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PREVALENCE OF INJURIES AND REPORTING OF ACCIDENTS AMONG HEALTH CARE WORKERS AT THE UNIVERSITY HOSPITAL OF THE WEST INDIES

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Abstract
Objectives: This study investigated the knowledge, awareness and practices of health care workers towards universal precautions at the University Hospital of the West Indies. The study also examined the prevalence of injuries experienced by health care workers, as well as incidence of accidents and compliance with post-exposure prophylaxis. **Materials and Methods:** A cross sectional survey was conducted in September and October 2007. A 28-item self-administered questionnaire was provided to two hundred health care workers including medical doctors, medical technologists, nurses and porters to assess knowledge and practices regarding universal precautions, prevalence of injuries and incidence of accidents. **Results:** Almost two-thirds (62.3%) of the respondents were aware of policies and procedures for reporting accidents while one-third (33.2%) were unsure. All nurses were aware of policies and procedures for reporting accidents, followed by medical doctors (88%) and medical technologists (61.2%). The majority (81.5%) of the respondents experienced splashes from bodily fluid. Over three-quarters of medical doctors (78%) and two-thirds of nurses (64%) reported having experienced needle stick injuries, while the incidence among medical technologists was remarkably lower (26%). The majority of the respondents (59%) experienced low accident incidence while just over one-tenth (14%) reported high incidence. Eighty four respondents reported needle stick injuries; just under two-thirds (59.5%) of this group received post-exposure treatment. **Conclusions:** The study found that majority of health care workers were aware of policies and procedures for reporting accidents. Splashes from body fluids, needle stick injuries and cuts from other objects were quite prevalent among health care workers. There is a need for monitoring systems which would provide accurate information on the magnitude of needle stick injuries and trends over time, potential risk factors, emerging new problems, and the effectiveness of interventions at The University Hospital of the West Indies and other hospitals in Jamaica.

Key words:
Health care workers, Needle stick injuries, Knowledge, Awareness

INTRODUCTION

Health care workers (HCWs) who are exposed to needles in their clinical activities are at increased risk of acquiring needle stick injuries which may lead to serious or fatal infection with blood-borne pathogens such as hepatitis B virus (HBV), hepatitis C virus (HCV) or human immunodeficiency virus (HIV) [1]. Needle stick injuries can be prevented by applying universal precautions as a safety measure [2]. The term universal basic precaution was introduced in 1985 by Garner [3]. It was defined as the prevention of transmission of blood borne pathogens like HIV through a strict respect by health workers of

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rules concerning care and nursing [3]. Gerberding et al. [4] also defined universal precaution as the routine use of appropriate barriers and techniques to reduce the likelihood of exposure to blood, other body fluids and tissues that may contain blood borne pathogens. The implementation of education, universal precautions, elimination of needle recapping, and use of sharps containers for safe disposal have reduced needle stick injuries by 80%, with additional reductions possible through the use of safer needle devices [5,6].

The safe handling and disposal of needles and other sharp instruments forms part of an overall strategy of clinical waste disposal to protect staff, patients and visitors from exposure to blood borne pathogens [7]. In 2003 the National Audit Office found that needle stick injuries ranked alongside moving and handling, falls, trips and exposure to hazardous substances as the main types of accidents experienced by National Health Service (NHS) staff [8]. Needle stick injuries are the commonest route by which blood borne viruses and/or infections such as HIV and hepatitis B and C viruses are transmitted from patients to health care workers. Such infections serve as high occupational risks and threats to health care workers, especially where basic rules of occupational safety and health are not implemented.

The National Institute for Occupational Safety and Health (NIOSH), USA, defines needle stick injuries as injuries caused by objects such as hypodermic needles, blood collection needles, intravenous (IV) stylets and needles used to connect parts of IV delivery systems [1]. Potential exposure is not limited to needle sticks alone because manipulation of other sharp instruments or mucous membrane exposure to infected body fluids can also result in transmission of infectious diseases [9]. The risk of pathogen transmission from infected persons to non-immune persons through an injury with a sharp instrument has been estimated to be 6–30% for hepatitis B virus, 5–10% for hepatitis C virus, and 0.3% for HIV [10]. The risk of contracting acute hepatitis C virus infection due to a needle prick injury is approximately 15% [11]. It is estimated that the risk of contracting hepatitis B virus infection due to a needle prick injury is 100 times higher than that of contracting HIV. The prevalence of occupational HIV is 0.3% after parenteral exposure, as opposed to 0.09% after mucosal exposure [12].

