NEEDLE PRICK AND SHARPS INJURIES AMONG PRIMARY HEALTH CARE WORKRES IN TANGAZA LOCAL GOVERNMENT AREA, SOKOTO STATE

BY

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MPH/MED/19516/2007-2008

BEING A DISSERTATION PRESENTED TO THE DEPARTMENT OF COMMMUNITY MEDICINE, IN PARTIAL FULFILMENT OF REQUIREMENT FOR THE AWARD OF MASTER OF PUBLIC HEALTH DEGREE (MPH) OF THE AHMADU BELLO UNIVERSITY, ZARIA.

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DECLARATION

I hereby declare that this project has bee written by me and it is a record of my research work carried out under the supervision of Dr Tukur Dahiru. It has not been presented in any previous application for higher degree. The work of other investigators are acknowledged and referred to accordingly.

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CERTIFICATION

This thesis "Needle prick and sharps injuries among primary health care workers in Tangaza Local Government Area, Sokoto State" meets the regulations governing the award of the Degree of Master of Public Health of Ahmadu Bello University, Zaria, and is approved for its contribution to sciences, knowledge and literacy presentation.

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DEDICATION

I have dedicated this work to my family; To inspire them to seek for knowledge and be useful to humanity.

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ACRONYSMS

AHA- American Hospital Association

AMA- American Medical Association

BHSS- Basic Health Services Scheme

CDC- Centre for Disease Control.

CHEW- Community Health Extension Worker

CHO- Community Health Office\r

EHA- Environmental Health Assistant

HICPAC- Hospital infection control practice advisory committee.

HIV/AIDS- Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome

ILO- International Labour Organization

JCHEW- Junior Community Health Extension Worker

LGA- Local Government Area

MOH- Medical Officer of Health

NIOSH- National Institute for Occupational Safety and Health

NP- Needle Prick

NP/SI- Needle Prick/Sharp Injury

NSI- Needle Stick Injury

NMW- Nurse Midwife

OSHA- Occupational Safety and Health Administration

PPE- Personal Protective Equipment

PHC- Primary Health Care

PHN- Public Health Nurse

SI- Sharp Injury

TBA- Traditional Birth Attendant

USA- United State of America

UBP- Universal Basic Precaution

WHO- World Health Organization

SUMMARY

Needle prick and sharps injuries (NP/SI) are common among health care workers (HCWs). The NP is the commonest route by which health care providers acquire blood born diseases from patients. PHC workers get exposed to accidental NP/SI during their routine hospital activities. Abuse of injection, lack of occupational health services, and lack of sharps bins expose HCWs to NP/SI, while awareness and compliance to protective measures prevent NP/SI and related consequences. However lack of data on NP/SI in this area, initiated this research to provide data for Tangaza LGA.

To determine the prevalence and circumstances of NP/SI among PHC workers in Tangaza LGA, Sokoto State.

It was a cross sectional descriptive study. Subjects were PHC workers who are most likely to be exposed to used needles and other sharp instruments.

The instrument of the study was a self administered questionnaire and analysis was done using SPSS version 15.0 soft ware.

Up to 75 4% of HCWs were aware of NP/SI hazards. There was a relationship between categories of HCWs and awareness of NP/SI hazards ($p<0.05$). About 76.1% and 73.9% of HCWs identified HIV and HBV to be associated with NP/SI respectively.

Majority, 81.7% of HCWs administered injections and 61.8% of these recapped needles.

More than half, 56.1% of the respondents incurred NP injuries with needle recapping accounting for 67. 4% of all the prick injuries. In this study NP are not related to cadre of HCWs ($p>0.05$).

Use of protective measures were not practiced by majority HCWs. Only, 16.4% used gloves all the time, post exposure HBV immunization was 12.4% and HIV PEP had not been attempted by any of the respondents.

In conclusion the study showed clearly that the population of primary health care workers are at risk of needle prick/sharps injures and related hazards, and only very few of them adhere to preventive or protective measures despite high level of awareness of the associated hazards.

Training on preventive measures must be recommended as well as avoidance of needle recapping, reduction in over use of injection in treatment, provision of adequate sharps and none sharps disposal bins and reporting NP/SI.

CHAPTER ONE

1.1 INTRODUCTION

Needle prick and sharp injuries are common accidents among health care workers and frequently expose them to occupational health hazards. Needle prick and sharps gain more recognition from the report on a health care worker (HCW) infected with human immunodeficiency virus (HIV) by needle prick (NP) published in 1984.[1] Health care workers incurred 2 million needle prick per year that result to blood born infections.[2] Thus prevention of needle prick and post exposure management are necessary for promoting the health of individual HCW.

Healthcare personnel (HCP) are defined as persons (e.g., employees, students, contractors, attending clinicians, public-safety workers, or volunteers) whose activities involve contact with patients or with blood or other body fluids from patients in a health-care, laboratory, or public-safety setting.[3] Generally, workers represent half of the global population and contribute greatly to the economic and social value of contemporary society. A substantial part of the general morbidity of the working population is related to work.[4] It is known that the ultimate goal of ensuring that all workers in the world enjoy full physical and mental health is still far from being achieved. As a concern that despite the availability of effective interventions for occupational health, too many workers are still exposed to unacceptable levels of occupational risks and fall victim to occupational diseases and work accidents, lose their working capacity and income potential, and still too few have access to occupational health services.[5] Yet occupational health is not widely acknowledged as part of public health care among health regulators and policy makers.[6]

The healthcare workforce, constitute 35 million people worldwide, representing 12% of the working population. The occupational health of this significant group has also long been neglected both organizationally and by governments. The misconception exists that the healthcare industry is "clean" and without hazard, when in fact the chemical and blood-borne exposures encountered can be career- and life-ending.[2]

Health care environment expose health workers to a variety of health hazards; physical, biological, chemical, mechanical(ergonomics) and social(psychological) harzards.[7,8] Despite this, hospital premises should not be detrimental to health and well-being, it serves as a setting for delivery of other essential public health interventions, and for health promotion. Industrialized countries, catered for medical workers in organized comprehensive occupational health service and with both curative and preventive in content, but in developing countries these services are purely curatives at general out patient department (GOPD) staff clinic.[7,8]

However poor waste management, lack of retraining in service, non teaching of occupational health hazards in teaching curricula, non application of universal basic precaution in management procedures, inadequate logistics supplies, poor work motivation and lack occupational health services, little knowledge and skill are identified as not uncommon risk factors that expose health care workers to NP/SI hazards in hospital environment.[9,10]

Needlestick injuries (NSIs) are wounds caused by needles that accidentally puncture the skin. Needlestick injuries are hazardous for people who work with hypodermic syringes and other

sharp equipments. These injuries can occur at any time when people use, disassemble, or dispose of needles. When not disposed properly, needles can become concealed in linen or garbage and injure other workers who encounter them unexpectedly.[9]

Needlestick injuries transmit infectious diseases, especially blood-borne viruses. In recent years, concern about AIDS (Acquired Immune Deficiency Syndrome), hepatitis B, and hepatitis C has prompted research to find out why these injuries occur and to develop measures to prevent them. Despite published guidelines and training programs, needlestick injuries remain an ongoing problem.[1]

The risk of infection after exposure to infected blood varies by type of blood borne pathogen. The risk of transmission after a contaminated needle prick injury had been estimated for HIV to be up to 0.3%, whereas Hepatitis B virus as much as 100 times greater than HIV (30%) and about 10% for hepatitis C.[2]

Needle prick/sharps injuries (NPSI) are the most common source of occupational exposure to blood and the commonest route of blood-borne infections to healthcare workers[6]. Such infections serve as high occupational risks and threats to healthcare workers, especially where basic rules of occupational safety and health care are not implemented; and hazards to health workers are dimly perceived by authorities, especially in low industrialized countries.[4]

In developing world overuse of injections in medical care is common; due to patient demand on assumption it gives rapid recovery, injection promotion by provider to reduce non compliance and aggressive promotion of injections by pharmaceutical companies; unsafe injection practice

and poor health care waste management are the common predisposing factors to medical worker for incurring needle prick and blood born pathogens exposure.[11,12]

1.2 JUSTIFICATION FOR STUDY

To enhance knowledge of primary health care workers on health safety promotion on the basis of strengthening primary preventive strategies through: promotion of universal basic precaution, proper hospital waste management and safe injection.

To generate information for health care provider at primary health centers, about this occupational health hazard, and the associated risk of blood born infections (HIV, Hepatitis, etc). This is necessary as trends of HIV epidemics are changing every year both nationally and states wide, so that precaution and preventive measures can be strengthened by workers and authorities in all treatment procedures requiring use of needles/sharp instruments.

Data unavailability on this occupational health hazards among primary health care providers, triggers this study to be carried out, to provide data for Tangaza Local Government Area, Sokoto State and the country as a whole for research and intervention needs.

To call on policy makers and political leaders to provide safe enabling environment for health care providers, clients and community; in order to achieved the challenging health goal (health for all 2000) and health related MDGs.

1.3 RATIONALE OF THE STUDY:

To establish the burden of hazards due to needle prick and sharps injuries in primary health care workers in Tangaza LGA.

To generate data on needle prick injury for the LGA as none is available.

To generate data on needle prick injury as evidence based for policy makers on planning for prevention and management.

1.4 AIMS AND OBJECTIVES:

General Aim of the Study

The aim of the study is to determine the prevalence and circumstances of needle prick and sharp injuries and the associated risk factors among primary health care workers in Tangaza Local Government Area of Sokoto State.

Specific Objectives:

1. To determine the frequency of needle prick/sharps injuries among primary health care workers in Tangaza Local Government Area (LGA).
2. To determine the level of awareness on consequences and type of preventive measures taken on needle prick/sharps injuries among health workers.
3. To determine the availability of occupational health services for this category of health workers, immunization, post exposure prophylaxis, protective devices, facilities for universal basic precaution etc.
4. To determine the types of preventive measures in place against needle prick/sharps injuries, at the work environment.

5. To determine level of knowledge of primary health care workers on associated risk factors for needle prick and sharps injuries.

