



RESEARCH ARTICLE

A STUDY TO ASSESS KNOWLEDGE AND PRACTICE IN RELATION TO UNIVERSAL PRECAUTIONS AND AWARENESS REGARDING POST-EXPOSURE PROPHYLAXIS FOR HIV AMONG INTERNS OF A MEDICAL COLLEGE IN MYSORE DISTRICT, SOUTH INDIA

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ABSTRACT

Background: HIV/AIDS infection in health care facility has become a major health problem. Especially in resource poor setting health care workers are managing huge number of HIV infected patients that made them to be more exposed to HIV infection. This situation makes the knowledge of standard precaution and use of post exposure prophylaxis for HIV very important.

Objectives: To assess the knowledge of interns on universal precautions and post-exposure prophylaxis for HIV, and to identify the gap between knowledge and practice relating to universal precautions.

Methods: The study was conducted on 100 interns of 2011-12 batches from a private-run medical college in Mysore, India. All participants completed a self-administered questionnaire with items relating to basic components of universal precautions and post-exposure prophylaxis for HIV.

Results: Adherence was poor in the use of personal protective equipment, hand washing, safe handling and disposal of needles and sharp objects were found with respect to practices for which the interns had correct knowledge. Although the majority of the respondents (80%) expressed awareness of washing sites if injured, with soap and water, approximately 30% did not know that antiseptics could cause more damage. Also, only 84% expressed awareness of reporting any incidence of occupational exposure, while knowledge on post-exposure prophylaxis was good but regarding regimens was generally found to be poor.

Conclusion: There was considerable gap between knowledge and practice of universal precautions and inadequate knowledge of post-exposure prophylaxis. This emphasizes the need for continuous onsite training of interns with regular supervision and monitoring of their activities

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INTRODUCTION

In order to prevent transmission of pathogens after potential exposure and also to refer for comprehensive management to minimize the risk of infection after potential exposure to HIV, post exposure prophylaxis (PEP) is needed.¹ PEP includes first aid, counseling, risk assessment, relevant laboratory investigations based on the informed consent of the exposed person and source and following the risk assessment, provision of short term of antiretroviral drugs for 28 days, along with follow-up evaluation.² Interns are persons working in health care setting and they are potentially exposed to infectious materials such as blood, tissue, specific body fluids, medical supplies, equipment or environmental surfaces contaminated with these substances.² They are frequently exposed to occupational hazards through percutaneous injury such as needle stick or cut with sharps, contact with the mucus membrane of eyes or mouth of an infected person, contact with non intact skin exposed with blood or other potentially infectious body fluids.³ Universal Precautions (UP)

include a group of infection prevention practices that apply to all patients, regardless of suspected or confirmed infection status, in any setting in which healthcare is delivered. These include hand hygiene, use of gloves, gown, mask, eye protection, or face shield, depending on the anticipated exposure; and safe injection practices.⁴ In spite of the established "Universal Precautions", healthcare workers may experience accidental occupational exposure to HIV, and in order to minimize the risk of infection, clear guidelines for post-exposure- prophylaxis (PEP) are available.⁵ Interns at a very early stage of their professional career take maximum load of providing medical care in the in-patient and out-patient departments of any medical college across the world and more so in a developing country like India, and are thus at a great risk of occupational exposure to all kinds of blood borne pathogens including HIV. Earlier studies had shown poor knowledge and compliance of "Universal Precautions" among interns.^{6,7} It is thus essential to instill in them good infection control practices from the very beginning, before incorrect

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practice develops into a habit and to develop in them aware of PEP for prevention of HIV infection through occupational exposure. The present study was thus conducted with the following objectives: 1) to assess the knowledge of the interns on Universal precautions and post-exposure prophylaxis for HIV; 2) to identify the gap between knowledge and practice of Universal precautions.

MATERIAL AND METHODS

The study was conducted from January 2012 to February 2012 among all the 100 interns of the 2011-12 batch at, a tertiary care hospital, Mysore, Karnataka, India. Permission to conduct the study was obtained from the ethical committee of the medical college. A self-administered, pre-designed and semi-structured questionnaire was prepared. The questionnaire was then pre-tested among 10 post-graduate trainees from different clinical disciplines at the same hospital and further modifications were incorporated after obtaining informed consent from all the participants, they were asked to fill up this questionnaire within half an hour time.

Data analysis

Data was entered in Microsoft excel sheet and analyzed using SPSS version 19 computer software. Results were summarized in frequencies and percentages and presented in tables.

