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STUDY OF KNOWLEDGE, ATTITUDE AND PRACTICES OF UNIVERSAL PRECAUTIONS AMONG HEALTH CARE WORKERS IN RURAL HOSPITAL DELHI.

Medical Science

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ABSTRACT

Background: Occupational transmission of blood borne pathogens has been emerged as a potentially significant hazard for health care workers (HCWs). There is a gap in knowledge, attitude and practices regarding universal precautions among health care workers. Having good knowledge, attitude and practices reduces the risk of transmission of blood borne pathogen to health care workers in hospital.Objective: To assess knowledge, attitude and practices of health care workers regarding universal precautions in a rural hospital of Delhi.Methods: A cross sectional study was carried out for one year at a rural hospital in Delhi on 230 health care workers (HCWs). Structured pre-designed pretested, questionnaire were administered to randomly selected 155 HCWs of hospital. Data collected and analyzed by using SPSS-17. Ethical approval was taken from institutional ethical committee. Results: Out of 230 HCWs, 155 HCWs were selected randomly. Response rate was 67.4%. Majority of HCWs were in the age group of 30.3 years ±5.6 (mean age ±SD) Almost half (54.2%) of study population comprised of female. Most of them were nursing staff. Majority HCWs in this study took education up to senior secondary and they have respective professional qualification. Mean years of experience in service 4.8 ± 3.7 (mean in ±SD). Statistically significant numbers of HCWs took HBV vaccine and received training regarding universal precautions ($p < 0.05$). Almost all (95.4%) HCWs knew that HBV HCV & HIV can transmit through blood and body fluids and have very positive attitude. Practice of HCWs was poor as compare to knowledge and attitude.Conclusions: Nursing staff have best KAP among HCWs. Paramedics & group-D workers need frequent training. Nursing staff could be act as roll model for other HCWs.

KEYWORDS:

Universal precautions, Knowledge Attitude Practices and health care workers.

Introduction: HIV/AIDS, HBV and HCV infection have progressed to become a world-wide epidemic.1 Once disease occurred there is no cure and hence it creates fear across the globe.2 Prevention is the only weapon available against these diseases. This is especially important in a health care setting.3,4 Health care workers (HCWs) are continuously exposed to potentially risky situations. Four million infections will results from unsafe blood transfusion, unsafe medical injections and other procedures performed in the absence of universal precautions.6 Occupational exposure to blood borne pathogens are common in the developing world. A survey assessing exposure to HIV among HCWs in South Africa showed that 13% of the staff reported accidental exposure when caring for HIV-positive patients.7 CDC recommended universal precautions is better approach to this problem and the recommendation of CDC are accepted by many countries.5 There is a growing burden of blood borne diseases particularly in the developing nations like India. The "Universal Precaution" principle is the simple measure to prevent infections among each and every person. Universal precautions means blood and body fluids of each and every person should be considered as infected with blood borne pathogens regardless of status of the person whether S/he was infected or not.1,2 So HCWs must have better knowledge, attitude and practices of universal precautions. Even though, very few researches touch such important topic. To fill gap in this relevant area this study was planned & carried out to assess knowledge & attitude of HCWs which in turns results into better practices of universal precautions.

Methods: A cross sectional survey was carried out for one year at tertiary care hospital in Maharishi Valmiki Hospital Pooth Khurd in North-West District of Delhi, Rural Health Training Centre (RHTC) of Maulana Azad Medical College, New Delhi. Department-wise information of all HCWs was collected. Administrative permission was granted for this study from Medical Superintendent of hospital. All HCWs were request to take part in study through hospital administrative support. Questionnaire was prepared with the help of through literature review. Structured questionnaire were designed & validity of the questionnaire was assessed using the opinion of experts from our institute. Again pilot study was carried out on 30 HCWs of different hospital to check validity and reliability of questionnaire. Ambiguous, complex and unclear questions which are difficult to interpret by HCWs were made simple by sitting with HCWs. Again questionnaire were put in front of expert of our college for review, criticism and required suggestions. All suggestions were welcome. In this way questionnaire were modified as per input received from them. Questionnaires were translated into local hindi language.

Finally structured, pretested & pre-designed questionnaire was introduced to all HCWs of hospital. Questionnaire was distributed in closed envelope with request letter to participate in the study and gave genuine and serious response. HCWs have to filled the questionnaire and return them to investigator. Those who returned the questionnaire were considered as their implied consent. It divided in four parts as follow:

1)Part I, comprised of demographic data such as age, sex, designation (nursing staff, paramedical staff and group-D workers), level of general education, professional qualification, years of experience, HBV immunization status of HCWs whether training of universal precautions received or not, if received then time elapsed since training.

