

Observing Precautions against Cutaneous Injuries by Theatre Workers

S. A. Eguma and R. I. Mohammed

Department of Anaesthesia, Ahmadu Bello University Teaching Hospital, Kaduna, Nigeria.

Reprint Requests to: Dr. S. A. Eguma, Department of Anaesthesia, A. B. U. Teaching Hospital, Kaduna, Nigeria.

ABSTRACT

Background: Health care workers are at risk of acquiring blood-borne viral infections from contact with infected blood and body fluids. Operating room workers are at even greater risk because of their greater exposure and the invasive procedures they perform.

Method: A questionnaire was used to determine the type and sites of injuries obtained at work by operating room workers and how much precaution they took to avoid sustaining such injuries. Knowledge of what to do following injury was also tested.

Results: Seven peri-operative nurses, 15 nurse anaesthetists, 23 resident doctors and 2 consultants responded to the questionnaire. Most injuries occurred on the left index finger. Injuries were sustained from needle sticks, broken ampoules, surgical blades, needle holders and bolts used on bone screws. Artery forceps, oxygen cylinder keys, bare hands, teeth and files were used to open injection ampoules. Gloves were worn while performing or assisting at surgery but not always for procedures like setting up blood, passing naso-gastric or endotracheal tubes, or opening injection ampoules. The risk of acquiring injury from instruments in theatre was 4.49%. 59.5% (28) of operating room workers took no measures to prevent injuries. 14.8% (7) of workers still recapped needles after use. Following injury, 78.7% (37) of operating room workers cleaned the wound with antiseptic and covered with dressing. 8.5% (4) cleaned the wound and left it open while 10.6% (5) did nothing about any injuries sustained.

Conclusion: Theatre workers need to change their present casual attitude towards taking preventive measures against injury at work.

KEY WORDS: *Cutaneous injuries, Theatre staff, Awareness*

Introduction

Operating room personnel are at risk of accidental injuries because of the invasive procedures they perform and their contact with possible infected blood and body fluids. Cutaneous injuries from needles and other sharp objects contaminated with infected materials result in the transmission of blood borne pathogens such as hepatitis B, hepatitis C and HIV.¹ The last decade has witnessed increased awareness of the risk of transmission of viral disease through needles, mucous membranes, blood and body fluids, thanks to intense media education on AIDS. As a result, health institutions in the developed world have put in place clear guidelines for dealing with sharp objects encountered at work and injuries obtained from them. Sadly, this is not the case in most health institutions in the developing world where there is said to be a high prevalence of the dreaded human immune deficiency virus. The number of health workers dying from AIDS seems to suggest that most health workers are either ignorant of or do not observe these work-related safety protocols.

Method

A questionnaire was used to establish the level of knowledge and the extent to which operating room personnel in Ahmadu Bello University (A. B. U.) Teaching Hospitals, Zaria and Kaduna observe precautionary measures against cutaneous injuries. The questionnaires were given to operating room workers in ABU Teaching Hospitals at Kaduna and

Zaria. These included surgeons, anaesthetists, peri-operative nurses, nurse anaesthetists, obstetrician and gynaecologists and theatre attendants. Sixty two questionnaires were given out and 47 were returned completed. All theatre attendants returned uncompleted questionnaires. All completed questionnaires were analysed. Questions asked in the questionnaire included; site and source of injury of injury, duty shift at which injury was received and method of opening injection ampoules. Respondents were also asked if they wore gloves for performing/assisting at surgery, opening ampoules, venepuncture, naso-gastric/endotracheal tube insertion and oropharyngeal suctioning. The questionnaire also sought to know if special precautions were taken to prevent injury and what the respondents did following injury.

Results

Twenty five nurses, 20 resident doctors and 2 consultant staff completed the questionnaire. A breakdown of the respondents is shown in table 1. There were 32 male and 17 female respondents. Majority of the respondents were resident doctors and nurse anaesthetists and the consultants responded least. The sources of injuries were needle sticks (55.3%), broken ampoules (38.3%), blades (4.2%), needle holders for surgical needles (1.8%) and orthopaedic bolts for use with bone screws (0.4%).