RESULTS

All the respondents expressed awareness of the blood contact route of transmission of HIV, Hepatitis B and C infections. The majority of correct knowledge was observed to be relating to the use of gloves and aprons, but knowledge relating to the use of goggles was found to be poor (55%).

Also, only 6.8% of the participants with the correct knowledge of safe disposal of sharp instruments reported to use puncture-proof containers for this purpose (Table 2). The main reasons for non-compliance to the correct practice of UP were as follows: a) inconvenience in handling needles and sharps when wearing gloves and often no time to wear gloves during rush hours; b) feeling uncomfortable to wear aprons in tropical climate; c) unavailability of goggles for regular use; d) regular hand-washing not feasible due to huge workload; e) non-availability of functioning hub-cutter and puncture-proof containers for safe handling and disposal of needles and sharps. (Table 2).

So far as the knowledge regarding immediate post-exposure prophylaxis to prevent transmission of HIV infection was concerned, 60.0% of the respondents were aware of the risk of putting fingers in the mouth to suck blood following a needle stick injury, and a majority (80%) of the respondents knew that the exposed area should be washed with soap and water. In addition, 70% knew that the application of antiseptics may cause more damage to the exposed tissues and 62% knew what to do following exposure to eyes and mouth. However, 84% of the respondents were actually aware of the fact that any incidence of occupational exposure must be reported to the superior officer on-duty; and only 30% expressed the correct knowledge of basic PEP regimen and even fewer could correctly name the drugs included in the expanded regimen. It was also observed that 56% of the respondents knew exactly where PEP drugs were and with whom they can be obtained at the hospital. Furthermore, 83% were expressed awareness of the best time of initiation of PEP drugs, while only 70% conveyed the correct knowledge about the duration of the regimens. (Table 3)

Table 1 Knowledge of the respondents regarding Universal Precautions (n = 100)

Knowledge on Universal Precautions	Correct*	Incorrect*
HIV, Hepatitis B and C could spread through	100(100)	
Gloves should be worn every time during handling potentially infectious materials	90(90)	10(10)
Aprons or gowns should always be worn to avoid exposure from splashing	88(88)	12(12)
Goggles should be worn when needed to avoid exposure to eyes	55(55)	45(45)
Hands should be washed with soap and water before and after handling potentially infectious materials irrespective of wearing gloves	70(70)	30(30)
Used needles should never be bent or recapped	15(15)	85(85)
Puncture-proof containers should be used for disposal of sharps	88(88)	12(12)

* Figures in parentheses indicate percentage

Table 2 Practice of Universal Precautions among the respondents having correct knowledge

Correct knowledge on Universal Precautions	Always practiced*	Not always practiced*
Gloves should be worn every time during handling of potentially infectious materials (n = 90)	50(55.5)	40(44.5)
Aprons or gowns should always be worn to avoid direct contact with blood or body fluids(n=88)	24(30)	64(70)
Goggles should be worn when needed to avoid exposure to eyes(n=55)	3(5.4)	52(94.6)
Hands should be washed with soap and water after handling potentially infectious materials irrespective of wearing gloves(n=70)	60(85.7)	10(14.3)
Used needles should never be bent or recapped(n=15)	1(6.6)	14(93.4)
Puncture-proof containers should always be used for disposal of sharps(n=88)	6(6.8)	82(93.2)

* Figures in parentheses indicate percentage

Moreover, most of participants conveyed knowledge of the following; importance of hand-washing, risk of bending or recapping used needles, and safe disposal of sharp instruments. (Table 1). Among the components for which correct knowledge was expressed, practice of always using gloves, aprons/gowns and goggles was reported by only 55.5%, 30% and 5.4% of the respondents, respectively. The practice of hand-washing was good(85.7%) among the participants; and only 6.6% of respondents who were aware of the policy to never bend or recap used needles adhered to its correct practice.