CHAPTER TWO

LITERATURE REVIEW

2.0. INTRODUCTION

All categories of health care personnel or HCWs face a risk of NP/SIs, in health care environment. The various activities performed by HCWs in providing health care, predispose them to NP/SIs and related hazards.[13] In 2001 the term health care personnel referred to all paid and unpaid persons working in health-care settings who have the potential for exposure to infectious materials (e.g., blood, tissue, and specific body fluids and medical supplies, equipment, or environmental surfaces contaminated with these substances).[5] They are classified into emergency medical service personnel, dental personnel, laboratory personnel, autopsy personnel, nurses, nursing assistants, physicians, technicians, therapists, pharmacists, students and trainees, contractual staff not employed by the health-care facility, and persons not directly involved in patient care but potentially exposed to blood and body fluids (e.g., clerical, dietary, housekeeping, maintenance, and volunteer personnel).[5]

Primary Health Care Personnel(PHCP) work at heath centers to delivered services in rural community where the majority of the population live and work. PHC workers have 3 groups in Nigeria: the first group was known before the existence of Basic Health Services Scheme(BHSS) in 1977. These include public health nurses(PHNs), medical officer of health(MOH), nurses/midwifes. The second group are the new cadres developed together with the BHSS, examples are community health offices(CHOs), community health

supervisors(CHSs), community health assistants (renamed senior community health extension worker i.e. SCHEW), community health aids(renamed junior community health extension worker i.e. JCHEW), laboratory technician(lab tech.), pharmacy technician(PT), medical records(MRO). The CHO are trained in teaching hospitals while rest of this group are trained in School of Health Technologies. The next category is the voluntary or village health worker(VHW) and traditional birth attendance(TBA).They are selected by village development committee; they mobilize community for heath action. They are informal health system staff but supervised by the formal health staff.[14,15]

Health care environment **t**his refers to all external factors living and non-living materials which surrounds the health facility.[8]

a. Health centers

The health centers are the most widely spread and most numerous structures for delivery of health services in many developing countries. Health centers because of their nearness to population form the interface and link between communities and health sector. The health centre is an important primary health institution which provides the family with all the health components of primary health care. The fourth and smallest unit is the health post, located at a place usually donated by the community, manned by a village health worker(VHW).[14]

In Nigeria 3 types of health centers are recognized within the primary health care system: i. basic health unit – characterized as a small health facility with few staff and with no inpatient facilities; ii. Primary health center; - has more staff and has 10 beds for maternity admission and 2 beds for acute conditions; iii. Comprehensive health center- the

largest and has facilities for in patients admission.[14,15] The objective was to have one PHC center for every 10,000 persons, implying that in a densely populated region the center serves only an area with the radius of 5km or ½ - 1 hour walk time.[14]

b. Hazards in health care environment

In favorable circumstances, work contributes to good health and economic achievements. However, the work environment exposes workers to health hazards.[4]

George Rosen et al, stated that workers in the health field do encounter special health hazards directly associated with their work. For most health workers today, the hazards may be less dramatic than several generations ago, when epidemic of contagious diseases often took the lives of physicians and nurses who fought them. Certain of the more dramatic risks are still present today, but there are also other much more insidious and less easily identified risks that threaten the physical well-being of health workers. There is reason to suspect that chronic conditions among health workers are often the result of occupational exposure where the relationship to the work environment is not suspected or is difficult to trace.[16]

However, the hospital environment exposes workers to many health hazards as follows:[8,13,17]

Biological hazards: viruses e.g. blood born(HIV Hepatitis B & C); bacteria, fungal, parasites etc.

Chemical hazards: laboratory reagents, cytotoxic drugs, disinfectants etc.

Physical hazards: radiation, noise, heat, cold, pressure, gases etc.

Mechanical hazards/ergonomics: contaminated used needle/sharp instruments, other tools and machines, forces (at lifting, bending, pulling, pushing),fall from slippery floor etc.

Psychological hazards: (work stress, disharmony at work place, prolong hours of work etc).[8,13,17]

A case-control study among British blood donors found that having been a health care worker was a risk factor for having HCV infection. A number of case reports have documented occupational HCV transmission from anti-HCV-positive patients to HCWs in a variety of settings.[1] In June 1999, a total of 191 U.S. workers had been reported to the CDC's national surveillance system for occupationally acquired HIV infection and out of these 136 have been reported as possible cases of occupationally acquired HIV infection.[1] The U.S National Cancer Institute (NCI) also established that the size as well as the complex nature of hospital environment may pose potential health and safety hazards.[18]

Workplace health hazards generally differ from those found in the general environment. Furthermore, because workers are often exposed in confined spaces, exposure levels to workplace hazards are often much higher than exposures to hazards in the general environment (WHO 1996).[19] Conditions of work and the work environment may have either a positive or hazardous impact on health and well-being of workers. Exposures and work loads are often several times greater in the workplace than in any other environment with adverse consequences on health.[20]

c. Role of employers and employees at work place.

Employers have an overall responsibility for health and safety in the workplace. Roles and responsibilities are critical in the success of health and safety in the workplace.[10,21,22] The World Health Assembly(WHA) in 2007 endorsed the Global Plan of Action on Workers' Health 2008-

2017 that addresses all aspects of workers' health, including primary prevention of occupational hazards, protection and promotion of health at work, employment conditions, and improving the response of health systems to workers' health in such a way that it links occupational health to public health. The plan also stipulated that a healthy workplace should not present any avoidable risk to the physical, psychological and social well-being of the workers and should allow them to strengthen and promote their health.[23,24]

2.1. Needle prick and sharps injuries (NP/SI)

2.1.1 Definition, Frequency and Hazard

Needle pricks are the most frequent occupational hazards for HCWs[2]. Needle prick and sharps injuries are accidental punctures by contaminated needles that could inject hazardous fluid and drugs into the body.[25,26] Globally, NP/SIs are stated to be the most common source of occupational exposures to blood and the primary cause of blood-borne infections for HCWs.[2] The first report of a health care worker infected with the human immunodeficiency virus (HIV) by a needle stick, published in the medical literature in 1984, launched a new era of concern about the occupational transmission of blood-borne pathogens.[12] In the United States, universal precautions were implemented, regulations such as the blood borne Pathogens Standard were issued, and the rate of vaccination against hepatitis B virus (HBV) among health care workers increased dramatically.[27,28] After a decade of phenomenal technological advances in sharp devices engineered for safety, the federal Needlestick Safety and Prevention Act, requiring the use of safer devices, became law in November 2000 in (U.S).[29]

Healthcare workers incurred 2 - 3 million needlestick injuries (NSIs) per year that result in infections with hepatitis B and C and HIV[2]. The World Health Organization estimated the global burden of disease from occupational exposure to be 40% from hepatitis B and C infections and 2.5% from HIV infections among HCWs. While 90% of the occupational exposures occur in the developing world, 90% of the reports of occupational infection occur in the United States and Europe.[2] As of June 2001, 57 confirmed and 137 suspected cases of occupational HIV transmission in the United States had been reported by the CDC.[2]

It was estimated that more than three million HCWs experienced the stressful event of a percutaneous injury with a contaminated sharp object each year.[30] These exposures result in about 16,000 infections of HCV, 66,000 of HBV and about 1,000 of HIV that lead to about 1,100 deaths and significant disability. Half of these deaths occur in Sub-Saharan Africa.[30] These adverse consequences weaken the health-care system by impact its made on workforce, at a moment where shortages of HCWs are reported (WHO 2000). In addition to the burden caused in this professional group, occupational exposure to sharps also lead to additional problems, including discrimination and stigmatization for of blood born infections.[31,32] In another study it was estimated that between 600,000 and 800,000 needle percutaneous injuries occurred each year in the United States(U.S).[33]

Data from injection safety surveys conducted by the WHO and others shown on average, four NSIs per worker per year in the African, Eastern Mediterranean, and Asian populations.[2,34] In South Africa, 91% of junior doctors reported sustaining a needlestick injury yearly and, 55% of these injuries came from source patients who were HIV-positive.[35] Needlestick injuries are far

too common hazards; some hospitals reported one third of nursing and laboratory staffs suffered such injuries each year.[26] At Hospital University Kebangsaan Malaysia, an average of two accidental sharps injuries among health care workers have been reported every month.[36]

Zungu in his study on NP among nursing students at a university in Gauteng, South Africa reported that, needle prick injuries are the commonest route by which blood-borne viruses and/or infections such as HIV and, hepatitis B and C are transmitted from patients to healthcare workers. He further stated such infections served as high occupational risks and threats to healthcare workers, especially where basic rules of occupational safety and health are not implemented.[9] The risk of contracting acute hepatitis C infection due to a needle prick injury was estimated to range from 1% to 5% and hepatitis B infection 100 times higher than contracting HIV.[29] The prevalence of occupational HIV was documented as 0.3% after parenteral exposure, as opposed to 0.09% after mucosal exposure.[37]

Any health care worker handling sharp devices or equipment such as scalpels, sutures, hypodermic needles, blood collection devices, or phlebotomy devices faced risk of blood born partogens.[26,38,39] Susan reported hepatitis C (HCV) and HIV viruses, being two of the most serious of the 20 blood-borne pathogens that healthcare workers are exposed to in their daily work caring for the world's health. And hepatitis B virus (HBV) being the most common blood borne infection and the only one of the three serious viral infections for which an immunization exists.[2,40,41] Other organisms stated to be transmitted by NPSI involve viruses, bacteria, fungi, and other microorganisms to health care workers, laboratory researchers, and veterinarian staff. Documented example of these include blastomycosis, brucellosis, cryptococcosis, diphtheria,

cutaneous gonorrhea, herpes, malaria, mycobacteriosis, mycoplasma caviae, rocky mountain sported fever, sporotrihosis, staphylococcus aureus, streptococcus pyogenes, syphilis, toxoplasmosis, tuberculosis etc.[2,25]

In the health care setting, blood-borne pathogen transmission occurred predominantly by percutaneous or mucosal exposure of workers to the blood or body fluids of infected patients. Occupational exposures that may result in HIV, HBV, or HCV transmission include needle-stick and other sharps injuries; direct inoculation of virus into coetaneous scratches, skin lesions, abrasions, or burns; and inoculation of virus onto mucosal surfaces of the eyes, nose, or mouth through accidental splashes. HIV, HBV, and HCV do not spontaneously penetrate intact skin, and airborne transmission of these viruses had not been reported to occurred.[42,43] WHO related the global burden of disease from occupational exposures to contaminated sharps, the number of HCWs at risk of exposure, the annual number of sharps injuries, and the prevalence of blood-borne diseases in the worldwide population.[2,29]

2.2. Causes and determinants of needle prick/sharps injuries (NPSI):

Most of the needle-stick injuries result from unsafe needle devices rather than carelessness by healthcare workers.[44] Needle-stick injuries account for a large number of the work-related accidents reported in hospitals. The two most commonly identified causes of NP/SIs are two-handed recapping and, the unsafe collection and disposal of sharps waste.[2,45]

Frequently reported determinants of NP/SI are overuse of injections; lack of supplies (disposable syringes, safer needle devices, and sharps-disposal containers); lack of access to and failure to use sharps containers immediately after injection; inadequate or short staffing; recapping of needles after use; lack of engineering controls such as safer needle devices; passing instruments from hand-to-hand in the operating suite, and lack of awareness of hazard and lack of training.[2]

Lack of appropriate resources, knowledge and skills, coupled with the unavailability of the universal standard precautionary procedures and compliance thereof, constitute high risks for needle prick injuries. Adequate knowledge and adherence to safety practices could prevent the occurrence of NP/SI and the related consequences[9,46].

