

A Study to Assess the Usage of Personal Protective Equipment among Health Care Providers Working in Covid-19 Wards in Pune City, Maharashtra

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Abstract

Background: The Protective equipment consists of garments placed to protect the health care workers or any other persons to get infected. All personal protective equipment should be safely designed and constructed, and should be maintained in a clean and reliable fashion. It should fit comfortably, encouraging worker use. If the personal protective equipment does not fit properly, it can make the difference between being safely covered or dangerously exposed. Personal protective equipment (PPE) limits the health care workers contact with all secretions or biological products. This study was planned to find gaps between use of PPE among the health care providers (HCPs) in Pune city.

Methods: A cross sectional design was used to assess the usage of PPE among health care workers selected by purposive sampling. The Data were collected by pretested structured questionnaire. Data analysis was done using SPSS 20 version at 5% of level of significance.

Results: 60 Health care workers were participated in study. Among them, there were 38.9% doctors, 51.9% nurses and 9.2% were technicians. 18.1% health care workers who work outside the ICU had appropriate uses of PPE. It was high among doctors 31.5% followed by nurses 9.3% and technicians 8.2%. which was statistically significant $p=0.001$.

Conclusions: The study showed inappropriate use and poor usage and practice of PPE among HCWs.

Keywords: Personal protective equipment, Health care providers, Infection control

Introduction

Personal protective equipment is designed to protect HCWs from serious workplace injuries or illnesses.¹ PPE provides a barrier between microorganism like Bacteria, virus etc. and health care workers. It offers protection by preventing microorganism from contaminating hands, eyes, clothing, hair and shoes.² A violation in infection control practices increases the chances of transmission of infection from patients to health care workers.

Nosocomial infections spread by direct-contact can be avoided by adapting standard precautions guidelines. Proper use of PPE is the easiest way to prevent contact from secretions and transfer of pathogens. It's needed to assess the level of contour with use of PPE by the various HCWs who make direct contact with client, Hence this study was conducted.

PPE includes gloves, protective eye wear, mask, apron, gown, shoe cover & hair cover. PPE should be used by all health care providers and family members who provide care to patients in hospitals.³

The disclosure of life-threatening infections such as severe acute respiratory syndrome and re-emerging infectious diseases had spotlighted the urge for efficient infection control programs in all health care settings³ and research into standard precautions has been adopted out in many countries.^{4,5}

Methodology

Research approach: Quantitative approach

Research design: One shot case study (cross sectional design)

Sampling technique: Convenience sampling

Sample size: 50

Data collection method: Pretested structured questionnaire

Setting: Various hospitals of Pune city

Analysis: SPSS 20v and summarized by descriptive statistics.

Results

The health care providers included in the study was 50. Among them, there were 38.9% doctors, 51.9% nurses and 98 9.2% technicians.

Among 50 health care providers who worked outside the Critical area, appropriate use of PPE among were only 18.1%.

Table 1: Appropriate PPE use among health care providers outside OT and ICU.

Health care providers	Appropriate use n (%)	Inappropriate use n (%)	Total
Doctors	31.5	68.5	12
Nurses	9.3	90.7	30
Technicians	8.2	91.8	8

Table 1 describes that; appropriate use of PPE was high among the doctors 31.5% followed by nurses

9.3% and technicians 8.2% which was statistically significant ($\chi^2=56.82, p=0.001$).

Table 2: Appropriate PPE use among health care providers inside OT and ICU.

PPE	CCU (n=22) (%)	ICU (n=8) (%)
Gloves	100	100
Mask	100	95.6
Goggles	7.3	4.4
Apron	100	62.3
Gown	100	44.3
Hair cover	100	57.9
Shoe cover	8.3	27.3

Table 2 shows that Health care providers working in CCU and ICU were 22 and 8 respectively. Among the HCPs working in CCU, appropriate use of gloves, mask, apron, gown and hair cover was 100%. But the use of goggles and shoe cover was very low. This was attributed to the fact that goggles and shoe cover was not available.

While doing procedures in Intensive care unit, use of gloves was 100%, mask was 95.6%. but the use of other PPE was very less to the extent that the use of goggles 4.4%, apron 62.3%, gown 44.3%, hair cover 57.9% and shoe cover 27.3%. This was attributed to the fact that the unavailability of PPE and unaware of the importance of goggles.

Fig 1 shows then various reasons given by the health care providers for use of PPE, around 78% Health care workers mentioned the PPE are not Available in their hospitals. 11% of Health care workers were not aware of PPE followed by only 4% of Health care workers did not use PPE because they did not expect any spill in ICU, which makes them more prone to get infection. 2% Health care workers said they only use PPE in case of HIV and Hepatitis B patients.

Discussion

Akbar Ziauddin et al, showed in their study that the knowledge and attitude towards PPE, among the health care workers were 75% to 97% only. But, in practice, it is observed that only up to 80% responded positively⁶

Jeong et al The goggles use was 5% % in this study which was comparable with the study done by 2% and much lower than the study done by Kermode (32%) and Wilson (43.5%).^{6,8,9}

The reason for inaccurate use of PPE was non availability of PPE 88% which was similar to the other studies. But the study done by Sandeep et al described that the reasons were busy schedule, non-use of PPE by co- workers, emergencies, risk that patients may get offended and discomfort while using PPE.

Conclusion

The present study showed accurate use of PPE was very low among health care workers specially nurses.

A violation in infection control practices increases the chances of transmission of infection from patients to health care workers. Steps should be taken to ensure adequate availability and strict infection control guidelines should be followed to improve the same.

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Conflict of Interest: There is no conflict of interest in the study

Ethical Approval: The study was approved by the Institutional Ethics Sub-Committee

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