

KNOWLEDGE, ATTITUDES AND PRACTICE OF LABORATORY TECHNICIANS REGARDING UNIVERSAL WORK PRECAUTION

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ABSTRACT

Objective: Objective of the present study is to determine the knowledge, attitude, and practice of universal work precautions amongst medical laboratory technicians in private hospitals.

Methodology: Cross-sectional study of health care workers was conducted using a pretested self-administered questionnaire, which enquired about knowledge, attitude and practices of universal work precautions. The hepatitis B vaccination statuses were also asked.

Results: 200 questionnaires were administered to laboratory technicians and 154 of them were returned giving a response rate of 77%. All the participants wear gloves during laboratory work but 81.2% wear a single pair. 17.5 % of the participants claimed to know what to do if exposed to infection. 45.6% of the participants eat in the laboratory, 47.0% of them store foods and water in the refrigerators, 31.5% of them put on cosmetics in the laboratory, 12.6% smoke in the laboratory, 10.0% cut their finger nails with teeth in the laboratory. 91.5% are not immunized against hepatitis B virus (HBV). 99.0% of them do not take shower immediately after laboratory work. 82.0% of the participants do not feel that the use of masks is necessary in laboratory.

Conclusion: It is concluded that the knowledge, attitude, perception, and compliance with universal work precautions amongst laboratory technicians are poor.

Keywords: Laboratory Technicians, Universal Work Precautions, attitude and Practices

INTRODUCTION

The workers in laboratories generally are faced with many occupational risk at work and his/her health and safety may be severely jeopardized if adequate preventive protective measures are not taken. These hazards can be physical, chemical and biological. The prevention of occupational hazards in laboratories requires a thorough knowledge of the risks and practical measures to be taken¹. Laboratory workers should familiarize themselves with “universal work precautions,” as defined by Center for Disease Control, are a set of precautions designed to prevent transmission of Human immunodeficiency virus (HIV), hepatitis B virus (HBV), and other blood borne infections when providing first aid or health care. Under universal work precautions, blood and certain body fluids of all patients are considered potentially infectious for HIV, HBV and other blood borne pathogens².

Universal work precautions apply to blood, other body fluids containing visible blood, semen, and vaginal secretions. Universal work precautions also apply to

tissues and to the following fluids: cerebrospinal, synovial, pleural, peritoneal, pericardial, and amniotic fluids. Universal work precautions do not apply to faeces, nasal secretions, sputum, sweat, tears, urine, and vomitus unless they contain visible blood. Universal work precautions do not apply to saliva except when visibly contaminated with blood or in the dental setting where blood contamination of saliva is predictable.

Universal work precautions involve the use of protective barriers such as gloves, gowns, aprons, masks, or protective eyewear, which can reduce the risk of the health care worker’s skin or mucous membranes to potentially infective materials. In addition, it is recommended that all health care workers take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices.

Laboratory technicians are exposed to a large pool of specimens from patients suffering from infections such as HBV and HIV^{3,4}. However, they seem to have a poor perception of the risk of infections and are not compliant with the basic principles of universal work precautions^{5,6}. This system of infection control is,

therefore, very important if the risk of transmission of infections in the laboratory is to be minimized, as they may not be aware of the outcome of blood and fluid specimens until they are investigated or contaminated instruments in the laboratory.

The purpose of this study was therefore to assess the knowledge about and compliance with universal work precautions amongst laboratory technicians in private hospitals situated in Ahmedabad city.

MATERIALS AND METHODS

This cross-sectional study of laboratory technicians was conducted at various private hospital of Ahmedabad city in the year 2009. Only technicians directly involved with the work in the laboratories of selected hospitals participated in the study. Hospitals were selected considering feasibility and response from their management. 200 questionnaires were randomly sent out, which were to be filled and returned. Only 154 questionnaires were returned.

A structured pretested self-administered questionnaire prepared by using guidelines on universal work precautions was used to collect data for the study. Information sought included socio-demographic characteristics such as age, sex, marital status, duration of working experience and background on biohazards.

Attitude and practices of participants were included in the study. Participants were also scored on some items on biohazards and biosafety. Furthermore, participant's knowledge on the subject was sought by inquiring what they would do if they sustained injuries in the laboratory. The Hepatitis B vaccination statuses were also determined.

All returned questionnaires were analyzed in a computer using Epi-Info version 6.04 b software (CDC, USA, and WHO, Geneva, Switzerland).

RESULTS

200 questionnaires were sent out and 154 of them were returned giving a response rate of 77%. 92 males and 62 females participated in the study. 73% of them were married while 27% are single. 82% of them are Hindu while 18% were Muslims. The mean age was 36.8±6.5 with a mean working experience of 8.3±2.1 years. 76.63% of the participants had worked for less than 10 years. Regarding awareness about Universal work precautions, Table 2 shows that 20.8% (n=32) of the participants had heard of it and only 37.5% (n=12) of these could define and state its objectives

53.23% (n=82) of the participants had had injury (cuts or punctures) from needles, surgical blades, sharp instruments or devices. The current study shows that only 28.78% of the victims make use of first aid after injury. All the participants wear gloves during laboratory works but 81.2% wear a single pair. Of

these, 59.7% had experienced torn gloves and claimed that they are changed as soon as they are noticed.