A number of studies from developing countries have examined knowledge, attitude and compliance of medical doctors towards the standard precautions and their views for better compliance [13,14]. This study investigated the knowledge, awareness and practices of health care workers towards universal precautions at The University Hospital of the West Indies (UHWI). It examined the prevalence of injuries experienced by health care workers, as well as the incidence of accidents and compliance with post-exposure prophylaxis.

MATERIALS AND METHODS

This study was conducted in September and October 2007 at The University Hospital of the West Indies. The study was granted ethical approval by the University of The West Indies/University Hospital of the West Indies Ethics Committee. The University Hospital of the West Indies (UHWI) in Jamaica is the major teaching hospital, with approximately 500 beds. It is one of two large general hospitals serving the Kingston Metropolitan Area (population = 1 160 204). It is a referral centre for the island (population approximately 2.8 million) and provides services in community health, surgery, obstetrics and gynaecology, paediatrics, psychiatry and general care. The UHWI employs approximately 370 medical doctors, 600 nurses, 80 medical technologists and 150 porters as members of its healthcare team. The study population consisted of fifty (50) members randomly selected from each group from the healthcare team making the sample size for this study of 200 employees. All subjects signed the free and informed consent form.

This study was a random, descriptive cross-sectional survey. A structured questionnaire was prepared by the authors. The health care workers included in the study were those in close contact with the patients for at least three years. These occupational groups of medical doctors, nurses, medical technologists and porters were chosen because they had direct contact with patients, specimens (blood,

urine, stool and other bodily fluids etc.) and chemicals during their routine clinical duties.

A 28-item self-administered structured questionnaire about knowledge and awareness of universal precautions in the health care system was devised *de novo* and tested. The questionnaires were distributed to the health care workers together with instructions necessary for completion. The questionnaire included a full range of response options designed to identify the practitioner's knowledge, awareness and compliance with universal precautions in the health sector. Prior to distribution of the questionnaire a pilot study was done with a selected group of health care workers who were asked to complete the questionnaire and return with comments. Minor changes were made to the final instrument.

The questionnaire had three overarching considerations; namely: demographics (included occupation, age, gender, and the years of service in the health sector); knowledge and awareness of universal precautions, which assessed exposure to biological and chemical agents, potential harm when exposed to these agents and availability and use of protective equipment; personal experience of accidents while conducting duties, the reporting of such, awareness of policies and procedures for reporting of accidents, and post-exposure prophylaxis.

There were questions on the availability of containers for safe disposal, availability of disposable syringes and gloves. Accidental or occupational needle-stick injury was defined as a prick with a needle during use of the object for patient care. Accidental splash was defined as a splash of any body fluid from a patient onto the skin or mucous membrane. Accidents are hazards to which health workers are exposed. A health hazard is a material substance or circumstance that poses a danger to human health [15]. Hazards may be physical, chemical, biological, mechanical or psychosocial. Mechanical hazards are very common in the health sector because of the frequent use of pointed and sharp instruments such as needles, scalpels and knives. This results in injuries that expose the workers to blood borne diseases (biological hazards). Protective gears include gloves, masks, gowns, eyewear etc.

Participants were asked about sharps injuries and other blood and body fluid exposures. Initially they were asked whether they had ever been stuck or cut (or had blood or body fluids come in direct contact with their eyes, mouth, or broken skin) when carrying out their duties. Then they were asked the number of times they had experienced a sharps injury. Those who reported having experienced at least one sharps injury or other blood and body fluid exposure were asked to consider the most recent event and respond to open-ended questions that elicited detail on the timing of and circumstances leading up to the event, and associated risk factors. The biological exposure comprised exposures to blood, urine, sputum, faeces, ascetic fluid, pleural fluid and cerebrospinal fluid. Chemical exposure included exposure to concentrated and/or dilute acids, formaldehyde, bleach and other cleaning agents, toluene, xylene, radioactive isotopes and other chemicals. The frequency of both the biological and chemical exposures was assessed.