According to Santhana most of the sharp injuries were due to the absence of sharps bin at the site of the procedure and neglected uncapped needles left in trays, kidney dishes, in drapes or in trash. Also stated that non compliance or failure to adhere to guidelines could be a contributory factor to needle stick injuries.[36] The sharps disposal into ordinary disposal bags used for general purposes instead of disposing them into prepared yellow sharps bins could result into serious injuries to other persons.[47,48,49]

A study at university hospital and clinics in Ile-Ife, also found circumstances associated with needlestick injuries to include unexpected patient movement, handling or disposal of used needles, needle recapping, accidental stick by a colleague, and needle disassembly.[11]

Health care workers, and patients are at risk of acquiring infection from sharps and contamination of environment with multiple drug resistant microorganisms if wastes are not properly managed, stated by a researcher in Abuja health care waste management.[50]

In 2008 Jungu in a study among nurses demonstrated high rate of needle prick; 30.2% from suturing and 33.3% due to blood taking. He also stated activities highly associated with the risk of NP as lack of adequate sharps disposal containers (74.8%), blood transfusion (35.5%) and injection administration (25%).[9]

2.3. Risk determinants of blood borne infection following injury.

The risks of transmission of infection from an infected patient to the HCW following a NSI were rated as 3-10% for hepatitis B, 3% for hepatitis C and 0.3% for HIV.[2,51]

The Centers for Disease Control and Prevention (CDC), in collaboration with international public health authorities, conducted a study using data reported to national surveillance systems in the United States, France, Italy, and the United Kingdom and found factors associated with risks of transmission of HIV after percutaneous exposure to include wound depth, visible blood on the device, a hollow-bore blood-filled needle, used device to access an artery or vein, and high-viral-load status of the patient[1,2]. These factors increase the risk of transmission of HIV from a contaminated sharp by 5%.[2] In developing countries, the risk of occupational transmission is increased by the excessive handling of contaminated syringes.[1,2]

Laboratory studies showed increasing needle size and penetration depth are associated with increase blood transfer volume, and that hollow-bore needles transfer greater volumes of blood

than solid suture needles, and that gloves reduce the amount of blood transferred.[52,53] CDC in 1990 also stated that the level of infectious HIV present in the blood of most patients with symptomatic AIDS is significantly higher than the level present in patients with asymptomatic HIV infection. In addition to documented infection with both HIV and HCV that a health care worker acquired simultaneously from a single NPI while performing phlebotomy on a patient with AIDS.[54]

Unsafe injections practice are responsible for transmission of several blood borne infections like HIV/AIDS, Hepatitis B and C, especially in countries with low income.[53,55,56] WHO in 1999 estimated that annually 12,000 million injections are given, with an annual mean of 4 injections per person per year. In low-income countries, most of the injections were determined to be unnecessary and unsafe, and only increasing the burden of blood born infectious.[33,57] In developing countries, WHO in 2000 estimated proportion of injections administered with re-use injection equipments, in the absence of sterilization to rang from 15 to 50 percent.[51,58] According to WHO, a safe injection is one that is given using appropriate equipment and that does not harm the recipient, does not expose the provider to any avoidable risks and does not result in waste that is dangerous to the other people[3,4,59].

In developing countries it was reported that administration of unnecessary injections on demand is very high. This is due to belief that injection provide quick recovery than other alternative treatment. The re-use of non sterile needles when supplies are low, and the unregulated disposal of hazardous waste posed risks of disease transmission to health care workers, patients, and communities at large.[12,60] In Ghana, it was found 80 to 90 percent of the patients who visit a

health center received one or more injections per visit.[12] Similar findings had been reported in Uganda and Idonisea.[12,19] A correlation had been documented between the frequency of injections and the prevalence of HBV, HCV, and HIV in population.[12] Also other factors were identified to further exacerbate the risk to health care workers in developing countries as lack of gloves, gowns, masks, and goggles to protect them from contact with blood.[51,61] It was recently reported in Tanzania that birth attendants covered their hands with plastic bags to protect themselves from exposure to HIV during deliveries because, there were no gloves available. There was also lack of safe disposal systems to secured containment and elimination of contaminated waste.[12,62]

2.4. Awareness on NP/SIs and associated risks-

Most public health agencies do not have adequate information on injuries and illnesses suffered by their personnel in connection with their work, and what they have is often difficult to analyze.[63] According to the World Health Organization, the exact scale of occupational risk in the health sector is unclear, partly because of the stigma and blame attached to the reporting of sharps injuries and the lack of available post-exposure prophylaxis.[9]

A survey conducted among second-, third- and fourth-year nursing students registered for the 2007 academic year at a medical university in Gauteng province, South Africa, to determine their knowledge of and the circumstances of needle prick injuries and how the risk of blood exposure is managed. The majority of the respondents, 83.3% displayed a fairly high level of awareness of the NP/SI guidelines. More than half 56.3% had a fair knowledge and

understanding of the content of the NP/SI guidelines, while 78.1% indicated that the standard operating procedures (SOPs) for NPI were available and easily accessible in the hospitals and clinics where they conducted their clinical practice.[9]

A study in Kathmandu Medical College and Teaching Hospital to determine knowledge, attitude and practices on needle stick injuries; showed that 4% and 61% of health care workers, respectively, were unaware of the fact that hepatitis B and hepatitis C can be transmitted by needle-stick injuries.[64] Sir Thomos Morison Legge in 1899 stated that "All workman should be told something of the danger of the material with which they come in contact, and not be left to find out themselves- sometimes at the cost of their lives".[7] A study in University of Ghana Medical School showed that, 92% of respondents had knowledge about universal precautions, 4% had no knowledge and 4% others gave no response and between 46% and 96% of respondents understood the various constituents of universal basic precaution(UBP).[38]

The CDC's surveillance system likely does not reflect the full extent of occupationally acquired HIV infection because of underreporting of known infections or under recognition of HIV infection.[65] Studies on HCWs in hospital settings suggest that many percutaneous injuries are not reported. Also, HCWs may not complete post exposure follow-up serologic testing.[9]

2.5. Prevention of NPSI and associated infections

The most effective means of preventing the on going transmission of blood-borne pathogens is to prevent NP/SI. Susan through the following means elimination of unnecessary injections,

education on practice of universal basic precautions, elimination of needle recapping and, used of sharps containers for safe disposal of used needles were found to reduce NP by 80%.[2]

2.5.1 Control measures involve in prevention of NPSI:

Elimination of hazard

Substitution of injections by administration of medications through other routes (like oral, nasal, topical etc), jet injectors substitution for syringes and needles, removal of sharps/needles and elimination of all unnecessary injections. Other examples include the elimination of unnecessary sharps such as towel clips and use of needle less intravenous (IV) systems.[2]

Engineering controls

Such as use of needles that retract, sheathed, or blunt immediately after use. These devices, after a decade of technologic advances, were ideally available in North America and Europe and required by law in the United States.[2] Safe instruments can provide effective protection against needle-prick injuries in the health services. This was the conclusion of a joint project conducted by the German Federal Ministry of Labour and Social Affairs.[40]

Administrative controls

Policies and training programs aimed to limit exposure to NP/SIs hazards. Examples include Universal Precautions, allocation of resources to demonstrate a commitment to HCW safety, a needle stick prevention committee, an exposure control plan and, consistent training.[2,20]

Work practice controls

Examples include non re-capping of needles, placing sharps containers at eye level and at arms' reach, checking sharps containers on a schedule and emptying them before they become full, and establishing the means for safe handling and disposing of sharps devices before beginning next procedure.[10,66] Centre for disease control guidelines recommended that needle never be recapped and, that all used needle/syringes to be discarded into disposable units.[2,56]

Use of Personal Protective Equipment (PPE)

Barriers and filters between the worker and the hazard. Examples include eye goggles, face shields, gloves, masks, and gowns.[7,67]

Universal Basic Precautions (UBP)

It was introduced in 1985 by Garner. He defined it as "the prevention of transmission of blood borne pathogens like HIV through strict respect by health workers of rules concerning care and nursing".[68,69] Alternatively UBP was also defined as "the routine use of appropriate barrier and techniques to reduce the likelihood of exposure to blood, other body fluids and tissues that may contain blood borne pathogens".[68] UBP assumes that anybody in a hospital, especially patients, is potentially a carrier of blood borne pathogens, therefore all patients are treated in the same way as though they were infected from world wide of AIDS awareness 1985.[1,70]

UBP in practical terms means use of gloves, aprons, goggles, suitable care of needles, sharps and other contaminated instruments, house keeping with appropriate cleaning policies and ensuring strict adherence to standard practices. This requires the sustained provision of protective

materials, proper training of health care providers and adherence to sterilization and disinfection protocols.[68,71,72] Strict adherence to universal precaution prevent exposure to blood born pathogens including HIV and hepatitis B.[61,73,70]

In 1995, the CDC's Hospital Infection Control Practices Advisory Committee (HICPAC) introduced the concept of standard precautions, which synthesized the major features of universal precautions and considered every patient being infected with a blood-borne pathogen regardless of the known seros status for taken protective measures.[1,49] Standard precautions apply to blood, all body fluids, secretions, and excretions (except sweat), non-intact skin and mucous membranes. The core elements of standard precautions comprise: (i) hand washing after patient contact, (ii) the use of barrier precautions (e.g., gloves, gowns, and facial protection) to prevent mucocutaneous contact, and (iii) minimal manual manipulation of sharp instruments and devices and disposal of these items in puncture-resistant containers.[1,67] Kahhaleh in 2001 mentioned that donning of gloves could reduced the amount of solution introduced into the wound because the needle might loose half its volume on the glove surface.[63] Wearing gloves during a needle prick injury has a protective effect against viral exposure. Double gloving provides an even more protective benefit in needle prick injury.[52]

Post exposure prophylaxis(PEP)

Report indicated that when HCW sustains a needle stick injury or other potential exposure to a blood-borne pathogen, the site should be washed with soap and water; while mucous membranes should be flushed with water.[36,68] The decision to initiate PEP is based upon the nature of the

NP/SI, severity of exposure and, patient's sero-status and medication regimen if known. Post exposure use of zidovudine (ZDV) by HCWs was found to be associated with a lower risk for HIV transmission.[2] Amr et al reported the incidence of HBV and HIV infections caused by a sharps injuries depend on the effect of post exposure prophylaxis (PEP).[57] The efficacy of the PEP regimen was estimated to be 90% for HBV and 81% for HIV(CDC 2001).[1,37,74]

