



Sharps injuries among emergency department nurses in one tertiary care hospital in Ghana



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ABSTRACT

Exposure to bloodborne pathogens is the most serious occupational health risk encountered within the healthcare profession worldwide. The World Health Organization estimates that 3 million healthcare workers experience percutaneous injuries each year. The objectives of this study were to: (1) examine the frequency of sharps injuries, and (2) assess the adequacy, understanding, and use of post-exposure protocols within a sample of the nursing staff at a busy tertiary care emergency department in the Ashanti Region of Ghana. A mixed-methods descriptive study design was used including key informant interviews to develop the survey, a structured survey of emergency department nursing staff, and document review. Overall, the emergency department staff was well informed regarding the risks of sharps injury and the immediate steps to take in the event of a sharps injury. However, few staff could list essential post-exposure follow-up steps. Over one-quarter (28.9%) of emergency nurses reported a sharps injury during a one-year period according to hospital records. The high incidence of sharps injuries indicates an urgent and pressing need for policy and educational interventions to address the infectious disease risk to this group of emergency department staff.

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1. Introduction

Exposure to bloodborne pathogens is the most serious occupational health risk encountered within the healthcare profession worldwide (Leow et al., 2012; Wicker et al., 2008). In a study of US hospitals, nurses accounted for nearly half of all needlestick injuries (Chen and Jenkins, 2007). Additionally, sharps injuries often go unreported. In a survey of 259 US emergency healthcare workers (physicians, nurses, and technicians), nurses were found to report only two-thirds of sharps injuries (Tandberg et al., 1991).

On a global scale, the cost of disease from occupationally acquired hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV) is high (Phillips et al., 2007; Yang and Roberts, 2010). The World Health Organization (WHO) estimates that of 35 million healthcare workers (HCWs) worldwide, approximately 3 million experience percutaneous injuries each year. As a result of these exposures, 66,000 HCWs are likely to become in-

fectured with HBV, 16,000 with HCV, and 1000 with HIV (Pruss-Ustun et al., 2005; World Health Organization, 2011). A disproportionate number of these bloodborne infections (more than 90%) occur in developing countries (World Health Organization, 2011; Yarahmadi et al., 2014). Additionally, HCWs providing care in operating, delivery, and emergency departments (ED) have an enhanced risk of exposure due to the nature of their frequent exposure to sharps used in these specialized areas (World Health Organization, 2011).

2. Background

The adult (15–49 years) prevalence of HIV/AIDS in the country of Ghana is 1.4% (UNAIDS, 2013; World Health Organization, 2005a). In Africa, HBV is endemic (Hwang and Cheung, 2011; World Health Organization, 2002, 2010). Decreasing the risk of infection caused by bloodborne pathogens in Ghana and other developing countries has the potential to significantly influence healthcare economics and positively impact infection prevention.

The Occupational Safety and Health Administration (OSHA) is a part of the United States Department of Labor and was created in the 1970s to ensure safe and healthful working conditions (Occupational Safety and Health Administration, 2010a). This is

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achieved by setting and enforcing standards and by providing training, outreach, education, and assistance in the workplace (Occupational Safety and Health Administration, 2010b). Although OSHA is an institution specific to the U.S., its standards serve as a model for occupational healthcare worldwide.

The major source of bloodborne infections among hospital workers is through percutaneous injury by needlestick or other sharp instrument (World Health Organization, 2011). A sharps injury is defined by the Center for Disease Control (CDC) (2011) as “a penetrating stab wound from a needle, scalpel, or other sharp object that may result in exposure to blood or other body fluids” (p. 1). The CDC, OSHA, and WHO have synthesized the most current scientific findings to create recommendations, guidelines, and protocols to reduce the risk of sharps injuries (Center for Disease Control, 2001; Kuhar et al., 2013; Occupational Safety and Health Administration, 2010b; World Health Organization, 2011). These include compliance with universal precautions, pre-employment hepatitis B immunizations of HCWs, utilization of personal protective equipment, and post-exposure management.

