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ORIGINAL ARTICLE

Knowledge, Attitude and Practice of Standard Precautions among The Health Care Workers of a Tertiary Care Teaching Hospital of North India

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ABSTRACT

Introduction: Standard precautions (SPs) are the minimum infection prevention practices that is applicable to all kinds of patient, regardless of suspected or confirmed infection status of the patient, in any healthcare setting to protect both HCW and the patient under care. These include hand hygiene, use of gloves, gown, mask, eye protection, or face shield, depending on the anticipated exposure and safe injection practices.The present study aims to estimate the awareness of Health care workers (HCWs) regarding various aspects of Standard Precautions.

Materials and method: Study included 400 HCWs (250 doctors, 100 nurses, and 50 technicians) of Lady Hardinge Medical College & Associated Hospitals, New Delhi. A self structured pretested questionnaire was used as a tool in the study. The level of awareness was graded (adequate, fairly adequate and inadequate) on the basis of their knowledge regarding that particular practices.

Results: Regarding the practices of SPs, 20.2% HCWs had adequate, 38.5% had fairly adequate and 41.2% had inadequate awareness. Sixty seven percent (67%) HCWs knew about the best agent for hand hygiene, 47.2% had correct knowledge about the duration of hand hygiene and 58% HCWs knew about the 5 moments of hand hygiene.

Conclusion: All the groups of HCWs who are actively involved in patient care and at a risk of acquiring infections should be aware of SPs and they must be trained regularly for the same.

Keywords: Standard precaution, Health Care workers (HCWs), Awareness, Knowledge, Practice.

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INTRODUCTION

Health Care Workers (HCWs) are potentially exposed to blood and body fluid (BBF) in the course of their work which put them in an escalating risk of acquiring blood borne infections such as HIV, Hepatitis B & C**.** Exposure to BBF can occur through a percutaneous injury (needle stick injury, sharp injury) or mucocutaneous incident like BBF splash during patient care.[1]

It is of utmost importance to consistently use Blood and body fluid (BBF) precautions for all patients regardless of their blood borne infection status. This practice of blood and body fluid precautions to all patients is referred to as 'Standard Precautions' (SPs).[2]

The term "Standard precautions" is replaced by "universal precautions", as it also includes any kind of body fluid. Standard precautions is defined as single set of precautions used for all patient care regardless of their HBV, HCV & HIV status.[3] It is difficult and expensive to test all patients for all pathogens before giving care specially in resource limited setups. The level of precautions to be used depends on the nature of procedure being done but not on serological status of patient.[4] Standard precautions apply to all potentially infectious specimens such as vaginal secretions, semen, amniotic, peritoneal, cerebrospinal and pericardial fluids; but not to seat, urine, stool and sputum(unless these specimens are mixed with blood)

Standard precautions include:[5]

- Hand hygiene
- Use of personal protective equipment like gloves, gowns, masks.
- Safe injection practices
- Safe handling of potentially contaminated equipment or surfaces in the environment
- Respiratory hygiene/ cough etiquette.

Despite the awareness campaign, the knowledge regarding SPs among HCWs in developing countries,is inadequate and their safety is at high risk.[1]

With this background, the present study was conducted among the HCWs of our hospitals with objective to assess the awareness towards standard precautions among HCWs

MATERIALS AND METHOD

The present study was a cross sectional study conducted for a period of one year and three months among 400 HCWs (150 resident doctors, 100 interns, 100 nursing professionals, 50 laboratory technicians) selected randomly who were willing to participate in the study. These 400 HCWs included in the study were from various departments such as Medicine, Surgery, Obstetrics &Gynaecology, Pediatrics, Orthopedics, Ophthalmology, ENT, Pathology, Microbiology, Biochemistry, Anesthesia, Community Medicine and psychiatry. Ethical clearance was obtained prior to the commencement of the study from Institutional Ethical Committee, Lady Hardinge Medical College, New Delhi

A self structured pretested multiple choice questionnaire was used as a tool to access HCWs awareness regarding NSI. The initial part of the questionnaire had demographic information of the participant such as occupation, age, sex, work experience and current posting, whereas rest were the questions related to SPs. Various Departments (as mentioned above) were visited on rotational basis and HCWs who gave voluntary consent for participation in the study were given 15 minutes each to answer the questionnaire in an independent and unbiased way without any undue pressure, maintaining the confidentiality of their identity.

