Assessment of the Knowledge and Practice of Universal Precaution for the Prevention of HIV Transmission by Health Workers in Mangu Local Government Area of Plateau State Nigeria

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[1,2]Chingle Moses, [1,2]Miner Chundung, [2]Obadiah Musa, [2]Adiel Apagu, [1,2]Lar Luret, [1,2]Agbo Hadiza, [1,2]Banwat Mathilda, [1,2]Envuladu Esther, [1,2]Daboer Jonathan, [1,2]Chirdan Oluwabunmi, [1,2]Ogbonna Chikaike, [1,2]Zoakah Ayuba, [3]Isa Samson

[1]Department of Community Medicine, University of Jos, [2]Department of Community Medicine, Jos University Teaching Hospital and [3]Department of Internal Medicine, University of Jos, Nigeria.

ABSTRACT

BACKGROUND

The increasing prevalence of HIV increases the risk that health workers will be exposed to patients infected with HIV, especially when blood and body-fluid precautions are not followed for all patients. The objective of the study was to assess the knowledge of health workers on HIV/ AIDS as well as their practice of universal precaution with regards to HIV/ AIDS.

METHODOLOGY

This was a cross sectional study conducted among health workers in selected health facilities in Mangu Local Government Area of Plateau state in north central Nigeria. A multistage sampling technique was used to select 104 health workers that are directly involved in patient care from 5 health facilities made up of a General Hospital and 4 Primary Health Centres. The data collection instrument was a structured interviewer administered questionnaire that obtained data on health workers' bio-data, knowledge of transmission of HIV, knowledge on universal precautions, practice of universal precautions, and the prevention of HIV transmission by health workers.

RESULT

A total of 104 respondents were recruited for the study. The mean age of the health workers was 42.6 ± 7.9 years with 69 (66.3%) females and 35(33.7%) males. All (100%) of the respondents were aware of HIV/AIDS and 78 (75.0%) knew that the disease has no cure. Modes of transmission that were recognized by the participants included sex [90(86.5%)] pregnancy [55(53.4%)], delivery [85(81.7)]. Most of the respondents were able to identify components of UPs. Hand washing was identified by 85(81.7%), use of PPE by 83(80.6%), safe collection and disposal of sharps by 99(95.2%) and prevention of injury from sharps by 96(92.3%). Among the respondents 88 (84.6%) practiced hand washing regularly when handling patients/carrying out procedures. General use of Personal Protective Equipment's (PPE) was reported by 85 (81.7%) though consistent use was reported by only 54(63.5%). PPE that are used by the respondents included gloves (93.1%), safety goggles (11.5%), apron (29.8%), boots (18.4%), facemask (25.3%) and gowns (21.8%). Also, 34(32.7%) had experienced splashing of bodily fluids to the mouth, 28(26.9%) splashing to the eye, 38(36.5%) splashing to non-intact skin and 65(63.7%) had sustained percutaneous injury. The devices commonly causing injury included hypodermic needles (52.2%), suture needle (26.1%) and intravenous stylet (14.5).

CONCLUSION

This study conducted among 104 health workers showed good knowledge of various aspects of HIV/AIDS and UPs. Most were found to use PPE especially gloves, sharp boxes for disposal and regular hand washing. Up 64% had experienced exposures of various types of which less than half had been reported. Periodic re- training of the health workers would be of immense benefit in cultivating safe practices hence reducing the risk of injury and infection.

Keywords: *HIV/ AIDS; Universal Precaution; Personal Protective Equipment*

Correspondence: *Dr. M.E. Chingle*
Email *- chingleson@yahoo.com*

INTRODUCTION

Human Immune deficiency Virus (HIV), the virus that causes the Acquired Immunodeficiency Syndrome (AIDS), is transmitted through sexual contact, exposure to infected blood or blood components and perinatally from mother to neonate. HIV has been isolated from blood, semen, vaginal secretions, saliva, tears, breast milk, cerebrospinal fluid, amniotic fluid, and urine and is likely to be isolated from other body fluids, secretions, and excretions. However, epidemiologic evidence has implicated only blood, semen, vaginal secretions, and possibly breast milk in transmission [1].