Immunization

Hepatitis B vaccine provides both pre-exposure and post-exposure protection against HBV infection. Employees with blood or body fluid contact should be offered HBV immunization within 10 working days of exposure. Immunoprophylaxis for hepatitis B or NANB, are most effective when given soon after exposure.[37,75] Prior to the availability of the hepatitis B vaccine, numerous surveys showed that HCWs had a three to five- fold higher sero-prevalence of HBV infection than the general U.S. population.[52] Prevalence rates of HBV infection of 13% to 18% had been demonstrated among surgeons, and infection rates of up to 27% shown among dentists and oral surgeons.[1]

The CDC's recommendations along with the blood-borne pathogen standard, were issued by the Occupational Safety and Health Administration (OSHA). These requested that HBV vaccine to be made available to HCWs with risk of occupational exposure, the development of written exposure control plans, the use of engineering and work practice controls to reduce exposures, and annual HCW training. This had caused widespread standard precautions adoption in U.S. hospitals.[1,15] In 1991, OSHA issued a standard that required employers to offer hepatitis B

vaccine at no cost to employees with reasonably anticipated contact with blood or other potentially infectious materials.[59,37]

Safe blood transfusion

This required strengthening the quality of blood for transfusions through screening, deferring of high-risk donors, recruitment of volunteers and reduction of unnecessary transfusions found to protect patients and HCW.[9,54]

The Record keeping

The record keeping of needle stick and sharps injuries and, circumstances of needle stick injuries and cuts from sharp objects that were contaminated with another person's blood or other potentially infectious materials was said to be unavoidable, in planning and implementation of preventive strategies.[25] According to WHO, the exact scale of occupational risk in the health sector is unclear, partly because of the stigma and blame attached to the reporting of sharps injuries and the lack of available PEP.[9] At University Hospital Kebangsaan Malaysia study found other reasons for not reporting injuries as fear of disciplinary action due to the negligence on the part of the health care workers, doubts about their profession on whether they would be allowed to continue giving care to patients, if they were confirmed to have blood borne disease.[36] Nurses were also not reporting the injury immediately if the ward were busy especially during night shift as they might not have the time to leave the ward.[36,65]

Waste management

The waste produced in the course of health care activities carry a higher potential for infection and injury than any other type of waste.[42] According to Bio-medical waste rule of 1998, all biomedical waste means any waste which is generated during the diagnosis, treatment or immunization of human beings or animals or biological testing, research or production[7,12]. Health care waste expose health workers to infectious agents; sharps injuries; toxics chemicals & pharmaceuticals genotoxics and radioactive hazards. Proper management of health care waste became necessary to prevent associated occupational hazards to workers and community, recommended by waste tracking act.[7,48]

From a study on management of solid medical wastes in some selected hospitals in the Federal Capital Territory, Abuja, the researcher reported medical waste management has received very little attention in waste management process in Nigeria. Neither the government nor hospital authorities pay proper attention to its management.[76] He also found that waste disposal techniques employed by the selected health institutions in the management of solid waste were incineration, burial in the hospital premises, burning in open pits, and disposal of their waste into the municipal dumpsite, microwave irradiation and segregation.[76]

In Nigeria, healthcare waste falls under the category of infectious waste. Within this category are culture and stock of infectious agents, pathological waste, waste from surgery or autopsy that were in contact with infectious agents, sharps (hypodermic needles, syringes, scalpel blades), waste from human blood and products of blood, and laboratory waste.[50] Nigeria does not have health care waste management plan, thus putting its citizens at the risk of infection to blood related diseases. The United States Agency for International Development (USAID), Country

Director, stated this in Abuja March 23 2009.[77] She further added that: "Right now, the waste management of the country is in limbo because there is no plan. There is no any policy for healthcare waste. Hospital wastes are just mixed with municipal waste. And that means the whole community is at risk of infection with HIV, hepatitis and other blood related illnesses".[77]

Others measures

The risk of needle-stick injuries can be further reduced by discarding used needles in puncture-resistant disposal units without first recapping them or purposely bending or breaking them by hand.[78] Risk of injury also found to be reduced if personnel obtain assistance when administering injections or infusion therapy to uncooperative patients also use of caution when cleaning up after procedures that include needles use.[79] Additionally, the incidence of needle stick injuries may be reduced by providing needle-disposal units throughout the hospital in locations that facilitate their immediate use, for example, in nursing stations, patient rooms, laboratories, and utility rooms.[33]

2.5.2 Immediate action to be taken for needle prick/sharps incident

Exposure prevention remains the best strategy for protecting HCWs from occupationally acquired infection, but exposures nevertheless occur.[3] Employers are required to have in place a system that includes written protocols for prompt reporting, evaluation, counseling, treatment, and follow-up of occupational exposures that may place a worker at risk of blood-borne pathogen infection.[3,49,80,81] It is also stated that employers must establish exposure control plans that comply with accident reporting requirements mandated in 1992 by OSHA, including access to clinicians who can provide post exposure care recommended to be available during all work hours, including nights and weekends.[3]

a - Exposure reporting

The prompt reporting of exposures is shown to be important, not only for management of the exposure but also for identification of workplace hazards and evaluation of preventive measures. Reporting systems indicated to include ready access to expert consultants as well as safeguards to protect the confidentiality of the exposed worker.[56,82] HCWs are mandated to understand the importance of reporting exposures immediately after they occur, since certain indicated interventions (e.g., PEP for HIV and HBV) need to be initiated promptly for effective prevention.[37]

b-Exposure Assessment and Emergency Management

Upon reporting an exposure, it is necessary that HCW be evaluated and counseled regarding the risk of blood-borne pathogen infection, the potential usefulness of PEP for HIV and/or HBV, the need for follow-up evaluation, and precautions to prevent possible HIV transmission to others during the follow-up period. First aid, if necessary, required to be administered as quickly as possible. Puncture wounds and other coetaneous injury sites requested to be washed with soap and water. It was reported that there is no evidence that antiseptics use for wound care reduced the risk of blood-borne pathogen transmission, and their use is also not contraindicated.[1,37,49]

c-Post exposure chemoprophylaxis

Study on HCWs from the United Kingdom, suggested that ZDV PEP may reduce the risk for HIV transmission after occupational exposure to HIV-infected blood.[69,82] ZDV and other reverse transcriptase inhibitors are stated to be important for PEP by preventing early viral dissemination.[69] Studies on HIV-infected patients have shown that combination of ARV agents

significantly decrease the plasma HIV level. However, any protection afforded is not absolute. Failure of ZDV PEP to prevent HIV infection in HCWs had also been reported.[1,69]

d-Counseling and follow-up

It was proposed that all HCWs with occupational exposure to HIV to receive follow-up counseling, post exposure testing, and medical evaluation, regardless of whether they receive PEP. HIV antibody testing needed to be performed for at least 6 months post exposure (e.g., at 6 weeks, 12 weeks, and 6 months).[75]

e- Post exposure Prophylaxis for HBV

PEP with hepatitis B vaccine and hepatitis B IG among persons susceptible to HBV infection, counted highly effective in preventing infection after an exposure.[47] Management of HCWs after percutaneous (e.g., needle stick, or laceration) exposure to potentially infectious body fluids include consideration of: (i) the HBsAg status of the source of exposure and (ii) the hepatitis B vaccination and vaccine response status of the exposed HCW.[63,75]

f- Post exposure Management of HCV

Many reports stated that there is currently no effective PEP for HCV infection. In the absence of effective prophylaxis, persons who have been exposed to HCV may benefit from knowing their infection status so that they can seek evaluation for chronic liver disease and treatment.[1,57]

CHAPTER THREE

METHODOLOGY

3.1 Background information of the study area.

The study was carried out in Tangaza Local Government Area (LGA), Sokoto State. One of the North Western states, this state has three senatorial districts (North, West and South) and has 23 LGAs including Tangaza LGA. The Tangaza LGA was created in 1989 out of Silami LGA. It covers a land mass of 336 square kilometers, bordered by the following LGAs: in the South by Binji, East by Kware, Gwadabawa and Wamakkwo and, West by Gudu, while in the North by Niger republic. It has 3 districts namely Gidan Madi (the administrative head quarter),Tangaza and Gongono which are further subdivided into ten (10) political wards: Raka, Tangaza, Gidan Madi, Kalanjeni, Kwachehuro, Sutti, Magoho, Sakkai, Salewa and Ruwawuri (Appendix I).

The population was projected to be113,853 people; male 55088 and female 58765 based on (2006 census)[83].The main ethnic groups are Hausa, Fulani, then Zabarmawa, Adarawa, and Gobirawa. They are predominantly Muslims and Hausa is the common spoken language then Fulfulde. The culture of the people is similar to that of the northern states while occupation is mainly farming and cattle rearing, others practice petty trading ,cloth weaving, hawking, black smiting and hide and skin tanning[83,84].

The temperature of the area ranges between 36 and 37^0c through out the year during cold and hot periods. The rainfall starts in the month of May and ends in October with some slight variation from time to time. The period from November to March is characterize by cold harmatan winds. The area has a large vegetation trees characteristic of semi humid arid zone. It

has an area of insulating hills mainly of sedimentary rocks formation and sandy plains except for few fadama (swamps) lands.[83]

The health department is headed by the PHC coordinator and the activities of the department are overseen by the supervisory councilor for health. There are five(5) units in this department each with a deputy coordinator as in charge; namely:

1 Deputy coordinator (DC) – medical supplies

2 DC - maternal and child health + family planning (MCH+FP)

3 DC - disease control and prevention

4 DC -essential drugs

5 DC -water and sanitation

There are total of thirty eight (38) heath facilities under the LGA which are:

- comprehensive health center – 1
- primary heath center - 2
- dispensary - 35

(Appendix I)

3.2 Study Design

The study design is cross sectional descriptive type.

3.3 Study population:

These are health workers in primary health care facilities in Tangaza LGA. They comprise mainly of staff that are frequently exposed to needles and sharp instruments:

- Community health officers - 4
- Nurses/midwives - 24
- Senior community health extension workers(SCHEW) - 58
- Junior community health extension workers(JCHEW) - 92
- Environmental health officers - 11
- Laboratory technicians – 6
- Attendants - 141
- Cleaners - 128

Inclusion criteria

- All cadre of staff in contact with needles or sharps instruments.

Exclusion criteria

- security people – because they are considered not be exposed to needles and sharp instruments.
- All secretariat staff – by the fact that they mostly engage in administrative works.
- Pharmacy technicians – because they do not deal with uncapped needles.
- Medical record officers – on ground of being mainly engaged in data management.

3.4 Sample size determination

The total study population after considering inclusion and exclusion criteria is 464

PHC workers.

