Occupational Health Injuries among Health Care Workers at Moi Teaching & Referral Hospital, Eldoret, Kenya

Camlus Otieno

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MOI UNIVERSITY
SCHOOL OF PUBLIC HEALTH
EHS 416: RESEARCH PROJECT

RESEARCH TOPIC:

OCCURRENCE OF OCCUPATIONAL INJURIES AMONG HEALTH CARE WORKERS AT MOI TEACHING AND REFERRAL HOSPITAL.

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REPORT SUBMITTED TO COBES COMMITTEE IN PARTIAL FULFILMENT OF REQUIREMENTS OF EHS 416 (COBES IV) COURSE.

October 2007
# DECLARATION

We, the undersigned hereby declare that this is our original work:

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<thead>
<tr>
<th>REG. NO.</th>
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<tr>
<td>EVH/10/03</td>
<td>MERES, Janet Jepng’etich...</td>
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<td>EVH/26/03</td>
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<td>EVH/32/03</td>
<td>KASSIM, Saku Rashid</td>
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**CONTENT SUPERVISOR**

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<td>Mr. G.O Araka.</td>
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ACKNOWLEDGEMENT

We wish to acknowledge the contributions of Prof Odero, our Methodology Supervisor (has since moved on), Mr. Glen O. Araka, our content supervisor, the course coordinator Dr. Magak, the COBES Office, and the management of MTRH for allowing us to conduct the research in their premises.
DEDICATION

We dedicate this report to the healthcare workers at MTRH who strive daily to provide quality service to all clients despite the many occupational risks faced by them in their work environment.
# TABLE OF CONTENTS

Declaration ...........................................................................................................i  
Acknowledgements .........................................................................................ii  
Dedication .................................................................................................iii  
List of Abbreviations ....................................................................................v  
List of Tables and Figures .............................................................................vi  
Abstract .....................................................................................................vii  
Chapter 1: Introduction .................................................................................1  
Chapter 2: Literature Review .........................................................................3  
Chapter 3: Methodology ...............................................................................6  
Chapter 4: Results .......................................................................................10  
Chapter 5: Discussion ..................................................................................21  
Chapter 6: Conclusion and Recommendations .........................................22  
References ...................................................................................................23  
Appendices .................................................................................................24
LIST OF ABBREVIATIONS

CDC- Centers for Disease Control and Prevention
DTC- Diagnostic Testing and Counseling
HCW- Health Care Workers
HIV/AIDS- Human Immuno-Deficiency Virus/ Acquired Immune –Deficiency Syndrome
EU- European Union
ILO- International Labour Organization
MCH/FP- Maternal and Child Health/ Family Planning
MTRH- Maternal and Child Health
OPD- Outpatient Department
PEP- Post Exposure Prophylaxis
PPE- personal Protective Equipment
LIST OF TABLES

Table 1: shows the gender of the respondents
Table 2: shows the designation of the healthcare workers
Table 3: shows the age of healthcare workers
Table 4: shows the highest level of education attained by respondents
Table 5: shows the number of respondents per department
Table 6: shows the duration of work experience
Table 7: shows the number of staff that sustained injuries in the last one year (prevalence of injuries)
Table 8: shows the incidences of injuries sustained by the respondents in the last one year.
Table 9: shows the causes of injuries sustained by the health care workers
Table 10: shows the types of injuries sustained by respondents
Table 11: shows the usage of personal protective equipment by respondents
Table 12: shows the immediate course of action taken in the event of a workplace incident/ accident.

LIST OF CHARTS

Chart 1: shows the gender of healthcare workers at the Moi Teaching and Referral Hospital.
Chart 2 below shows the occupations of the various HCWs at the MTRH.
Chart 3 below shows the percentages of the various age categories of HCWs at the MTRH.
Chart 4 below shows the various levels of education attained by the HCWs at the MTRH.
Chart 5 below shows the percentage of HCWs in each department in the hospital.
Chart 6 below shows the duration of work experience of HCWs at the MTRH.
Chart 7 below shows the percentage of HCWs that had sustained injuries in the last one year.
Chart 8 below shows the incidences (frequency) of acquiring occupational injuries among the HCWs at the MTRH.
Chart 9 below shows the causes of occupational injuries among HCWs at the MTRH.
Chart 10 below shows the types of injuries sustained by the HCWs at MTRH.
Chart 11 below shows the usage of PPE by the HCWs at the MTRH.
Chart 12 below shows the immediate action taken in the event of a workplace injury among the HCWs at MTRH.
ABSTRACT

Research Topic: Occurrence of Occupational Health Injuries among Healthcare Workers at the Moi Teaching and Referral Hospital.

Introduction: This study was carried out so as to generate data in order that future planning on interventions and control of occupational injuries can be evidence based.

Study Justification: Injuries arising out of needlesticks ought to be taken seriously in this era of HIV/AIDS. There is need to institute active infection control based on reliable data.

Study Objective: To determine the magnitude of occupational injuries occurring among health care workers at Moi Teaching and Referral Hospital (MTRH).

Study Area: The Moi Teaching and Referral Hospital, serves western Kenya and is based in Eldoret, in the Rift Valley Province.

