ORIGINAL ARTICLE

Attitude and Practice of Universal Healthcare Precautions (UHPs) among Healthcare Workers in Healthcare facilities of Jaipur, Rajasthan

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ABSTRACT

Background: Healthcare workers are more prone to occupational illness due to catching infections as they are involved in practices, if they lack the adequate knowledge and attitude to practice and comply with the UHPs **Objective:-** assess the knowledge, attitude and practice of UHPs among the healthcare workers **Method:-** descriptive cross-sectional study was conducted on healthcare workers including doctors, nurses, pharmacists, internees (both medical and nursing) laboratory technicians including intensive care unit (ICU) technicians, X-ray technicians, etc.. A pretested and predesigned questionnaire was used on 240 participants. Knowledge questionnaire in a true false statement based format; In attitude questionnaire responses were plotted on a 3-point scale i.e. “agree”, “neutral”, and “disagree”; Practice questionnaire was an observation questionnaire filled by us directly. All the results were transferred onto Microsoft excel sheet and evaluated statistically. **Results** majority 89.16% knew UHPs should be followed by all persons irrespective of their diagnosis and 77.92% were aware that all body fluids are considered infectious. Majority i.e. 91.25% agreed that UHPs are effective. There was a mixed response when asked if they perceived their own risk of HIV/HCV high, 76.25% agreed, 6.67% disagreed while 17.08% were neutral. 74.16% agreed that all body fluids are infectious. We observed 94.58% always while 5% sometimes wore gloves. 21.67% never changed gloves between patients. Recapping of used needles was never done by 55%. **Conclusion:** UHPs are the keystones for infection control and only complete adherence to them in form of good practice can reduce the risk of transmission of diseases. Major barrier to compliance with UHPs were identified to be shortage of time, heavy workload, non availability of PPEs, discomfort in their use and negligence due to lack of knowledge.

KEYWORDS

Knowledge; Attitude; Practice; Universal Healthcare Precautions (UHPs)

INTRODUCTION

The universal healthcare precautions (UHPs) aim at preventing healthcare workers contact with blood and other body fluids by performing various infection control practices such as hand washing, wearing gloves and mask, safe disposal of infectious waste, and safe cleansing of used instruments.(1)

Healthcare workers are more prone to occupational illness due to catching infections as they are involved in practices, if they lack the adequate knowledge and attitude to practice and comply with the UHPs. This subsequently might increase the harm to the patients and may lead to noso-comial infections. WHO estimates that for health-care workers worldwide, the attributable fractions for percutaneous occupational exposure to HBV, HCV and HIV are 37%, 39% and 4.4%, respectively. These infections may lead to serious complications like long-term illness, disability or even death.(2)

This increases the importance of knowledge and compliance with the UHPs at all the professional levels in the medical hierarchy. Despite detailed guidelines, the understanding and practices of the use of UHPs among healthcare workers, even in developed countries, is inadequate.(3) In developing countries, including India, the situation is worse and occupational safety of healthcare workers remains a neglected issue.(4) In a study on Healthcare workers of North India, the knowledge and understanding of UHPs was found partial and their compliance was suboptimal (eg, only 32% wore eye protection where ever indicated, and 40% recapped needles sometimes).(3)

The study in Ethiopia reported that 65.0% of Healthcare workers followed UHPs.(5) while the study of Nigeria found that 95% of healthcare workers followed hand hygiene practices, 33% of Healthcare workers practiced recapping of used needles, and 64% of Healthcare workers used PPE.(6)

According to WHO, poor knowledge, attitude, and practice (KAP) are among the important predictors of Health Care Associated Infections (HAIs) (7). While narrating the KAP theory, Kelman argued that knowledge is essential to change practice and also a positive attitude is a necessary to bring change (8.9). Therefore, assessment of KAP among the HCWs is important to explore the reasons for non-compliance and to identify the measures to improve infection control practice and prevent HAIs (10).