General reporting was investigated with questions about respondents' awareness of policies/procedures for reporting of accidents.

It took approximately 15 minutes to complete each questionnaire. Before administration, the purpose of the study was explained to respondent and confidentiality assured. In this study needle stick injury was defined as percutaneous injury caused by hollow-bore needles. In order to further analyze the prevalence of accidents (that respondents experienced) a variable was computed and recoded to reflect none (0), low (1–2), moderate (3) and high (4 and more) prevalence of accidents. Relationships between accident prevalence were then explored with age, gender, occupation type and years of service.

Statistical analysis

Data from the questionnaires were coded and entered into a micro-computer and analysis done using Statistical Package for the Social Science (SPSS) for Windows version 12.0 software. Strict confidentiality was guaranteed. All data were stored in computers at a secured location, with access only to the researchers involved in the study. The Chi-square test was used to test association between

non-metric variables. A P-value < 0.05 (two-tailed) was selected to indicate statistical significance.

RESULTS

The sample consisted of 200 respondents: 65% females, 32% married, and 77% younger than 40 years. One-fifth of the respondents spent between 6 to 10 years in the current occupation, 59.5% less than 6 years and 11% 20 years or more. Just over one-quarter of the sample (28.5%) reported no knowledge of universal precautions. Significantly more males (48.6%) than females (17.7%) were represented in this category (P < 0.0001). Less than one-tenth (7.5%) of the respondents was somewhat knowledgeable of universal precautions (Table 1). Almost two-thirds (64%) of the respondents were very knowledgeable of universal precautions with significantly more females (75.4%) than males (42.9%; P < 0.0001). There is a significant relationship between knowledge of universal precautions and occupation. Significantly more nurses (90%), medical doctors (88%) and medical technologists (70%) were very knowledgeable of universal precautions compared with only 8% of porters (P < 0.0001).

Almost two-thirds (62.3%) of the respondents were aware of policies and procedures for reporting accidents while one-third (33.2%) were unsure. Only 4.5% reported that no policies and procedures existed. All nurses (100%) were aware of policies and procedures for reporting accidents, followed by medical doctors (88%) and medical technologists (61.2%). Almost all porters were unsure if any policies and procedures existed (92%) while the remaining (8%) reported that there were none. Interestingly, approximately one-third of the medical technologists (34.7%) reported being unsure of whether any policies and procedures for reporting accidents existed.

Significantly more of the respondents (P < 0.0001) who were very aware of universal precautions reported knowledge of policies and procedures for reporting accidents (84.3%) compared with those who were somewhat aware (46.7%) or unaware (17.5%).

The majority of the respondents knew a health care worker who experienced splashes from bodily fluids (86.5%) followed by needle stick (74%) and cuts from sharp objects (70%). Burns were the least reported accident (7%) (Table 2). In addition, the majority of the respondents who experienced splashes from bodily fluid had the highest prevalence of accidents among respondents (81.5%). There were those who experienced cuts from other sharp objects and needle stick injuries (43.5% and 42% respectively), while burns were experienced by only 1% of the respondents (Table 3). There was a significant relationship

Table 1. Demographic characteristic of sample

Variable	N	%
Gender		
male	70	35.0
female	130	65.0
Marital status		
single	129	64.5
married	63	31.5
divorced/separated	3	1.5
other	5	2.5
Age group [years]		
17–29	104	52.0
30–39	50	25.0
40–49	25	12.5
50–59	15	7.5
60+	6	3.0
Occupational type		
medical technologist	50	25.0
doctor	50	25.0
nurse	50	25.0
porter	50	25.0
Years of service		
less than 1 year	36	18.0
1–5	83	41.5
6–10	40	20.0
11–15	13	6.5
16–20	6	3.0
20+	22	11.0
Knowledge of universal precautions		
not knowledgeable	57	28.5
somewhat knowledgeable	15	7.5
very knowledgeable	128	64.0