Study Design: This was a cross-sectional study, which was both qualitative and quantitative. 372 respondents were interviewed.

Study Population: Comprised of health care workers such as Doctors, Nurses and laboratories staff.

Data Collection: Standardized questionnaires were administered as well as key informant interviews having obtained informed consent.

Data Presentation: Having derived frequency distributions and percentages, data was presented in tables, bar and pie charts.

Results: 56% of the HCWs at the MTRH did not acquire any injuries while 44% of them sustained occupational injuries in the last one year.

Conclusion: The research was successfully conducted though a few limitations were experienced. Preventive measures in place are not strictly adhered to. Besides, they are inadequate.

Recommendations: Provision and maintenance of adequate Personal Protective Equipment (PPE); continuing professional development (education); establish a properly manned occupational health department and an active infection control team; and establishment of a clear channel for reporting and managing occupational injuries in the hospital.
1. INTRODUCTION

An occupation is a job or employment activity that takes up one’s pass time. It therefore takes up a large amount of someone’s lifetime and so the occupational environment can be an important source of hazards that may adversely affect one’s health. Bamboo-web an Internet dictionary, defines a hazard as something that can cause harm. This is determined by a risk, which is the measure of the probability of the hazard causing actual harm (Internet, July 2006). Standards of Occupational Safety and Health (OS&H) are normally set in legislation; Governments have long realized that poor OS&H performance results in cost to the state (e.g. through social security payments to the incapacitated, medical costs for treatment, and also through the loss of employment capacity of the worker). Industries lose out on man-hours when employees get sick. “In the European Union (EU), member states have enforcing authorities to ensure that the basic legal requirements relating to OS&H are met. In many EU countries, there is strong cooperation between employers and worker organizations to ensure good OS&H performance as it is recognized that this has benefits for both worker (maintenance of good health) and enterprise (improved quality productivity)” (Internet, July 2006).

Due to these factors, many countries especially the developed ones like the USA have established agencies to regulate OS&H and this can be traced back to the 1970s. Modern OS&H legislation usually demands that a risk assessment be made prior to making an intervention. This assessment should:

- Identify the risk,
- Identify all affected by the hazard and how,
- Evaluate the risks and,
- Identify and prioritize the required actions (Internet).

Health being a fundamental human right according to a U.N. declaration, anything that impedes the realization and maintenance of health is an infringement of rights. Incidentally, in the developing countries like Kenya, working conditions are still way below average and this is contributed to by agents like dangerous machinery, noise, pollution and poor pay (Internet, July 2006).

*P. falciparum* is a blood borne pathogen, and malaria is a well-documented complication of transfusion. Malaria has also been diagnosed after intravenous drug use and breaches in infection control procedures, as well as occupational exposures. Occupational *P. falciparum* infection after a needle stick injury may
be rare; however, such an injury can be potentially severe in non immune healthcare workers in countries where malaria is not endemic, especially if the occupationally infected person is pregnant. This situation may also become more common as malaria spreads and as increasing international travel brings potential source patients to hospitals in malaria-endemic countries (Arnaund et al, 2004).

To protect health care providers, as well as to prevent HIV and other infectious diseases from being transmitted from health care providers to their patients, universal precautions must be implemented. Universal precautions are infection control measures aimed at preventing the transmission of HIV and other pathogens in blood and other body fluids in the health care setting. They include safe injection practices and measures to create physical barriers such as wearing gloves, goggles, and other protective gear (Africa Action, E-Journal, 2003).

The greatest risks for occupational infections appear to come from needle-stick injuries. One study estimated that the risk of occupational acquisition of HIV for a surgeon practicing in Zambia was fifteen times that of their Western colleagues, primarily due to the high HIV prevalence in Zambia. That study found that most injuries to surgeons occurred through needle stick injuries caused by suture needles.

Replacing sharp suture needles with blunt needles could prevent many injuries caused during suturing (Africa Action, E-Journal, 2003).

This study was carried out at the Moi Teaching and Referral Hospital in order to generate data on these occupational injuries so that future planning and decisions on how to control them could be evidence based.
2. LITERATURE REVIEW

According to the World Health Organization, (WHO, 1998) by the beginning of the third Millennium, the global workforce will surpass three billion people and without preventive action the burden of occupational disease will escalate.

Today, the daily lives of millions of people around the globe are still blighted by the shadow of occupational disease and injury. Even in the most advanced industrialized societies, the elimination of occupational disease remains an unattained goal (Baxters, 2000).

When management understands the basic and root causes of occupational accidents, it will be in a better position permanently to prevent accidents from occurring in the workplace. Many companies’ safety and health programmes only address the symptomatic or direct causes of accidents and never really identify the root causes. Changing a management system that can allow accidents to occur is not difficult.

Approximately 10% of workplace accidents occur because of unsafe conditions, processes, or facilities. 15% of these are due to “employee or human error”, 75% are due to errors, oversights, or omissions in policies, procedures, practices, and especially priorities in day-to-day business activities. Since the 1930s, accident causes have been placed into two categories, unsafe conditions (12%), and unsafe acts (88%) (Baxters, 2000).