2) Part II, included four questions of universal precautions knowledge (Know Universal Precautions principle, Can HIV, HBV & HCV transmitted through blood and body fluids, Is hand washing required before touching patient & Availability of PEP* facility in your hospital).

3)Part III, contain four statement of HCWs' attitude towards universal precautions using (Reporting to concern authority is must after exposure to blood & body fluids, Apron should be put on in hospital, Gloves should be worn while handling blood & body fluids & Hand should be washed after contact with patient.).

4) Part IV, includes 4 statements to check practices of HCWs of universal precautions such as (Wear PPE* while patient handling, Correct technique (sop#) followed while handling sharps, Sharps disposed in blue/white translucent puncture proof container & should use needle burned & cut) Data analysis: Collected data compiled and enter into excel sheet. Coding of data was done. Then data transferred to SPSS-17 software. Data was analyzed by using SPSS-17. Ethical issues: Written permission was taken from the institutional ethical committee. Data was kept confidential and findings were shared only with the concerned authorities.

Results: A total of 230 HCWs were working in Maharisi Valmiki Hospital Pooth Khurd, Delhi. Out of these only 155 filled up the questionnaire because remaining HCWs were didn't returned filled questionnaire. Hence response rate was 67.4%.

Table 1 reveal demographic characteristics of HCWs (N=155). Out of 155, 82(52.9%) were nursing staff, 34(21.9%) were paramedical staff & 39 (25.1%) were group-D workers. There were significant difference in sex, professional qualification & experience except age & education among nursing staff, paramedical staff & group-D workers, (p value < 0.005) because

Table 1: Socio-demographic characteristics of health care workers

Characteristics	Health Care Workers*				Test of Significance	P value
	Nursing Staff (n=82) %	Paramedics (n=34) %	Group-D (n=39) %	Total (n=155) %		
Age (in years)					χ^2=1.01	0.31
21-25	16 19.7	04 11.7	04 10.2	24 15.4	df=1	
26-30	45 54.8	14 41.1	17 43.5	76 49.0		
31-35	13 15.8	11 32.3	12 30.7	36 23.2		
>35	08 09.6	05 14.6	06 15.2	19 12.1		
Mean (30.3 yrs±5.6SD)						
Sex					χ^2=81.01	0.001
Male	12 14.6	25 73.5	34 87.1	71 45.8	df=1	
Female	70 85.3	12 26.4	05 12.8	84 54.2		
Education					χ^2=0.007	0.93
Under graduate	50 60.9	18 52.8	27 69.1	95 61.3	df=1	
Graduate & above	32 39.1	16 47.0	12 30.7	60 38.7		
Professional Qualification					Fisher's Exact test	1.0
GNM & BSc Nursing	82 100	00 000	00 000	82 52.9		
D. Pharm/ Radio/Lab$	00 000	34 100	00 000	34 22.0		
None	00 000	00 000	39 100	39 25.1		
Experience(in years)					χ^2=14.35	0.001
0-5	27 32.9	09 26.7	10 25.6	46 29.6	df=1	
6-10	38 46.3	14 41.1	22 56.4	74 47.7		
>10	17 20.7	11 32.2	07 17.9	35 22.5		
Mean (4.8yrs±3.7SD)						
HBV taken					χ^2=16.55	0.001
Yes	65 79.2	17 50	18 46.1	100 64.5	df=1	
No	17 20.7	17 50	21 53.8	55 35.5		
Training received						
Yes	72 87.8	20 58.8	32 82.1	124 80	χ^2=6.62	0.01
No	10 12.2	14 41.2	07 17.9	31 20	df=1	
Within 1 yr	43 59.7	14 70.0	23 71.8	80 64.5	χ^2=4.63	0.03
More than 1 yr	29 40.3	06 30.0	09 28.2	44 35.5	df=1	

***Paramedics & group-D clubbed together for purpose of analysis. $diploma in pharmacy, radiology & medical laboratory technology.**

Maximum nursing staff were female & had professional qualification of GNM & most of group-D workers had work experience of up to 10 years. HCWs who had taken Hepatitis B vaccines & numbers of participant attended training on universal precautions & that was within last one year period were statistically significant. (p value < 0.05)

Table 2: Knowledge regarding universal precautions among HCWs

Sr No	Knowledge (Correct response)	Health Care Workers							
		Nursing staff (n=82)%		Paramedics (n=34) %		Group-D (n=39)%		Total (n=155)%	
1	Know Universal Precautions principle	80	97.5	32	94.2	36	92.3	148	95.4
2	Can HIV, HBV & HCV transmitted through blood and body fluids	82	100	32	94.1	34	87.1	148	95.4
3	Is hand washing required before touching patient	78	95.1	29	85.3	31	79.5	138	89.0
4	Availability of PEP* facility in your hospital	80	97.5	30	88.2	34	87.2	144	92.9