Table 1: Demographic characteristics of laboratory technicians

Demographic characteristics	Number (%)
Age (years)	
20-29	25.80
30-39	53.32
40-49	8.6
50-59	10.32
>60	1.72
Sex	
male	92 (59.7)
female	62 (40.3)
Work experience in laboratory (yrs)	
1-10	118 (76.63)
11-20	21 (13.4)
21-30	10 (6.7)
>30	5 (3.3)

93.5% of the participants were aware of the risk of being infected with blood born infections after injury in laboratory and could recognize HBV and HIV as potential workplace exposures. They do not know if the following diseases could be contacted at workplace: Shigellosis, Tuberculosis, Hepatitis C, Brucellosis. 17.5 percentage of the participants claimed to know what to do if injury happens.

Table 2 describes attitude and practices of laboratory technicians.

Table 2: Knowledge, attitude, and practices of laboratory health workers

Occupational hazards and preventive Measures.	Numbers (%)
Aware of Universal Work Precaution	32 (20.8)*
Immunized against Hepatitis B	5 (8.5)
Injury while working	82 (53.23)
Used first aid after injury	44 (28.78)**
Wearing of gloves For all procedure	154 (100.0)
Wearing Single pair of gloves	125 (81.27)
Experienced torn gloves	92 (59.7)
Awareness of the risk of being infected	144 (93.5)
Eating in Laboratory	70 (45.6)
Storage of food and water in refrigerator	72 (47.0)
Putting on of cosmetics in laboratory	49 (31.5)
Smoking in Laboratory	19 (12.07)
Cutting the fingernails with teeth in lab	15 (10.0)
Take shower immediately after lab work	2 (1.00)
Put on face masks	9 (25.5)
Put on white lab coat	110 (71.4)
Knowing that prophylaxis measures to be taken in the event of injury or exposure	27 (17.5)

*Only 37.5% of these could correctly state its objective.

** Percentage of those who had cuts while working.

DISCUSSION

The level of awareness about universal work precautions amongst laboratory technicians is low as only 20.8% of them had heard about the term and only 37.5% of these could correctly state the objectives. The attitude and practices of the laboratory health workers towards universal Precaution call for a lot of concern as 45.6% of them ate in the laboratory and this is comparable with 41.0% rate observed amongst laboratory scientist in Ibadan, Nigeria⁷ and greater than 5.6% amongst workers in Lagos State Emergency Services (LASEMS) in Lagos⁸. It is very interesting to note that 81.2% wear a single pair and of these, 59.7% had experienced torn gloves. None of those who had sustained injuries reported it to the hospital authorities because they felt no positive actions would be taken and could be treated elsewhere⁸. 53.23 % of them were treated in laboratory out of which 28.78% of them made use of the first aid boxes. The reasons proffered for the under utilization of the first aid boxes are that they are mere window dressings and as such they are ill equipped, poorly managed and kept in the laboratories in fulfillment of the requirements of the accrediting bodies.

The ultimate responsibility for laboratory safety within an institution lies with its Superintendent, who, along with all immediate associates should have a continuing, overt, commitment to the safety program. It has been shown that perception of senior management support for safety programmers was the most significant factor influencing compliance with infection control and reducing exposure incidents^{8,9,10}. We observed that 17.5% of them were knowledgeable about post exposure prophylaxis, which is comparable with 8.0% as obtained amongst British surgeons¹¹ and 10.0% as recorded at LASEMS in Lagos⁸. It has been reported that health workers are generally not aware of what form of prophylaxis measures to be taken in the event of exposure to blood and body fluids⁸. Many needle and sharp injuries can be avoided with proper knowledge and good practices.

The incidence of infection with HBV has declined in health care workers in recent years largely due to the widespread immunization with hepatitis B vaccine¹². In many health facilities, even though the personnel are vaccinated, the seroconversion status after vaccination is not assessed¹³. The CDC recommendation is to test for antibody after completion of three injections of HBV vaccine, and if negative, give a second three dose vaccine and test again anti-HBsAg antibodies. If there is no antibody response, no further vaccination is recommended. If an employee has a blood exposure to a patient known or suspected to be at high risk of HbsAg sero-positivity, he should be given HBIGx2 (one month apart) or HBIG and initiate revaccination¹⁴.

In conclusion, knowledge and compliance with universal work precautions among these highly exposed laboratory workers is poor^{8,9,15}. Suggestions to improve

deficiencies identified include elaborate training on universal precaution commitment to safety safer work practices by hospital management. Vaccination of staff against hepatitis B should also be done while guidelines for post prophylaxis should be widely disseminated.

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