It is management policies, procedures, practices and priorities that control the 75% of workplace accidents (Hunters, 2000). An estimated 10 million work related injuries and 430,000 non-work related illnesses occur each year in the United States. In the developing countries, occupational and illness rates are much higher than in the United States.

Each day in the United States an average of 9,000 workers sustain disabling injuries on the job, 16 workers die from a workplace injury, ad 137 workers die from work related diseases. However, the number of occupational diseases and injuries reported is much lower. In addition its estimated that there may be 100,000 or more deaths in the US each year (Internet, July 2006).

A study funded by the National Institute for Occupational Safety and Health and
published in 1997 showed that in 1992, indirect and direct (including administrative) costs of occupational injuries were $145 billion and of occupational illnesses, $26 billion, a total of $171 billion (Baxters, 2000).

There are few good statistics on the occurrence of occupationally related illnesses and injuries in developing countries or on the magnitude or degree of health and safety hazards at work. This inadequacy is a function of inadequate infrastructure and human resources for occupational health and safety in the developing countries, as well as inherent difficulty in diagnosing and obtaining data on work-related health problems.

In situations with data, there’s evidence that the occurrence of occupational illnesses and injuries in the developing countries is much higher in the developing nations than in the developed countries. The ILO for example collected data on annual rates of fatal injuries in 24 developing countries from 1971-75 and 1976-80.

Although rates of fatal injuries decreased in developed countries during the 1970s, these rates stayed the same or even increased in the developing countries, in almost half of the countries studied, the rates increased between the first and second halves of the decade. In addition, ILO found that in twenty-one developing countries, non-fatal occupational injury rates rose by 5.3% during 1976-80, while they were declining elsewhere (Barry, 2000).

There are a variety of reasons for the poor occupational safety situation in developing countries, including the use of outdated machinery often imported from the countries in used condition from more developed countries; poor maintenance and little safety guarding of machinery; inadequate training of workers, poor design of equipment and work stations, and lack of personal protective equipment, which even when available, may be difficult to wear because of working conditions or workers’ health status.

Besides workers with underlying health endemic diseases, poor housing sanitation and inadequate nutrition may compromise status. Almost one in every 10 workers in the US is a care worker, characterized as people committed to promoting health through treatment and in case for the sick and injured, health care workers ironically confront perhaps a greater range of significant workplace hazards than workers in any other sector.

In addition to exposure to airborne and blood borne infectious agents, typical exposures include workplace assault, ergonomic hazards, toxic drugs, and other chemicals, radiations, and work stress, often exacerbated by inadequate staffing.
For these reasons, health care workers often struggle to provide quality and compassionate care in an inherently dangerous work environment (Barry, 2000).

According to data from the Bureaus of Labour Statistics, the number of injury and illness cases recorded among health staff workers increased 130% between 1983-1993 while total employment grew by only 46%. In 1997, employees reported that 652,800 health care workers had an occupational safety and health hazard injury (US Bureau of Labour Statistics, 1997).

Musculoskeletal injuries rank 2nd among all work related injuries, with the greatest number occurring among the health care workers. Exposures include the requirements to lift, pull, slide, turn and transfer patients, more equipment and stand for long hours.

The most prevalent, least reported, and largely preventable serious risk health care workers face comes from continuing use of inherently dangerous conventional needles, such unsafe needles transmit blood borne infections to health care workers employed in a wide variety of occupations. Elimination of unnecessary sharps and use of safer needles can dramatically reduce needle stick injuries (Barry, 2000).

As of 1998, the US Food and Drug Administration had proposed more than 250 safer needle-bearing products. The CDC&P reported in 1997 that an 8 hospital study demonstrated that during such high risk procedures as draining blood, needle sticks could be reduced up to 76% with the use of safer needles; nevertheless, fewer than 10% of the needles being purchased in 1998 by the employers there had integrated safety measures.

After a needle stick injury, the risk of developing occupationally acquired hepatitis B virus (HBV) infection for the non immune health care worker ranges from 2% to 40% depending on the HBeAg status of the source patient. The risk of transmission from a positive source for HepC is between 3% and 10% and the average rise of transmission of HIV is 0.3% (Barry, 2000). This cannot be taken lightly and some steps need to be taken to arrest this situation.

Needle or sharps injuries are common, underreported and often preventable (UK Department of Health, 2004).
3. METHODOLOGY

BROAD OBJECTIVE
To determine the magnitude of occupational injuries occurring among health care workers at Moi Teaching and Referral Hospital (MTRH).

SPECIFIC OBJECTIVES
1. To determine the nature and causes of occupational injuries among health care workers at MTRH.
2. To determine the incidence and prevalence rates of the injuries.
3. To assess the impact of occupational injuries on the above health care workers.
4. To establish the preventive and control measures in place regarding these.

RESEARCH QUESTION
How many Occupational injuries occur among health care staff at Moi Teaching and Referral Hospital.

3.1. STUDY AREA
The Moi Teaching and Referral Hospital is situated in Eldoret Municipality, Uasin Gishu District of Rift valley Province along Nandi Road about one kilometre from the town centre. It was established in 1917 as a District Hospital and as a Referral health facility in the year 2000. It has 88 Doctors, 517 nurses, 19 community oral health workers and dental surgeons. 122 work in the Laboratories among other health workers. There are 210 support staff. Of these 40% work in the clinical areas. Its mission is to provide efficient, quality and affordable healthcare to patients referred to it from other hospitals in western Kenya and Central Africa.

