EXTENT OF UTILIZATION OF HIV POST-EXPOSURE PROPHYLAXIS AMONG HEALTHCARE WORKERS OF DISTRICT HOSPITALS, MTWARA REGION

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Master of Public Health Dissertation

Muhimbili University of Health and Allied Sciences

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By

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A Dissertation Submitted in Partial Fulfilment of the Requirements for the Degree of Master of Public Health of the Muhimbili University of Health and Allied Sciences

Muhimbili University of Health and Allied Sciences

September, 2008

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance a dissertation entitled **Extent of utilization of HIV Post-Exposure Prophylaxis among Healthcare workers of District Hospitals, Mtwara region** in fulfillment of the requirements for the degree of Master of Public Health of the Muhimbili University of Health and Allied Sciences.

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(Supervisor)

Date: 29th October 2008

DECLARATION AND COPYRIGHT

I, **Phirimini Phillipo Lesafi,** declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature 

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DEDICATION

This work is dedicated to my beloved wife Mary Francisca Kamuli, my son in law John Mboni Mwemezi, my Grandfather the Late Joseph Lesafi, my uncle the Late Justin Temba, my Grandmother in law the Late Mkandoli and to all people who died from and live with HIV/AIDS.

ABSTRACT

The main objective of the study was to determine extent of utilization of HIV Post Exposure Prophylaxis (HIV PEP) among Healthcare Workers (HCWs) in three (3) District Hospitals across Mtwara Region (Masasi – Mkomaindo, Newala and Tandahimba). Analytical cross sectional study was conducted from mid July to end July 2008. There were about 65/225 (29%) of respondents who experienced percutaneous exposure in the last past six months. It was observed that number of episodes of percutaneous exposure in period of last six months was 101 for 65 HCWs. This is approximately an average of 1 episode per HCW in 3 months. Among respondents who experienced percutaneous exposure, only 13/65 (20%) utilized HIV PEP service. Of all respondents 91/225 (40%) were not aware of HIV PEP guideline. More than half of Respondents, 122/225 (54%) had low level of knowledge on HIV PEP national guideline, while 66/225 (29%) had Moderate level of Knowledge and those with High level of knowledge were 37/225 (16%). Of all respondents 102/225 (45%) were not willing to test for HIV at their working area. From the study findings, it was recommended that; Measures be undertaken by Ministry of Health to support the ongoing monitoring of HIV PEP delivery in Health facilities, Confidentiality must be maintained with respect to both the exposed worker and the source person; The successful implementation of HIV PEP policy requires social dialogue between employers, workers and their representative and government.

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LIST OF ACRONYMS/ABBREVIATION

ACO	Assistant Clinical Officer
AMO	Assistant Medical Officer
AIDS.	Acquired Immune Deficiency Syndrome.
ARV	Anti-Retroviral
CDC	Centre for Disease Control
CO	Clinical Officer
HIV	Human Immunodeficiency Virus.
IEC	Information, Education, Communication
MO	Medical Officer
MOHSW	Ministry of Health and Social Welfare
NACP	National AIDS Control Programme
PEP	Post exposure prophylaxis
PHN B	Public Health Nurse B.
PI	Principal Investigator.
WHO	World Health Organization.
PIH	Partner In Health

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND

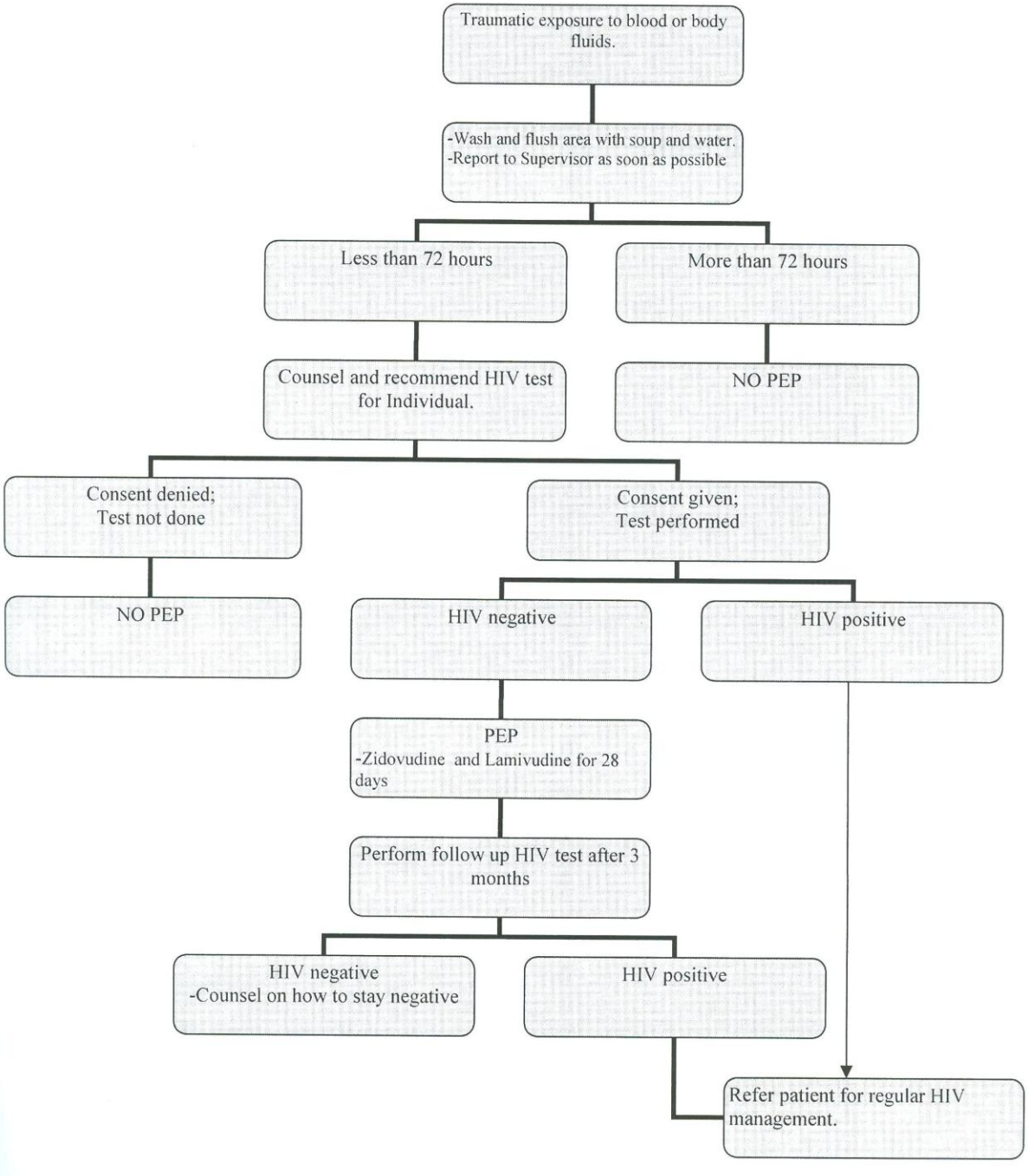
Globally Healthcare Workers (HCWs) incur 2 million needlestick injuries (NSIs) per year that result in HIV and other infections (Wilburn. et al., 2004). The World Health Organization estimates the global burden of disease from occupation exposure to 2.5% of HIV infection among HCWs as attributable to exposure at work. Research has shown that 40 to 75% underreporting of these injuries especially in developing world (Wilburn. et al., 2004).