With this background in mind this study was done to assess the knowledge, attitude and practice of UHPs among the healthcare workers of private and government healthcare facilities of Jaipur district, Rajasthan.

MATERIAL & METHODS

This descriptive cross-sectional study was conducted to evaluate the knowledge, attitude and practice of the UHPs among Healthcare workers of government and private healthcare facilities of Jaipur district, Rajasthan.

All Healthcare workers including doctors, nurses, pharmacists, internees (both medical and nursing) laboratory technicians including intensive care unit (ICU) technicians, X-ray technicians, etc were randomly selected and interviewed. Total 120 subjects were selected from each center randomly (total of 120+120 subjects from a private and a government centers respectively). Hence the final sample size was 240.

A pretested and predesigned questionnaire was used. Initially a pilot study was performed on 24 healthcare workers to test the tool and necessary changes were made accordingly.Questionnaire was given to participants and collected after filling their information regarding their knowledge and attitude towards UHPs. Practices were observed and questionnaire was filled by observer.Socio-demographic information of healthcare workers was collected based on different parameters like age, gender, educational qualification, occupation, professional experience and working area; Knowledge questionnaire in a true false statement based format; In attitude questionnaire responses were calculated in a 3-point scale i.e. “agree”, “neutral”, and “disagree”; Practice questionnaire was an observation questionnaire filled by us directly.

Informed Consent: Before initiation of study, consent from the principals of both government and private medical colleges were taken. The objectives of our study were explained to the participants before data collection and the privacy of respondents was assured. Informed consent was obtained from each subject.

Data Collection: The data was collected using a semi structured self-administered questionnaire. The collected data was checked for completeness and consistency and entered into the computer in the excel datasheets and analyzed using a statistical software. Percentages and frequencies were calculated for the categorical variables. Chi-square, Fischer's and Kruskal-Wallis tests were employed to prove association between independent variables and KAP (Knowledge, Attitude and Practices) of health care workers about UHPs.

Ethical Approval: Study was done only after obtaining ethical clearance from the Institutional Ethics Committee (IEC) of Mahatma Gandhi Medical College and Hospital. IEC number-No./MGMC&H/IEC/JPR/2022/677

RESULTS

Table 1 shows that in our study population more subjects (63.75%) were males while females were less (36.25%). Out of which 59.16% belonged to age group of 20-40 years and 40.83% to 40-60 years. In our study, 17.08% were doctors, 26.25% were nurses, 39.16% were class 4 workers and remaining 17.5% were other members or staff, lab technicians etc. 38.33% were working in medical department, 43.75% were in surgical department and 17.91% were in intensive care. In terms of professional experience there were three groups of HCWs with 30.83% having 1-3 years experience, 19.17% having 4-6 years experience and 50% having 7 or more years of experience. 16.67% had completed matric level of education, 17.91% had completed intermediate level, 49.58% were graduates and 15.83% had done masters in their respective field. 24.17% HCWs' Hepatitis B vaccination was incomplete while of 75.83% was complete.

Table 1. Socio-demographic information of healthcare workers

	Variables	N (%)
Gender	Male	153 (63.75)
	Female	87 (36.25)
Age (years)	20-40	142 (59.16)
	40-60	98 (40.84)
Occupation	Doctor	41 (17.08)
	Nurse	63 (26.25)
	Class 4 worker	94 (39.17)
	Others (OT staff, Ward staff, Lab technician)	42 (17.50)
Department of Current Work	Medical	92 (38.33)
	Surgical	105 (43.75)
	Intensive Care	43 (17.92)
Professional experience (years)	1-3	74 (30.83)
	4-6	46 (19.17)
	7 or more	120 (50.00)
Education	Matric	40 (16.67)
	Intermediate	43 (17.91)
	Graduation	119 (49.58)
	Masters	38 (15.84)
Hepatitis B Vaccination	Not vaccinated/ Incompletely vaccinated	58 (24.17)
	Completely vaccinated	182 (75.83)
	Total	240 (100.00)