***PEP means Post Exposure Prophylaxis**

It was observed from table 2 that most of nursing staff 80 (97.5%) were heard about universal precautions followed by paramedical staff 32(94.5%) & group-D workers 36 (92.3%). Almost all nursing staff & paramedical workers were known that HIV, HBV & HCV can be transmitted through blood & body fluids. Maximum nursing staff 78 (95.1%) knew that hand washing required before touching patients followed by 29 (85.3%) paramedical staff & 31 (79.5%) group-D workers. Similarly majority of nursing staff 80 (97.5%) had knowledge about availability of post exposure prophylaxis (PEP) in their hospital.

Bar diagram shows attitude of HCWs and Almost all HCWs have best attitude towards universal precautions.

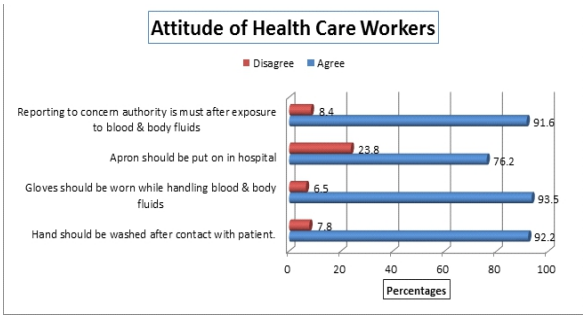

Table 3 reveals that practices of nursing staff about wearing of PPE while handling patient were good among all HCWs 72 (87.8%). Majority of (68.3%) nursing staff followed correct (SOP) while handling sharps. Paramedical staff was comparatively better but Group-D workers were shows worst practices while handling sharps. Nursing staff stood better among all HCWs regarding disposal of sharps among all HCWs 72 (87.8%). Maximum 74(90.2%) nursing staff was correctly burnt & cut used needle. Whereas only 26(76.2%) paramedical workers & 26 (66.6%) group-D workers were correctly burnt & cut used needle.

Table 3: Practices among HCWs related to universal precautions.

SR No	Practices (Correct response)	Health care workers							
		Nursing Staff (n=82)%		Paramedics (n=34)%		Group-D (n=39)%		Total (n=155)%	
1	Wear PPE* while patient handling	72	87.8	28	82.4	29	74.4	129	83.3
2	Correct technique (sop#) followed while handling sharps	56	68.3	22	64.7	12	30.8	90	58.0
3	Sharps disposed in blue/white translucent puncture proof container	72	87.8	20	58.9	22	56.4	114	73.5
4	Should use needle burned & cut	74	90.2	26	76.2	26	66.6	126	81.3

***PPE means personal protective equipment # SOP means standard operative procedure**

Discussion:

World Health Organization (WHO) has estimated that about 5% of new HIV infections in developing and transitional countries may be attributable to unsafe health care injections, unsafe blood and occupational exposures. Whereas global estimate varies according to regions, higher percentages in Asia compared to other parts of the world.8 So hospital administrators should create an organizational atmosphere in which adherence to recommended universal precautions is an integral part of hospital.

The present study was carried out at Maharishi Valmiki Hospital Pooth Khurd, North West District of Delhi. The Rural Health Training Centre (RHTC) under the Department of Community Medicine, MAMC at North West district of Delhi. Although review of published & unpublished data showed that no such type of study has been conducted in this tertiary care hospital so far, but the available studies

done in Delhi & remaining part of India shows a definite gap in knowledge, attitude & practices (KAP) related to universal precautions among HCWs such as nurses, paramedical & group-D staff. In this study we were assessed the baseline KAP of 155 HCWs.

Interestingly, this study revealed that the knowledge and attitude about universal precautions was best among all HCWs. As universal precautions principle was emphasized that all patients were infected with HIV or other blood borne pathogens (BBP) and HCWs has to adhere rigorously to infection control precautions in order to minimize the risk of exposure to blood and bodily fluids9. These findings are in contrast to the findings reported by Pandit et al.10 But study done by Pandit et al in 2005, in Sabharkantha district, Gujarat in 30 hospitals which were situated in tribal remote area and 50% hospitals chosen in the study were private hospitals. So that study carried out five to six years back, and with time there is lot of awareness generation campaign run by Government of India and our hospital where study has been done situated in Delhi. Also our study carried out in government run hospital bound to follow rules and regulations stringently. So HCWs could have better knowledge and best attitude regarding universal precautions. In the current study, a total of 95.4% HCWs had heard about universal precautions. Our study results are in concordance with findings of other study carried out by N. Motamed, et al in 2004 in the university hospital in Sari, Mazandaran Province.11 Almost all nurses(97.5%) had heard universal precautions principle than paramedics and group-D workers. Also our findings are in line with the figures in University Hospital of West Indies.[12]