Globally, NSIs are the most common source of occupational exposure to blood and the primary cause of blood-borne infection of HCWs. Post exposure prophylaxis medication has been demonstrated to reduce the risk of transmission of HIV following NSI by 81% (Cohen at el., 2005).

In Tanzania, the Ministry of Health and Social Welfare has published HIV post exposure prophylaxis guideline (see Figure 1). For the HIV PEP guideline to be adhered effectively the HCWs need to be aware and well trained in management of HIV occupational exposure. Availability and accessibility of drugs for HIV PEP is one of the key components of the HIV PEP service among HCWs. As stigma is still a problem in our community, some of HCWs may refuse to test for HIV after being exposed to HIV before initiation of HIV PEP regimen.

Therefore this cross sectional study was conducted to determine extent of utilization of HIV post exposure prophylaxis among HCWs in all available three (3) District Hospitals in Mtwara Region (Masasi – Mkomaindo, Newala and Tandahimba).

Figure 1: Post Exposure Prophylaxis procedures against HIV Occupational Exposure



1.2. STATEMENT OF THE PROBLEM

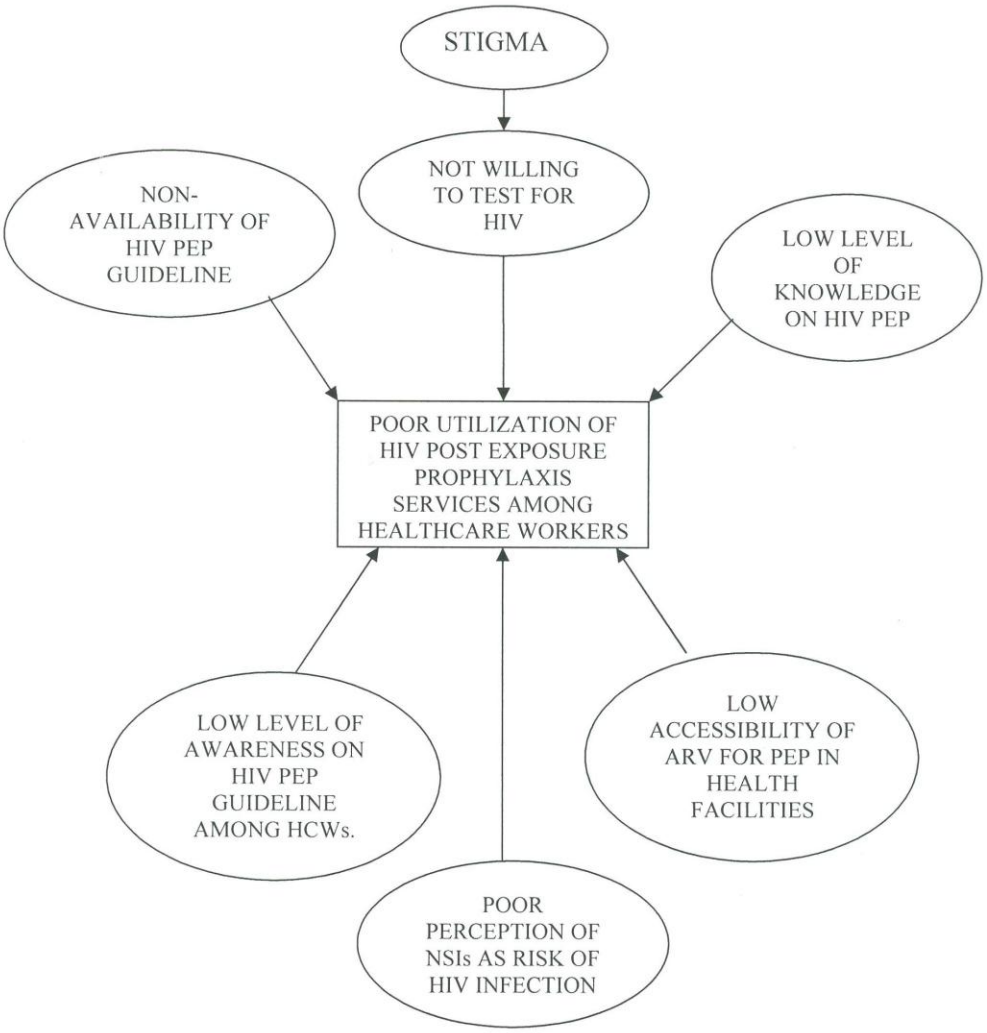
Each day thousands of Health care workers (HCWs), around the world, suffer accidental occupational exposures during the course of their role of caring patients. These injuries can result in transmission of HIV. In 2003 Ministry of Health and Social Welfare (MOHSW) published the HIV post exposure prophylaxis Guideline to put in place standard procedures in management of HIV occupational exposures among HCWs (see Figure 1).

Despite the fact that HCWs often experience incidences of percutaneous exposure, they are still under reported; therefore this implies poor utilization of HIV PEP services. Among the factors which may affect utilization of HIV PEP are; low level of awareness and knowledge among HCWs on HIV PEP guideline, HCWs' perception on NSIs as low risk of acquiring HIV, fear to test for HIV before initiation of drugs for HIV PEP due to stigma, unavailability and poor accessibility of drugs for HIV PEP.

The study which was done in Thika District in Kenya one year after intervention of sensitizing HCWs on HIV PEP revealed that utilization of PEP was low, about 4% of those who had needlestick injuries (NSIs). In-depth interview revealed this was due to HCWs fear of HIV testing and their perception of NSIs as low risk of HIV transmission. (Taegtmeyer et al., 2008). This result infer that PEP can be made readily available but where HIV testing remains stigmatized, uptake of HIV PEP services will be limited among HCWs. In Tanzania since when HIV PEP guideline was introduced by MOHSW

in 2003 to present 2008, five years have passed. In that period several interventions were done to sensitize community including HCWs to test for HIV. One of the big interventions was National Campaign on HIV Counseling and testing, inaugurated by President of Tanzania, Hon. Jakaya Mrisho Kikwete in 2007, which may make situation to be different from that of Thika district in Kenya. Also since HIV PEP guideline was introduced by MOHSW there is no any documented study which was done in Tanzania to assess the utilization of the HIV PEP services among HCWs. Therefore this study was conducted to determine the extent of utilization of HIV PEP among Healthcare workers in all available three District Hospitals, in Mtwara Region, Mkomaindo – Masasi, Newala and Tandahimba.

Figure 2: Problem analysis diagram



1.3 RATIONALE OF THE STUDY

Healthcare workers, especially who provide care to a large number of HIV infected patients have a definite risk of becoming infected with HIV as a result of professional activities. In Tanzania the HIV PEP services are supposed to be available in Health Facilities particularly in District Hospitals. With the introduction of the HIV PEP guideline there is need to find out if is adhered to in the health facilities and thus, what is the current existing scenario.

For HCWs to utilize the HIV PEP services effectively education and awareness need to be raised among HCWs, avail the drugs and guidelines for HIV PEP. The findings of this study revealed the extent of utilization of HIV PEP among HCWs and the possible factors affecting its utilization, which in turn will help Ministry of Health and Social Welfare, Medical Training Institute and health facilities to include plan for monitoring and evaluation of HIV PEP services.

1.4 RESEARCH QUESTION

(1) What is the extent of utilization of HIV PEP against occupational exposure to HIV among HCWs who experienced needle stick injury?

(2) What are the factors affecting utilization of HIV PEP among HCWs?