Most injuries occurred on the hand, the left index finger being the most frequently injured (Figure 1). Fifty one percent of injuries occurred on the

Table 1: Specialty of 47 Respondents

Respondent	Specialty	No. (%)
Peri-operative nurses	Anaesthesia	15 (32)
	Theatre	7 (15)
Nurse anaesthetists	General surgery	11 (23)
	Obstetrics/Gynaecology	6 (13)
	Anaesthesia	3 (6)
Resident doctors	Paediatric surgery	2 (4)
	Orthopaedics	1 (2)
	Anaesthesia	1 (2)
Consultants	Surgery	1 (2)

night shift.

Only 10.6% of workers used injection files to file open ampoules. The distribution (figure 2) also shows that 46.8% opened ampoules with metal forceps. Oxygen cylinder keys accounted for 25.5%, bare hands 4.9% and teeth 2.2%.

The habit of wearing gloves for procedures likely to cause injury or bring about contact with body fluids says a lot about observance of precautionary measures against disease transmission. All theatre workers wear gloves while performing or assisting at surgery. None wear gloves specifically to open injection ampoules. The percentage of this group of workers who did not wear gloves for various procedures is shown in figure 3.

Measures taken by operating workers to prevent injuries ranged from none (59.9%) to wearing double gloves (10.65), wrapping ampoule with gauze or edge of theatre outfit before breaking it (23.4%) and the use of injection files to open ampoules (6.5%). Fifteen percent of workers recapped injection needles and cannulae stylets. When there was an injury, most operating room workers

knew that some form of treatment had to be taken. Seventy nine percent of the workers clean the wound with antiseptic solution and cover with some dressing. Some cleaned the wound and left it open (8.5%) while 10.6% did nothing to the wound.

Discussion

Health workers are at risk of acquiring blood-borne infections from cutaneous and mucous membrane contact with blood and body fluids of infected patients. Studies have shown that the risk of occupational transmission of HIV to health care workers is greatest after a percutaneous exposure such as needle stick injury to HIV-infected blood.² The risk of acquiring needle stick injury has been quoted as 0.31%.³ In this study the risk of acquiring injury from equipment in theatre was found to be 4.49%.

In 1977, the U.K. Department of Health issued guidelines for health care workers on the management of occupational exposure to HIV. These recommended that post exposure