The hospital has Medical, Paediatric, Surgical, Obstetrics, Gynaecology, Renal ward, Psychiatric, Ophthalmology, as special wards. There also exists Intensive care unit, Amenity ward and a private wing called Memorial.

The MTRH has a bed space of 519.24596 patients were admitted in the year 2005 and the patient load was 181,265 in the same year. A total of 199,075 out patients were seen last year.

3.2. STUDY POPULATION
The study population comprised of health care workers in the wards and laboratories.

3.3. STUDY DESIGN
This was a cross-sectional study, which was both qualitative and quantitative. Information on the nature and occurrences of injuries, preventive measures in place and the effects of injuries on staff’s lives was obtained from interviews of staff and key informants.

3.4. SAMPLE SIZE DETERMINATION

The sample size was determined as follows:

\[
N = \frac{Z^2 (Pq)}{d^2}
\]

Where: 
- \(Z\) = Error which was taken as 5% hence Z Score is 1.96
- \(d\) = Absolute precision of size at 5% Level of Significance i.e. 0.05,
- \(P\) = Estimated Prevalence of Injuries: 50% or 0.5*,
- \(Q\) = 1 - \(P\) = 1 - 0.5 = 0.5

* A prevalence of 50% was assumed since there was no documented data on prevalence of injuries.

Thus: 
\[
N = \frac{1.96^2 (0.5 \times 0.5)}{0.05^2} = 384.
\]

3.5. SAMPLING PROCEDURE

Stratified-Clustered sampling was used to group the respondents into their respective departments e.g. Doctors, Nurses, and Laboratory technicians/technologists.

Systematic sampling was employed where individual respondents will be picked depending on their numbers in their respective departments.

6 key informants were selected purposively depending on their roles in the hospital departments, A sampling interval of 2 (two) was used i.e. Population (836) / Sample (384).

3.6. EXCLUSION CRITERIA

Support staff like secretaries, Clerical officers, Nutritionists, Radiologists, Physiotherapists, Public health officers, Occupational therapists and Social workers since no appreciable data on injuries may have been found.

3.7. SOURCES OF DATA

Data was obtained through interviewer-administered questionnaires, staff records and also from interviews with key informants.
3.8. DATA COLLECTION, ANALYSIS AND PRESENTATION

3.8.1. DATA COLLECTION
Having obtained verbal informed consent from respondents, Standardized Questionnaires were administered.

Interview Schedules were used to obtain data on common injuries and the course of action taken when one is exposed besides finding out information on preventive and control measures from key informants.

3.8.2. DATA MANAGEMENT AND ANALYSIS
Data was analyzed using descriptive statistics i.e. frequencies and percentages. Data collected will be coded appropriately and entered into computer programmes like SPSS 10.0 and Ms Excel which were used to analyse them.

3.8.3. DATA REPORTING AND PRESENTATION
Pie chart, graphs, frequency distribution tables were used to convey the statistics. An electronic and printed copy was handed in to the COBES Committee for assessment at the end of the exercise. The complete report may also be published.

3.9. MINIMISATION OF BIAS
Questionnaires that had been standardized and pretested in a pilot study in a similar setting were used.

The sampling procedure entailed both non-probability and probability sampling methods. Non-probability sampling methods when used alone are prone to a lot of biases.

Respondent bias was minimized by use of closed ended questions in the standardized questionnaire.

3.10 ETHICAL CONSIDERATIONS

Informed consent was obtained from the respondents before the questionnaires were administered.

The respondents were not asked to identify themselves and they were assured of confidentiality in the handling of all the information that they gave.

The study in no way subjected the respondents to any harm or risk.
The study was beneficial both to the hospital management and health care workers since its results may be used to improve their working conditions by instituting intervention measures, and also provide data for planning purposes.

Data was stored by the researchers safely and was not accessible to unauthorized parties.

The research was only done after permission was sought and obtained from the Institutional Research and Ethics Committee.
4. RESULTS

a) Demographic Data

i) Gender of the Healthcare Workers at MTRH.

Table 1: shows the gender of the respondents

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>96</td>
<td>25.8</td>
</tr>
<tr>
<td>Female</td>
<td>276</td>
<td>74.2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>372</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Chart 1: shows the gender of healthcare workers at the Moi Teaching and Referral Hospital.

![Pie chart showing gender of HCWs]

From the above chart it can be seen that 74% of the HCWs are female with the minority (26%) being males.

ii) Staff Designation by Gender

Table 2: shows the designation of the healthcare workers

<table>
<thead>
<tr>
<th>Staff Designation</th>
<th>Male</th>
<th>Female</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses</td>
<td>51</td>
<td>225</td>
<td>276</td>
<td>74.2</td>
</tr>
<tr>
<td>Clinical Officers</td>
<td>27</td>
<td>18</td>
<td>45</td>
<td>12.1</td>
</tr>
<tr>
<td>Medical Officers</td>
<td>6</td>
<td>3</td>
<td>9</td>
<td>2.44</td>
</tr>
<tr>
<td>Lab Technicians</td>
<td>6</td>
<td>21</td>
<td>27</td>
<td>7.26</td>
</tr>
<tr>
<td>Others</td>
<td>6</td>
<td>9</td>
<td>15</td>
<td>4.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>96</td>
<td>276</td>
<td>372</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Chart 2 below shows the occupations of the various HCWs at the MTRH.
From the above graph, it can be inferred that Nurses make the majority (74.2%) of the workers with Medical Officers being the least in numbers (2.44%).