1.5 RESEARCH OBJECTIVES

1.5.1 BROAD OBJECTIVE

To determine extent of utilization of HIV post exposure prophylaxis among Healthcare workers who experienced percutaneous exposure in District hospitals in Mtwara Region.

1.5.2 SPECIFIC OBJECTIVES

1) To determine the proportion of HCWs experienced percutaneous exposure in the past six months.
2) To determine the extent of utilization of HIV PEP among HCWs by age and sex in the past six months.
3) To determine association between awareness of HIV PEP guideline among HCWs in and utilization of HIV PEP among HCWs in past six months.
4) To determine association between level of knowledge on the HIV PEP guideline against occupational exposure among HCWs in relation to utilization of HIV PEP among HCWs in the past six months.
5) To determine association between willingness to test for HIV among HCWs if they exposed to HIV and utilization of HIV PEP among HCWs in past six months.

6) To determine association between accessibility of ARV for HIV PEP among HCWs and utilization of HIV PEP among HCWs in past six months.

CHAPTER TWO

2.0 LITERATURE REVIEW

In prospective studies of HCWs, the average risk of HIV transmission after a percutaneous exposure to HIV-infected blood has been estimated to be approximately 0.3% (95% confidence interval [CI] = 0.2%–0.5%) and after a mucous membrane exposure, approximately 0.09% (95% CI = 0.006%–0.5%) (Beltrami et al, 2000). Although episodes of HIV transmission after non-intact skin exposure have been documented, the average risk for transmission by this route has not been precisely quantified but is estimated to be less than the risk for mucous membrane exposures. The risk for transmission after exposure to fluids or tissues other than HIV-infected blood also has not been quantified but is probably considerably lower than for blood exposures (CDC, 2005).

Epidemiologic and laboratory studies suggest that multiple factors might affect the risk for HIV transmission after an occupational exposure. In a retrospective case-control study of HCW who had percutaneous exposure to HIV, increased risk for HIV infection was associated with exposure to a larger quantity of blood from the source person as indicated by

i) A device (e.g., a needle) visibly contaminated with the patient's blood,

ii) A procedure that involved a needle being placed directly in a vein or artery, or

iii) A deep injury. The risk also was increased for exposure to blood from source persons with terminal illness, possibly reflecting either the higher titer of HIV in blood late in the course of acquired immunodeficiency syndrome (AIDS) or other factors (e.g., the presence of syncytia-inducing strains of HIV). A laboratory study that demonstrated that more blood is transferred by deeper injuries and hollow-bore needles lends further support for the observed variation in risk related to blood quantity (CDC, 2005; Wig, 2003).

Clinician should be able to judge whether the injury poses a high or low risk of HIV transmission. For percutaneous exposure, high risk is associated with: A deep injury; Large size needle; Visible blood in the device (needle/other sharp object); Needle placed in patient artery or vein and Hollow needle while low risk is associated with : Superficial injury; Small size needle; No visible blood contamination; Injury with solid needle or lancet. For exposure with mucous membrane and non-intact skin (e.g., skin with dermatitis, abrasion), high risk is associated with a large volume of blood or body fluid splashes. Low risk is associated with small volume (drops) of blood or other body fluids (MOHSW, 2007).

Although occupational exposure to HIV accounts for only a small burden of transmission, it is important to offer Healthcare workers in heavily HIV-burdened settings adequate protection against HIV (Partners In Health, 2004). World Health

Organization (WHO) estimates about 2 million NSIs per year. The global burden of diseases from occupational exposure is estimated to be 2.5% of HIV infection among HCWs as attributable to exposure at work. While 90% of the occupational exposure occurs in developing world, 90% of the reports of occupational infection occur in North America and Europe. The projected 2 million NSIs is probably a low estimate because of the lack of surveillance system and underreporting of injuries. Research has shown 40 - 75% underreporting of these injuries. Data from injection safety survey conducted by WHO and others show on average: four NSIs per worker per year in the African, Eastern Mediterranean, and Asian population. Seventy percent of the world's HIV population lives in Sub-Saharan Africa, but only 4% of worldwide occupational cases of HIV are reported from this region (Wilburn et al, 2004). Over 300 definite cases or possible HCW HIV transmissions have been documented, 90% have occurred in either Europe or North America, region that collectively account for just 4% of the global burden of HIV infection. It is likely therefore that the figure is an underestimated of the true number of HCW infections worldwide (ILO/WHO, 2005). Failure to report NSIs may compromise appropriate HIV PEP management and assessment of occupational hazards and preventive interventions (Wilburn et al., 2004).

The use of Zidovudine (AZT) after occupational exposure to HIV was associated with 79 - 81% reduction in the odds of HIV transmission (OR=0.21; 95% CI 0.10, 0.60) in the Centers of Disease Control and Prevention (CDC) study (Fong, 2001; Cardo at el., 1997). Data from human studies regarding the prevention of mother to child HIV transmission also support the probability of the efficacy of an HIV post-exposure

prophylaxis. In a randomized trial, the administration of AZT to HIV infected pregnant women was associated with a 2/3rd reduction in HIV infections in babies whose mothers had been given AZT pre and intra partum (and who themselves had received AZT post partum) versus those randomized to placebo. Despite contact between the child's blood and the HIV status of its mother, AZT prevented infection in the majority of cases (Almenda et al., 2004).

Post Exposure Prophylaxis Guideline in Tanzania

Exposure prevention remains the primary strategy for reducing occupational HIV transmission; however, occupational exposures will continue to occur and so the following should be done:

Step 1: Treatment of an Exposure Site

Wounds and skin sites that have been in contact with blood or body fluids should be washed with soap and water; mucous membranes should be flushed with water.

Step 2: Report and Document

If an occupational exposure occurs, the circumstances and post exposure management should be recorded in the exposed person's confidential form for easy follow up and care.

Step 3: Evaluation of the Exposed HCW

Health care worker exposed to HIV should be evaluated within hours (rather than days) after their exposure in order to allow early initiation of PEP. The exposed Health care workers should be counseled and tested for HIV at baseline (i.e., to establish infection

status at the time of exposure). In case of refusal to test, PEP should not be started or should be discontinued. National Guidelines for the Clinical Management of HIV and AIDS For purposes of considering HIV PEP, the evaluation also should include the following information that might influence drug selection:

• Medications that the exposed person might be taking

• Any current or underlying medical conditions or circumstances (i.e., pregnancy, breast feeding, or renal or hepatic disease).

Step 4: Drugs for Post Exposure Prophylaxis for HIV

For most HIV exposures a combination of Zidovudine (AZT) and Lamivudine (3TC) should be used twice a day for four weeks. In case of high risk exposure, third drug should be considered, either Efaviranz or Kaletra.

Step 5: Timing of Post Exposure Prophylaxis (PEP)

PEP should be initiated as soon as possible, preferable within two (2) hours. PEP is not indicated for exposures that occurred more than seventy two (72) hours previously.

Step: 6 Duration of Post Exposure Prophylaxis (PEP)

PEP should be administered for 4 weeks, if tolerated.

Step: 7 Follow-up of Health care worker exposed to HIV

Health care worker with occupational exposure should be tested at baseline, 6 weeks, 12 weeks and 6 months post exposure to HIV. HIV testing should also be performed on any exposed person who has an illness that is compatible with an acute retroviral syndrome, regardless of the interval since exposure.

