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A Study on Prevalence of Practice of Universal Precautions Among Health Care Workers in Medical College, Jhansi (U.P)

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Abstract

Following Universal Precautions are the most important measure to prevent nosocomial infection. Because of the environment in which health care workers (HCWs) work, they are at an increased risk of nosocomial infection. Assess the prevalence of practice of Universal Precautions (UPs), use of personal protective equipment and perceived barrier to compliance with UPs among HCWs. Hospital based cross sectional study was conducted during July to October 2014 among HCWs in Medical College, Jhansi. 100 HCWs were selected by simple random sampling. The collected data was entered in M.S Excel and analyzed in SPSS 16 trial version. Chi-square test was used for comparing the proportion and statistical significance was taken at *P* value <0.05. Study shows that nurses have an overall low level of correct knowledge about the use of UPs as compared to doctors. In the study 62% of HCWs were following UPs. Perceived barriers to compliance with UPs are too busy to use personal protective equipments (PPEs), not using PPEs as colleagues do not use it. Multifaceted approach promoting positive perception of UPs compliance should include training (initial and periodic), adequate supply of post- exposure prophylaxis, provision of hepatitis B vaccination.

Keywords: Universal precautions, nosocomial infection, personal protective equipments, health care workers

Introduction

Following Universal Precautions are the most important measure to prevent nosocomial infection, but the compliance is still low. Because of the environment in which health care workers (HCWs) work, they are at an increased risk of nosocomial infection. Nosocomial infections can be defined as those occurring within 48 hours of hospital admission, 3 days of discharge or 30 days of an operation. Infections acquired in the hospital account for major causes of death, morbidity, functional disability, emotional suffering and economic burden among the hospitalized patients.[1] These nosocomial infections (NI) occur among 7-12% of the hospitalized patients globally with more than 1.4 million people suffering from the infectious complications acquired in the hospital.[2] Healthcare workers (HCWs) are potentially exposed to blood and body fluids (BBF) in the course of their work and therefore are at risk of infection with blood-borne pathogens. Worldwide, three million HCWs experience percutaneous exposure to blood-borne viruses each year (two million hepatitis B, 900,000 hepatitis C and 300,000 human immunodeficiency virus). [3]Exposure to BBF can occur through a percutaneous injury (needle-stick injury, NSI) or mucocutaneous incident (BBF splash). Awareness regarding this occupational risk led to the issue of guidelines by CDC as universal precautions (UPs) in 1987, later updated in 1996. [4] Evidence exists that compliance with UPs reduces the risk of infections and protects healthcare practitioners.[5,6] In developing countries, including India, the situation is worse and occupational safety of HCWs remains a neglected issue.[7,8] In India, very few studies, with varying focus, have been conducted in this field. Thus, the present study was conducted to assess the prevalence of practice of Universal Precautions (UPs) among HCWs, to assess the use of personal protective equipment among Nurses and Doctors and perceived barrier to compliance with UPs.

Material and methods

This was a hospital based cross sectional study conducted in Medical College, Jhansi, a tertiary care hospital. The study was conducted for the period of four months during July 2014 to October 2014. The study was conducted on 100 HCWs. The HCWs were selected randomly using simple random technique. A questionnaire was prepared based on the W.H.O and C.D.C guidelines on Universal Precautions and was pretested. In the study, Doctors and nurses from all wards of Medical College were included. Consent was taken from the HCWs prior to study. HCWs were also studied in OPDs, injection room, emergency room and plaster room. They were interviewed face-to-face and then questionnaire was filled. Every data were treated carefully and privately with no name tag in it. After getting through literature, where expected prevalence of correct knowledge regarding UPs to be 50%. [9]The sample size was calculated using the formula:

$n = 4pq/L^2$ [10], where n= sample size, p= proportion in the population processing the characteristic of interest, L=absolute error, q = (1-p)

Considering 95% confidence interval prevalence of correct knowledge regarding UPs to be 50% ("p" of 50%) and taking "L", absolute error in the estimate of "p" as 10%, the sample size was calculated to be 100. A total of 100 health care workers were selected for this study by simple random sampling

*Statistical Analysis***:** The collected data was entered in M.S Excel and analyzed in SPSS 16 trial version. Chi-square test was used for comparing the proportion and statistical significance was taken at *P* value <0.05.

Results

In the current study overall knowledge of UPs was good among HCWs. Doctors had better knowledge of UPs than nurses. Compliance to UPs was high among doctors as compared to nurses.

