

Knowledge And Practice Regarding Universal Precautions Among Health Care Workers At A Selected Tertiary Care Hospital In South India

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Abstract

Introduction: Healthcare-associated infections are still a significant concern for healthcare workers (HCWs). This is because the risk of exposure to blood and body fluids is high during their work. Infection control is a challenge for every healthcare setting. Universal precautions are essential in infection control. They protect healthcare providers and prevent the spread of infection from patient to patient as well.

Aim: To determine the level of knowledge and practice of universal precautions among healthcare workers.

Materials and methods: The study used a descriptive research design. Ethical clearance was obtained from an institutional ethics committee, permission was obtained from the concerned authority and informed consent was taken from the study participants. Using a nonprobability convenient sampling technique 100 study participants were selected. Data was collected using a structured knowledge questionnaire and structured self-reported practice checklist. The data were analyzed using descriptive and inferential statistics.

Results: The majority (75%) of the study participants belong to the age group of 22-26, the majority (70%) were females, and the majority (32%) were nurses. The mean knowledge score was 19.11 ± 2.63 . The majority (62%) of the study participants had good knowledge and 38% had excellent knowledge regarding universal precautions. The mean practice score was 66.02 ± 6.14 . All the study participants showed having good practice of universal precautions. The study found a positive correlation between knowledge and practice ($r=0.29$) of healthcare workers.

Conclusion: The study concluded that the majority of the healthcare workers had good knowledge and all had good practices towards universal precautions.

Keywords: Knowledge, practice, health care workers, universal precautions

INTRODUCTION

Healthcare workers are at risk of occupational hazards as they perform their clinical duties. This is because during this course of action, they get exposed to blood-borne infections by pathogens, such as HIV, hepatitis B, and hepatitis C. Slight negligence would lead to injuries from the sharps and contact with deep body fluids. It is said that healthcare-associated infections are the main cause of morbidity and mortality associated with clinical, diagnostic, and therapeutic procedures. [1,2] They are not only a threat to HCWs but also a threat to service users and patients.[3]

The World Health Organization estimates that about 2.5% of HIV cases and 40% of hepatitis B and C cases among healthcare workers worldwide are the results of these exposures.[4] A study reported that overall, 16,000 HCV, 66,000 HBV, and 1,000 HIV infections may have occurred in the year 2000 worldwide among HCWs due to their occupational exposure to percutaneous injuries. The fraction of infections with HCV, HBV, and HIV in HCWs attributable to occupational exposure to percutaneous injuries fraction reached 39%, 37%, and 4.4% respectively.[5]

It was also reported that 248 [27.5%] HCWs had sustained a sharp injury in the given year. Factors including seniority, job category, title, education, department, and training programs were associated with the occurrence of sharp injuries.

According to the stepwise logistical regression, seniority, and training programs were the risk factors associated with the occurrence of sharp injuries. Of 248 sharp injuries, 130 HCWs were exposed to blood. Only 44 (33.9%) HCWs reported their injuries to the concerned body. The main reasons for not reporting the sharp injuries were the perception that the extent of the injury was light (30.2%), having antibodies (27.9%), and being unaware of the injury (16.3%).[6]

Protecting both healthcare personnel and patients from blood-borne diseases in the healthcare setting will create an environment supporting rational treatment of people regardless of their infected status. Unfortunately, it is observed that few health service providers whether public hospitals or private nursing homes provide inadequate equipment to their staff. As a result, the adherence to universal precautions by health workers is unsatisfactory. [7] Healthcare organizations take different actions to strengthen infection prevention measures. The measures mainly focused on bringing up-to-date information and practical interventions in the area of infection prevention. Despite these efforts, in some countries infection prevention activities are low. [8,9,10] To protect themselves and their patients, HCWs need to follow universal precautions. Universal precautions are a standard set of guidelines to prevent the transmission of bloodborne pathogens from exposure to blood and other potentially infectious materials. They also protect the HCWs from nosocomial infections and occupational hazards. [11]