Step: 8 Monitoring and Management of PEP Toxicity

If PEP is used, Health care worker should be monitored for drug toxicity by Laboratory testing at baseline and again 2 weeks after starting PEP. The scope of testing should be based on medical conditions in the exposed person and the toxicity of drugs included in the PEP regimen. Minimally, laboratory monitoring for toxicity should include a complete blood count and renal and hepatic function tests (MOH, 2005; MOHSW, 2007).

In a health facility, the management should do the following to ensure better provision of HIV PEP to HCWs:

- Assign one person responsible for PEP and state clearly where HCWs should report immediately following exposure.
- All staff including cleaners should be given information to ensure they know about PEP
- Ensure PEP services are available for 24 hours of each day, including weekends.
- When the person responsible for PEP is off duty, inform all who replace him/her.
- Ensure that PEP drugs are always is available and accessible by the person responsible for PEP.
- Guarantee confidentiality (MOHSW, 2007).

In study conducted in Malawi 37 nurses were interview about number and occupational injuries sustained in past one year. Twenty eight (76%) nurses reported a total of 56 injuries in past one year, which translate into an incidence rate of 1.5 occupational injuries per person-year, assuming all worked throughout a year. Only one of the 28 nurses who had an occupational injury sought advice for PEP. In majority 20 (74%), the reason for not seeking help was being unaware about PEP programme; four (15%) did not want a HIV test, while three thought the event was not serious enough (Joep et al., 2007). In the study which was done in India, a total of seventy doctors working in various non-governmental hospitals/nursing homes in Delhi were interviewed. 68.8% of participants were not aware of post exposure prophylactic measures to be taken if there is an occupational exposure to the blood of HIV positive patient. Of those who knew prophylactic measure, 71.4% of participants knew washing as the immediate measure for the management of exposure. Of participants who were aware 84.2% knew zidovudine as the recommended drug. Awareness about other antiretroviral drugs that are used for prophylaxis such as lamivudine was low (36%). Many HCWs were not clear from where to get the drugs and when these drugs to be started. Therefore HCWs who are at risk for occupational exposure to blood borne pathogens should be familiarized with the principles of post exposure management as part of job orientation and ongoing training (Wig, 2003).

Insight from the qualitative data revealed that staff feared having an HIV test as were concerned about testing positive themselves. Despite knowing as a group they had relatively low rate (7%), many staff felt unsure of their own status. Others were

concerned about confidentiality when testing at their own place of work while others were concern that the knowledge of an HIV positive status alone would make them ill. The fear and stigma associated with HIV programme that will take time to overcome, even in the presence of focused efforts to address those (Taegtmeyer et al., 2008).

In the study which was done in UK, St Thomas Hospitals, of 273 who completed questionnaire, 253 (93%) doctors had heard of HIV PEP, only 208 (76%) were aware that HIV PEP reduce the transmission rate of HIV. One hundred and eighteen (43%) doctors could not name any of the drugs recommended for use after a high risk exposure. Twenty (7%) knew that a three drug regimen was recommended, although only 23(8%) could name the specific drugs. Up until December 1997, there had been 95 definite and 191 possible cases of occupationally acquired HIV infection among healthcare workers. Most of these were from developed countries, with no report at all from most developing countries. Forty six (16%) of these occurred in doctors or medical students. The combination of high risk of exposure coupled with poor knowledge of HIV PEP is of serious concern (Chen et al., 2001).

It was found that risk perception of acquiring HIV infection was associated with type of clinical practice (where this involved treating HIV – positive patients), the use of protective measures, experience of sharp injuries and those previously tested for HIV. Nurses appeared to have higher reporting rates but also more frequent exposures.

Doctors have generally failed to report sharp injuries, and numbers of studies have pointed this out (Jovic-Vranes et al., 2006).

CHAPTER THREE

3.0 METHODOLOGY

3.1 Study area

The study was conducted in District Hospitals in Mtwara Region. The Region is situated in south of Tanzania and is divided in the following districts, Masasi, Mtwara Rural, Mtwara Urban, Newala, Nanyumbu and Tandahimba. The population of the Region is about 1,124,481 (NBS, 2002). HIV prevalence of Mtwara Region is about 6.1% (MOH/NACP, 2007). In the Region there are only three available Governmental District Hospitals, Tandahimba, Newala and Masasi (Mkomaindo) where the study was conducted.

3.2 Study design

Analytical cross sectional study was conducted from mid to end of July 2008. Quantitative technique using a structured questionnaire having both open and closed ended questions was used together with an observation checklist for the available inventory of ARV for PEP in the facilities. Questionnaire in additional to demographic items measured the following information; Availability of ARV drugs for HIV PEP, Accessibility of ARV drugs for PEP, Awareness on HIV PEP guideline, level of knowledge on HIV PEP national guideline, willingness to take HIV test before initiation of HIV PEP Regimen, perception of HCWs of NSIs as risk to HIV infection and extent of utilization of HIV PEP.

3.3 The Study population

The intended study population were Healthcare workers in the following cadres working in District Hospitals (Masasi-Mkomaindo, Newala and Tandahimba): Specialist Doctors, Medical Officers (MDs), Assistant Medical Officers (AMO), Clinical Officers (CO), Nursing Officers, Nursing Assistant, Dental Officers, Dental Assistant, Laboratory Technicians, Laboratory Assistants, Pharmacist, Pharmaceutical Technicians and Pharmaceutical Assistant.

All of the named cadres except Pharmacy Personnel have high risk of Occupational exposure to HIV in their professional activities. Pharmacy personnel have low risk but are key staff in HIV PEP program. They are included in the study because they are custodians and dispensers of the HIV PEP Regimens. Therefore they are required to be aware and knowledgeable on HIV PEP guideline.

3.4 Sample size

a) Number of healthcare workers

All available Healthcare Workers (as named above) was interviewed in each District hospital, while for absentees; were followed up in other shifts and in the next day for interview. The expected number of Healthcare workers was as follow;

- Masasi (Mkomaindo) District Hospital, 85 HCWs, (Masasi CCHP, 2007)
- Newala District Hospital, 84 HCWs (Newala CCHP, 2007)
- Tandahimba District Hospital, 58 HCWs (Tandahimba CCHP, 2007)

Therefore the expected number of Healthcare workers to participate in the study was 243. However the available participants were 225, (Masasi 89, Newala 83 and Tandahimba 53 HCWs)

3.5 Sampling procedures

Selection of Health Workers

All Healthcare workers as named above in the all three District Hospitals in Mtwara Region participated in the study.

3.6 Data collection

a) Recruitment and training

Two research assistants especially with a medical background and a research experience was recruited and given orientation to the study.

b) Data collection tool and technique

i) A structured questionnaire with both open and close ended questions was used to interview the eligible and available health workers at the selected facilities. Both Swahili and English versions of the questionnaire were prepared, participants were free to chose which one they most preferred.

ii) An inventory checklist was used to determine the availability of ARV for PEP and guidelines related to the HIV PEP.

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c) Data collection procedure

The data were collected by the help of the two research assistants. Each participant in the study was first explained as to what the study is all about and what the aim was. Thereafter each one of the participants was asked for his/her consent before being interviewed. The responses were then recorded on the questionnaire by the PI or the Research Assistants.

d) Pre testing

Prior to commencing the study the questionnaire were pre tested in a public health facility in Ilala municipality to check if the questionnaire was well understood, the sequence of the questions were logical and if there will be a need for any modification in terms of structuring or rephrasing the questions. Amendments were made where necessary for final data collection.

3.7 Study variables

Dependent variable

- Utilization of HIV PEP services among Healthcare Workers in District Hospitals in Mtwara Region.

