

To Study the Awareness about Universal Health Precautions among Nursing Professionals in a Medical College Hospital of India

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Abstract

Background: The universal health-care precautions (UHP) aim at preventing health-care workers contact with blood and other body fluids by performing various infection control practices such as handwashing, wearing gloves and mask, safe disposal of infectious waste, and safe cleansing of used instruments. **Objective:** The study was conducted to assess the knowledge and awareness among nursing professionals regarding UHPs. **Methodology:** It was a cross-sectional study done on nursing professionals across all seniority and from various specialties including superspecialties. A pretested questionnaire consisting of 25 questions was used as a study tool. **Results:** There were a total of 550 respondents. The mean knowledge score of the respondents was 17.31 (range: 6–24). The mean score was 69.25% of the total achievable score. In the subgroup analysis, respondents above 60 years of age, married, females, urban residents, and nursing sisters scored better than the middle-aged professionals, unmarried, males, rural residents, and staff nurses. **Conclusion:** The study concludes important clues for further research and interventions. As the nursing professionals are learning about UHP from practical exposure rather than formal teaching, it is pertinent to address this issue through well-planned formal sessions of training workshops and lecture discussions.

Keywords: Health-care worker, hospital-acquired infection, knowledge, nursing professionals, personal protective equipment kit, universal health-care precautions

INTRODUCTION

The universal health-care precautions (UHPs) aim at preventing health-care workers (HCWs) contact with blood and other body fluids by observing various infection control practices such as handwashing, wearing of gloves and mask, safe disposal of infectious waste, and safe cleansing of used instruments. Any body fluid may have injurious microorganism and hence the scope of universal precautions is expanded and this term is replaced with standard precautions.^[1] The poor compliance to universal precautions may cause harm to patients and simultaneously may lead to occupational illness/injury to HCWs.^[2,3] The developing nations account for the maximum prevalence of HIV-infected patients and needlestick injury in the world.^[4] The WHO estimates that 2.5% of HIV cases and 40% of hepatitis B virus and hepatitis C virus cases in health-care professionals are due to work-related hazards.^[5] A study^[6] has revealed

that correct use of UHPs has resulted in substantial decline in professional exposure to blood. However, another study^[7] reported that compliance with universal precautions among HCWs is usually poor. The poor compliance was attributed to poor knowledge about various facets of universal precautions.^[8] Among HCWs, the nursing professionals are most affected by occupational hazards, being exposed to potentially contaminated items including sharps during patient care activities.^[9-11] In a study carried out at urban

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and rural health settings of Ahmedabad city, it was found that 80% of study participants were aware about different hand hygiene approaches and merely 30% of doctors and 7% of nursing professionals were mindful about the use of personal protective equipment (PPE).^[12] However, in some other research work carried among HCWs of rural North India, the knowledge and understanding of UHPs was found partial and their compliance was testified as suboptimal.^[13] The study carried out in Ethiopia reported that 65.0% of HCWs showed compliance with UHPs.^[14] However, on the other hand, the study carried out in Nigeria reported that 95% of HCWS followed hand hygiene practices, 33% of HCWs practiced recapping of used needles, and 64% of HCWs used PPE.^[1]

Hence, awareness among nursing staff regarding various aspects of UHPs is vital for preventing these hazards. On review of indexed literature, very few studies are available on this topic, particularly in relation to developing countries like India. With this background in mind, this study was planned to assess the awareness regarding UHPs among nursing professionals. The study also aimed to find an association between the knowledge differential and selected variables for assessing the future needs of training (if any). The permission was obtained from the institute ethics committee before conducting this study.

METHODOLOGY

This was a cross-sectional study. The study population included nursing professionals working in various specialties of a tertiary care hospital of northern India. In our study, 50% of the nursing personnel on roll of the institute were included. Sampling frame consisted of a list of all nursing professionals obtained from nursing superintendent's office. By following a convenient sampling technique, a requisite number of participants were selected from each department. A self-administered questionnaire was used as a study tool. The questionnaire was pilot tested among 20 different experts for checking its validity and modified accordingly. The experts involved in pilot testing were excluded from the study. Written informed consent from selected nursing professionals was taken individually, and they were given the questionnaire to fill at their earliest available time, preferably within a week. The participants who failed to fill the questionnaire in 1-week time were reminded once every week, till a maximum of three times, to get the filled questionnaire back. Participants who still failed to respond were dropped and the next participants were chosen from the list by convenient sampling technique. All questions were scored. Each correct response was given a score of one. Wrong answers and unanswered questions were given zero marks. The overall mean score (95% confidence interval) was calculated for all participants.

RESULTS

There were a total of 550 respondents. It was observed that 40% of participants were in the age group of 31–40 years

followed by 34% participants in the age group of 20–30 years, 93% were females, 91% were married, 88% were from urban backgrounds, 55% were nursing diploma holders followed by 31% of BSc nursing degree holders, and 76% were staff nurses.

The mean knowledge score of the respondents was 17.31 (range: 6–24). The mean score was 69.25% of the total achievable score [Table 1].