The sample size for population was determined using the formula below

$$n = \frac{Z^2 pq}{d^2} \text{.....(1)}^{33}$$

Where:

n= the desire sample sample size for the study population

z = the standard normal deviate i.e. 1.96 at 95% confidence interval

p = the proportion of staff making frequent contact with bare needles and sharps instruments; 50% (0.50), will be used as no estimate was given.

q= proportion not making contact with needles/sharps;

i.e. 1.0 – p = 0.50

d = degree of accuracy, usually set as 5% (0.05) at 95% confidence interval.

$$Thus \quad n = \frac{(1.96)^2 (0.5)(0.5)}{(0.05)^2}$$

$$n = \frac{0.9604}{0.0025} = 384$$

When sample size is <10,000, like this study the final population correction (*nf*), is determined by:

$$nf = \frac{n}{\frac{1 + (n)}{(N)}} \qquad (2)^{33}$$

Where;

nf= the desired sample size for this study (population <10,000)

n = the desired sample size for population >10,000

N = the estimate of the population size

$$Thus \quad nf = \frac{384}{\frac{1+384}{464}} = 210$$

In case that there may be no response from any respondent, adjustment was made. By anticipating that at least 90% of the heath workers selected would respond, this formula bellow provided the adjustment;

$$ns = \frac{nf}{r} \qquad (3)^{33}$$

where;

ns = adjusted sample size to be selected

nf = the calculated sample size of this study

r = the anticipated response rate

$$Thus \quad ns = \frac{210}{0.9} = 234$$

3.5 Sampling technique;

Sampling was not considered, on account of the small size of the study population that the available resources can handle. Thus the whole workers 464 at risk were considered to be involve in the study instead of the small sample size calculated. So all workers in each cadre category that, satisfied inclusion criteria were picked up and allocated with questionnaires.

Cadre	No. of HCWs in a cadre
-Nurses/midwives	24
-Community Health Officers	4
-Senior Community Health Extension Workers	58
-Junior Community Health extension Workers	92
-Medical Laboratory Technicians	6
-Environmental Health Officers	11
-Attendants	141
-Cleaners	128
Total	464

3.6 Data Collection:

The data were collected using self administered structured questionnaire to those that can read and interviewer administered to those that do not understand English. The questionnaire consist of five(5) parts: personal data, causes and determinants of needle prick/sharps injuries, needle prick/sharp injury hazards, awareness of needle/sharps injury hazards, and preventive measures . The data collectors were selected from health workers in the LGA under study. The data

collectors were trained on the exercise and rehearsal conducted. A total of four hundred and sixty four (464) questionnaires were distributed, and out of which four hundred and twenty six (426), 92% filled were returned while thirty eight (38), 8% were not returned by the respondents.

3.7 Data Analysis technique.

Computer based analysis using SPSS version 15.0 was done. The data were edited, then summarized into frequency tables and percentages. X^2- statistical test set at α 0.05 and 95% confidence interval was the test applied for drawing inference on degree of association examined in the course the data analysis.

3.8 Limitation of the study

Some of the respondents might not have filled in the correct answers due to fear of stigmatization.

3.9 Ethical consideration.

Permission was obtain from the Health Department of the LGA after deep discussion explaining the aim of the study and, the process involved with the Head of Health Department. A letter of approval was sent to all Heads of various health facilities involved in the study.

An ethical clearance was collected from the department of community medicine ABU Zazia to the chairman of Tangaza LGA for permission to conduct this study among the HCWs in the health centers of this LGA.

CHAPTER FOUR:

RESULTS

The data analyzed and presented into frequency tables, to show results of the findings

Table 1: Sociodemographic characteristics by sex of respondents

Characteristics	Sex					
	N Male	%	N Female	%	N Total	%
Ethnic group						
Hausa	177	41.5	134	31.5	311	73.2
Fulani	47	11.0	21	4.9	68	15.9
Gobirawa	9	2.1	4	0.9	13	3.0
Zabarmawa	7	1.6	2	0.5	9	2.1
Yoruba	3	0.7	10	2.3	13	3.0
Adarawa	2	0.5	3	0.7	5	1.2
Ibo	2	0.5	5	1.2	7	1.6
Total	**207**	**57.9**	**179**	**42**	**426**	**100**
Cadre						
Attendants	76	17.8	46	10.8	122	28.6
Cleaners	61	14.3	51	12.0	112	26.3
JCHEW	51	12.0	39	9.2	90	21.1
SCHEW	32	7.5	26	6.1	58	13.6
N/M	11	2.6	12	2.8	23	5.4
EHA	9	2.1	2	0.5	11	2.6
Lab. Tech	4	0.9	2	0.5	6	1.4
CHO	3	0.7	1	0.2	4	0.9
Total	**247**	**57.9**	**179**	**42.1**	**426**	**100**
Age group (year)						
20-24	4	0.9	6	1.4	10	2.3
25-29	59	13.8	38	8.9	97	22.7
30-34	59	13.8	42	9.9	101	23.8
35-39	50	11.7	32	7.5	82	19.2
40-44	40	9.4	18	4.2	58	13.7
45-49	20	4.7	26	6.1	46	10.8
50-54	11	26	14	3.3	25	5.9
55-59	4	0.9	3	0.7	7	1.6
Total	**247**	**57.9**	**179**		**426**	**100**
Religion						
Islam	237	55.6	173	40.6	410	96.3
Christianity	10	2.3	6	1.4	16	3.7
Total	**247**	**57.9**	**179**	**42.1**	**426**	**100**
Marital status						
Married	217	50.9	129	30.3	246	81.3
Single	18	4.2	8	1.9	26	6.1
Separated	5	1.2	11	2.6	16	3.7
Widowed	5	1.2	18	4.2	23	5.4
Divorced	2	0.5	13	3.1	15	3.5
Total	**247**	**58.0**	**179**	**42.1**	**426**	**100**
Duration of Service (years)						
1-4	96	22.5	50	11.7	146	34.3
5-9	55	12.9	49	11.5	104	22.4
10-14	39	9.2	28	6.6	67	15.7
15-19	29	6.8	22	5.2	51	12.0
20-24	15	3.5	17	4.0	32	7.5
25-29	6	1.4	10	2.3	16	3.8
30-34	7	1.6	3	0.7	10	2.3
Total	**247**	**57.9**	**179**	**42.1**	**426**	**100**

- There were more males 57.9% than females.
- Majority of the respondents 81.3% were married.
- A large fraction were CHEWs 34.7%.
- Majority of the respondents 96.3% were Muslims.
- Majority 73.2% were Hausa by tribe then followed by Fulani 15.9%.
- About 23.8% of the respondents were within the age group 30-34 years.
- Mean age wss 36.25 years.
- Median age is 35 years.
- About 32.6% of the respondents were under 5 years in services.
- The mean duration of service was 9.43 years.
- The median duration of service was 7 years.

Table 2: Responses on awareness that used needle/sharp can expose to blood borne infections.

Awareness	**Frequency**	**Percent**
Yes	321	75.4
No	106	24.6
Total	**426**	**100**

- Highest percentage of the respondents 75.4% were aware used needle can expose HCW to blood born infections.

Table 3: Awareness that NP/SI can expose someone to blood borne infection by cadre

Cadre	**Awareness**			
	Yes			
	N	**%**	**N**	
SCHEW/JCHEW	127	85.8	21	14.2
Attendant	83	68.0	39	32.0
Cleaner	74	65.9	38	34.0
Nurse./Midwife	21	91.3	2	8.7
EHA	8	72.7	3	27.3
Lab. Techn.	5	83.3	1	16.7
CHO	3	75.0	1	25.0
Total	**321**	**75.4**	**105**	**24.6**

- About 91.3% of nurses were aware that NP/SI can expose some one to blood borne infections
- The calculated X^2 –value 21.551 compared to tabulated X^2 – value 12.590 at df 6 and α 0.05, shown calculated value greater than table own ,which indicated existence of relationship between the cadre and awareness that used needle can expose some one to blood born infections. ($P<0.05$).

Table 4: Respondent's awareness of common disease associated with NP/SI

Type of disease	Frequency			
	Yes	**%**	**No**	**%**
HIV/AIDS	324	76.1	102	23.9
Hepatitis B	315	73.9	111	27.1
Hepatitis C	275	64.5	151	35.5
Hepatitis A	127	29.8	299	70.2
Tetanus & Cholera	52	12.2	374	87.8
Epilepsy	13	3.1	413	96.9
Pneumonia &Tuberculosis	7	1.6	419	98.4

- Significant proportions of the respondents 76.1%, 73.9% & 64.5% knew HIV/AIDS, HBV & HCV respectively as common diseases associated with NP/SI.
- Some respondents had misconception or lack of knowledge regarding epilepsy, tetanus, cholera, pneumonia and tuberculosis by reporting them as diseases associated with NP/SI.

Table 5: Knowledge of respondents on diseases that constitute occupational health risk to HCW

Type of disease	**Yes**		**No**	
	N	%	N	%
HIV/AIDS	342	80.3	84	19.7
Hepatitis B	319	74.9	107	25.1
Hepatitis C	268	62.9	158	37.1
Hepatitis A	239	56.0	187	44.0

- HIV was considered by 80.3% of the respondents to constitute occupational health risk to HCW, then HVB by 74.9% of the respondents.

Table 6: Responses on determinants of NP/SI by respondents

Determinants	**Frequency**			
	Yes	**%**	**No**	**%**
Administer injection to patients	348	81.7	78	18.3
Handle of clean sharp instruments	239	56.1	187	43.9
Set/VF or blood transfusion on patient	216	50,7	210	49.3
Collect or wash hospitals lining	174	40.8	252	59.2
Do suturing of injuries or surgical procedures	133	31.2	293	68.8
Draw blood samples from patients	97	18.5	347	81.5
Do not recap needle at all	90	21.1	336	78.9
Recap use needle with one hand	62	14.6	364	85.4

- Majority of the respondents 81.7% agreed that they administer injection to patients.

Table 7: Respondent's methods of used needles disposal

Methods of disposal	**Frequency percentage**	**Percent**
Drop in any waste bin available	165	47.4
Drop in sharps bin	127	36.5
Leave in kidney dish or tray	31	8.9
Leave on trolley or table	12	3.4
Throw on the ground or floor	7	2.0
No response	6	1.7
Total	**348**	**100**

- Only 36.5% of the respondents that administer injections, dispose used needles in sharps bins.

Table 8: Respondent's response on involvement in shifting duty

Shifting Duty	**Frequency**	**Percent**
Yes	238	55.9%
No	188	44.1%
Total	**426**	**100%**

- About 55.9% of the respondents were involved in shift duty.

Table 9: Effect of shift duty on respondents

Effect	Morning		Evening		Night	
	N	%	N	%	N	%
Exhaustion	143	60.0	24	10.0	71	29.8
General distress	93	39.1	41	17.2	104	43.7
Frequent illness	46	19.3	73	30.7	119	50.0
Sleep disturbances	66	27.7	8	3.4	166	70.5
Family disharmonies	53	22.3	67	28.2	188	49.6

- Sleep disturbances during night shift affected majority of the respondents 70.5% involved in shift duty.