### iii) Age of Healthcare workers by gender

Table 3: shows the age of healthcare workers

<table>
<thead>
<tr>
<th>Age Category</th>
<th>Female</th>
<th>Male</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
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<tr>
<td>18-23</td>
<td>21</td>
<td>3</td>
<td>24</td>
<td>6.45</td>
</tr>
<tr>
<td>24-29</td>
<td>87</td>
<td>27</td>
<td>114</td>
<td>30.65</td>
</tr>
<tr>
<td>30-35</td>
<td>66</td>
<td>33</td>
<td>99</td>
<td>26.6</td>
</tr>
<tr>
<td>36-41</td>
<td>45</td>
<td>12</td>
<td>57</td>
<td>15.03</td>
</tr>
<tr>
<td>42-47</td>
<td>21</td>
<td>9</td>
<td>30</td>
<td>8.06</td>
</tr>
<tr>
<td>48-53</td>
<td>30</td>
<td>9</td>
<td>39</td>
<td>10.5</td>
</tr>
<tr>
<td>54-59</td>
<td>6</td>
<td>3</td>
<td>9</td>
<td>2.44</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>276</td>
<td>96</td>
<td>372</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Chart 3 below shows the percentages of the various age categories of HCWs at the MTRH.
From the bar graph above, it can be seen that most (30.65%) of the HCWs fall in the 24-29 years age group followed by the 30-35 years age group at 26.6% with the least being 54-59 years age group at 2.44%.

iv) Highest level of education attained by healthcare workers

Table 4: shows the highest level of education attained by respondents

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>Male</th>
<th>Female</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate</td>
<td>12</td>
<td>84</td>
<td>96</td>
<td>25.8</td>
</tr>
<tr>
<td>Diploma</td>
<td>51</td>
<td>171</td>
<td>222</td>
<td>59.68</td>
</tr>
<tr>
<td>Degree</td>
<td>21</td>
<td>15</td>
<td>36</td>
<td>9.68</td>
</tr>
<tr>
<td>Others</td>
<td>12</td>
<td>6</td>
<td>18</td>
<td>4.84</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>96</strong></td>
<td><strong>276</strong></td>
<td><strong>372</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Chart 4 below shows the various levels of education attained by the HCWs at the MTRH.
From the above pie chart, it can be inferred that majority (59%) of the HCWs are diploma holders, followed by certificate holders at 26%, degree holders at 10% and other varied qualifications at 5% being the least.

v) The number of healthcare workers interviewed by department

Table 5: shows the number of respondents per department

<table>
<thead>
<tr>
<th>Department</th>
<th>Males</th>
<th>Females</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternity/Labour ward</td>
<td>9</td>
<td>29</td>
<td>38</td>
<td>10.22</td>
</tr>
<tr>
<td>Medical wards</td>
<td>6</td>
<td>40</td>
<td>46</td>
<td>12.37</td>
</tr>
<tr>
<td>Eye Unit</td>
<td>3</td>
<td>9</td>
<td>12</td>
<td>3.23</td>
</tr>
<tr>
<td>Casualty/Emergency dept.</td>
<td>6</td>
<td>30</td>
<td>36</td>
<td>9.68</td>
</tr>
<tr>
<td>Pediatric ward</td>
<td>3</td>
<td>27</td>
<td>30</td>
<td>8.06</td>
</tr>
<tr>
<td>Theatre</td>
<td>39</td>
<td>21</td>
<td>60</td>
<td>16.13</td>
</tr>
<tr>
<td>Orthopedic/Surgical ward</td>
<td>3</td>
<td>27</td>
<td>30</td>
<td>8.06</td>
</tr>
<tr>
<td>MCH</td>
<td>3</td>
<td>21</td>
<td>24</td>
<td>6.45</td>
</tr>
<tr>
<td>Laboratory</td>
<td>6</td>
<td>21</td>
<td>27</td>
<td>7.26</td>
</tr>
<tr>
<td>General ward</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>0.81</td>
</tr>
<tr>
<td>Mental ward</td>
<td>6</td>
<td>9</td>
<td>15</td>
<td>4.03</td>
</tr>
<tr>
<td>Consultancy (OPD) clinics</td>
<td>12</td>
<td>39</td>
<td>51</td>
<td>13.70</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>96</strong></td>
<td><strong>276</strong></td>
<td><strong>372</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Chart 5 below shows the percentage of HCWs in each department in the hospital.
From the above graph it can be deciphered that the workers are equitably distributed in the hospital in the various departments with the Majaliwa theatre registering the highest at 16.13% then consultancy clinics at 13.7% and medical wards at 12.37% with the rest fairly distributed across the departments.