Independent variables

- Awareness of HIV PEP guideline among HCWs.
- Level of knowledge on HIV PEP guideline among HCWs.
- Willingness to test for HIV among HCWs.
- Perception on NSIs as risk of HIV transmission among HCWs.

- Availability of ARV for HIV PEP at the health facility level.
- Accessibility of ARV for HIV PEP at the health facility level.

3.8 Operational definitions

Utilization of HIV PEP services

For the purpose of this study; utilization of HIV PEP is the adherence of HIV PEP National guideline after occupational exposure as written by MOHSW in the "National Infection Prevention and Control Guideline for Healthcare Services in Tanzania", 2007 27 – 31 (Refer section 2.0 above).

Level of knowledge on HIV PEP guideline

Knowledge for the purpose of this study is defined as what is known by a Healthcare workers regarding to HIV Post Exposure Prophylaxis National Guideline, this was referred to the total facts and information regarding theoretical and practical understanding of a HIV PEP National guideline. The Healthcare workers were be asked 7 questions in testing level of knowledge. The response was scored. Level of knowledge was categorized into 3 categories such that those who scored 0 – 2 were regarded as having "Low level of knowledge", 3 – 4 were regarded as having "Moderate level of knowledge" while those with score of 5 – 7 were regarded as having "High level of Knowledge"

Awareness of HIV PEP guideline

Is the ability of Healthcare worker to know the presence of and what about HIV PEP National guideline, four questions were asked to healthcare workers, awareness was categorized as "Not aware" if scored 0 – 1, while those who scored 2 – 4 were categorized as "Aware".

Availability of Drugs for HIV PEP

For the purpose of this study; availability of drugs for HIV PEP is the presence of drugs for HIV PEP in Health Facility for the past six months. Assessment was done monthly for last six months from January 2008.

- If the drugs for HIV PEP in health facility were available for whole month then in that month was scored – 2.
- If the drugs for HIV PEP were found to be out of the stock for one day (24 hours) then in that month was scored – 1.
- If the drugs for HIV PEP were found to be out of the stock for two days or more (48 hours or more) then in that month was scored – 0.

Information was obtained from inventory/Lager book at health facility and drug purchasing receipt (if bought) or receiving note (if donated).

Score of 1 – 2 was assessed as "Available" while Score of 0 was assessed as "Non available"

Accessibility of Drugs for HIV PEP

For the purpose of this study; Accessibility of drugs for HIV PEP is the flexibility/easiness to access drugs for HIV PEP during late hours and holidays in case of emergency as per HIV PEP guideline. In every shift there must be a person responsible for provision of HIV PEP services or someone who is reachable 24 hours.

- If procedures on how to obtain HIV PEP services will be displayed for HCWs, Health facility was scored - 3,
- If the name/s of person/s responsible for providing HIV PEP services and their contacts were displayed on the procedures, Health facility scored – 2,

Score of 0 to 2 was regarded as "low accessibility". Score of 3 was regarded as "Moderate Accessibility" while score of 5 was regarded as "High Accessibility"

Perception on NSIs as risk of HIV infection among Healthcare workers

Is the understanding and belief of Healthcare workers of being susceptible to acquire HIV infection in case they will be occupationally exposed to HIV by Needle stick injuries or blood/body fluid splash on non - intact skin. Two questions will be asked to participants. Each question will have score of one point. Result will be categorized as,

- "Poor perception on NSIs as risk of HIV infection" (No) if score will be 0 – 1
- "High perception on NSIs as risk of HIV infection" (Yes) if score will be 2.

Willingness to test for HIV

Is the readiness of Healthcare workers to test for HIV before administer drugs for HIV PEP in case of being exposed to HIV as per HIV PEP guideline requirements. Two questions were asked. Result categorized HCWs in "Not willing to test" if scored 0-1, while "Willing to test" if scored 2.

3.9 Data management and analysis

Data were collected for a period of two weeks, from mid July to end of July 2008 under the supervision of the PI. The questionnaires were collected on daily bases to monitor the trend of sample size and to avoid bias of manipulation of data. Manual data cleaning was done to check for accuracy and completeness of the questionnaires before entering them into the computer. Open ended questions were coded and categorised. Data entry was done using EPI DATA, and the data cleaned, validated and analysed using the EPI Info 2000 Version. Procedures which were followed are

(i) Sorting data; questionnaire were given ID numbers for easy administration and thereafter for sorting,

(ii) Performing quality control on the field to ensure that all information are properly collected and recorded,

(iii) Coding data and categorised before entering them into the computer for analysis.

Frequency tables and extent of utilization of HIV PEP was compared with age, sex, work experience and the Independent variables and statistical associations were made for the independent and the dependent variables using the appropriate statistical test at the significance level set at $p < 0.05$.

3.10 Ethical issues

Ethical approval was obtained from the Research and Publication Committee of the Muhimbili University of Health and Allied sciences. The permission to conduct the study in the study area was obtained from Regional Administrative Secretary (RAS), and the specific District Medical Officer (DMO). All the administrators of the facilities and in charges were asked for their permissions to conduct the study in their facilities/departments. The health workers were also asked for their consent and to be told the purpose of the study before asking them to participate in the required study. They were assured of confidentiality that in no way their names would be used but only ID numbers. Information provided by participants would only assist to improve the utilization of HIV PEP guideline against occupational exposure. Those not wishing to participate were allowed to withdraw from the study.

3.11 Study limitations

This study was subject to recall bias that was minimized by asking extra questions. Finding HCWs at healthcare settings during working hours was a problem due to high burden of patients and shortage of trained healthcare workers, therefore repeated visit were made and some were interviewed during lunch hours and their free time.

CHAPTER FOUR

4.0 RESULTS

4.1 Socio-demographic characteristics of the study population

The results of social demographic characteristics are summarized in table 1. A total of 225 Healthcare workers from 3 district hospitals in Mtwara Region were interviewed of whom 83/225 (37%) were from Newala, 53/225 (24%) from Tandahimba and 89/225 (40%) from Masasi. More than 60% of respondents were 40 years of age and above. Religious wise, population study had 126/225 (56%) of Christians, while 98/225 (44%) were Muslims. Among the respondents 75/225 (33%) were male while 150/225 (67%) were female. More than 65% of respondents were married. Most of the respondents 165/225 (73%) had the working experience of 6 years and above while 15/225 (6.7%) had experience of less than a year. More than 60% of respondents had education level of college and above. The sizeable proportion of respondents was nurse assistants 76/225 (34%).