DISCUSSION

The present study was focused on how far the correct knowledge of "Universal Precautions" is translated into correct practice in practical settings. The interns during their undergraduate course attended theoretical classes relating to important blood-borne infections, preventive actions and post-exposure prophylaxis. However, the results of this study revealed poor adherence to the main components of UP, like using personal protective equipment, hand washing, safe handling and disposal of needles

Table 3 Awareness among the respondents regarding post-exposure prophylaxis for HIV

Knowledge on post-exposure prophylaxis for HIV	Correct*	Incorrect*
Following a needle stick injury, finger should not be put in the mouth	60(60)	40(40)
Exposed area should be washed with soap and water	80(80)	20(20)
Application of antiseptics might cause more damage to exposed tissues	70(70)	30(30)
Eyes and mouth should be washed with normal saline or plain water following exposure	62(62)	38(38)
Any incident of occupational exposure should be reported to the superior	84(84)	16(16)
Specific drugs are available for post-exposure prophylaxis	100(100)	
Drugs for basic PEP regimen	30(30)	70(70)
Drugs for expanded PEP regimen	16(16)	84(84)
Where and with whom PEP drugs would be available in the hospital	56(56)	44(44)
PEP drugs are best effective when started within 2 hours following exposure	83(83)	17(17)
When needed PEP drugs must be continued for 4 weeks	70(70))	30(30)

* Figures in parentheses indicate percentage

and sharps, even among the interns who expressed correct knowledge of these policies. The main reasons for non-adherence to the correct practices of UP could be due to negligence in handling needles and sharps when wearing gloves and lack of time during rush hours, feeling uncomfortable to wearing aprons, the lack of availability of goggles for regular use, the infeasibility of regular hand-washing due to huge workload, and the lack of available functioning hub-cutter and puncture-proof containers.

A study conducted in a tertiary care hospital in Delhi, India, showed that in spite of having adequate knowledge, adherence to practices of universal precautions remained poor among most interns except wearing gloves. While 90% of the respondents reported to follow correct disposal of needles and sharps, only 60% of the respondents never recapped or bent needles after use. The perceived impediments against the use personal protective equipment (PPE) were given as follows; too busy to use PPE, colleagues do not use them, and discomfort in PPE use.⁸ Time constraints, inconvenience, unavailability of equipment and presumption that the patient was not infected, were the reasons for non-compliance reported in another study from Chandigarh, India.⁹ In the present study, while it was found that even though the majority of the respondents were aware of washing the site of injury with soap and water, around one-third of were unaware of the fact that the application of antiseptic could cause more damage to the already injured tissues. Many of the respondents also had no knowledge of the immediate measures to be undertaken following exposure to eyes or mouth; and the lack of knowledge about reporting any incidence of occupational exposure was noted among many respondents, which was a great concern. In fact, a great number of them expressed no knowledge of where to look for PEP drugs in the hospital. In terms of knowledge of basic and expanded PEP regimens, the best time of initiation of the drugs and the duration of the regimens was found to be far lower than satisfactory. In a similar study conducted in Mangalore, India, it was reported that only 23.5% knew the first aid measures following exposure and approximately 57.6% expressed knowledge relating to the application of antiseptics to the injured site; however, poor knowledge was observed with respect to the time of initiation of PEP, PEP drug regimens and their duration; while very few of the respondents actually knew where the drugs were available at the hospital and whom to first contact following any incidence of occupational exposure.¹⁰ While in a earlier study by Chogle et al. around 78% of the respondents correctly stated that washing the site of injury with soap and water was the initial measure, but less than a third knew whom to contact immediately after a needle stick injury; and although 64% expressed the correct knowledge on the time of initiation of PEP, none knew exactly which drugs to use. Furthermore, only 6% knew the correct duration of post- exposure prophylaxis.¹¹

Another survey conducted by Siwach et al. in Chandigarh, revealed that 70% of the respondents were unaware of the availability of post-exposure prophylaxis, and most of them were unsure of the timings for its administration.¹² In the end, the researchers would emphasize the fact that the decision to start PEP following a needle prick depends a lot on the HIV status of the source, who often tends to hide their sero- status out of fear of stigma and discrimination, and might not show willingness to undergo HIV testing. The present study has its own limitations, to begin with; the study assessed the self reported compliance of practice of "Universal Precautions", while the actual practice may be even lower. The results of this study could not be extrapolated to other groups of healthcare workers because they had not been included in the study. However, this study has to some extent been able to assess the training needs of the interns who are going to be the future consultants. Similar studies on different groups of healthcare workers are needed to determine whether knowledge and practice differ in different groups.

CONCLUSION

Although medical interns had good knowledge about Universal precaution and PEP but they failed to put that into use. There was a gap between knowledge and practice. In order to overcome this gap it is important that during internship there should be regular onsite training and constant supervision by superior staff. Moreover, adequate supply of equipment like hub-cutter and puncture proof containers is imperative to ensure adherence to the practice of proper disposal of needles and sharps instruments.

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