Table 1 describes the knowledge towards universal precautions (UPs) among HCWs. It shows that misconceptions persist despite a high level of awareness regarding UPs. There is high level of knowledge of UPs being effective, mask and eye protection are required for protection from splash. Nurses had an overall low level of correct knowledge towards UPs as compared to doctors.

Compliance to UPs among HCWs is shown in Table 2. There is a high level of compliance with correct disposal (87%) and hand washing (66%). Nurses have low level of compliance as compared to doctors. As shown in the table compliance to hand washing was 68% in doctors compared to 64% in nurses. Compliance to no needle recap always was seen 60% of doctors; the same was seen in 38% of nurses. Correct disposal always compliance was seen in 90% doctors compared to 84% in nurses.The perceived barriers to compliance with UPs, like too busy to use personal protective equipment (PPE) and not using PPE as colleagues do not use it, may offend patients, and discomfort in PPE use was seen to be statistically significantly higher in nurses as compared with doctors ($P < 0.000$).

Discussion

Hospital administrators should strive to create an organizational atmosphere in which adherence to recommended UPs practices is considered an integral part of providing high-quality care. For such an approach to be successful, hospitals must provide visible support and sufficient resources in the form of continuous education. [11] The strategies should be designed to suit the specific need and the expected outcome for that particular category of HCWs. [12]The present study shows that most of the HCWs in tertiary health care facility (HCF) in India possessed incomplete knowledge, as shown by other studies in developed [13] as well as

developing countries, including India. [7-9] This lack of appropriate knowledge may be a factor leading to a high level of anxiety among them regarding exposure to BBF and NSIs.

In our study findings of a low level of compliance with UPs among HCWs have also been noted in other studies.[7,9,13,14] It seems probable that an incomplete understanding of the principles underlying UPs among tertiary HCWs affected their practices and led to reduced compliance than expected in this group.HCWs inability and unwillingness to comply with UPs practice could be influenced by their perceived barrier to compliance with them. Inability to use PPE during emergencies, overwork and busy schedules have also been shown in other studies. [8,9,15,16] The other reasons for non-compliance overlap with those reported in studies from developed and developing countries.[7-9,13,14] The level of compliance seen in this study could also be due to the low level of training received by the HCWs and the low availability of equipment, as shown by other studies.[15]

Conclusions

The study shows that nurses have an overall low level of correct knowledge about the use of UPs as compared to doctors. In the study 62% of HCWs were practicing UPs. Perceived barriers to compliance with UPs are too busy to use personal protective equipments (PPEs), not using PPEs as colleagues do not use it, may offend patient. The range of barriers between 42-68% for nurses and 12-24% for doctors. Discomfort in PPE use was seen to statistically significantly higher in nurses as compared to doctors.

Recommendations

The overall usage was high among the HCWs in the study, but they were not using the methods regularly. This attitude should be changed by appropriate health education. A multifaceted approach promoting positive perception of UPs compliance should include training (initial and periodic). Adequate supply of post- exposure prophylaxis, provision of hepatitis B vaccination and development of appropriate infection control and injury surveillance programmes.

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Tables:

Table 1: Knowledge of HCWs towards U.Ps

	Doctors		Nurses		Total	
	N	%	N	%	N	%
UPs effective	50	100	42	84	92	92
Mask required for protection from splash	50	100	40	80	90	90
Eye protection required for protection from splash	50	100	37	74	87	87
Perceive own risk of HIV as high	20	40	33	66	53	53
Perceive own risk of HCV as high	25	50	22	44	47	47
Mandatory routine testing of all patients undergoing surgery	40	80	42	84	82	82
Reporting splashes and NSIS	43	86	18	36	61	61
Always putting needles in sharp containers	45	90	41	82	86	86

TABLE 2: Compliance to U.Ps among H.C.Ws

	Doctors		Nurses		Total	
	N	%	N	%	N	%
Hand washing always	34	68	32	64	66	66
No needle recap always	30	60	19	38	49	49
Correct disposal always	45	90	42	84	87	87
Wiping spills always	20	40	37	74	57	57
Cover broken skin always	25	50	21	42	52	52

TABLE 3: Perceived barrier to compliance with U.Ps

Perceived barriers	Doctors	Nurses	Chi-square	P value
Too busy to use PPE	10	26	11.1	0.0008*
May offend patients	6	21	11.4	0.0007*
Discomfort in PPE	9	25	11.4	0.0007*
Colleague don't use it	12	34	19.5	0.000*

* P value <0.05 i.e. statistical significant

df = 1