Table 1: Socio-demographic characteristics of the study sample (N = 225)

Social-demographic characteristics	Male	Female	Total
	n (%)	n (%)	n (%)
Health facility			
Newala	29 (38.7)	54 (36.0)	83 (36.9)
Tandahimba	21 (28.0)	32 (21.3)	53 (23.6)
Masasi	25 (33.7)	64 (42.7)	89 (39.6)
Age group			
Less than 20	1 (1.3)	0 (0.0)	1 (0.4)
20 - 29	10 (13.3)	16 (10.7)	26 (11.6)
30 – 39	22 (29.3)	33 (22.0)	55 (24.4)
40 - 49	28 (37.3)	62 (41.3)	90 (40.0)
50 – 59	14 (18.7)	37 (24.7)	51 (22.7)
60 and above	0 (0.0)	2 (1.3)	2 (0.9)
Religion			
Muslims	26 (34.7)	72 (48.0)	98 (43.6)
Christians	49 (65.3)	77(51.3)	126 (56.0)
Others	0 (0.0)	1 (0.7)	1 (0.4)
Marital Status			
Married	53 (70.6)	93 (62.0)	146 (64.9)
Single	20 (26.7)	27 (18.0)	47 (20.9)
cohabiting	0 (0.0)	1 (0.7)	1 (0.4)
Separated/Divorced	2 (2.7)	13 (8.7)	15 (6.7)
Widowed	0 (0.0)	16 (10.6)	16 (7.1)

Education level	Male	Female	Total
Primary	14 (18.7)	47 (31.3)	61 (27.1)
Secondary	8 (10.7)	21 (14.0)	29 (12.9)
College/Institute	48 (64.0)	79 (52.7)	127 (56.4)
University	5 (6.7)	3 (2.0)	8 (3.6)
Job Experience by Years			
Less than 1	4 (5.3)	11 (7.3)	15 (6.7)
1 – 2	15 (20.0)	10 (6.7)	25 (11.1)
3 – 5	6 (8.0)	14 (9.3)	20 (8.9)
Above 6	50 (66.7)	115 (76.7)	165 (73.3)
Cadre			
Medical officer (MD)	4 (5.3)	0 (0.0)	4 (1.8)
Assistant Medical Officer	8 (10.7)	2 (1.3)	10 (4.4)
Clinical Officer	21 (28.0)	8 (5.3)	29 (12.9)
Nursing Officer	6 (8.0)	22 (14.7)	28 (12.4)
Nurse Midwife	7 (9.3)	53 (35.3)	60 (26.7)
Nurse assistant	15 (20.0)	61 (40.7)	76 (33.8)
Lab Assistant	10 (13.3)	3 (2.0)	13 (5.8)
Pharmacist	1 (1.3)	1 (0.7)	2 (0.9)
Pharmaceutical Technician.	2 (2.7)	0 (0.0)	2 (0.9)
Assistant Dental officer	1 (1.3)	0 (0.0)	1 (0.4)
Total	**75 (33.3)**	**150 (66.7)**	**225 (100)**

4.2 Proportional of HCWs experienced percutaneous exposure in past six months

There were about 65/225 (29%) of respondents who experienced percutaneous exposure in the last past six months. Among those 30/65 (46%) experienced needle stick injuries, while 21/65 (32%) experienced blood splash on non intact skin/eyes and 14/65 (22%) experienced both needle stick injuries and blood splash. Of the HCWs who experienced percutaneous exposure, the most affected cadre was Medical officers 3/4 (75%), followed by Assistant Medical officer 5/10 (50%), Nursing officers 9/28 (32%), Nurse assistants 22/76 (29%), Nurse Midwives 17/60 (28%) and Lab assistants 2/13 (15%).

Table 2: Incidences of Percutaneous exposure among HCWs in past six months

Cadre	Experienced Percutaneous Exposure		Total	No. of percutaneous exposure Episodes
	Yes n (%)	No n (%)	N (%)	
Medical officer (MD)	3 (75.0)	1 (25.0)	4 (1.8)	5
Assistant Medical Officer	5 (50.0)	5 (50.0)	10 (4.4)	7
Clinical Officer	7 (24.1)	22 (75.9)	29 (12.9)	11
Nursing Officer	9 (32.1)	18 (67.9)	28 (12.4)	11
Nurse Midwife	17 (28.3)	43 (71.7)	60 (26.7)	32
Nurse assistant	22 (28.9)	54 (71.1)	76 (33.8)	29
Lab Assistant	2 (15.4)	11 (84.6)	13(5.8)	6
Pharmacist	0 (0.0)	2 (100.0)	2 (0.9)	0
Pharmaceutical Technician.	0 (0.0)	2 (100.0)	2 (0.9)	0
Assistant Dental officer	0 (0.0)	1 (100.0)	1 (0.4)	0
Total	**65 (28.9)**	**160(71.1)**	**225(100.0)**	**101**

It was observed that number of episodes of percutaneous exposure in period of last six months was 101 for 65 HCWs. This is approximately a rate of about 3 episodes per HCW in a year.

4.3 Extent of utilization of HIV PEP among HCWs by age and sex in the past six months

Among respondents who experienced percutaneous exposure, only 13/65 (20%) utilized HIV PEP service. Results in table 3 shows that utilization of HIV PEP was slightly increasing with age. Utilization of HIV PEP services among age group of 20-29 years was 1.5 times less compared to other group of age. However the difference was not statistically significant (Chi Square = 0.22, P=0.975). Among female respondents who experienced percutaneous exposure, those who utilized HIV PEP services was 9/46 (20%) while male was 4/19 (21%). Again results show that there was no statistically difference in utilization of HIV PEP services between male and females (Fisher exact test, P = 0.569).

Table 3: Utilization of HIV PEP among HCWs by age and sex in past six months (n=65)

FACTOR	UTILIZATION OF HIV PEP		TOTAL
	Yes	No	
	n (%)	n (%)	n
AGE (YRS)*			
20 – 29	1 (14.3)	6 (85.7)	7
30 – 39	4 (21.4)	17 (81.0)	21
40 – 49	6 (21.4)	22 (77.8)	28
50 – 59	2 (22.2)	7 (77.8)	9
SEX**			
Male	4(21.1)	15 (78.9)	19
Female	9(19.6)	37 (80.4)	46
Total	**13 (20.0)**	**52 (80.0)**	**65 (100.0)**

*Chi Square=0.22, P=0.975

**Fisher exact test, P = 0.569

4.4 Awareness of HIV PEP guideline among HCWs and utilization of HIV PEP among HCWs in past six months

Of all respondents 91/225 (40%) were not aware of HIV PEP guideline. However out of the respondents who experienced percutaneous exposure 39/65 (60%) were aware of HIV PEP guideline while 26/65 (40%) were not aware. Results in table 4 shows that those who were aware, utilization of HIV PEP were 2.2 times high compared to those

who were not aware. However the relationship between utilization of HIV PEP and awareness on HIV PEP among HCWs was not statistically significant (Chi Square = 1.94, P = 0.141).

Table 4: Relationship between HCWs' awareness on HIV PEP guideline and utilization of HIV PEP among HCWs in past six months (n=65)

AWARENESS	UTILIZATION OF HIV PEP		TOTAL
	Yes n (%)	No n (%)	
Yes	10 (25.6)	29 (74.4)	39
No	3 (11.5)	23 (88.5)	26
Total	**13 (20.0)**	**52 (80.0)**	**65**

(Fisher Exact test, P = 0.141).

4.5 Level of knowledge on the HIV PEP guideline against occupational exposure among HCWs and utilization of HIV PEP among HCWs in the past six months.

Results show that more than half of Respondents 122/225 (54%) were having low level of knowledge on HIV PEP national guideline, while 66/225 (29%) were ranked as Moderate level of Knowledge and those who ranked with High level of knowledge was 37/225 (16%).