Table 10: Occurrence of injury by type of shift

Shifting duty	**Frequency**	**Percent**
Morning	`163	50.4
Evening	63	19.5
Night	98	30.1
Total	**324**	**100**

- About, 50.4% of the respondents with NP/SI were doing morning shift.

Table 11: Worry about job as regards acquiring diseases in the course of contact with patients by respondents

Disease	**Frequency**	**Percent**
Yes	363	85.2
No	63	14.8
Total	**426**	**100**

- Majority (85.2%) of the respondents are worry about job acquiring diseases.

Table 12: Respondents' perception on risk of getting infection from NP/SI

Risk of infection	Frequency	Percent
Yes	373	87.6
No	53	12.4
Total	**426**	**100**

- A high percentage of respondents (87.6%) thought they were at risk of getting infections from NP/SI.

Table13: Perception on risk magnitude of acquiring infection from NP/SI among HCW

Magnitude of infection risk	Frequency	Percent
Very high	218	58.4
High	96	25.8
Moderate	32	8.6
Low	19	5.1
Very low	8	2.1
Total	**373**	**100**

- About 58.4% of respondents selected very high risk magnitude, out of HCW that accept risk of getting infection from NP/SI.

Table 14: Responses on over work on duty by HCW

Over work	**Frequency**	**Percent**
Yes	265	62.2
No	161	37.8
Total	**426**	**100**

- Over work on duty was recorded by majority of the respondents 62.2%

Table 15: Number of injection given per day by respondents

No of injection/day	**Frequency**	**Percent**
1-5	162	46.5
6-10	144	41.4
> 10	42	12.1
Total	**348**	**100**

- About 46.5% of respondents stated having given 1-5 injection per day while 41.4% gave 6-10 injection per day.
- Average of 7 injections given per day per respondent.

Table16: Ever sustained injuries in the past by respondents

Instruments	**Frequency**			
	Yes	**%**	**No**	**%**
Needle	239	56.1	187	43.9
Broken bottles/ contaminated glass	31	7.3	395	92.7
Razor blade	23	5.4	403	94.6
Scalpel	15	3.5	411	96.5
Scissors	11	2.6	415	97.4
Forceps	5	1.2	421	92.8
Total	**324**	**76.1**		

- Highest percentage of respondents 56.1% ever had NP.

Table 17: Circumstances surrounding NP by respondents

Circumstance for NP	**Frequency**	**Percent**
Recapping a needle	161	67.4
Giving an injection to the patient	28	11.7
Working with tray or kidney dish containing uncapped needles	15	6.3
Setting/VF or blood on a patient	11	4.6
Throwing needles into the sharps bin	7	2.9
Taking blood from the patient	5	2.1
Handling an overflowing sharps bin	4	1.7
Carelessly playing with the needle	2	0.8
Handling a garbage bag	1	0.4
Others	5	2.1
Total	**239**	**100**

- Needle recapping provided highest percentage of respondents 67.4% with needle prick.

Table 18: Circumstances surrounding sharps injuries by respondents

Circumstance for sharp injury	**Frequency**	**Percent**
Cleaning sharps instrument	33	38.8
Using instruments on surgical procedure	24	28.2
Handling hospital linings	7	8.2
Others	21	24.7
Total	**85**	**100**

- Cleaning sharp instruments gave the highest proportion of respondents (38.8%) with sharps injuries

Table 19: Occurrence of needle prick by cadre of respondents

Cadre	**Frequency**			
	Yes	**%**	**No**	
SCHEW/JCHEW	94	63.5	54	36.5
Attendants	65	53.2	57	46.8
Cleaners	58	51.8	54	48.2
Nurses/Midwives	11	48.1	12	
EHA	6	54.5	5	45.4
Lab. Technician	3	50	3	50
CHO	2	50.3	2	
Total	**239**	**56.1**	**187**	**44.4**

- Nurses/Midwives had the least percentage of needle prick, 48.1%.
- The calculated X^2- value 5.193 was found to be less than the tabulated X^2 – value 5.350 at α 0.05 and df 6 which implies none relationship between cadre and NP (P>0.05).

Table 20: Blood spillage among respondents

Blood spillage	Frequency	Percent
Yes	147	35.5
No	279	65.5
Total	**426**	**100**

- About 35.5% of respondent had blood spillage

Table 21: Injuries in the past four weeks among respondents

Sustain injury	Frequency	Percent
Yes	12	2.8
No	414	97.2
Total	**426**	**100**

- Only 2.8% of the respondents sustained injuries in the past 4 weeks.

Table 22: Shift duty and injuries sustained in the past four weeks by respondents

Shift	**Frequency**	**Percent**
Morning	5	41.7
Evening	3	25.0
Night	4	33.3
Total	**12**	**100**

- Up to 41.7% of the respondents had injuries during morning shift

Table 23: Circumstance of sustaining injury in the last four weeks

Circumstances	**Frequency**	**Percent**
Recapping a needle	2	16.7
Cleaning sharps instruments	2	16.7
Working with tray or kidney dish containing uncapped needles	1	8.3
Giving an injection to the patient	1	8.3
Taking blood from the patients	1	8.3
Setting IVF or blood on a patient	1	8.3
Throwing needles into the sharps bin	1	8.3
Using instruments on surgical procedure	1	8.3
Handling hospital linings	1	8.3
Others	1	8.3
Total	**12**	**100**

- Needle recapping and cleaning sharp instruments each contributed to 16.7% of the injuries in the past 4 weeks.

Table 24: Uses of precautionary measures against NP/SI by respondents

Measures	**Frequency**	**Percent**
Yes	408	95.8
No	18	4.2
Total	**426**	**100**

- Majority of the respondents (95.8) took preventive measures against NP/SI.

Table 25: Regularity in use of preventive measures among respondents

Use precautionary measure	Frequency	Percent
All the time	308	75.5
Most of the time	51	12.5
Some of the times	31	7.6
Occasionally	18	4.4
Total	**408**	**100**

- Up to 75.5% of the respondents took preventive measures, all the time.

Table 26: Types of precautionary measures taken by respondents

Measures	Frequency			
	Yes	**%**	**No**	**%**
Follow appropriate established infection control measures	260	63.7	148	36.3
Follow appropriate procedure in handling and disposing of sharp instruments	214	52.4	194	47.6
Wash hands and other exposed skin surface	193	47.3	215	52.7
Routinely use barriers such as gloves, eye protective and gowns	73	17.9	335	82.1
Have not bothered about any precaution	5	1.2	403	98.8
Never had any precaution	3	0.7	405	99.3

- Following appropriate established infection control measures was the commonest precautionary measure (63.7%) taken by HCWs.

Table 27: Use of latex glove before giving injection or instrument cleaning by the respondents

Use of glove	Frequency	Percent
Occasionally	126	29.6
Not at all	111	26.1
Frequently	96	22.5
All the time	70	16.4
No response	23	5.4
Total	**426**	**100**

- About 16.4% of the respondents used gloves all the time before giving injection/instrument cleaning, while 26.5% did not do so at all.

able 28: Response on the availability of separate sharp bins in health facility by respondents

Separate sharp bin	Frequency	Percent
Yes	198	46.6
No	228	53.4
Total	**426**	**100**

- Separate sharp bins were stated not to be available in health centers by 53.4% of the respondents.

Table 29: Location of separate sharp bins in health facilities by use of check list.

Sharp bin location	Sharp bin availability					
	Yes	**%**	**No**	**%**	**Total**	**%**
Injection room	26	68.4	12	31.6	38	100
Ward	3	7.9	35	92.1	38	100
Labour room	3	7.9	35	92.1	38	100

- Sharp bins were more available in injection rooms than elsewhere.

Table 30: Number of NP/SI reported to health facility authority by respondents

Reported NP/SI	Frequency	Percent
Yes	51	14.7
No	297	85.3
Total	**348**	**100**

- Only 14.7% of NP/SIs were reported by respondents to health facility authority.

Table 31: Immediate type of action taken by respondents following NP/SI

Action	Frequency			
	Yes	**%**	**No**	**%**
Clean with antiseptic (e.g. methelated spirit)	289	83.0	59	17.0
Clean the site with water and soap	256	73.6	92	26.4
Express blood from the site	220	63.2	128	36.8
Take no action	14	4.0	334	96.0

- Up to 83.3% of the injured respondents took immediate action after NP/SI by cleaning the site with antiseptic.

Table 32: Respondent's report on HBV post exposure prophylactic immunization

HBV Immunization	Frequency	Percent
Yes	43	12.4
No	305	87.6
Total	**348**	**100**

- Maximum of 12.4% of NP/SI victims had post injury HBV prophylactic immunization .

CHAPTER FIVE

5.1 DISCUSSION

This study was conducted among primary health care workers of Tangaza local government area (LGA), Sokoto State, for the purpose of accessing the frequency of needle prick/sharps injuries (NP/SI) and associated hazards. A total of 464 Health Care Workers (HCWs) of the LGA were used in the study, but 426, (92%) returned their questionnaires, while the remaining 8% respondents withheld their own.

Table (2&3); The study showed that on average 75.4% of HCWs were aware that needles prick or sharps injuries could expose them to blood born infections. This is low compared to 94.2% obtained from a study conducted among nurses in India.[86]

Despite the low awareness obtained from this study, on cadre basis nurses/midwives had the highest proportion 91.3% while cleaners had the least 65.9%. This report showed that category of HCWs had relationship with awareness that NP/SIs expose someone to blood born infections ($P<0.05$). The difference may be due to differences in training and knowledge by cadre. The findings here are in line with results of a study in Binin City where nurses/midwives had 92.2% awareness about NP/SI hazards.[87]

Table (4); In the study 76.5%, 73.1% and 64.5% of the respondents identify HIV, Hepatitis B Virus (HBV), Hepatitis C virus (HCV) respectively as common diseases known to be associated with NP/SI, while 3.1%, 12.2%, and 1.6% of the respondents erroneously stated epilepsy, tetanus and cholera, then pneumonia and tuberculosis (TB) as common blood born diseases associated with NP/SI respectively. The response about HIV, HBV and HCV are in line with the reports of a study in South Africa.[9]

Table (5); Majority, 80.3% of respondents believed that HIV constituted occupational risk to HCWs; while 74.9% and 64.9% of respondents expressed HBV and HCV respectively. This is in contrast to the study in Binin City where nurses stated 92.3%, 87.9% and 82.4% occupational risk for HIV, HBV and HCV to HCWs respectively.[87]

Table (6); The majority of HCWs participate in doing one or more activities that happened to be a cause or determinant of NP/SI. As seen 81.7% of respondents administered injection to patients; about half, 47.2% of respondents unknowingly needle recapping with two hands; then setting IVF/blood transfusion, handling/cleaning of sharps instruments, and surgical procedures by 50.7% 56.1% and 31.2% of respondents respectively; only 14.6% of respondents correctly knew that used needles are recapped with one hand and about 21.1% of respondents refused needle recapping at all, which is safer than any method of recapping. These activities differ in proportion from those among the nurses at the University of Gauteng South Africa, which were enumerated as follows 92.7% administered injections, 23.9% did needle recapping, 65.2% did sharp instruments cleaning and 33.3% participated in surgical procedures.[9]

Table (7); Appropriately 36.5% of respondents disposed used needles by dropping them into sharps bins, whereas large proportion 43.7% of respondents wrongly dropped the used needles in any waste bin available. This indicates lack of sharp bins or less information about their importance.