Figure 1: Sites of Injury in 47 Respondents

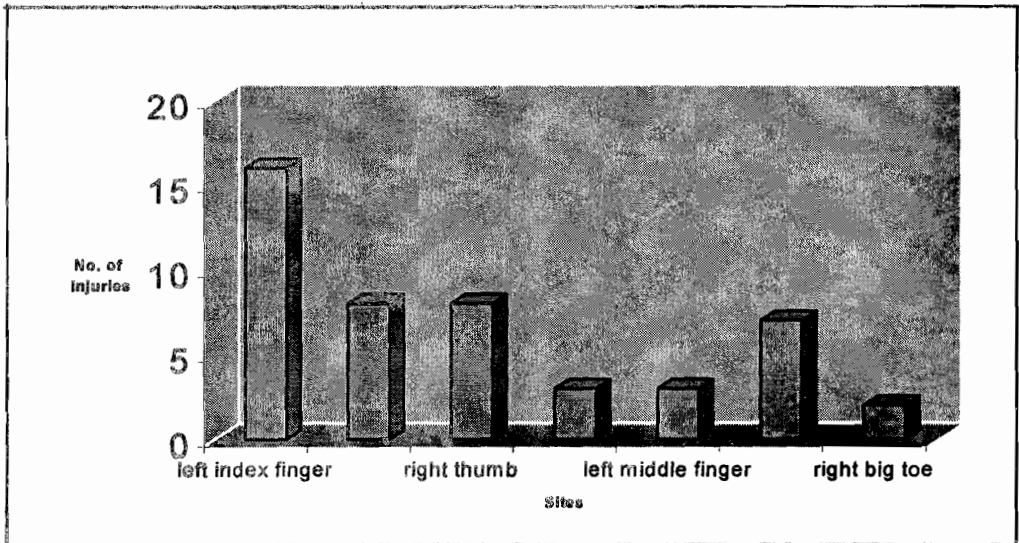


Figure 2: Method of Opening Ampoules by Respondents

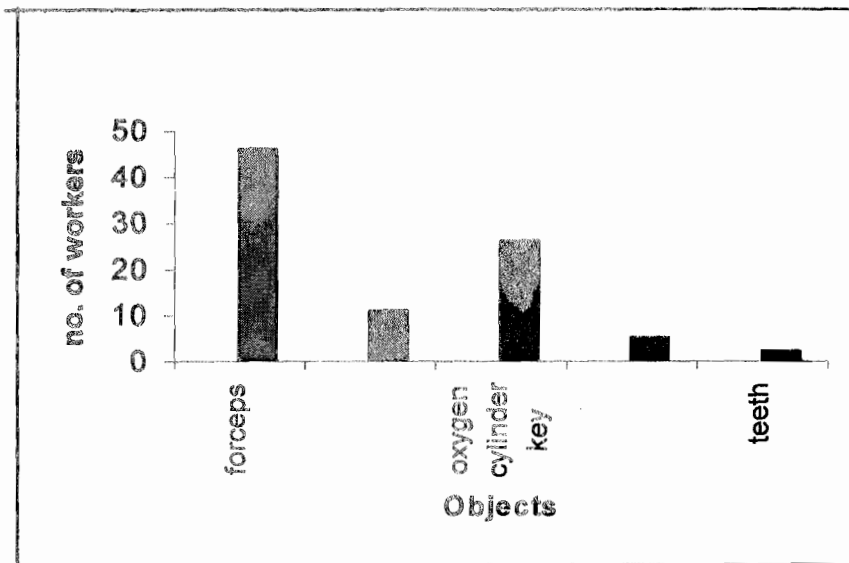
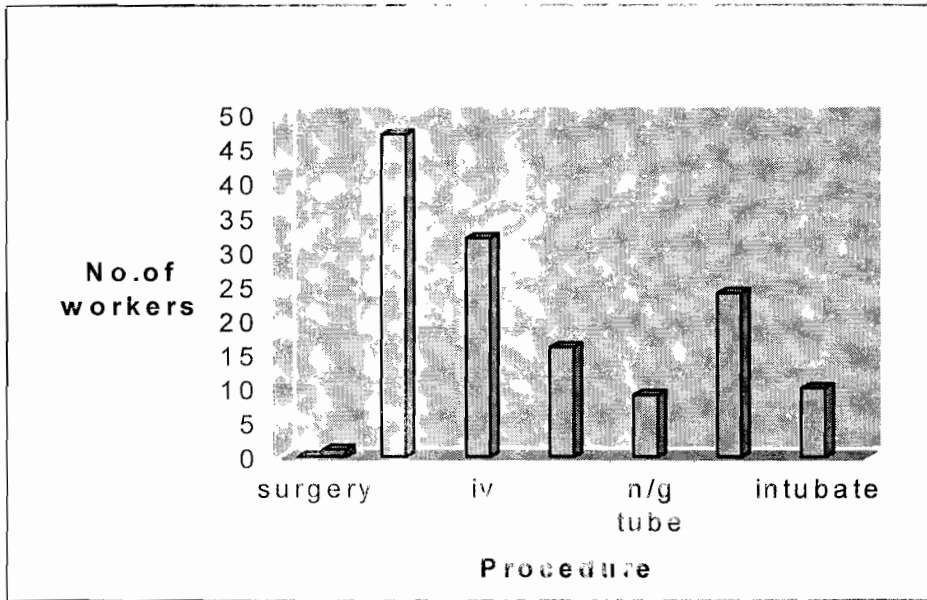


Figure 3: Non-Compliance with Glove Wearing by Respondents



prophylaxis in the form of triple therapy usually with zidovudine, lamivudine and indinavir be offered to health care workers following high-risk needle stick injury.⁴ This is to be done within one hour of injury for it to be effective.