Table 2 depicts that majority 89.16% knew UHPs to be applied to all persons irrespective of the diagnosis and 77.92% were aware that all body fluids are considered infectious. Majority (87.08%) knew that all unsterile needles and sharps are assumed similarly contaminated. When asked about the proper usage of gloves during the procedures, 67.91% knew use of gloves doesn't replace the need for washing hands, 88.75% knew hand washing is should be done after removal of gloves and 81.67% were aware that gloves should be changed between two patients regardless of visible contamination. More than90%(91.25%) knew sharp injuries should always be reported. 90.83% knew soiled sharp objects are shredded before disposal, 71.67% knew used needles shouldn't be recapped and 67.08% knew used needles shouldn't be bent. 94.16% were aware that it is necessary to categorize hospital waste before disposal.

Table 2. Knowledge of HCWs about UHPs

S.No.	Questions regarding knowledge (Actual T/F)*	Correct Response N (%)
1.	UHPs should be applied to all persons regardless of their infectious status. (T)	214 (89.16)
2.	All body fluids should be considered infectious. (T)	187 (77.92)
3.	Assume all unsterile needles and sharps are similarly contaminated.	209 (87.08)
4.	Use of gloves replaces the need for washing hands prior to contact with the patients. (F)	163 (67.91)
5.	Hand washing is indicated after removal of gloves. (T)	213 (88.75)
6.	Gloves should be changed between two patients regardless of visible contamination. (T)	196 (81.67)
7.	Sharp injuries should always be reported. (T)	219 (91.25)
8.	If soiling has occurred sharp object should be shredded first and then disposed. (T)	218 (90.83)
9.	Used needles should be bent before disposal. (F)	161 (67.08)
10.	Used needles can be recapped after giving injections. (F)	172 (71.67)
11.	It is necessary to categorize hospital waste before disposal. (T)	226 (94.16)
12.	Post exposure prophylaxis is used for managing injuries from HIV infected patients. (T)	180 (75)

**T- This is a true statement F- This is false statement*

Table 3 depicts the attitude of HCWs towards UHPs. Majority i.e. 91.25% agreed that UHPs are effective. There was a mixed response when asked if they perceived their own risk of HIV/HCV high, 76.25% agreed, 6.67% disagreed while 17.08% were neutral. While majority agreed self-protection should be ensured regardless of patient's diagnosis, 20.42% disagreed. 74.16% agreed that all body fluids are infectious. 29.17% agreed UHPs are required only if patient is HIVs positive. 26.25% agreed and 32.92% had neutral view about finding it difficult to work while wearing PPEs. Majority i.e. 90% agreed to need of washing hands after removal of gloves. On being asked whether reporting splashes and NSI were important, 93.33% agreed, only 1.67% disagreed while 5% gave neutral opinion. Only 2.5% disagreed on importance of mandatory routine of all patients undergoing surgery and majority i.e. 76.25% agreed. While the percentage of HCWs agreeing and having neutral response to the necessity of categorizing hospital waste before disposal was 70% and 29.58% respectively, no one disagreed on it.

Table 3. Attitude of HCWs towards UHPs

S.No.	Attitude Questions	Agree N(%)	Disagree N(%)	Neutral N(%)	Total N(%)	
1.	UHPs are effective.	219 (91.25)	7 (2.91)	14 (5.83)	240 (100)	p-0.024 (S)
2.	Perceive his/her own risk of HIV/HCV as high.	183 (76.25)	16 (6.67)	41 (17.08)	240 (100)	p<0.0001 (VHS)
3.	Self-protection should be ensured regardless of the patient's diagnosis.	146 (60.83)	49 (20.42)	45 (18.75)	240 (100)	p<0.0001 (VHS)
4.	UHPs categorize all body fluid as infective.	178 (74.16)	32 (13.33)	30 (12.5)	240 (100)	p<0.0001 (VHS)
5.	UHPs are required only if patient is HIV positive.	70 (29.17)	111 (46.25)	59 (24.58)	240 (100)	p<0.0001 (VHS)
6.	It is difficult to work while wearing PPE.	63 (26.25)	98 (40.83)	79 (32.92)	240 (100)	p-0.00316 (HS)
7.	Hands should be washed after removal of gloves.	216 (90)	18 (7.5)	6 (2.5)	240 (100)	p<0.0001 (VHS)