b) Work Experience

i) Duration of work experience

Table 6: shows the duration of work experience

<table>
<thead>
<tr>
<th>Duration (years)</th>
<th>Male</th>
<th>female</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>69</td>
<td>225</td>
<td>294</td>
<td>79.03</td>
</tr>
<tr>
<td>6-11</td>
<td>21</td>
<td>30</td>
<td>51</td>
<td>13.71</td>
</tr>
<tr>
<td>12-17</td>
<td>3</td>
<td>9</td>
<td>12</td>
<td>3.23</td>
</tr>
<tr>
<td>18-23</td>
<td>0</td>
<td>9</td>
<td>9</td>
<td>2.42</td>
</tr>
<tr>
<td>24-29</td>
<td>3</td>
<td>3</td>
<td>6</td>
<td>1.61</td>
</tr>
<tr>
<td>TOTAL</td>
<td>96</td>
<td>276</td>
<td>372</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Chart 6 below shows the duration of work experience of HCWs at the MTRH.
From the above graph, it can be rightly concluded that most (79.03%) of the workers had been working at their duty stations for the last 0-5 years with the least being those who had a 24-29 years experience.

ii) Number of staff that sustained injuries in the last one year

Table 7: shows the number of staff that sustained injuries in the last one year (prevalence of injuries)

<table>
<thead>
<tr>
<th>Response</th>
<th>Male</th>
<th>Female</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>45</td>
<td>117</td>
<td>162</td>
<td>43.55</td>
</tr>
<tr>
<td>No</td>
<td>51</td>
<td>159</td>
<td>210</td>
<td>56.45</td>
</tr>
<tr>
<td>TOTAL</td>
<td>96</td>
<td>276</td>
<td>372</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Chart 7 below shows the percentage of HCWs that had sustained injuries in the last one year.
From the pie chart above, it can be shown that majority (56%) of the HCWs at the MTRH did not acquire any injuries while 44% of them sustained occupational injuries in the last one year. This though is still a big proportion to be acquiring injuries.

iii) Frequency of sustaining injuries amongst the healthcare workers within the last one year (incidences)
Table 8: shows the incidences of injuries sustained by the respondents in the last one year.

<table>
<thead>
<tr>
<th>Response</th>
<th>Male</th>
<th>Female</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Once</td>
<td>18</td>
<td>57</td>
<td>75</td>
<td>46.30</td>
</tr>
<tr>
<td>More than One</td>
<td>27</td>
<td>60</td>
<td>87</td>
<td>53.70</td>
</tr>
<tr>
<td>TOTAL</td>
<td>45</td>
<td>117</td>
<td>162</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Chart 8 below shows the incidences (frequency) of acquiring occupational injuries among the HCWs at the MTRH.
From the above pie chart, it can be observed, and rightly so, that most (54%) of the workers sustained occupational injuries more than once in the last one year while only 46% acquired injuries once.

iv) Causes of injuries sustained by the respondents
Table 9: shows the causes of injuries sustained by the health care workers

<table>
<thead>
<tr>
<th>Cause</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needle pricks</td>
<td>69</td>
<td>41.82</td>
</tr>
<tr>
<td>Broken glass/ ampoules</td>
<td>45</td>
<td>27.28</td>
</tr>
<tr>
<td>Lifting (uncooperative) patients</td>
<td>21</td>
<td>12.72</td>
</tr>
<tr>
<td>Others</td>
<td>30</td>
<td>18.18</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>165</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Chart 9 below shows the causes of occupational injuries among HCWs at the MTRH.

From the above chart, it can be seen that needle-pricks were the largest cause of occupational injuries contributing 41.82% with broken ampoules coming next with 27.28%. Lifting and uncooperative patients (mental ward) contributing 12.72%.

v) Types of injuries
Table 10: shows the types of injuries sustained by respondents

<table>
<thead>
<tr>
<th>Injury type</th>
<th>No. of HCWs injured (N)</th>
<th>Frequency of occurrence Of injury (F)</th>
<th>Magnitude (N*F)</th>
<th>Percent (%)</th>
</tr>
</thead>
</table>

17
<table>
<thead>
<tr>
<th>Type of Injury</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fractures</td>
<td>2</td>
<td>0.33</td>
</tr>
<tr>
<td>Cuts</td>
<td>16</td>
<td>13.17</td>
</tr>
<tr>
<td>Bruises</td>
<td>3</td>
<td>0.74</td>
</tr>
<tr>
<td>Eye injuries</td>
<td>4</td>
<td>0.98</td>
</tr>
<tr>
<td>Needlesticks</td>
<td>31</td>
<td>66.34</td>
</tr>
<tr>
<td>Others</td>
<td>14</td>
<td>18.44</td>
</tr>
</tbody>
</table>

**TOTAL** 70 60 1215 100.0

Chart 10 below shows the types of injuries sustained by the HCWs at MTRH.

From the above graph, it can be seen that needle-sticks are the most occurring occupational injuries at 66.34% with fractures being the least with 0.33%.

**c) Protective and control measures**

i) Usage of protective and preventive measures.