In ABU Teaching hospital, apart from a brief warning on page 11 of the hospital diary⁵ that health care workers must wear gloves before handling materials soiled by patient's blood or other body fluids, there is no other information on what to do if a worker accidentally comes in contact with suspected infected material from patients.

The method of handling instruments and equipments in the operating room may predispose the staff to injury. One such example is the method of opening

injection ampoules. In this study, ampoules were opened using forceps, oxygen cylinder keys, bare hands and sometimes teeth! This study also showed that broken ampoules were responsible for 38.3% of hand injuries received by the theatre personnel. The use of such a variety of unconventional methods of opening ampoules may be due to the non-inclusion of metal ampoule files in injection packets these days. In the past, drug companies usually enclosed files in each packet of injectable drug.

The fact that most injuries occurred during the morning duty shift when people are expected to be more alert shows that the risk of injury is not dependent on the shift worked. Perhaps more injuries occurred in the morning

shift because it is the busiest shift with more patients being operated upon.

Ben-David and Gaitini,⁶ in their study on the impact of glove-wearing on the frequency of needle stick and percutaneous injuries in the operating room found that the policy of wearing gloves did not alter the incidence of injury. They also found that a significant number of operating room workers were unaware of the connection between glove wearing and injury. In this study, all operating room workers realised the need to wear gloves for surgical operation. Other procedures such as venepuncture, naso-gastric tube insertion and pharyngeal suctioning, where likely contact with infected body fluids may be made were not regarded as priority. Gloves were not worn by most operating room workers for high-risk procedures such as intravenous line insertion, pharyngeal suctioning, tracheal intubation and setting up blood for transfusion. Yet among the precautionary measures listed by respondents was the wearing of gloves and double gloves! This may be explained by the fact that patients have to pay for every item used in the operating room during their surgery. In a bid to reduce the financial burden on the patients, operating room workers sometimes omit glove wearing at a risk to themselves.

It is alarming to note that about 60% of operating room workers do not take any measures to prevent injury while working. This is unacceptable considering the role of percutaneous injuries in the transmission of viral diseases. In our environment, where there is a high prevalence of HIV in the general population and surgical patients are not routinely screened for HIV, it is

easy to see that operating room workers are at great risk of contracting AIDS at work. Buerger et al⁷ have pointed out that three factors determine the annual risk of occupational infection with HIV namely; the annual risk for a needle stick injury, the risk of sero-conversion after a needle stick exposure and the prevalence of HIV infection in the specific patient population. The health worker can change only one of these factors, the risk of an accidental needle stick injury. The finding that more than half of the operating room workers in these two centres do not take any measures to prevent injury at work and about 14% still re-cap used needles gives cause for concern. There are no laid down guidelines and hospital policies regarding injury prevention and the handling of needles and other sharp devices. Eventhough Becker et al (8) and Courington et al⁹ have shown that in places where there are laid down universal precautions, compliance with glove use and proper needle handling is poor, that should not form the basis for doing nothing at all. Our study revealed that 78% of the respondents knew that some form of decontamination and protective covering of the wound had to be done following injury. No further steps were taken because there are no readily available drugs or tests at the workers disposal. Since timely post-exposure prophylaxis after needle stick injury is thought to reduce the risk of HIV sero-conversion,¹⁰ many operating room workers may be putting themselves at risk by not recognising the need to receive post-exposure prophylactic treatment within one hour of injury.

The general attitude towards observance of preventive measures against percutaneous injuries among

operating room workers is poor. The risk of transmission of viral disease through contact with blood and body fluids and the need to take timely appropriate measures is not being given the seriousness it deserves. There is need for hospital management to educate her workforce by establishing, publicising and enforcing clear policies of universal precautions. These policies should include the wearing of gloves, using eye protection where appropriate, avoiding re-sheathing of needles, ensuring that there are puncture-proof sharps disposal bins at areas where needles and sharp instruments are used. Formal presentations at clinical meetings, posters and periodic publicity campaigns are necessary to educate and remind health care workers of the need to minimise risk of injury and disease transmission and protect much needed manpower. More importantly, operating room workers have to change their attitude towards observance of precautionary measures against work-related injuries and use of protective gadgets.

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