S.No.	Attitude Questions	Agree N(%)	Disagree N(%)	Neutral N(%)	Total N(%)	
8.	Reporting splashes and NSIs are important.	224 (93.33)	4 (1.67)	12 (5)	240 (100)	p<0.0001 (VHS)
9.	Mandatory routine testing of all patients undergoing surgery is important.	183 (76.25)	6 (2.5)	51 (21.25)	240 (100)	p<0.0001 (VHS)
10.	It is necessary to categorize hospital waste before disposal.	168 (70)	1 (0.42)	71 (29.58)	240 (100)	p<0.0001 (VHS)

Table 4 shows that on observing the practice of UHPs among HCWs it was found that 94.58% always wear gloves when exposed to body fluids or blood but only 77.5% always covered their wounds or lesions with waterproof dressing before taking care of patients. 21.67% never changed gloves between patients. While 73.75% HWCs always washed hands immediately after removal of gloves, this percentage reduced to 46.25% always washing hands after taking care of each patient. Recapping of used needles was never done by 55% HCWs while 28.33% did it sometimes and 16.67% always did it. 79.17% always shredded the used needle before disposal. 88.33% wore face mask, 82.5% wore gown/apron but only 41.66% wore goggles at all times when there was a possibility of splash. Only 69.17% always categorized hospital waste before disposal, 24.17% did it sometimes and 6.67% never did it.

Table 4. Practice of UHPs observed among HCWs

S.No.	Practices observed*	Never N (%)	Sometimes N (%)	Always N (%)	Total N (%)	
1.	Wears gloves when exposed to deep body fluids or blood products.	1 (0.42)	12 (5)	227 (94.58)	240 (100)	p<0.0001 (VHS)
2.	Covers their wound(s) or lesion(s) with waterproof dressings before taking care of patients	33 (13.75)	21 (8.75)	186 (77.5)	240 (100)	p<0.0001 (VHS)
3.	Changes gloves between patients	52 (21.67)	26 (10.83)	162 (67.5)	240 (100)	p<0.0001 (VHS)
4.	Washes hands immediately after removal of gloves	24 (10)	39 (16.25)	177 (73.75)	240 (100)	p<0.0001 (VHS)
5.	Washes hands after taking care of each patient	32 (13.33)	97 (40.42)	111 (46.25)	240 (100)	p<0.0001 (VHS)
6.	Recaps needles after giving an injection	132 (55)	68 (28.33)	40 (16.67)	240 (100)	p<0.0001 (VHS)
7.	Shreds the needle with needle cutter before disposal	14 (5.83)	36 (15)	190 (79.17)	240 (100)	p<0.0001 (VHS)
8.	Wears disposable face mask whenever this is a possibility of splash	6 (2.5)	22 (9.17)	212 (88.33)	240 (100)	p<0.0001 (VHS)
9.	Wears gown/apron if soiling with blood or deep body fluids is likely to occur	26 (10.83)	16 (6.67)	198 (82.5)	240 (100)	p<0.0001 (VHS)
10.	Wears goggles whenever this is a possibility of splash	89 (37.08)	51 (21.25)	100 (41.66)	240 (100)	p<0.0001 (VHS)
11.	Characterizes hospital waste before disposal.	16 (6.67)	58 (24.17)	166 (69.17)	240 (100)	p<0.0001 (VHS)

**Observations were categorized as always, sometimes, and never*

DISCUSSION

Following UHPs is simple and effective way to prevent infection in the hospital. It is essential to assess the knowledge, attitude, and practice of UHPs among the HCWs. In view of this the present study was carried on 240 HCWs in government and private healthcare settings in Jaipur District of Rajasthan.