Table (8 & 9); About more than half, 55.9% of respondents accepted being involved in shift duty and 70.1% of these had sleep disturbance effects during night shift; while exhaustion affected 60.0% of respondents on morning duty. This agrees with a study at Pakistan where

sleep disturbances worried 71.9% of HCWs during night shift.[33,81] The study is further buttressed by another study on nurses in Pozan, Poland, where they had 44.9% exhaustion at morning shift and 68% sleep disturbances at night shift.[88]

Table (11); From the study 85.2% of respondents were worried about job acquired diseases on course of contact with patients. This shows that majority of HCWs are cautious about occupational health diseases. In a similar research in Malaysia 93.1% of HCWs were said to be worried with occupational diseases.[36]

Table (12 & 13); Though majority of respondents 87.6% suspected risk of acquiring infection from NP/SI, but only 58.4% of these respondents thought of the risk to be very high in magnitude and the remaining percentage considered the risk as low in magnitude. This suspicion nearly coincide with 86.2% perception on risk of acquiring infection from NP by HCWs in India.[89]

Table (14); About 62.2% of the respondents stated being overworked on duty. This does not correspond with 71.2% work over load, reported by WHO for some countries in sub-Saharan Africa.[6,30]

Table (15); According to this study 87.9% of respondents that were engaged in administration of injections, each gave 1-10 injection per day, and 12.1% of respondents gave more than 10 injection per day. This shows over use of injection in this type of health care system, which could be as a result of overwork on duty due to understaffing or upon the demand by clients on the belief that injection provided quicker recovery than tablets. This study is in line with a study in Ghana where 79% of HCWs gave 5-30 injections per day and, 80-90% of patients received one or more injections per visit.[12] Similar findings were reported in Uganda.[72]

Table (16); NP/SI are common accidents among HCWs. This study showed that 56.1% of respondents incurred needle prick (NP) injuries with used needles and, 20.0% of respondents sustained other types of injuries with various sharp instruments. However the category of HCWs did not show any relationship to NP/SIs (P>0.5) as the proportion of NP/SIs across cadres were about the same. Similarly a study in Malaysia indicated 58.4% NP among HCWs.[68] Another study in Vietnam showed 66% of nurses reported sustaining NP in nine months.[22]

Table (17 & 18); On the circumstances resulting to NP injuries; it was found that recapping of needles produced the highest percentage of respondents (67.4%) that incurred NP. This has a higher percentage than 46.2% reported by WHO in a study conducted in Nigeria in 2005.[3] Also instrument cleaning was discovered to provide the highest percentage of respondents (38.8%) than other sharp instruments injuries.

Table (24, 25 & 26); A high percentage of workers, 95.8% took general preventive measures to protect themselves against NP/SIs and associated infections, but out of these only 75.5% of the respondents complied with the measures all the time. On the whole, 43.2% of the HCWs followed appropriate established infection measures, 38.1% washed their hands and other exposed skin surfaces, and 40.6% followed appropriate procedures in handling and disposal of sharps. Erroneously 0.2% of HCWs stated never to have taken any precaution, and lastly 0.5% said they have not bothered about any precaution. From a study in Tanzania 93.6% of respondents reported have taken universal basic precautions for all treatment procedures.[52]

Table (27); From the present study, only 16.4% of respondents used gloves all the time to protect themselves before giving injections or other procedures. This could be either due to

non availability or cost. This significantly contrasts with the study in Lagos where 68.5% of HCWs wore gloves for all procedures involving sharp instruments or blood handling.[31]

Table (29); As part of pre-injury safety, separate sharp bins are recommended for disposal of waste from sharps in health centers. Upon all the importance of this, only 46.6% of the respondents admitted availability of sharp bins in their health facilities. This showed that more than half were not provided with separate sharp bins in their centers.

Table(30&31); On the incident of injury HCWs are noticed to response immediately with intention to minimize or prevent complications. A great majority 83.3% of respondents cleaned the injury site with antiseptic, 73.6% cleaned with soap and water, and 63.1% expressed blood from the site; similarly a study in Uganda showed 60% of injured HCWs squeezed blood from the site.[72] However the last group of respondents about 4.0% stated that they have taken no action after injury. Injury reporting is mandatory. All injuries are expected to be reported and recorded, but in this study only 14.7% of injured HCWs reported the accident to the authority. This is not surprising due to fear of stigmatization, discrimination and consequences, in addition to lack of standard occupational health services. The percentage of injuries reported is higher than 8.3% from a similar study among nurses in South Africa.[9,22]

However from the report of the study a maximum of 12.4% of respondents received post injury HBV immunization. But in Enugu a study indicated about 34.6% of HCWs had HBV vaccination.[27] Similarly in Taiwan, 52.1% of HCWs were reported to have been vaccinated agaist HBV.[54]

Table(32); From this study it is shown that non of the respondents tried PEP for HIV after injury. This is strongly contrasted by a study in South Africa that showed 15.2% PEP among HCWs that sustained NP injuies.[9,22]

5.2 CONCLUSIONS

From the study it can be concluded that there is urgent need to look into the issue of NP/SI among PHC workers studied, who are of various cadre, mostly in middle age and majority in service for less than five years.

Generally level of awareness about NP/SI hazards was high up to 75.4% among HCWs. Nurses/midwives had the highest knowledge 91.3% and cleaners the least 65.9%; and there was a statistically significant difference between category of HCWs and awareness ($p<0.05$).

Majority of respondents identified HIV, HBV and HCV as common diseases associated with NP/SI.

Among HCWs, 81.7% administered injections and 67.4% of these recapped needles.

About 56.1% of respondents incurred NP injuries and 67.4% of these resulted from needle recapping. In this study NP injuries were not found to be related to cadre ($p>0.05$).

Despite all the NP/SI hazards the protective measures were not well observed. Only 16.4% of respondents used gloves all the time, 45.6% had sharps bins, a few 12.4% had post injury HBV immunization, and none ever had HIV PEP.

5.4 RECOMMENDATIONS

After conducting this study, the following recommendations are make:

1. Training of primary healthcare workers on universal basic precaution and adherence to its application in all patient management procedures.
2. To provide enough personal protective equipments for health workers.

3. There is need to employ more health workers in order to reduce much work load and stress to the existing ones.
4. Provision of free and adequate occupational health services both curative and preventive to all health workers
5. Provision of enough sharps and non-sharp disposal facilities at health centers.
6. To educate health care workers on the importance of reporting needle prick/sharp injuries, hepatitis B virus immunization and post exposure prophylaxis.
7. To enlighten healthcare workers about voluntary counseling for blood born diseases and their screening.
8. Avoidance of needle recapping; by educating HCWs not to recap needles at all.
9. To avoid use of needles where safe and effective alternatives are available.
10. To provide adequate sharps and none sharps disposal bins for all health centers.

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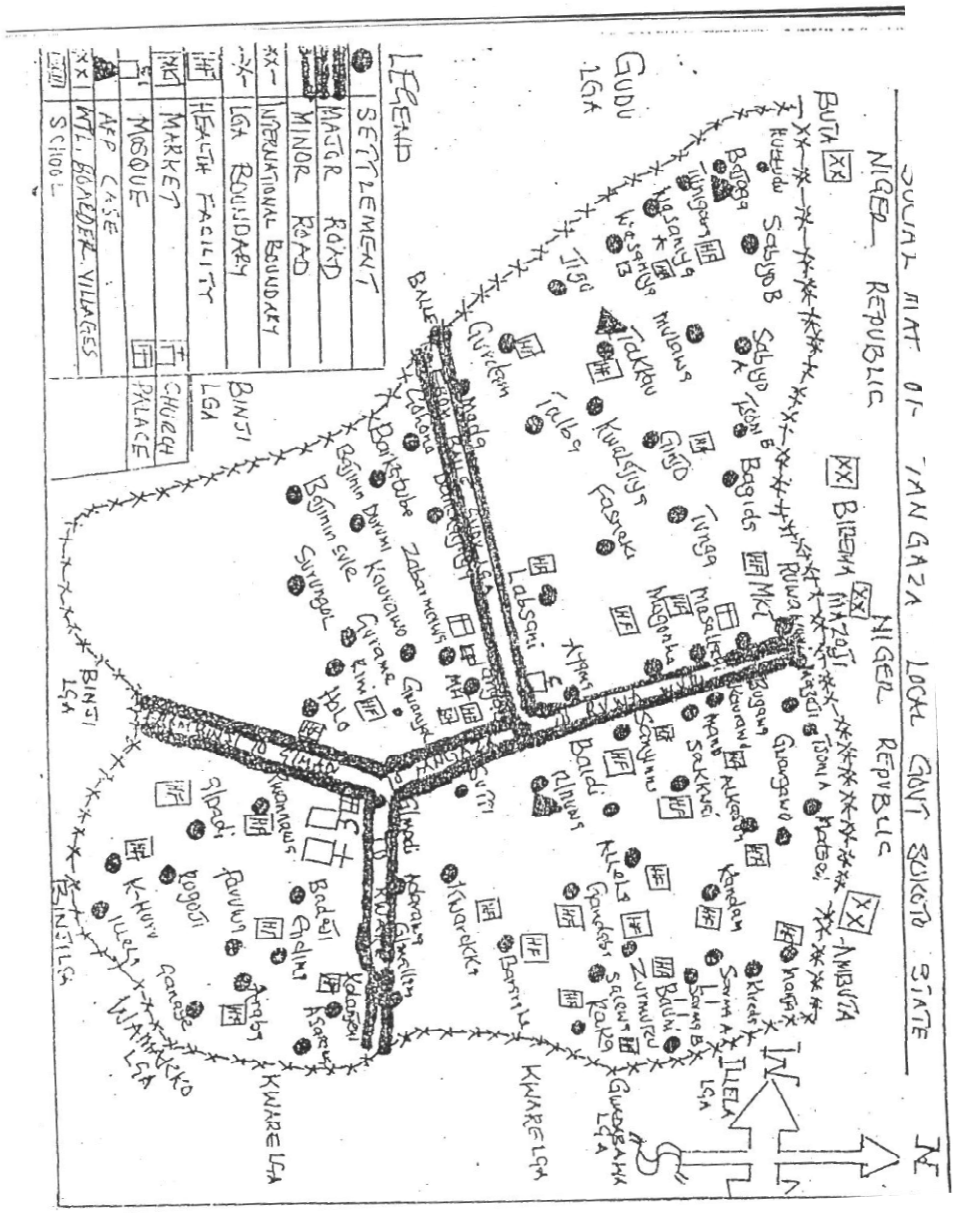
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APPENDIX I

SOCIAL MAP OF TANGAZA LOCAL GOVERNMENT AREA OF SOKOTO STATE



APPENDIX II

QUESTIONNAIRE ON THE STUDY OF NEEDLE PRICK AND SHARP INJURIES AMONG PRIMARY HEALTH CARE WORKERS, IN TANGAZA LOCAL GOVERNMENT AREA, SOKOTO STATE.

