason for not wearing PPE was non availability which was similar to the other studies.[9]

CONCLUSION

From our study it is recommended that proper training should be provided to healthcare workers for universal precaution. Information about universal precaution can be spread in the form of posters in different wards. Personal protective equipment should be available in hospital in enough quantity.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Kiran A, Kumari S, Kujur M, Kashyap V. Study on utilization of personal protective equipments by paramedical staffs: an institutional study at RIMS, Ranchi. Int J Community Med Public Health 2019;6:4447-9.