Table 2. Knowledge of types of injuries of other hospital employees

Injury type	Prevalence	
	%	n
Splashes from blood and body fluids	86.5	173
Needle stick	74.0	148
Cuts from other sharp objects	70.0	140
Slips/Falls	37.0	74
Splashes from hazardous chemicals	26.0	52
Burns	7.0	14
Other accidents	3.0	6

Table 3. Types of injuries respondents experienced

Injury type	Prevalence	
	%	n
Splashes from blood and body fluids	81.5	163
Cuts from other sharp objects	43.5	87
Needle stick	42.0	84
Slips/Falls	10.0	20
Splashes from hazardous chemicals	10.0	20
Other	3.0	6
Burns	1.0	2

between types of injuries received by respondents and occupation of health care workers ($P < 0.0001$). Porters and medical doctors (96% and 94% respectively) reported more splashes from bodily fluids compared with nurses and medical technologists (86% and 50% respectively). Other significant differences in terms of occupation and accidents were for cuts from other sharp objects and needle sticks. For the former, almost two-thirds of the medical doctors (64%) and nurses (60%) experienced this compared with medical technologists (38%) and porters (12%). Just over three-quarters of the medical doctors (78%) and two-thirds of nurses (64%) reported experiencing needle stick injuries compared with 26% of the medical technologists. None of the porters reported experienced needle stick injuries.

Significantly more respondents who were employed for more than 16 years (32.1%) reported high incidence of accidents compared with those employed for shorter periods (0 to 5 years — 10.1%; 6 to 15 years — 13.2%; $P < 0.0001$). Similarly, greater proportions of older respondents ($P < 0.01$) reported high and moderate incidence of accidents compared with the younger respondents.

The majority of the respondents (59%) reported experiencing low accident incidence (1–2 accidents). Just over one-tenth (14%) reported high incidence (4 or more accidents) while under one-tenth (8.5%) reported experiencing no accidents at all. Almost one-fifth of the sample (18.5%) reported moderate incidence (3 accidents). There were no significant gender differences in prevalence rates of accidents ($P > 0.05$). Similarly, medical doctors and nurses reported high levels of accidents (22% and 11% respectively) compared with medical technologists (12%) and porters (0%) ($P < 0.0001$). Significantly more porters ($P < 0.0001$) reported low incidence of accidents (98%) compared with medical technologists (60%), nurses (44%) and medical doctors (34%). Significantly more medical technologists (22%) reported no accidents than nurses (8%). Only a small proportion of medical doctors (2%) and porters (2%) reported no accidents.

The findings showed that 84 respondents reported needle stick injuries and of this number, just under two-thirds (59.5%) received follow-up medical attention, while 40.5% received no medical attention. Of the 87 respondents who experienced cuts from sharp objects, approximately one-half (54%) received medical attention while 46% did not.

Almost all medical doctors (98%), medical technologists (96%) and nurses (91.8%) reported that they were aware of the potential harm associated with hazardous chemicals while the majority of porters (90%) reported being unaware. Medical technologists (42%) reported the highest frequency of exposure to hazardous chemicals compared with only 4% of medical doctors. Majority of respondents who reported low exposure (1–3 times) were medical doctors (80%) followed by nurses (76%).