Our study revealed that all (100%) nursing & paramedical staff knew that HIV, HBV & HCV can be transmitted through blood/body fluids but group-D workers knew less. In china, 94% nursing staff had awareness of HBV transmitted through blood by needle stick injury (NSI). Also a study carried out in Karachi, Pakistan to assess the knowledge of blood borne pathogens (BBPs) among medical students, reported that 100% HBV & 92% HIV could be transmitted through needle stick injuries (NSI). It could be due to the fact that there were more literature, guidelines, awareness campaign & mass media coverage on HIV as it is relatively old & sensitive issue & also morbidity & mortality is high & till today there is no vaccine to prevent HIV.[13]

Hand washing is the most important measure for preventing and controlling infections. Transmission of microorganisms from the hands of HCWs is the main cause of nosocomial infections. Contrary to previous findings in observational study in 2001 at Intensive care unit of St. Luke's Medical centre14 findings in this study shows a high compliance with hand washing by HCWs that is over 75%. This could be because of socially acceptable response.

In the year 2003, a similar study was carried out by Wig N. Department of Medicine, AIIMS, New Delhi, to find out awareness on management of occupational exposure in HCWs. In that study knowledge of post exposure prophylaxis (PEP) of HCWs was only 37.2%.15 Contrary to previous findings present study revealed that 93% of HCWs had knowledge about availability of post exposure prophylaxis (PEP) in their hospital. This difference could be due to in our hospital there were number of training session on universal precautions were organised in the past and 64.5% HCWs received training within last one year. Also voluntary HBV immunisation taken by majority of HCWs (64.5%) in our study shows their active participation in self-precaution. As this study was planned & execute in the year 2011, awareness generation activities carried out by government may be there. Overall Awareness generation activities carried out by NACO and many NGO regarding HIV/AIDS on this sensitive issue definitely would be more during this period and also research and awareness generation activities about seriousness of HBV & HCV would be much more since past. Because of this there were introduction of HBV vaccine in national immunisation schedule by GOI. Same findings were revealed in a study carried out by AIIMS in 2003 in nongovernmental hospitals & clinics across Delhi amongst doctors revealed that 85.7% HCWs had received Hepatitis-B immunization.16 HBV vaccination was found to be at lower level in Pakistan i. e. 74%.[17]

Attitude: Attitude of all was HCWs positive (88.3%) towards universal precautions. Attitude towards the 'wearing of apron in hospital' is 76.2%. In one of the study it was found that 98% of the nurses 79% of the housekeeping staff had positive attitude but attitude of technical staff was only 59%. 9 Current study shows better attitude compared to results of previous study carried out in a 512 bedded multidisciplinary teaching hospital located in rural area at Swami Ramanand Teerth Rural Medical College, Ambajogai in Beed district by Deepali Deo et al in 2005 i. e. 76.63% in medical staff & 60% in paramedical staff. 18

Practices: In present study practices of wearing personal protective equipment (PPE) while handling patient by nursing staff were better (96.3%) as compare to paramedical staff (85.3%) & group-D workers (77%). Correct technique followed while handling sharps by nursing staff were (87.8%) & paramedical staff were (79.4%). This findings are in line with results in study done at Banglore in 2005, with the purpose of assessing KAP regarding universal precautions & occupational safety among nursing professionals, where almost three fourth (72%) nursing staff took precautions while handling waste.17 Most of (81.3%) the HCWs correctly destroyed used needle by burning & cutting with the help of burner & needle cutter so that it cannot be reused. Majority (83.3%) of HCWs disposed sharps correctly in puncture proof translucent white/blue bag.

This study did not collect direct observational data on universal precautions, but relied on self-reporting. This may result in over reporting of correct responses. The non-respondents may have poor knowledge, attitude & practices about universal precautions, so overall level of KAP among HCWs might be high. Actual knowledge, attitude & practices on universal precautions might be low, but due to social desirability bias it came out to be high.

Our study strongly recommends the training in various aspects of universal precautions along with the refreshers courses from time to time especially for group-D. Nursing staff that are correctly practicing universal precautions should be used as a role models in the training program for other HCWs.

Conclusions: The present study highlights the high level of knowledge and practices regarding universal precautions in nursing staff as compare to housekeeping and technical staff. This study also reveals that group-D workers had low level of knowledge & poor practices but their attitude was good. Education program targeting on grey area by using nursing staff as a role model would be the one of the best way to improve knowledge, attitude & practices of paramedics & group-D workers. Attitude regarding universal precautions of paramedical workers was found to be good even though their practices were poor.

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