Occupational exposure to blood or blood components can result from percutaneous or mucocutaneous injury and blood contact with non-intact skin. Needle stick injury is the most common form of occupational exposure to blood that would most likely result in infection [1]. Needle stick injury most commonly results from two-handed (double-handed) recapping and the unsafe collection and disposal of sharps waste. Health workers in areas such as operating, delivery and emergency rooms and laboratories have a higher risk of exposure. Cleaners, waste collectors and others whose duties involve handling blood-contaminated items are also at risk[1].

The increasing prevalence of HIV increases the risk that health workers will be exposed to HIV from patients infected with HIV, especially when blood and body-fluid precautions are not followed for all patients. The Center for Disease Control (CDC) in Atlanta, Georgia in 1985 came up with guidelines to protect health workers from HIV infection which became widely referred to as Universal Precautions (UP)[2]. This was later modified to include all persons (patients and clients) attending healthcare facilities regardless of whether or not they are confirmed to be infected especially in view of the fact that many people with blood-borne infections do not have symptoms, nor can they be visibly recognized as being infected.

Among the 35 million health workers worldwide, about 3 million experience percutaneous exposures to blood-borne pathogens each year; two million of them to Hepatitis –B Virus (HBV), 0.9 million to Hepatitis –C Virus (HCV) and 170 000 to HIV. These injuries may result in 15 000 HCV, 70 000 HBV and 1000 HIV infections. More than 90% of these infections occur in developing countries [3].

Up until December 2006, health care workers in the USA had reported 57 occupational HIV infections. Of these, 48 had percutaneous exposure, 5, mucocutaneous exposure, 2 both percutaneous and mucocutaneous exposure; and 2, an unknown route of exposure. In addition, 140 possible occupational transmissions have occurred among healthcare personnel. These are cases in which a worker is infected with HIV and has a history of occupational exposure, but did not have a test immediately before and after the possible exposure. As no other risk factors are reported, it is most likely that the infection has occurred as a result of that occupational exposure[4]. However, there may be under-reporting of cases due to the voluntary nature of the reporting system. The CDC also emphasizes that over 90 percent of health workers infected with HIV also have non-occupational risk factors for acquiring their infection[5].

In the UK, as of November 2008, the Health Protection Agency (HPA) has reported that there have been five documented cases of HIV infection after occupational exposure in the healthcare setting, the last being in 1999[6].

Universal infection control precautions advised by the World Health Organization (WHO)[7] to help protect health care workers from blood-borne infections including HIV include hand washing after direct contact with patients, use of protective barriers such as gloves, gowns, aprons, masks and goggles, safe collection and disposal of needles and sharps, avoidance of two-handed recapping of needles, covering all cuts and abrasions with a

waterproof dressing, promptly and carefully cleaning up spills of blood and other body fluids and using a safe system for health care waste management and disposal.

The objective of the study is to assess the knowledge of health workers on HIV/ AIDS as well as their practice of UP in with regards to HIV/ AIDS.

METHODOLOGY

STUDY AREA

This was a cross sectional descriptive study conducted among health workers in selected health facilities in Mangu Local Government Area (LGA) of Plateau state in north central Nigeria, a typical rural setting with farming as the primary occupation. It has a total of 94 health facilities of public and private ownership. According to the State Ministry of Health there are a total of 624 health workers in the publicly owned health facilities. The minimum sample size required for the study, calculated using the simplified formular[8] for sample size determination for an infinite population for a descriptive study was 104.

A multistage sampling technique was used to select 104 health workers that are directly involved in patient care. In the first stage, 5 health facilities made up of a General Hospital and 4 Primary Health Centres (PHCs) were randomly selected from a list of all the health facilities in Mangu LGA involved in patient care. In the second stage, all the health workers involved in patient care were then listed and proportionately selected from the health facilities based on their numbers. The study excluded health workers in administration, accounts, radiology and pharmacy departments. The data collection instrument was a structured interviewer administered questionnaire that obtained data on health workers' bio-data, knowledge of transmission of HIV, knowledge on universal precautions and practice of universal precautions and the prevention of HIV transmission by health workers. All the health workers in the selected facilities were administered questionnaires by the researchers. Data was analyzed with Epi Info 3.4.1. Permission was obtained from the Local Government Council and the medical directors/superintendents or persons in charge of the health facilities.