Universal precautions are recommended to prevent transmission of infection in hospitals. However, their implementation is dependent on the knowledge and attitudes of healthcare workers. [12] A study on universal precautions among health care professionals showed that Knowledge regarding transmission risks of blood-borne infections (HIV, HCV, HBV) among HCWs is higher compared to Dental Health Care Workers (DHCWs) (for HIV 73% vs 45.3%, for HCV 49.2% vs 37.9% and HBV 54.8% vs 33.7%) ($p < 0.005$). The vast majority of DHCWs as well as HCWs believed that the probability of transmission of blood-borne infections after a contaminated needle stick is 50-70% ($p < 0.05$). There was poor knowledge of the availability of post-exposure prophylaxis (42.9% of HCWs compare to 36.1% DHCWs believed that HCV post-exposure prophylaxis is available) ($p < 0.005$). The practice of using facemasks (81% vs 74.4% always use, respectively), protective clothes (96.8% vs 83.3% always use), and eyewear (46.9% vs 27.4% always use) were reported by DHCWs and HCWs. Some nosocomial risk events were reported by a higher proportion of DHCWs, compared to HCWs, and included accidental needle stick injuries (65.1% vs 45.5%) and blood splashes (48.3% vs 28.2%). Cuts with contaminated instruments were more common among HCWs compared to DCHWs (41.4% vs 35.1%) during medical procedures. The study suggests that the level of knowledge on blood-borne infections among both HCWs and DHCWs is not adequate.[13]

Yet another study where a total of 290 HCWs participated (76% response rate), including 111 (38.3%) doctors, 147 (50.7%) nurses, and 32 (11%) laboratory scientists. Overall median knowledge and attitude scores toward standard precautions were above 90%, but the median practice score was 50.8%. The majority of the HCWs had poor knowledge of injection safety and complained of inadequate resources to practice standard precautions. House officers, laboratory scientists, and junior cadres of nurses had lower knowledge and compliance with standard precautions than more experienced doctors and nurses.[12]

Literature also reveals that the most important factor influencing universal precautions practice is the lack of provision of adequate protective equipment. Other factors, all of which show a significant difference between the doctors and nurses ($p < 0.05$), include carelessness; lack of display of universal precautions guidelines; emergency nature of the procedure; insufficient water supply; patient perceived to be at low risk of bloodborne pathogens; the pressure of time; and universal precautions equipment interfering with technical skills. [14]

Having adequate knowledge is a prerequisite for implementing universal precautions in healthcare facilities. Poor knowledge about universal precautions among HCWs is the most common responsible reason for low adherence to implementing universal precautions in various healthcare facilities. [15,16,17] Hence, the present study tried to determine the level of knowledge and practice regarding universal precautions among different HCWs working in a tertiary care hospital.

METHODOLOGY

Materials and methods

The present descriptive was conducted at a 1050 bedded multispeciality tertiary care teaching hospital. Ethical approval was obtained from the Institutional Ethics Committee (Protocol No: YEC 2 / 931). The study population comprised doctors, nurses, laboratory technicians, pharmacists, physiotherapists, and dialysis technicians of the hospital.

A convenience sampling technique was used to select healthcare workers as study participants. [Sample size was calculated using a single population proportion with 95% power and 5% level of significance, the estimated sample size was 96. But the investigators selected 100 study participants. G* power was used in the calculation]. It was ensured that different categories of HCWs were taken as samples. HCWs between 25 to 60 years of age, able to communicate in the English language were selected for the study. HCWs who have undergone training programs regarding universal precautions and infection control and Hospital infection control nurses were excluded from the study.

Study procedure

Formal permission from the concerned hospital authority was obtained for the study. Informed consent was taken from the participants. The tool was administered to the sample and they took around 20-25 minutes to complete the questionnaire. Knowledge of HCWs was assessed by a structured knowledge questionnaire on universal precautions

consisting of 25 items. A practice checklist was used to assess the practice toward universal precautions which comprised 27 items. It was a self-reported practice. The demographic proforma of study participants had 5 items. These tools were validated by subject experts and were found reliable.

Investigators arbitrarily graded the knowledge based on the scores obtained as Excellent (17-25), good (9-16), and poor (≤ 08). For the practice checklist, the maximum possible score was 81 and it was graded as good practice (≥ 40) and poor practice (< 40).

RESULT

Data in Fig 1 shows the age of health workers, figure 2 gender of health workers, figure 3 is the different groups of health care workers, and figure 4 shows the years of experience of HCWs. The study showed that the majority (59%) HCWs received information from healthcare personnel.