Table 11: shows the usage of personal protective equipment by respondents

<table>
<thead>
<tr>
<th>Usage</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>336</td>
<td>90.32</td>
</tr>
<tr>
<td>No</td>
<td>30</td>
<td>8.06</td>
</tr>
<tr>
<td>No response</td>
<td>6</td>
<td>1.62</td>
</tr>
</tbody>
</table>

**TOTAL** 372 100.0

Chart 11 below shows the usage of PPE by the HCWs at the MTRH.
From the above pie chart, it is clear that a huge majority (90%) of the healthcare workers at the Moi Teaching and Referral Hospital use Personal Protective Equipment with only 8% of them not using PPE while 2% of the HCWs did not respond.

ii) Immediate course of action taken in the event of a workplace injury

Table 12: shows the immediate course of action taken in the event of a workplace incident/ accident.

<table>
<thead>
<tr>
<th>Course of Action</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Aid</td>
<td>144</td>
<td>38.71</td>
</tr>
<tr>
<td>Report to in-charge</td>
<td>69</td>
<td>18.55</td>
</tr>
<tr>
<td>DTC/PEP</td>
<td>60</td>
<td>16.13</td>
</tr>
<tr>
<td>See clinician</td>
<td>27</td>
<td>7.26</td>
</tr>
<tr>
<td>No action</td>
<td>72</td>
<td>19.36</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>372</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Chart 12 below shows the immediate action taken in the event of a workplace injury among the HCWs at MTRH.
Some (38.7%) of the HCWs go for First Aid, followed by 18.55% reporting their injuries to the in charge first. 16.13% seek DTC and PEP while 7.26% opt to see their clinicians. 19.36% indicated taking no action \ response, too high a majority to be undecided.

iii) Consequences of injuries.
The HCWs interviewed in the study identified possible results of injuries as:
- Acquiring infections such as HIV/AIDS, Hepatitis and Tetanus;
- Physical deformities especially in the case of fractures;
- Temporary incapacitation and inconveniences;
- Interference with service delivery;
- Economically, lost man hours due ‘sick offs’;
- Diversion of resources to treating injured workers instead of patients\ clients;
- Psychological trauma, stress, depression, anxiety and fear of acquiring the above infections;
- Backaches;
- Severe drug reactions during PEP;
- Shortage of staff;
- Poor work performance;
- Loss of pregnancy; and even,
- Death.

5. DISCUSSION
Varied courses of action suggest that there is no clear policy on occupational injuries in the hospital; a fact confirmed by the key informants (Heads of Department) interviewed.

About 98% of those using PPE used gloves as the only means of protection while about 63% combined this with other protective devices such as face masks, goggles, boots, cotton wool, gowns, using files to open ampoules and others.

The possible consequences of these injuries are wide and varied and range from almost insignificant ones such as temporary incapacitations and inconveniences, to very severe ones like loss of pregnancy and even tragically, death.

Musculoskeletal injuries rank 2nd among all work related injuries, with the greatest number occurring among the health care workers. Exposures include the requirements to lift, pull, slide, turn and transfer patients, more equipment and stand for long hours.

The most prevalent, least reported, and largely preventable serious risk health care workers face comes from continuing use of inherently dangerous conventional needles, such unsafe needles transmit blood borne infections to health care workers employed in a wide variety of occupations. Elimination of unnecessary sharps and use of safer needles can dramatically reduce needle stick injuries (Barry, 2000).

As of 1998, the US Food and Drug Administration had proposed more than 250 safer needle-bearing products. The CDC&P reported in 1997 that an 8 hospital study demonstrated that during such high risk procedures as draining blood, needle sticks could be reduced up to 76% with the use of safer needles; nevertheless, fewer than 10% of the needles being purchased in 1998 by the employers there had integrated safety measures.

After a needle stick injury, the risk of developing occupationally acquired hepatitis B virus (HBV) infection for the non immune health care worker ranges from 2% to 40% depending on the HBeAg status of the source patient. The risk of transmission from a positive source for HepC is between 3% and 10% and the average rise of transmission of HIV is 0.3 % (Barry, 2000). This cannot be taken lightly and some steps need to be taken to arrest this situation.

Needle or sharps injuries are common, underreported and often preventable (UK Department of Health, 2004).
6. CONCLUSION AND RECOMMENDATIONS

In conclusion, the research was successfully conducted though a few limitations were experienced including some respondents not returning questionnaires while others had an openly negative attitude towards research. Following the results of the study, we recommend the following:

**Recommendations to the Moi Teaching and Referral Hospital management:**
- Proper workplace design, construction and maintenance;
- Proper ergonomic conditions;
- Provision and maintenance of adequate Personal Protective Equipment (PPE);
- Careful handling of instruments used in managing patients;
- Segregation of wastes, especially sharps and infectious as well as highly infectious wastes in the hospital;
- Provide files to brake bottles and ampoules;
- Adherence to injection safety methods;
- Provision of lifting aids for immobilized patients;
- Recruit more staff to relieve the available inadequate healthcare workers;
- Decontamination of used instruments which may be re-used;
- Continuing professional development (education);
- Establish a properly manned occupational health department and an active infection control team; and
- Establishment of a clear channel for reporting and managing occupational injuries in the hospital.