The study revealed a good level of knowledge (89.16%) of UHP application among all health personnel's. This was in concordance with the findings in the studies by Fayaz S H et al (11)

and Abalkhail A et al.(12) When the overall knowledge regarding changing gloves between two patients, segregation of hospital waste, reporting of the sharp injuries and post exposure prophylaxis was assessed the correct responses were given by 81.67%, 94.16%, 91.25% & 75% respectively which was more seen in our study thanSherwani N et al (65%, 68.3%, 66.67% & 55% respectively).(13) Our study has shown better knowledge (75%) in post exposure prophylaxis than a study of Wig N, in Delhi.(14) A good number of HCWs i.e. 75.83% had also completed their HBV immunization. This is probably because a number of awareness generation campaigns have been organized by GOI and hospitals in recent years.

Majority of the HCWs i.e. 91.25% have a positive attitude towards the effectiveness of UHPs. Soyam G C and Khakse G M reported 92.2% positive response for hand washing and 91.6% for reporting of NSI and splashes, this was in line with the findings in our study (90% and 93.33% respectively).(15) The positive responses were so high because these practices have now become a routine. However only less than half had a positive outlook towards wearing PPEs despite knowing their importance and 28.25% found it difficult to work while wearing them, but even these percentages were higher than the study by Abalkhail et al in Saudi Arabia.(12)

UHPs are the keystones for infection control and only complete adherence to them in form of good practice can assure free from the risk of transmission of diseases. Hand hygiene is one of the crucial and cost-effective measure to achieve this. Similar to results seen by Fayaz S H et al, in our study 95% HCWs always wore gloves when exposure to body fluids or blood and 73.85% washed hands after removing gloves. However in study by Fayaz S H et al 88.6% always washed hand in between patients after taking care of each patient which is in contrast to our study where only nearly half of the participants (46.25%) did so.(11) The most common reason found to be time constraint. Our findings were compatible with Ogoina Det al.(16) Interestingly even though only 40.83% had a positive attitude towards use of PPEs, practice was much better with 82.5% always wearing gowns & aprons because of constant hospital monitoring.

The study also reported decent compliance of eye protective gears i.e. 41.66% always wore goggles which is in line with other studies where about one third wore eye protection.(17,18) This is little less than what was seen in studies conducted in developed countries like USA where compliance was significantly higher i.e. 63%.(19) Better compliance seen in developed countries was most likely due to easy availability of these protective gears compared to our setting. 90.83% HCWs had knowledge about correct way to dispose sharp objects but only 79.17% always followed it hence showing the knowledge didn't always translate into practice, similar result was also seen by Soyam G C and Khakse G M in rural Delhi where positive response noted was 81.3%.(15)

Conclusion

Major barrier to compliance with UHPs were identified to be shortage of time, heavy workload, non availability of PPEs, discomfort in their use and negligence due to lack of knowledge and feeling of not requiring in every patient.

Despite this the current findings are helpful for in identifying the specific areas that may need further HCWs education and training for universal precautions in order to ensure safer practices in the healthcare settings as well as draws attention to the barriers to compliance with UHPs thus providing scope for interventions.

Limitations Of The Study

Being limitations to our study were small sample size, random selection of various professional groups in a hospital and study design of the cross sectional study that could limit the generalizability of study results.

Recommendation

Guidelines for preventing transmission should be made a part of the objectives of the hospital's patient and occupation safety programmes. There should be a regular supply of PPEs and other medical resources like antiseptic solution. Finally to bridge the gap

between attitude and practice various strategic pre service and in service training sessions can be organized, accompanied by regular observation and feedback.

A mandatory safety precaution course can be started that includes occupational health and safety rules, wearing of PPEs, precaution for handling contaminated and dangerous materials and hand hygiene.

Authors Contribution

All authors have contributed equally.

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Nil

Conflict of Interest

There are no conflicts of interest.

Declaration of Generative AI and AI Assisted Technologies in the Writing Process

The authors haven't used any generative AI/AI assisted technologies in the writing process.

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