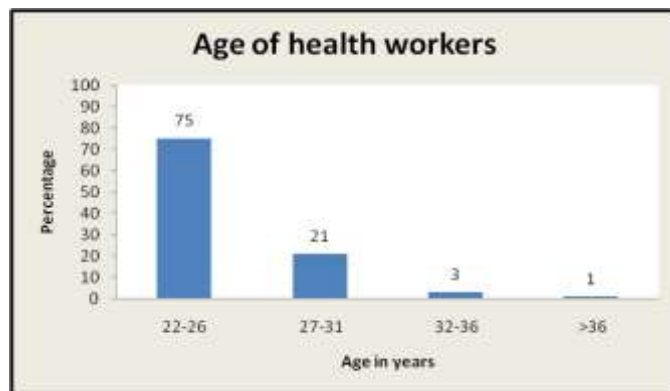


Fig 1: Bar diagram showing the age of health workers

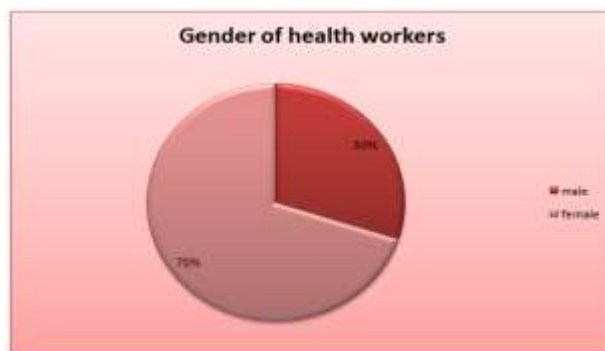


Figure 2: Pie diagram showing the gender of health workers

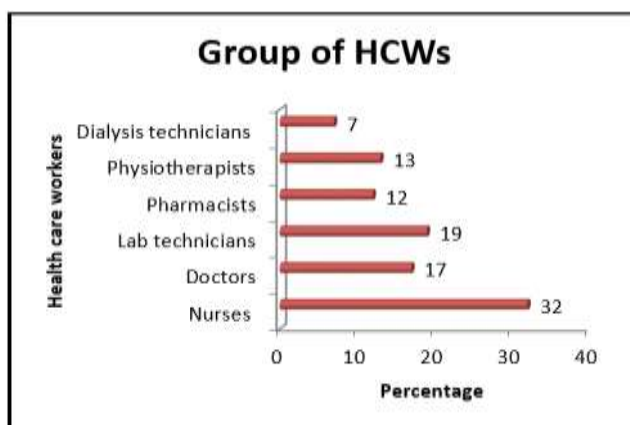


Figure 3: Bar diagram showing the group of health care workers

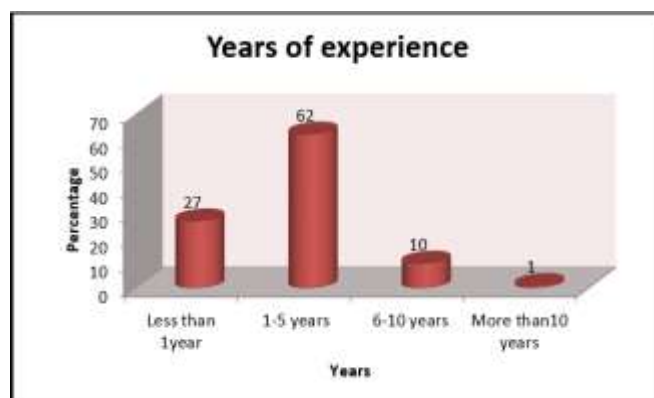


Fig 4: Cylindrical diagram showing the years of experience of HCWs

Table 1: Mean, standard deviation, median knowledge and practice scores of health workers regarding universal precautions.

Variables	Maximum possible score	Mean \pm SD	Median	Mode	Range
Knowledge	25	19.11 \pm 2.63	19	18	12-25
Practice	81	66.02 \pm 6.14	65.50	65	51-81

Data in table 1 shows that the Mean \pm SD of knowledge scores is 19.11 \pm 2.63, with a range of 12-25 whereas the Mean \pm SD of practice scores is 66.02 \pm 6.14, with a range of 51-81. The present study showed that the majority (62%) of the study participants had good knowledge and 38% had excellent knowledge regarding standard precautions whereas all the study participants had a good practices.

The study also found that there is a positive correlation ($r=0.29$) between the knowledge and practice of HCWs but the findings did not show any significant association of knowledge score, or practice score, with selected demographic variables ($p>0.05$).

Table 2: Comparison of mean knowledge and practice scores of HCWs and correlation between knowledge and practice scores

Sl No	Group of HCW	Number of HCWs	Mean \pm SD of Knowledge scores	Mean \pm SD of Practice scores	Correlation between knowledge & practice
1	Doctors	17	18.88 \pm 2.69	65.24 \pm 6.02	$r=0.32$
2	Nurses	32	18.59 \pm 2.35	66.31 \pm 6.90	$r=0.22$
3	Lab technicians	19	19.79 \pm 2.95	66.79 \pm 6.37	$r=0.76$
4	Pharmacists	12	18.75 \pm 2.99	65.33 \pm 4.96	$r=-0.07$
5	Physiotherapists	13	19 \pm 2.52	63.54 \pm 4.82	$r=-0.32$
6	Dialysis technicians	7	21.14 \pm 1.77	70.29 \pm 5.22	$r=-0.13$

Data in table 2 shows that the dialysis technicians have higher mean scores for knowledge and practice as compared with other HCWs. The study has also shown that there is a positive correlation between the knowledge and practice of doctors ($r=0.32$), nurses ($r=0.22$), and lab technicians ($r=0.76$) but a negative correlation between the knowledge and practice of pharmacists ($r=-0.07$), physiotherapists ($r=-0.32$) and dialysis technicians ($r=-0.13$).