The ANOVA test was applied for evaluating the knowledge differential among different subgroups. The knowledge score varied from 66% (41–50 years' age group) to 75% (>60 years' age group). The respondents in the age group of more than 60 years had higher knowledge than the respondents in the age group of 41–50 years ($P = 0.104413$). Females had higher knowledge score (70%) compared to males (63%), and the difference was statistically significant ($P = 0.000029$). Knowledge score was higher for married participants (69.5%), compared to unmarried (67%), and was not statistically significant ($P = 0.063733$). The respondents from urban areas had a statistically higher knowledge score (70%) than those from the rural background (knowledge score = 65%) ($P = 0.000095$). Postgraduate degree holders had the highest knowledge score of 19 (76%), which was statistically significant ($P = 0.014664$). The nursing sisters had significantly higher knowledge than staff nurses ($P = 0.001509$) [Table 2].

It was found that knowledge of nursing professionals about various components of infection chain, importance of universal precautions, nosocomial infection, hand hygiene, and hospital waste classification was very good (score more than 70%). Knowledge was good about ideal duration of medical and surgical handwashing and doffing order of PPE (score between 60 and 70%). However, knowledge was fair (score: 50%) about the disposal of used PPE kit and was average (score between 40 and 50%) about handwashing practice in labor room, different steps involved in handwashing, correct sequence of donning of PPE, and treatment of hospital sharp waste.

DISCUSSION

All HCWs must fully understand different aspects of universal precautions. However, not many studies are available on this subject related to nursing professionals of developing countries. Therefore, this study was conducted among nursing professionals of tertiary care, teaching, research, and referral hospital of northern India. We found that the overall mean knowledge score in our study was 69.25% of the total achievable score. This score was higher than that of Fayaz *et al.*,^[15] wherein the mean knowledge score of doctors and other staff for UHP was 47%. The score was less than that achieved by nursing professionals at Punjab in a study by Kaur *et al.*^[16]

The present study has generated some important differentials in the knowledge scores. Respondents above 60 years of age, married, females, urban residents, and nursing sisters scored better than the middle-aged professionals, unmarried, males,

Table 1: Descriptive statistics showing overall mean knowledge score

	<i>n</i>	Minimum-maximum	Mean	SEM	SD	95% CI of mean
Knowledge score	550	6.00-24.00	17.31	0.11	2.53	17.10-17.52

SD: Standard deviation, SEM: Standard error of mean, CI: Confidence interval

Table 2: Analysis of variance for association of knowledge scores with age group, sex group, marital status, place of residence, designation, and educational qualification

Parameter	<i>n</i>	Mean	SD	<i>F/t</i>	<i>P</i>
Age group (years)					
20-30	184	17.27	2.69	1.93	0.10
31-40	218	17.37	2.38		
41-50	52	16.58	2.72		
51-60	89	17.57	2.33		
>60	7	18.71	2.98		
Sex group					
Male	39	15.70	2.27	-4.21	0.00
Female	511	17.44	2.51		
Marital status					
Married	501	17.38	2.46	1.86	0.06
Unmarried	49	16.68	3.15		
Place of residence					
Urban	485	17.47	2.53	3.93	0.00
Rural	65	16.17	2.25		
Designation					
Staff nurses	420	17.30	2.48	6.57	0.00
Nursing sister	120	17.58	2.67		
Others	10	14.60	1.35		
Educational qualification					
GNM	304	17.32	2.48	3.54	0.02
B.Sc.	172	17.23	2.51		
M.Sc.	20	19.00	2.41		
Others	54	16.91	2.71		

Designation Others: Assistant nursing superintendent, deputy nursing superintendent, DNS. Education qualification others: Ph.D., post basic. GNM: General nursing and midwifery, SD: Standard deviation

rural residents, and staff nurses. The postgraduates also scored better than the graduates. The findings are compatible with the study conducted by Abdulraheem *et al.*,^[17] which reported that female HCWs had better knowledge of UHPs compared to male HCWs. Similar findings were also reported by Yassi *et al.*^[18] The finding that respondents above 60 years of age had higher knowledge about UHP than their younger colleagues was in conformity with the finding of a study by Mohd-Nor *et al.*^[19] However, this finding was contrary to the findings of a study conducted by Motamed *et al.*^[20] which showed that the age group of 20–30 years had the highest knowledge of UHPs. Better knowledge scores in some categories compared to others could be because of greater exposure to the subject in the former compared to the latter. This exposure can be due to better training or/and practical exposures.

It is encouraging to note that in the present study, the knowledge score was very good for various components of infection chain,

importance of universal precautions for nursing professionals, nosocomial infection, hand hygiene, etc., The findings of the present study are supported by few other studies,^[21-23] where every participant knew that appropriate handwashing diminished the likelihood of spread of infection. The present study showed fair knowledge about treatment of hospital sharp waste among respondents which was in agreement with the finding of Chaudhuri *et al.*^[24] which revealed that respondents had little knowledge about safe disposal of needle sharp.

Limitation of this study

This was a single-center-based study. Furthermore, most of the respondents had undergone similar kinds of training sessions, so the uniformity could have been attributed to the same.

CONCLUSION

Subgroup analysis scores and differences generated in the study should be absorbed with caution as sample size was not calculated for this subgroup analysis and thus was not sufficient for valid interpretations. Nonetheless, this explorative analysis has shed some important clues for further research and interventions. First, as probably nursing professionals are learning about UHP from their practical exposure rather than formal teaching, it is pertinent to address this issue through well-planned formal sessions. Seminars at regular intervals on UHP should be conducted so that nurses across all levels of seniority can learn about the universal precautions. It should be made a mandatory topic of induction training of the nurses. Further, a system of regular medical audit should be instituted to document whether nurses are correctly practicing UHP.

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Conflicts of interest

There are no conflicts of interest.

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