The data obtained from the questionnaires was evaluated by giving 1 point for each correct answer given by the participants. There was no negative marking for wrong answers. The level of awareness was graded (adequate, fairly adequate and inadequate) on the basis of their knowledge regarding that particular practices. A score of more than 70% was considered adequate awareness, 50–70% fairly adequate awareness, and less than 50% was taken as inadequate awareness. Finally, HCWs are considered to be aware of a particular practice, when the overall awareness (i.e. adequate+ fairly adequate) is more than 50%. Data obtained from the questionnaires was analyzed by using SPSS software. Descriptive statistics was used to calculate percentages for each of the responses given. Chi-square test for comparing percentages across groups, ANOVA for comparing means across more than 2 groups and Unpaired t-test for comparing more than 2 groups. A *P* value less than 0.05 was considered significant.

RESULT

Out of 250 doctors, 100 nurses and 50 laboratory technicians (Total HCW 400) included in the present study, 23.2% were male and 76.7% HCWs were female**.** Majority (60.25%) of the study population belonged to the age group of 20-30 yrs(mean age 30.72 yrs). Most (23.5%) of HCWs were from Department of Obstetrics & gynecology followed by Surgery(15%) and medicine (14.75%) department.

Knowledge regarding various aspects of hand hygiene among HCWs

Correct response regarding the best agent of hand hygiene was given by 66.4% doctors, 66% nurses and 74% technicians. Regarding duration of hand hygiene the correct response chosen by doctors, nurses and technicians were 50%, 33% and 62% respectively. Seventy two percent (72%) doctors, 38% nurses and 28% technicians gave correct answer regarding the 5 moments of hand washing. Regarding the preferred method of hand hygiene in soiled hands, 70.80% doctors, 37% nurses and 40% technicians marked correct answer.

Overall awareness regarding hand hygiene among HCWs

Regarding hand hygiene 31.2% doctors, 6% nurses and 16% technicians had adequate awareness level. Fairly adequate level of awareness was 40.8%, 48% and 44% among doctors, nurses and technicians respectively. Twenty eight percent (28%) doctors, 46% nurses and 40% technicians were found to have inadequate awareness level regarding hand hygiene practices. The difference between adequate awareness level in doctors, nurses and technicians were significant ($p<0.05$).(Table 1)

Practice of standard precautions

56.80% doctors, 41% nurses and 32% technicians had correct knowledge regarding SPs applicable to which all specimens. Regarding Precautions while handling HIV/HBV patient the correct answer chosen by doctors, nurses and technicians were 48%, 50% and 36% respectively. The correct knowledge regarding donning of PEP among doctors, nurses and technicians were 76.4%, 69% and 48% respectively.

Overall awareness regarding the practice SPs

Twenty three percent (22.80%) doctors, 21 % nurses and 6% technicians had adequate awareness level regarding the practice of SPs. Fairly adequate level of awareness was 44%, 30% and 28% among doctors, nurses and technicians respectively. Thirty three percent (33.20%) doctors, 49% nurses and 66% technicians were found to have inadequate awareness level regarding practice of SPs. The difference between

Awareness level	Doctor(n=250)		Nurse(n=100)		Technician(n=50)		*P*-value		
	No.	%	No.	%	No.	%	Doctor Vs. Nurse	Doctor Vs. Technician	Nurse Vs. Technician
Inadequate	70	28.00%	46	46.00%	20	40.00%	0.001	0.045	0.243
Fairly adequate	102	40.80%	48	48.00%	22	44.00%	0.109	0.337	0.322
Adequate	78	31.20%	6	6.00%	8	16.00%	<0.001	0.015	0.024

Table-1: Overall awareness regarding hand hygiene among HCWs:

adequate awareness level in doctors Vs. technicians and nurses Vs. technicians were significant.(P <0.05). (Table 2)

DISCUSSION

Adequate awareness and compliance regarding Standard precautions among HCWs decreases the risk of exposure of HCWs to potentially infectious materials such as blood and body fluids & hence blood borne infections like HBV, HCV & HIV.[2]

SPs have been widely promoted in high income / developed countries, but in low income countries, SPs are often practiced partially, therefore the HCWs of developing countries are at high risk of blood borne diseases.[6] In developing countries where there is insufficient funding for health care resources, practicing SPs is much more cost effective as compared to cost for diagnosis and management of patient's/ HCW's blood borne diseases.[7]

Keeping in mind the above mentioned scenario, the present study was conducted in a group of 400 HCWs consisting of doctors, nurses and technicians of our Hospitals to assess the awareness level of SPs.Hand hygieneis a major component of standard precautions and one of the simple and most cost effective methods to prevent transmission of pathogens to health care workers as well as the patients under care.[8]