RESULTS

Socio- demographic data of respondents

A total of 104 respondents were recruited for the study. The mean age of the health workers was 42.6 ± 7.9 years with 69 (66.3%) females and 35(33.7%) males. The mean duration of practice was 14.7 ± 8.8 years. The respondents were made up largely of nurses/midwives (23.1%), cleaners/attendants (28.8%), others were doctors, lab scientists/technicians, Community Health Officers, Environmental Health Officers, Community Health Extension Workers and Environmental Health Assistants.(Table 1)

Knowledge of HIV/AIDS and Ups

All (100%) of the respondents were aware of HIV/AIDS and 78 (75.0%) knew that the disease has no cure. Modes of transmission that were recognized by the participants included sex [90(86.5%)] pregnancy [55(53.4%)], delivery [85(81.7)], though some wrongly said by healthy looking persons [93(89.4)]. Misconceptions of modes of transmission included sharing food with an infected person [4(3.8%)], witchcraft [20(19.2%)] and mosquito bites [5(4.8%)]. Regarding preventive measures, respondents identified abstinence from sex [76(73.1%)], faithfulness to one uninfected sexual partner [90(86.5%)], use of condoms [93(89.4%)] and use of UPs [100(96.2%)].

Most of the respondents were able to identify components of UPs. Hand washing was identified by 85(81.7%), use of PPE by 83(80.6%), safe collection and disposal of sharps by 99(95.2%) and prevention of injury from sharps by 96(92.3%). Ninety three (90.3%) knew that sharp injuries needed to be reported. Diseases transmitted by sharp injuries identified by respondents included HIV, HBV, HCV and Tetanus. (Table 2)

Practice of Ups

Among the respondents 88 (84.6%) practiced hand washing regularly when handling patients/carrying out procedures. General use of Personal Protective Equipments (PPE) was reported by 85 (81.7%) though consistent use was reported by only 54(63.5%). PPE that are used by the respondents included gloves (93.1%), safety goggles (11.5%), apron (29.8%), boots (18.4%), facemask (25.3%) and gowns (21.8%). Use of gloves was reportedly practiced among respondents when carrying out invasive procedures [101(98.1%)] and cleaning contaminated surfaces [96(92.3%)]. A total of 17(16.3%) practiced the disassembling of used needles and sharps with their hands. Among the [19(18.3%)] that do not use PPE, reasons provided for not using included non-availability, not seeing the need and being cumbersome to use. Use of sharp boxes to dispose of used sharps was practiced by 95(91.3%) of respondents. (Table 3)

Among the respondents, 34(33.0%) had undergone training on UPs. Hospital waste disposal systems used by the health facilities included burning in enclosed pits, dumping in enclosed pits, open burning and open dumping.

Exposure history

Among respondents, 34(32.7%) had experienced splashing of bodily fluids to the mouth, 28(26.9%) splashing to the eye, 38(36.5%) splashing to non-intact skin and 65(63.7%) had sustained percutaneous injury. The devices commonly causing injury included hypodermic needles (52.2%), suture needle (26.1%) and intravenous stylet (14.5%). Procedures frequently found to cause injury included manipulating needles in patients (31.9%), surgical procedures (17.4%) and needle recapping (14.5%).Only 32(46.4%) had reported the exposures.

Table 1: Socio-demographic characteristics of respondents

Variable	Frequency(%) (N = 104)
Age group (years)	
27	3(2.9%)
28 - 32	9(8.7%)
33 - 37	11(10.6%)
38 - 42	28(26.9%)
43 - 47	28(26.9%)
48 - 52	15(14.4%)
53 - 57	4(3.8%)
≥ 58	6(5.8%)
Sex	
Female	69(66.3%)
Male	35(33.7%)
Marital status	
Married	75(72.1%)
Single	13(12.5%)
Widowed	16(15.4%)
Educational level	
None	2(1.9%)
Primary	8(7.7%)
Secondary	24(23.1%)
Tertiary	70(67.3%)
Profession/cadre	
CHEWS	20(19.2%)
CHO	4(3.8%)
Cleaners/attendants	30(28.8%)
Doctor	6(5.8%)
Lab scientist/technician	8(7.7%)
Nurses/midwives	24(23.1%)
Other*	12(11.5)