This study is purely an academic exercise towards a university postgraduate degree. The information obtained will be kept highly confidential. Your cooperation will be greatly appreciated. Help to contribute to knowledge and improvement of the health profession.

Thank you.

Instructions: please tick or fill in where appropriate

Name (optional).....

Work place address:.....

Section 1. personal data

1.1 Age (in years): ,.....

1.2 Sex: Male [ ] Female [ ]

1.3 Marital status: Married [ ] Single [ ] Separated [ ] widowed [ ] Divorced [ ]

1.4 Cadre: Nurse [ ] Midwife [ ] Nurse/Midwife [ ] CHO [ ] SCHEW [ ] JCHEW [ ] Laboratory assistant/ Technician [ ] Attendants [ ] Cleaners [ ] EHA [ ]

1.5 Religion: Islam [ ] Christianity [ ] Others (Specify).....

1.6 Ethnic Group: Hausa [ ] Fulani [ ] Adarawa [ ] Zabarmawa [ ] Gobirawa [ ] Ibo [ ] Yoruba [ ] Others specify).....

1.7 Duration of Employment ----------

Section 2. Awareness on needle prick/sharp injury occurrence as an occupational hazard.

2.1 Do you think injuries due to needles pricks and sharp instruments could expose you to blood born infection or diseases?

i. Yes [ ]

ii. No [ ]

2.2 What are the common diseases associated with needle prick/sharps injury that you know?(Tick all that applies)

i. HIV/AIDS [ ]

ii. Hepatitis B [ ]

iii. Hepatitis C [ ]

iv. Pneumonia & Tuberculosis [ ]

v. Tetanus & Cholera [ ]

vi. Epilepsy [ ]

vii. Hepatitis A [ ]

2.3 Do you think the following below constitute occupational risk to health workers?

	Yes	No
i. HIV/AIDS	[ ]	[ ]
ii. Hepatitis B	[ ]	[ ]
iii. Hepatitis C	[ ]	[ ]
iv. Hepatitis A	[ ]	[ ]

Section 3. Causes & determinants of needle prick/sharps injury

3.1 Do you :-

i. Administer injection to patients? Yes [ ] No [ ]

ii. Draw blood samples from patients Yes [ ] No [ ]

iii. Set IVF or blood transfusion on patients Yes [ ] No [ ]

iv. Do suturing of injuries or surgical procedures Yes [ ] No [ ]

v. Handle or clean sharp instruments Yes [ ] No [ ]

vi. Collect or wash hospital lining Yes [ ] No [ ]

vii. Recap use needles with two (2) hands Yes [ ] No [ ]

viii. Recap use needle with one hand Yes [ ] No [ ]

ix. Do not recap needle at all Yes [ ] No [ ]

3.2 How do you dispose use needles?

i. Leave in kidney dish or tray Yes [ ] No [ ]

ii. Drop in any waste bin available yes [ ] No [ ]

iii. Drop in sharp bin Yes [ ] No [ ]

iv. Throw on the ground or floor Yes [ ] No [ ]

v. Leave on trolley or table Yes [ ] No [ ]

3.3 Are you involved in shifting duty?

Yes [ ] No [ ]

3.4 If yes to (Q 3.3) does any shift affect you in any of the following ways? Tick as appropriate.

	Night	Evening	Morning
i. Exhaustion	[ ]	[ ]	[ ]
ii. General distress	[ ]	[ ]	[ ]
iii. Frequent illness	[ ]	[ ]	[ ]
iv. Sleep disturbances	[ ]	[ ]	[ ]

v. Family disharmonies [ ] [ ] [ ]

3.5 Do you have problem of drugs addiction as a worker in this centre?

Yes [ ] No [ ]

3.6 If yes to (Q3.5) what type of drug do you take----------

3.7 Are you worried about job aquaring diseases during the course of your contact with patients?

Yes [ ] No [ ]

3.8 Do you think you are at risk of getting infected from needle prick or sharp injuries?

Yes [ ] No [ ]

3.9 If yes to (Q3.8) what is the magnitude of the risk?

i. Very high [ ]

ii. High [ ]

iii. Moderate [ ]

iv. Law [ ]

v. Very low [ ]

3.10 Are you over work on duty

Yes [ ] No [ ]

3.11 State how many injection you give per day----------

Section 4. Needle prick/sharps injury and related hazards

4.1 Have you ever had injuries from any of the following in the past?

i. Needle Yes [ ] No [ ]

If yes state how many times & name of the shifting duty ----------

ii. Scalpel Yes [ ] No [ ]

If yes state how many times & name of the shifting duty----------

iii. Forceps Yes [ ] No [ ]

If yes state how many times & name of the shifting duty----------

iv. Razor blade Yes [ ] No [ ]

If yes state how many times & name of the shifting duty----------

v. Scissors Yes [ ] No [ ]

If yes state the how many times & name of the shifting duty----------

vi. Broken bottles/contaminated glass Yes [ ] No [ ]

If yes state how many times & name of the shifting duty----------

vii. Spillage of blood Yes [ ] No [ ]

If yes state how many times & name of the shifting duty----------

4.2 Tick what was the circumstances during the injury (i.e. work you were doing when you had the prick injury)?

i. Working with tray or kidney dish containing uncapped needles [ ]

ii. Recapping a needle [ ]

iii. Giving an injection to the patient [ ]

iv. Taking blood from the patient [ ]

v. setting IVF or Blood on a patient [ ]

vi. Handling a garbage bag [ ]

vii. Throwing needles into the sharps bin [ ]

viii. carelessly playing with the needle [ ]

ix. Handling an overflowing sharps bin [ ]

x. Using instruments on surgical procedure [ ]

xi. Handling hospital linings [ ]

xii. cleaning sharps instruments [ ]

xiii Others (specify)----------

4.3 In the past four (4) weeks did you have needle prick or sharp injury?

Yes [ ] No [ ]

4.4 If yes to (Q4.3), Tick shifting duty you had the injury.

i. morning [ ]

ii. evening [ ]

iii. night [ ]

4.5 If yes to (Q4.3), What was the circumstance during the injury (work doing at the time you had the injury)?

i. Working with tray or kidney dish containing uncapped needles [ ]

ii. Recapping a needle [ ]

iii. Giving an injection to the patient [ ]

iv. Taking blood from the patient [ ]

v. setting IVF or Blood on a patient [ ]

vi. Handling a garbage bag [ ]

vii. Throwing needles into the sharps bin [ ]

viii. carelessly playing with the needle [ ]

ix. Handling an overflowing sharps bin [ ]

x. Using instruments on surgical procedure [ ]

xi. Handling hospital linings [ ]

xii. cleaning sharps instruments [ ]

xiii Others (specify)----------

section 5: Preventive measures on needle prick/sharps injury hazards

5.1 Do you take precautionary measures to protect yourself against Needle/Sharps injuries?

Yes [ ] No [ ]

5.2 If yes to (Q5.1) how regular do you take the precaution measures?

i. All the time [ ]

ii. Most of the times [ ]

iii. Some of the times [ ]

iv. Occasionally [ ]

5.3 If yes (to Q5.1) -: Tick appropriate measure/s you usually take bellow?

i. Follow appropriate established infection control measures [ ]

ii. Wash hands and other exposed skin surfaces [ ]

iii. Follow appropriate procedure in handling and disposing [ ]
of sharp instruments

iv. Routinely use barriers such as gloves, eye protection and gowns [ ]

V. Never had any precaution [ ]

v. Have not bothered about any precaution [ ]

5.4 How regular do you use latex glove in your place of work before given injection or instrument cleaning?

i. Occasionally [ ]

ii. Frequently [ ]

iii. Not at all [ ]

iv. All the time [ ]

5.5 Do you have separate sharps disposal bins in the ward/labour room/OPD/clinic/injection room etc?

Yes [ ] No [ ]

5.6 What general measures or programmes are available for the prevention and control of needle/sharp injuries hazards in your health center?

i. Staff training programmes on injection safety [ ]

ii. Hospital Committee for waste management [ ]

iii. Strict enforced measures for disease protection and control. [ ]

iv. Established occupational health unit. [ ]

v. Injection policy [ ]

vi. Others specify…….

5.7 Did you reported your needle prick/sharp injury to the health facility authority?

Yes [ ] No [ ]

5.8 The last time you had needle prick or sharp injury what immediate action did you take?

i. clean the site with water and soap [ ]

ii. clean with antiseptic(e.g. methelated spirit) [ ]

iii. express blood from the site [ ]

iv. take no action [ ]

5.9 The last time you had needle prick or sharp injury did you have HIV post exposure prophylaxis(PEP)?

Yes [ ] No [ ]

5.10 The last time you had needle prick or sharp injury did you have hepatitis B virus prophylactic immunization?

Yes [ ] No [ ]

5.11 The last time you had needle prick or sharp injury did you had screening for the following?

	Yes	No
i. Hepatitis B & C	[ ]	[ ]
ii. HIV	[ ]	[ ]
iii. Both	[ ]	[ ]

5.12 If yes to (Q5.10) state duration between injury and the screening----------

Thank you.

APPENDIX III

Check list

Needle Prick and Sharps Injuries Among Primary Health Care Workers in Tangaza Local Government Area Sokoto State.

A check list to ascertain availability of separate sharps bins in health facilities in Tangaza LGA.

This study is purely an academic exercise towords a university post graduate degree. The information obtain will be kept highly confidential. Your cooperation will be greatly appreciated.

Instruction: please tic or fill in where appropriate.

a. Name of Health Facility ----------

b. Are sharp bins available in the following locations below?

	Yes	No
i. injection room	( )	( )
ii. wards	( )	( )
iii. labour room	( )	( )

iv. others (specify)----------

Thank you.