In our study overall 66% HCWs were aware of various aspects of hand hygiene. Another Indian study (2013) reported that 74% HCWs had awareness regarding hand hygiene.[9] In our present study, the overall awareness level regarding hand hygiene varied among different professionals groups of HCWs i.e. highest adequate level of awareness was found among doctors (31%) followed by technicians (16%) and nurses (6%). Highest inadequate level was seen in nurses (46%) followed by technicians (40%) and doctors (28%). These difference among the various groups was statistically significant (P<0.05). This finding shows that more attention needs to be given on training of nurses and technicians regarding various aspects of SPs and hand hygiene. Sharma S et al (Punjab,2011) and Basurrah MM et al (Saudi Arabia,2006) also had similar findings i.e awareness level of hand hygiene is more in doctors compared to nurses.[10,11]

Regarding various aspect of Hand hygiene, the level of knowledge varied among different professional groups. In the present study, 58.5% HCWs mentioned that washing hand with soap & water is the preferred method in soiled hand and doctors had the highest knowledge (70.80%) followed by technicians (40%) and nurses (37%). Lt V Anargh et al (Pune, 2012) showed 81% HCWs considered hand washing with soap and water to be superior than hand rubbing with alcohol solution for effectiveness against germs.[12] The high level of knowledge regarding hand hygiene among doctors in our study can be attributed to the fact that training programmes on hand hygiene and SP are mandatory for the resident doctors and interns at the time of their recruitment which compels the doctors to attend these trainings. The same training programmes are not mandatory for the nursing professionals/ technicians, therefore the number of nursing and technical staff attending these trainings are limited which is reflected in their low level of knowledge regarding hand hygiene practices.

Though in some aspects of hand hygiene practices like duration of hand hygiene & best agent for hand washing, technicians had better level (62% & 74% respectively) of knowledge compared to doctors (50% & 66.40% respectively) and nurses (33% & 66% respectively). This may be because of the fact the technicians are involved actively and directly with the dealing of blood and body fluids during their routine work which compels them to use hand hygiene practices more often.

Practice of SPs not only helps in reducing the blood borne infections among HCWs but also prevent cross transmission to patients. SPs should be followed while handling all the patients irrespective of their HBV, HCV & HIV status.

In our study, overall 58.7% HCWs were aware regarding practice of SPs. Vaz K et al (Jamaica, 2010) showed 64% HCWs were aware regarding SPs.[2] Among the HCWs, doctors had the highest (66.8%) awareness level followed by nurses (51%) and technicians (34%). This result is consistent with the result of another study conducted in Delhi where they found that nurses had an overall low level of awareness as compared to doctors.[1] Phukan P et al (Karnataka 2014) found that 32% nurses and 57% technicians were not aware of SPs.[13]

In the present study, the Knowledge regarding proper procedure of handling of HIV & HBV infected patients was found to be highest in nurses (50%) followed by doctors (48%) and technicians (36%). Overall 53% HCW believe that simply following SPs is not enough to deal with HIV/HBV patients and they need extra precautions such as using of double gloves, PPE while handling the patients even during taking temperature or touching the HIV/HBV infected patients, which is not always correct.

Fayaz S H et al reported that 87.2% HCWs were using gloves for all the practices and procedures while handling

Awareness level	Doctor(n=250)		Nurse(n=100)		Technician(n=50)		p-value		
	No.	%	No.	%	No.	%	Doctor Vs. Nurse	Doctor Vs. Technician	Nurse Vs. Technician
Inadequate	83	33.20%	49	49.00%	33	66.00%	0.003	0.000	0.024
Fairly adequate	110	44.00%	30	30.00%	14	28.00%	0.008	0.018	0.400
Adequate	57	22.80%	21	21.00%	3	6.00%	0.357	0.003	0.009

Table-2: Overall awareness regarding the practice SPs

HIV/HBV infected patient. This shows that misconception about handling of HIV/HBV patients still persists among the HCWs.[14]

Standard precautions is of utmost importance while handling all the blood and body fluid samples, though it is not applicable to urine, stool, saliva and sweat unless mixed with blood. Only 49.7% HCWs had correct knowledge regarding application of SPs on appropriate specimens. Doctors (56.8%) had the highest knowledge followed by nurses (41%) and technicians (32%) regarding this.Fayaz S et al (2014), reported that more than 90% of the HCWs did not have correct knowledge regarding application of SP depending on the nature of specimens.[14]