DISCUSSION

Following standard precautions is the most effective and simple way to prevent infection in the hospital. Standard precaution protocols are the recommendations designed to prevent or minimize exposure to infectious agents by hospital staff, patients, and their visitors. It is essential to assess the knowledge, attitude, and practice of standard precautions by healthcare workers which is a prerequisite for initiating and implementing a successful infection prevention and control strategy in hospitals.

The present study has shown that the majority (62%) of the study participants had good knowledge and 38% had excellent knowledge regarding standard precautions whereas all the study participants had a good practices. The literature shows that HCWs possess variable knowledge, attitude, and practice of standard precautions according to their professional group and duration of professional experience, among other factors. It is seen that longer duration of professional experience, knowledge, and training in standard precautions, and high-risk perception have all been associated with

improved compliance with standard precautions among health workers. [18] The majority of studies from around the world have reported higher compliance with standard precautions among nurses than doctors. [14,19,20,21,22] whereas a few others have not. [23,24,25] Yet some studies have reported different levels of knowledge, attitude, and practices related to standard precaution among nurses. [12,19,26,27,28,29,30,31] Another study has shown an overall low understanding of universal precautions among healthcare staff and medical students. [33]

The knowledge and practice of healthcare workers may depend on their work experience and educational status as well. A study finding has indicated that 69.7% of participants had a high knowledge concerning standard precautions. This is probably due to the respondent's years of experience. Most of the respondents had more than six years of experience. The more years of experience they have, the more knowledgeable they are. In addition, almost half of the respondents, i.e., 47% of respondents, have basic exposure/ training in infection control practices which contributes to extra knowledge compared to others. [34] Yet another study found that three-fourth (74.3%) of the healthcare workers had good knowledge of standard precautions. Good knowledge of standard precautions refers to scoring correct responses to > 60% of knowledge items from the survey. Year of service (AOR: 0.27, 95% CI: 0.16 to 0.44), and educational status (AOR: 1.7, 95% CI: 1.13 to 2.56) were among the predictor variables. In addition, physicians were 6.97 times more likely to be knowledgeable (AOR: 6.97, 95% CI 2.42 to 20.12) than laboratory technician/technology counterparts. Study participants working in medical, Gynecology /obstetrics, pediatrics wards, and OPD were about 2.23, 4.27, 2.81, and 2.52 times more likely to be knowledgeable than study participants working in the surgical ward. [35]

Even though awareness regarding universal precautions exists among HCWs, many a time their practice may not be good enough. A study has reported having awareness about universal precautions and personal protective equipment among nurses. But only 44.3% of nurses mentioned all the correct measures for universal precautions. 89.77% of nurses were aware of the health hazards of needle stick injury but only 67.05% correctly reported how needle stick injury can be prevented. 38.64% of nurses had experienced needle stick injury while working and most of them (79.41%) followed proper guidelines. [36]

The present study showed that dialysis technicians have higher mean scores for knowledge and practice as compared with other HCWs. These findings are contradicted by a study that was conducted on 290 HCWs, including 111 (38.3%) doctors, 147 (50.7%) nurses, and 32 (11%) laboratory scientists. Overall median knowledge and attitude scores toward standard precautions were above 90%, but the median practice score was 50.8%. The majority of the HCWs had poor knowledge of injection safety and complained of inadequate resources to practice standard precautions. House officers, laboratory scientists, and junior cadres of nurses had lower knowledge and compliance with standard precautions than more experienced doctors and nurses. [37]

Limitations

The study was limited to a single setting in a specific geographic area and the limited sample size imposes limits on larger generalizations.

CONCLUSION

Our study findings suggest that professionals do have good knowledge and practice regarding universal precautions. Healthcare institutions must ensure that all the HCWs in their institution strictly follow universal precautions so that the patients as well as the healthcare professionals are protected from infection. It has shown that knowledge and training in standard precautions, high-risk perception, and longer duration of professional experience be associated with improved compliance with standard precautions among health workers. Therefore the HCWs must be allowed to attend continuing professional education programs which will upgrade their knowledge and practice regarding standard precautions.

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