A significant statistical relationship was found between exposure to biological agents and the type of occupation of the health care workers [$\chi 2\,(df = 9) = 145.509$, $P < 0.0001$], as well as between exposure to chemical agents and the type of occupation [$\chi 2\ (df = 9) = 192.954$, $P < 0.0001$]. Concurrently, a statistical association was found between

Table 4. Exposure to biological and chemical agents by occupation

Variable	Type of occupation n (%)				P
	medical technologist	doctor	nurse	porter	
Exposure biological					$\chi2 = 145.509$ $P < 0.0001$
no exposure	2 (4.0)	0 (0.0)	0 (0.0)	0 (0.0)	
low exposure	13 (26.0)	1 (2.0)	2 (4.0)	45 (90.0)	
moderate exposure	15 (30.0)	3 (6.0)	12 (24.0)	2 (4.0)	
high exposure	20 (40.0)	46 (92.0)	36 (72.0)	3 (6.0)	
Exposure chemical					$\chi2 = 192.954$ $P < 0.0001$
no exposure	1 (2.0)	4 (8.0)	4 (8.0)	42 (84.0)	
low exposure	14 (28.0)	40 (80.0)	38 (76.0)	8 (16.0)	
moderate exposure	14 (28.0)	4 (8.0)	8 (16.0)	0 (0.0)	
high exposure	21 (42.0)	2 (4.0)	0 (0.0)	0 (0.0)	
Utilize protective gear					$\chi2 = 127.170$ $P < 0.0001$
no	0 (0.0)	1 (2.0)	0 (0.0)	27 (54.0)	
sometimes	15 (30.0)	25 (50.0)	13 (26.0)	23 (46.0)	
most times	23 (46.0)	20 (40.0)	33 (66.0)	0 (0.0)	
all the time	12 (24.0)	4 (8.0)	4 (8.0)	0 (0.0)	

Table 5. Utilization of protective gear

Variable	Years of service n (%)			Sex n (%)	
	0–5	6–15	16+	male	female
Utilize protective gear					
no	25 (21.0)	3 (5.7)	0 (0.0)	20 (28.6)	8 (6.2)
sometimes	43 (36.1)	23 (43.4)	10 (35.7)	33 (47.1)	43 (33.1)
most times	34 (28.6)	24 (45.3)	18 (64.3)	13 (18.6)	63 (48.5)
all the time	17 (14.3)	3 (5.7)	0 (0.0)	4 (5.7)	16 (12.3)
Total (n)	119	53	28	70	130

the utilization of protective gear and the type of occupation of the health care workers [$\chi2$ (df = 9) = 127.170, $P < 0.0001$] (Table 4). Medical technologists were the most likely to utilize protective gear all the times (24%) compared with medical doctors (8%); nurses (4%) and porters (0%) (Table 4).

A significant statistical association was found between utilization of protective gear and years of service of the health care workers [$\chi2$ (df = 6) = 25.880, $P < 0.0001$], and utilization of protective gear and gender of respondents [$\chi2$ (df = 3) = 31.377, $P < 0.0001$]. Females were more likely to utilize protective gears than their male counterparts (Table 5).

DISCUSSION

The study showed a fair understanding of universal precautions among the health care workers with knowledge and awareness higher among nurses and medical doctors followed by medical technologists. This finding is expected as medical doctors and nurses are required to possess a good understanding of universal precautions including the risk of blood borne pathogens and preventative measures for reducing risks [2]. While universal precautions are incorporated in the current nursing and medical student training curriculum at the University of the West Indies, there may be a lack of regular integration of universal precautions guidelines as part of the on-the-job training at the UHWI. The low awareness and understanding of universal precautions among porters may indicate exclusion in the introductory training and orientation porters receive at employment to the hospital.

The findings of this and other studies confirm that knowledge of universal precautions does not necessarily impact compliance [16,17]. Compliance with utilization of protective gears such as gloves, mask, gown, eye wear etc. by health care workers was variable. The utilization of protective gear increased with years of service, with the majority of those employed the longest using protective gear most often. Females were more compliant compared with males, the majority of health care workers utilized protective gears most of the time. Noncompliance is determined by a range of factors including lack of knowledge [18,19], interference with work skills [20,21], risk perception [19,21], conflict of interest [19,20], not wanting to offend patients [21], lack of equipment [22,23] and time [20,22], uncomfortable personal protective equipment [20], inconvenience [23], work stress, [18] and perceiving a weak organizational commitment to safety climate [18,19]. Besides providing barrier protection and sharps disposals, one way to improve compliance at the UHWI is to provide continuous educational in-services, in order to stress the importance of standard precautions. Two previous studies did not find that educational information significantly improve compliance with universal precautions or reduce needle stick injuries [24,25]. However, we believe that educational reminder about the risk of blood borne infections, their transmission, and ways of reducing the risk of transmission in the workplace may hold the key to improving compliance with standard precautions.