**Recommendations to the College of Health Sciences:**
- Early release of research funds to enable students have adequate time to conduct research;
- Conduct a sensitization seminar on the importance of research for the University and hospital fraternity to alleviate apathy towards research in the hospital community.
REFERENCES


9. Internet articles, 2006


QUESTIONNAIRE FOR HOSPITAL STAFF WORKING IN CLINICAL AREAS.

This research is interested in determining the occurrence of occupational injuries among healthcare workers. The information given herein will be treated with utmost confidentiality and for research purposes only. Please appropriately fill in the answers to the questions in the spaces provided. Thank you.

I) Demographic Data

1. Gender __________________ Staff Category/Designation__________________________

2. Age ____________________________

3. Level of education ____________________________
   Workstation_____________________________

II) Working Experience

4. How long have you been working in this department?

   ________________Years. ________________Months

5. Do you work in shifts? 1. Yes 2. No

6. Have you sustained any injuries at your work place?

   a) Last one year? Yes__________ No__________

   b) More than a year ago? Yes__________ No__________

   If YES:
   a). What was the cause?

   b). what type of injury was it? (Diagnosis)
      - Fractures __________ Frequency (how many times?)
      - Cuts __________
      - Bruises __________
      - Burns __________
      - Eye Injuries __________
      - Needle sticks __________
      Others ____________________________
c). what were you doing?

d). what action did you take after the injury?

7. Are there any preventive measures in place to protect against the injury?

1. YES_________ If yes, what are they?

2. NO_________

If No move to question 9.

8. Do you use the protective measures?

1. Yes_______________________ 2. No__________________________________

If no, Why?

9. What is the immediate course of action taken in the event of a workplace injury?

10. What are the consequences of injuries?

12. What can be done to prevent occupational injury at your place of work?
   (Suggest possible ways of preventing occupational injuries at your work place.)

………………………………………………….
………………………………………………….
………………………………………………….
………………………………………………….
………………………………………………….
Appendix 2

INTERVIEW GUIDE FOR KEY INFORMANTS

1. Which are most common injuries facing the workers?

2. Where do these injuries occur?

3. What do you think are the causes of these injuries?

4. What protective gear do you provide?

5. What effects do the injuries have on the productivity of the hospital?

6. In your opinion:
   a) Comment on the usage of protective gear that you provide?
   b) Comment on the non-usage of the protective gear that you provide?

7. What steps have been taken to ensure that protective gear being provided is used?

8. What other measures do you think should be taken to prevent the occurrence of these injuries?

Appendix 3
<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITY</th>
<th>UNIT COST</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Lunch Allowance</td>
<td>4 Individuals for 10 days</td>
<td>100 per person per day</td>
<td>4,000</td>
</tr>
<tr>
<td>2. Transport Costs</td>
<td>4 Individuals for 10 days</td>
<td>300 per person per day</td>
<td>12,000</td>
</tr>
<tr>
<td>3. Printing Paper</td>
<td>1 rim</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>4. Notebooks</td>
<td>4</td>
<td>50</td>
<td>200</td>
</tr>
<tr>
<td>5. Pens</td>
<td>10</td>
<td>20</td>
<td>200</td>
</tr>
<tr>
<td>6. Printing and Photocopying costs</td>
<td>150 copies</td>
<td>10</td>
<td>1,500</td>
</tr>
<tr>
<td>Sub-Total</td>
<td></td>
<td></td>
<td>18,300</td>
</tr>
<tr>
<td>10% Contingency</td>
<td></td>
<td></td>
<td>1,830</td>
</tr>
<tr>
<td>Grand - Total</td>
<td></td>
<td></td>
<td>20,130</td>
</tr>
</tbody>
</table>
Occupational Health Injuries among Health Care Workers at Moi Teaching & Referral Hospital, Eldoret, Kenya

Presenter: Camlus Otieno, College of Health Sciences, Moi University, Eldoret, Kenya.

Key Words: Occupational Injuries, Risk Assessment, Community Based Education, Needlesticks.

Abstract

Context: Occupational Health and Safety legislation usually demands that a risk assessment be done prior to making an intervention. This assessment should: identify the risk, identify all affected by the hazard and how, identify and prioritize the required actions in response to the risk. This study was conducted in the context of Community Based Education & Service programme. It brought about a proper understanding of the nature and cause of Occupational health injuries amongst our healthcare workers.

Setting & Objectives: The Moi Teaching & Referral Hospital is situated in Eldoret municipality of Uasin Gishu district in Rift Valley province. It serves western Kenya. Established in 1917 as a district hospital, it boasts of having diverse cadres of health professionals. The Hospital's mission is to provide affordable and quality healthcare. This study intended to decipher whether this quality service is at the expense of injury to the workers. Injuries, especially arising from sharps; are common, underreported and often preventable. The study quantified the magnitude of the occupational injuries occurring in the hospital, providing a basis for further intervention.

Design: Cross-sectional survey where both qualitative and quantitative data was gathered using open-ended questions. Specific key informants were selected and interviewed.

Subjects: Doctors, Nurses and Laboratory staff.

Results: 64% of workers obtained injuries; 46% of them once and 54% of them several times. Needlesticks were the most occurring injury type at 66% while 90% of the professionals were applying various protective measures.

Conclusions: Preventive measures in place are not strictly adhered to and they are also inadequate.