Figure 3: Distribution of respondents by Level of knowledge (N=225)

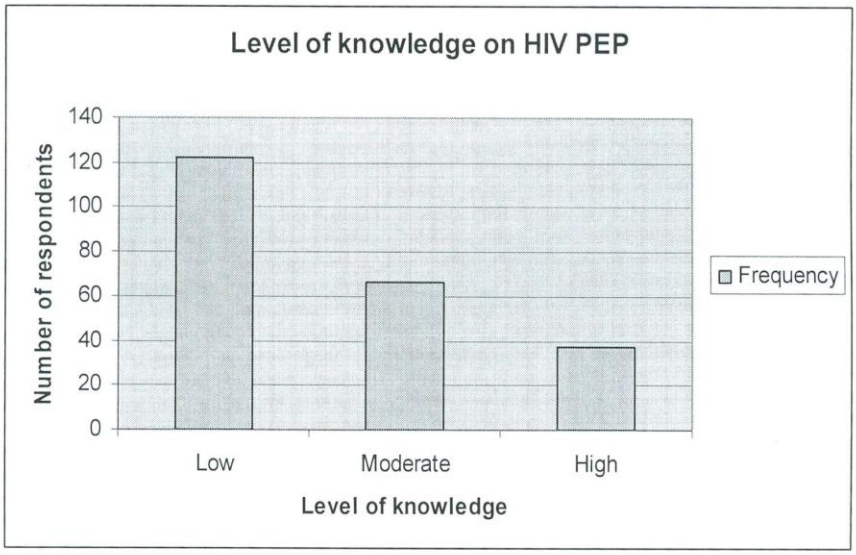


Table 5 shows that in this study the relationship between utilization of HIV PEP services and level of knowledge was statistically significant (Chi Square = 6.13, P = 0.047)

Table 5: Level of knowledge on the HIV PEP guideline and utilization of HIV PEP among HCWs in the past six months (n = 65)

LEVEL OF KNOWLEDGE	UTILIZATION OF HIV PEP		TOTAL
	Yes	No	
	n (%)	n (%)	
Low	6 (18.8)	26 (81.3)	32(49.2)
Moderate	1 (5.6)	17 (94.7)	18(27.7)
High	6 (40.0)	9 (60.0)	15 (23.1)
TOTAL	**13 (20.0)**	**52 (80.00**	**65 (100)**

(Chi Square = 6.13, P = 0.047)

4.6 Utilization of HIV PEP among HCWs and willingness to test for HIV and perception on NSIs as risk of HIV infection.

Among 225 respondents 102/225 (45%) were not willing to test for HIV in case they will be experienced percutaneous exposure, while 123/225 (55%) were willing to test for HIV (See Figure 2.)

n table 6 shows that the difference in utilization of HIV PEP services between those who were willing to test for HIV and those who were not was statistically not significant Fisher exact test, P = 0.40).

Figure 4: Willingness to test for HIV before utilization of HIV PEP among respondents (N=225)

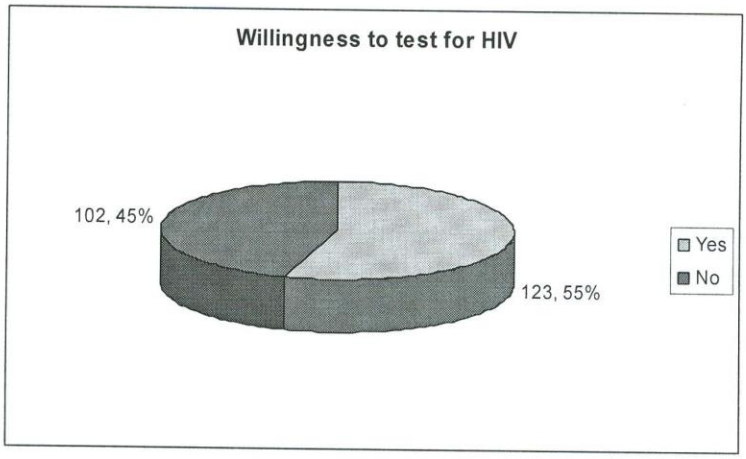
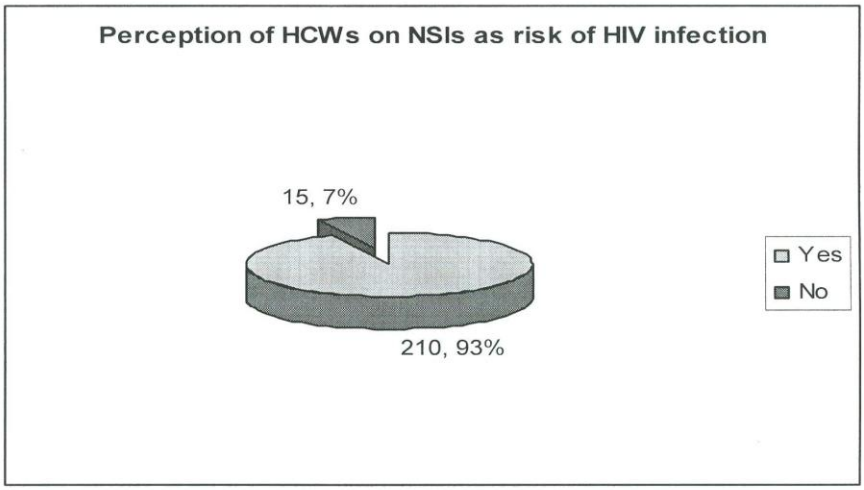


Table 6: Relationship between willingness to test for HIV, perception of HCWs on NSIs as risk of HIV infection and utilization of HIV PEP services (n=65)

FACTOR	UTILIZATION OF HIV PEP		TOTAL	
	Yes (%)	No (%)		
WILLING TO TEST				Fisher exact test P = 0.40
Yes	13 (21.3)	48 (78.7)	61	
No	0 (0.0)	4 (100.0)	4	
PERCEPTION ON NSIs AS RISK OF HIV INFECTION				Fisher exact test P=0.40
Yes	13 (21.3)	48 (78.7)	61	
No	0 (0.0)	4 (100.0)	4	
Total	**13 (20.0)**	**52 (80.0)**	**65**	

Sizable proportion of respondent 210/225 (93%) had high perception on NSIs as risk of HIV infection as shown in figure 3.

Figure 5: Perception of HCWs on NSIs as risk of HIV infection (n=225)



As results in table 6, it was shown in this study that perception of HCWs on NSIs as risk of HIV infection had no influence on utilization of HIV PEP services. Statistically it was not significant (Fisher exact test, $p = 0.40$).

4.7 Availability of ARV for HIV PEP among HCWs

According to checklist, in all three facilities (Masasi, Newala and Tandahimba) drugs for HIV PEP were kept in Main store together with stock of other Anti-Retroviral drugs. Drugs for HIV PEP were available for all period of past six months in all three district hospitals. As drugs for HIV PEP was available for all past six months, utilization of HIV PEP services in that period was not affected by availability of drugs. However it was observed that in all three hospitals there were no books for recording reported percutaneous exposures.

4.8 Accessibility of ARV for HIV PEP among HCWs

In all three District hospitals - Masasi, Newala and Tandahimba, it was observed that there were no displayed procedures which explaining what to do in case of HCWs experience percutaneous exposure. Even the name and contacts of person responsible for provision of HIV PEP was not displayed. These result in low accessibility of HIV PEP services among HCWs in all three Hospitals.

Table 7: Reasons given by HCWs as why they did not report percutaneous exposures

Code	Variable	Frequency n (%)
1*	I didn't know where to report.	24 (46.2)
2	I didn't see any necessity to report because there was no danger of HIV infection.	12 (23.1)
3*	There was no assigned person responsible for providing HIV PEP services.	2 (3.8)
4*	I didn't know what to do.	1 (1.9)
5	Fear to test for HIV	5 (9.6)
6	I am HIV positive	1 (1.9)
7	I screened source person, was HIV negative (without his/her consent)	2 (3.8)
8	I afraid of side effects of ARV	1 (1.9)
9	No confidentiality	4 (7.6)
Total		**52 (100.0)**

*Reasons attributed by poor accessibility of HIV PEP services.