Needle stick injuries of health care workers are an important occupational hazard leading to infections with blood borne pathogens like HBV, HCV, or HIV [26,27]. The prevalence of needle stick injury was fairly high among the health care workers. Among the medical doctors needle stick injuries occurred while suturing or doing a surgical procedure. Nurses usually sustained a needle stick while disposing of a used needle, injecting medicine, recapping a needle, or drawing blood. The practice of recapping used needles should be prohibited in healthcare facilities in line with the Occupational Safety and Health Administration (OSHA) guidelines [28]. It is important to understand health care workers' behavior in order to reduce needle stick injuries. Studies should be undertaken to identify reasons and factors that may influence whether an injury is sustained and reported. There is a standard order procedure (SOP) regarding needle stick injuries at the University Hospital of the West Indies. It outlines precautions to be taken when dealing with blood and body fluids. It also contains reporting procedures and management of all needle-stick injuries.

In this study the majority of the respondents reported having experienced 1–2 occupational accidents while just over one-tenth reported four or more occupational accidents. Almost one-fifth of the sample reported moderate incidence while under one-tenth reported no accident. Medical doctors and nurses reported higher levels of accidents compared with medical technologists. In addition, a key finding was that approximately two-thirds of the medical doctors and nurses experienced cuts from sharp objects while just over three-quarters of the medical doctors and two-thirds of nurses reported experiencing needle stick injuries. Cuts from sharps injuries were prevalent among approximately two-fifths of the health care workers in the study. Most of the sharps injuries were due to the absence of sharps bin at the site of the procedure. Neglected needles are often left in trays, kidney dishes, among drapes and trash. Wang et al. (2000)

found that the health care worker suffered injuries in the process of sorting and cleaning the instruments after use [29]. Davies (2000) stated that in the operating theatre, 39% of the injuries were self inflicted while 61% were inflicted by the surgeon or assistant and the majority of the injuries occurred during transfer of sharps between personnel such as direct hand transfer of needles or scalpel blades on handles [30].

Pournaras et al. [31] reported that the high levels of occupational injuries due to sharp objects is because of disposal in ordinary disposal bags which are sometimes used for general purposes. Syringes and sharps may not have been disposed of appropriately during emergency situation and health care workers need to be vigilant about clearing sharps after such events [32]. The ongoing stressor caused by the sharps injuries either due to negligence on the part of the victims or those working with them reinforces the need for continued administrative support through provision of protective equipment to limit occupational exposure and encourage prevention and treatment strategies in the face of occupational exposure. It is therefore important that all new employed HCWs particularly the young and inexperienced, should be taught the correct techniques for handling/disposing sharps and using protective clothing/devices. Although the authors are aware that this is sometime done, it should be an ongoing process, with regular evaluation of effectiveness.

Studies have shown that the stigma associated with blood borne pathogens, the fear of a positive result as well as denial of personal risk prevent the reporting of incidents [33,34]. From anecdotal evidence it seems that many nurses and medical doctors would rather not know their status following injury for fear of the potentially devastating impact a positive result could have on career. The other reasons for not reporting may be fear of disciplinary action due to negligence of the health care workers or the inability to influence the outcome following injury [35,36]. Health care workers may thus perceive reporting a needle stick injury as futile. However, this may be influenced by knowledge of post-exposure prophylaxis. Studies should be undertaken to identify reasons and factors that may influence whether an injury is sustained and reported. It is essential to ensure that the process of reporting injuries is simple and efficient, incorporating follow-up mechanism.