In our study, overall knowledge about PPE among HCWs was 71%. The correct response about the use of PPE was given by 76.4% doctors, 69% nurses and 48% technicians. Mukherjee S et al (2013) found that only 62% doctors, 56% nurses and 22.5% technicians had correct knowledge of using PPE.[15] Higher knowledge regarding PPE in the present study can be explained by the fact that National center for disease control, India (NCDC) had recently conducted several training programmes during the outbreak of H1N1 in India as well as current outbreak of Ebola in sub-Saharan African countries as a part of hospital preparedness against these outbreaks, where many HCWs got trained regarding the use of PPE. This high awareness level also shows that training and psychological fear about highly infectious diseases compel HCWs to increase the awareness level as they have to deal with such cases.

CONCLUSION

In conclusions the awareness regarding the practice of SPs among doctors, nurses and technicians is found to be inadequate in the present study. This finding may put light on the fact that there is need of revision of the ongoing training programme with more practical approach as well as refresher training programme for all categories of HCWs. It should be made mandatory for all HCWs to attend the training programmes at the time of their recruitment and also be included in the curriculum of nursing and medical students. All these effort may be very helpful in raising the awareness among HCWs regarding SPs.

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REFERENCES

1. Kotwal A, Taneja DK. Health Care Workers and Universal Precautions: Perceptions and Determinants of Non-compliance. Indian J Community Med. 2010;35: 526-528.
2. Vaz K, McGrowder D, Alexander-Lindo R, Gordon L, Brown P, Irving R. Knowledge, Awareness and Compliance with Universal Precautions among Health Care Workers at the University Hospital of the West Indies, Jamaica. Int J occup Environ Med. 2010; 1: 171-81.
3. Amoran O, Onwube O. Infection control and practice of Standard precautions Among Health care workers in Northern Nigeria. J Glob Infect Dis. 2013;5:156-163.
4. Health care worker Safety-World Health Organization. Available at www.who.int/injection safety/toolbox/docs[Accessed 9th April 2015].
5. Centers for Disease Control and prevention: Guide to Infection Prevention for Outpatient setting: Minimum Expectations for safe care. Available at www.cdc.gov/HAI/settings/outpatient/outpatient-care-guidelines.html[Accessed 27th March 2015]
6. Kermode M, Jolley D, Langkham B, Thomas MS, Holmes W, Gifford SM. Compliance with Universal/Standard Precautions among health care workers in rural north India. Am J Infect Control.2005;33:27-33.
7. Vaziri S, Najafi F, Miri F, Jalalvandi F, Almasi A. Practice of standard precautions among health care workers in a large teaching hospital. Indian J Med Sci. 2008; 62:292-4.
8. Sadoh WE, Fawole AO, Sadoh AE, Oladimeji AO, Sotiloye OS. Practice of universal precautions among healthcare workers. J Natl Med Assoc. 2006; 98:722-6.
9. Nair SS, Hanumantappa R, Hiremath SG, Siraj MA, Raghunath P. Knowledge, Attitude, and Practice of Hand Hygiene among Medical and Nursing Students at a Tertiary Health Care Centre in Raichur, India. ISRN Prev Med. 2014;6: 608-27.
10. Sharma S, Sharma S, Puri S, Whig J. Hand hygiene compliance in the intensive care units of a tertiary care hospital. Indian J Community Med. 2011;36: 217-21.
11. Basurrah MM, Madani TA. Handwashing and gloving practice among health care workers in medical and surgical wards in a tertiary care centre in Riyadh. Saudi Arabia.Scand J Infect Dis. 2006;38:620-4.
12. Anargh V Lt, Singh, M H, Kulkarni A, Kotwal A, Mahan A. Hand hygiene practices among health care workers (HCWs) in a tertiary care facility in Pune. Med J Armed Forces India. 2013;69:54–56.
13. Phukan P. Compliance to occupational safety measures among the paramedical workers in a tertiary hospital in Karnataka, South India. Int J Occup Environ Med 2014; 4:40-50.
14. Fayaz S H, Higuchi M, Hirosawa T, Sarker M AB, Djabbarova D, Hamajima N. Knowledge and practice of universal precautions among health care workers in four national hospitals in Kabul, Afghanistan.J Infect DevCtries. 2014;4:535-542
15. Mukherjee S, Bhattacharyya A, Sarkar BS, Goswami DN, Ghosh S, Samanta A. Knowledge and Practice of Standard Precautions and Awareness Regarding Post-Exposure Prophylaxis for HIV among Interns of a Medical College in West Bengal, India. Oman Med J. 2013;28:141–145