Very few studies have examined the occurrence and risk of sharps injuries among nursing staff in sub-Saharan Africa (Amira and Awobusuyi, 2014; Nsubuga and Jaakkola, 2005), and no prevalence data exist. The objectives of this study were to: (1) examine the frequency of sharps injuries, and (2) assess the adequacy, understanding, and use of post-exposure protocols within a sample of the nursing staff at a busy tertiary care emergency department in the Ashanti Region of Ghana. The aim of the study was to examine the policies and procedures for sharps injuries in a Ghanaian ED within the context of OSHA standards, describe adherence to the policies, and make recommendations for practice both locally and internationally.

3. Methods

3.1. Study design

A mixed-methods descriptive study was conducted in July 2010 to examine the frequency of sharps injuries among the nursing staff and assess the adequacy, understanding, and use of post-exposure protocols at a busy tertiary care ED in the Ashanti Region of Ghana. Data collection included a written survey of emergency department nurses and a review of hospital injury reports, policies, and procedures. The study was approved by the Institutional Review Board at the author's university and the health system associated with the emergency department.

3.2. Setting and sample

The hospital selected for the study site is one of three large teaching hospitals associated with medical schools in Ghana. The 1000-bed facility serves approximately 4 million people in the Ashanti region and receives referrals from nearby regions and throughout the entire country. The Accident and Emergency Center was built as part of a government response to prioritize emergency medicine in the country and to provide advanced clinical care through specialist outpatient consultation services, inpatient services, surgical operative care, pharmacy services, and emergency services consisting of resuscitation (trauma), major and minor procedures, clinical decision, and triage (University of Michigan Health System – Emergency Medicine, 2010). The ED is extremely busy with 70–100 new patients admitted each day and is located within the National Accident and Emergency Center.

A purposive sample of emergency department nursing staff ($n = 45$) was recruited to complete a structured survey. Inclusion criteria for the survey were employment as a nurse in the accident/emergency department and ability to read and write in English.

3.3. Instruments

Three members from the nursing department administration were purposively selected to participate as key informants to inform development of the written survey based on their knowledge of the department. The nurse administrators selected for key informant interviews included the nursing supervisor of the emergency department, the nurse-manager of a section within the emergency department, and the infection prevention and control nurse.

A semi-structured interview guide was created by the US investigators for use in conducting key informant interviews. The interview items focused on the content and detail of the post-exposure protocol and training practices in place at the hospital, with emphasis on specific practices within the emergency department. Emergency department nurse administrators were selected for their first-hand, in depth knowledge about the topic. Semi-structured, in-depth interviews with key informants allowed them to illuminate their own perspective on the topic while shepherding development of the structured survey.

The 14-item written survey solicited descriptive information from subjects utilizing multiple-choice, closed-ended, and open-ended questions. The tool queried subjects regarding their personal history of sharps injuries within the past 12 months and knowledge of institutional post-exposure protocols. Details of sharps injuries were solicited, including the procedure being performed, the device that caused the exposure, and the circumstances that surrounded the exposure. Subjects were also given an opportunity to make suggestions to improve the existing sharps injury prevention program.

Hospital injury reports, policies, and procedures were reviewed. Selected data (e.g., frequencies of injuries) were extracted directly from emergency department injury reports, provided by the hospital Director of Nursing. The 2010 bloodborne exposure standards of Occupational Safety and Health Administration (2010b) served as a guideline for review of hospital documents including policies and procedures.

3.4. Study procedures

Data collection methods included a structured survey and review of injury reports, policies, and procedures related to sharps injuries and bloodborne pathogens. Prior to administering the survey, the purpose of the study was explained to participants and all questions were answered. Participation was voluntary and informed consent was obtained from all participants. Pencil-and-paper surveys were administered to nursing staff jointly by the nursing supervisor of the emergency department and an investigator in a group setting at the hospital.

Hospital policies and procedures for post-exposure prophylaxis in the event of a sharps injury were supplied by the key informants to the investigators for review. Data were collected over a three-week period in 2010.

3.5. Analysis

Data from the structured survey were entered and coded using Statistical Package for the Social Sciences 18.0 (SPSS; IBM, Armonk, NY, USA). Descriptive analyses included frequencies and distributions of key variables.

Written policies and procedures were reviewed and compared to OSHA standards. Emergency department injury records were examined and data were extracted for reported workplace sharps injuries.

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