Exposure to blood and other potentially infectious body fluids has, for a long time, been recognized as a potential health hazard among health care workers [37]. In this study majority of the nurses, medical doctors and to a lesser extent medical technologists reported moderate and high exposure to contaminated body fluids. There was a high incidence of splashes from body fluids among the health care workers. Splashes from body fluid experienced typically by medical doctors and nurses occurred most frequently at the patient‘s bedside and predominantly affected the eyes or face/mouth. Drawing blood samples, setting up IV lines and giving injections were the other hazardous procedures exposing the HCWs to potential infectious material. [38]. Among resident doctors, surgical operations and conduct of labour were the common circumstances leading to exposure to blood and body fluids.

The urgency of some interventions and unavailability of some protective devices, might have contributed to the high level of biological exposures among the studied occupations. Even though biological exposure among the majority of the porters was low, a few reported moderate or high exposure. Focused programs should be available to teach porters the risks of occupational exposure to blood and other infected fluids and educate them on the necessity of vaccination and post-exposure management.

In this study, approximately two-fifths of health care workers who reported needle stick injuries or experienced cuts from sharp objects did not undergo post-exposure prophylaxis. This low rate of post-exposure prophylaxis was due to under-reporting. Clarke et al. [39] in their study found that only 29% of exposed respondents reported the incident. Reasons for not reporting included: perceived non-infectiousness, insignificant exposure, timeliness, previous immunization for hepatitis B, unchanged outcome, and missing instructions on how to report incident. These accounted for 83% of the reasons given for not reporting [39]. Although there is an established post-exposure prophylaxis program for the protection of HCWs who experience needle stick injuries, the authors suggest that a written plan of the use of personal protective equipment

should be posted in the hospital, particularly at the delivery and surgical suites.

The majority of the medical technologists reported moderate or high chemical exposure compared with the other groups. Concentrated or dilute acids, formaldehydes, xylene and other chemicals are common hazards in histology and pathology laboratories. Most of them were familiar with the health effects that may result from exposure to these chemicals. Although xylene does not have medical/health surveillance requirements set by the OSHA, medical evaluation of employees exposed to xylene above the action level is effective occupational and environmental health practice [40]. Formaldehyde exposed medical technologists require medical/health surveillance [41]. It is therefore important to ensure the implementation and management of a formaldehyde, xylene or any chemical hazard surveillance program.

One of the limitations to this study was the method for assessing the practice of the precaution. The researchers could not supervise the responders' practice and, therefore, had to rely on their subjective self-assessment. Therefore, the responses might have not accurately reflected true knowledge and attitude in practice and, therefore, the reported level of practice might be even lower than reported. Despite these limitations the findings will contribute to better management of the health care workers who are exposed to sharps injury and should assist in furthering the debate on how best to prevent such injuries. It is hoped that by identifying the problems encountered by the injured staff, appropriate treatment can be given to prevent further anxiety, stress and incapacitation.

CONCLUSION

There is a fair understanding of universal precautions among the health care workers. However, it was observed that, although educational programmes for standard precautions for reducing occupational exposure risks are currently available for nurses, medical doctors, and medical technologist interns at the UHWI, there still exists a large gap between their knowledge, attitude and practice. Therefore, new educational approaches which can effectively change the practice of the personnel should be applied.

The study also showed that cuts from sharp objects and needle stick injuries among HCWs were a widespread occupational hazard, and job categories and work experience were the most important risk factors for exposure. The authors believe that there is a need for further study to evaluate existing techniques/practices involving the use of sharp instruments. Improved standards concerning techniques of taking blood, insertion of drips and allocation of sharps disposal containers are necessary. There should also be an establishment of a surveillance system for registering, reporting and management of occupational exposure. Initial interventions in the form of communication and behavior changes should be backed up by regular trainings and a system for prevention of infections from blood borne pathogens. Post exposure prophylaxis should be given early after accident. Needle should be eliminated wherever possible; safe and effective alternatives should be made available. There should be continuing development, evaluation, needle devices should have safety features. Monitoring systems are also needed to provide accurate information on the magnitude of needle stick injuries and trends over time, potential risk factors, emerging new problems, and the effectiveness of interventions in all health care settings. Further research into how health care workers make risk assessment at the time of exposure could provide insight into developing risk management strategies in this and other hospitals in Jamaica.

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