CHAPTER FIVE

5.0 DISCUSSION

The study was conducted to assess the extent of utilization of HIV Post Exposure Prophylaxis (PEP) among HCWs in district hospitals of Mtwara Region and reasons that may contributed to low utilization of HIV PEP.

In this study, it was observed that, number of respondents who experienced percutaneous exposure was 65/225 (29%). The most affected cadre were Medical Officers 3/4 (75%), the reason behind might be contributed to the work load due to the shortage of trained personnel, especially Medical Officers who are about 4 in all district hospitals, (Masasi 1, Newala 1 and Tandahimba 2) in average one doctor serves more than 90,000 peoples. The shortage of trained HCWs in Mtwara Region is a matter of concern. All other cadres like Assistant Medical Officers, Clinical Officers and Nurses face the same shortage. Also it was found that number of NSIs/Blood splash episodes in period of six months was 101 for 65 HCWs. This was approximately a rate of about 3 episodes per HCW in a year. WHO and others show that, on average four NSIs per worker per year in the African, Eastern Mediterranean, and Asian population (Wilburn et al., 2004). The slightly difference might be due to small sample size in this study.

In this study, utilization of HIV PEP services was 13/65 (20%). Results in this study are different from that which was done in Thika district Kenya, where by the uptake of HIV

PEP services was 4%. Before initiation of ARV for PEP, the exposed HCW must have a test for HIV. This might be one of the obstacles in utilization of the services among HCWs, especially for those who fear to test for knowing that they had risky sexual behaviour or because of stigma (Taegtmeyer et al.,2008). Result in HIV PEP utilization in this study was quite different from the study done by Taegtmeyer et al, in Kenya. The difference might be contributed by the big campaign to sensitize people to test for HIV. The intervention was national wise and inaugurated in July, 2007 by President of Tanzania, Hon Jakaya Kikwete. Difference in utilization of HIV PEP services by age was statistically not significant, however utilization of the services among age group 20-29 years was 1/7 (14%), and that is 1.5 times less compared to other elder groups. The reason for this might be contributed to the fact that, this age group is likely to get involved in most of risk behaviours including unsafe sex. Therefore fear to test might become the obstacle in utilization of HIV PEP services among them compared to other elder groups. Also result in this study showed that, the difference in HIV PEP services utilization between male and female was not significant.

Results of this study show that those HCWs who were aware on HIV PEP guideline, their level of utilization of HIV PEP was twice as much compared to those who were not aware. However, result showed that the difference was not significant. The reason behind might be due to the on job training on HIV PEP guideline in all the three district hospitals which was going on. Therefore those HCWs who had percutaneous exposure

and did not utilize HIV PEP because of being not aware, during the interview they were already aware.

The result of the study show that more than half of HCWs participated in the study had low level of knowledge. When HIV PEP guideline was introduced in Tanzania, 2003 the priority of attending training was given to those who were working in HIV/AIDS Care and Treatment Clinics. HCWs who were working in other sections were not trained although they were in high risk of acquiring HIV/AIDS through occupational exposure.

The result showed that, the relationship was statistically significant. Therefore HCWs who are at risk for occupational exposure to blood borne pathogens should be familiarized with the principles of post exposure management as part of job orientation and ongoing training (Wig, 2003). Also curriculum on HIV PEP needs to be emphasized in medical and allied schools so that to empower HCWs to protect themselves and their patients as the combination of high risk of exposure coupled with poor knowledge of HIV PEP is of serious concern (Chen et al., 2001).

Testing for HIV is the key to utilization of HIV PEP services. However HIV testing among HCWs has been one of the obstacles of HIV PEP utilization. Among 225 respondents 102/225 (45%) was not willing to test for HIV in case they will be experienced percutaneous exposure, because they did not trust their colleague on

keeping confidentiality and/or fear of HIV testing (Taegtmeyer et al., 2008). Results of this study, shows that there were no statistically significant relationship between utilization of HIV PEP services and willingness to test for HIV among the HCWs who experienced percutaneous exposure in last six months. This result is different from what was expected, the reason behind might be the psychological pressure which some one experience after occupation exposure and therefore choosing to test although he/she was not willing to. Also presence of researcher may influence respondents to answer what he/she think will please researcher.

A sizable number of respondents (93%) had perception on needle stick as risk of HIV transmission. In comparison of perception of HCWs on NSI as a risk to HIV transmission and utilization of HIV PEP services, it showed that it not significant. This can be explained by the fact that, although some of HCWs knew that they were in danger of HIV infection but they did not utilize HIV PEP, due to risk behaviors they practice and therefore fear of HIV testing and stigma in the community. In study which was done in Thika, Kenya by Taegtmeyer et al., 2008 revealed PEP services can be made readily available but where HIV testing remains stigmatized, uptake of HIV PEP services will be limited among HCWs.

Although drugs for HIV PEP was available through past six months, that was not enough. The HIV PEP services suppose to be accessible 24 hours of each day, including weekends/holidays. Specific person responsible for PEP should be assigned and state

clearly where HCWs should report immediately following exposure. Through training and posters, all staffs including cleaners should be given information to insure they know about PEP (MOHSW, 2007). This was missing in all three facilities; therefore it was one of the reasons which impeded utilization of HIV PEP among HCWs.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATION

6.1 CONCLUSION

Although preventing blood exposure is the primary means of preventing occupationally acquired blood born diseases, appropriate post exposure management is an important element of workplace safety. Every HCW who sustain NSI should have access to PEP, as appropriate, within hour of injury, along with counselling, confidential testing, and follow up. Failure to report NSIs may compromise appropriate post exposure management, including PEP for HIV and hepatitis B virus, and assessment of occupational hazards and preventive assessment of occupational hazards and preventive interventions. The absence of PEP, lack of knowledge of the efficacy of PEP for prevention, an attitude that HCWs are careless or to blame for their own injuries, and lack of follow-up and workers' compensation are all reasons HCWs do not report NSIs. Health care institution and HCWs should assess reasons for under-reporting and eliminate barriers to reporting to encourage an effective exposure-control program.

6.2 RECOMMENDATION

1. Ministry of Health and Social Welfare (MOH&SW), Regional Health Management Teams (RHMTs) and District Health Management Teams (DHMTs) must take measures to support the ongoing monitoring of HIV PEP delivery in Health facilities.

2. MOH&SW and Medical training institutes should emphasize HIV PEP training and to include a more comprehensive discussion of risk assessment, and an integration of other issues and concerns raised by HCWs.
3. In charges of Health facility have to make sure that confidentiality is maintained within health facilities with respect to both the exposed worker and the source person; this will encourage HCWs to report percutaneous exposures.
4. MOH&SW should emphasize that in all health facilities HIV PEP procedures to be clear, well documented and accessible by all HCWs.
5. The successful implementation of HIV PEP policy requires social dialogue between employers, workers and their representative and government through MOH&SW.
6. Unless working environment are safe and appropriate prevention measures on HIV PEP are in place, it will be difficult to recruit both local and foreign HCWs to serve in high prevalence settings, therefore MOH&SW, RHMTs and DHMTs must work to improve situation.
7. High work load to HCWs is one of the factors which contributing to high incidences of NSIs among HCWS. Therefore MOH&SW and Local government should think ways of attracting trained HCWs to accept appointment in peripheral areas like Mtwara, so that to reduce the shortage gap of trained HCWs.

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