Other – EHA, JCHEW

Table 2: Knowledge of respondents regarding HIV/AIDS and UPs

Knowledge of HIV/AIDS and Ups	Freq (%)
Heard of HIV/AIDS	104(100%)
HIV cannot be cured	78(75.0%)
Transmission	
Pregnancy	55(53.4%)
Delivery	85(81.7%)
Breastfeeding	95(91.3%)
Healthy-looking person	93(89.4%)
Sharing of foodwith infected person	4(3.8%)
Witchcraft	20(19.2%)
Mosquito bites	5(4.8%)
Preventive measures	
Keeping one sex partner	90(86.5%)
Use of condom	93(89.4%)
Abstinence	76(73.1%)
Use of UPs in work place	100(96.2%)
Components of UPs	
Handwashing	85(81.7%)
Use of PPE	83(80.6%)
Safe collection and disposal of sharps	99(95.2%)
Prevention of injury from sharps	96(92.3%)
Risky practices	
Needle recapping	45(43.3%)
Needle detaching	34(33.0%)
Diseases transmitted	
HIV	63(60.6%)
HBV	74(71.2%)
HCV	44(42.3%)
Tetanus	39(37.5%)
Reporting of sharp injuries	93(90.3%)

Table 3: Respondents' practices of Ups and exposure histories

Handwashing	88(84.6%)
Use of gloves for invasive procedures	101(98.1%)
Use of gloves for contaminated surfaces	96(92.3%)
Disassembling of used needles/sharps	17(16.3%)
Use of sharps disposal box	95(91.3%)
Use of PPE	87(83.7%)
Frequency of use of PPE	
Always	54(62.1%)
Seldom	5(5.7%)
Sometimes	28(32.9%)
Exposure history	
Splashing to the mouth	34(32.7%)
Splashing to the eye	28(26.9%)
Splashes to non-intact skin	38(36.5%)
Percutaneous injury	65(63.7%)
Reporting of exposure	32(46.4%)

DISCUSSION

HIV/AIDS is a disease of public health importance, the respondents being health workers were all aware of the existence of the disease unlike what is obtained in the general population of Nigeria where 88% of women and 93% of men are aware[9]. The respondents demonstrated good knowledge of HIV/AIDS as correct responses were given to most of the knowledge questions regarding its curability, transmission and prevention. This is similar to the findings of a study conducted among medical students where there was 100% awareness and good to excellent knowledge of HIV and AIDS [10]. Be that as it may, misconceptions exist among them regarding its transmission which included sharing food with an infected person, witchcraft and through mosquito bites.

Knowledge regarding universal precautions showed that more than 80% were able to state various components of UPs. Less than 45% identified the use of hands to detach and recap needles as risky practices. Recapping of used needles and manipulating of sharps with unprotected or poorly protected hands have been identified as contributors to a significant proportion of percutaneous injuries [11,12]. Though only 60% mentioned HIV as transmissible by sharps, up to 90% recognized the need to report exposure to bodily fluids. These findings are at variance with other studies that have documented the poor knowledge of UPs among health workers at the primary level of care[13,14] This could be as a result of recent media campaigns on prevention and control of HIV/ AIDS among health workers who have been recognized as an at risk group.

Universal precautions involves the use of protective barriers such as gloves, gowns, aprons, masks, or protective eye wear, which can reduce the risk of exposure of the health worker's skin or mucous membranes to potentially infective materials[15]. Though 84% made use of PPE, only 62% would use it always. The most frequently used protective gear was gloves and the least used were safety

goggles. Other studies in Ghana and Minnesota have documented similar findings among health workers [16,17,18]. It is worrying that more than a quarter (26%) did not consistently engage in hand washing which is considered as one of the most effective methods to prevent transmission of pathogens associated with health care[19]. Almost all (95%) respondents reported using sharps disposal boxes which indicates that there may be availability of safety boxes at the primary health care level.

Exposures to bodily fluids ranged from 32.7% to 63.7%. Percutaneous injuries were the most frequently occurring in the 6 months preceding the study. A seven year study among 150 reporting centres in Britain showed that percutaneous injuries are the most commonly reported exposures[20]. It is believed that less than 50% of injuries are reported[21,22] which was demonstrated in this study as 46.4% of those who experienced exposures reported them among which only 3 were offered HIV post exposure prophylaxis.

CONCLUSION

This was a study which surveyed 104 health workers to assess their knowledge of HIV/AIDS and Universal Precautions as well as practice of UPs in regard to HIV/AIDS. The health workers showed good knowledge of various aspects of HIV/AIDS and UPs though only 34% had received previous training in UPs. Most were found to use PPE especially gloves, sharp boxes for disposal and regular hand washing. Up 64% had experienced exposures of various types of which less than half had been reported. Periodic re- training of the health workers would be of immense benefit in cultivating safe practices hence reducing the risk of injury and infection.

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