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Occupational health hazards among mortuary attendants at ndola teaching and arthur davison children's hospitals

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ABSTRACT

Background: Just like employees from other occupations, Mortuary attendants are exposed to various hazards that may put their health at risk as they perform their duties. **Objectives:** The study was aimed at identifying occupational health hazards that mortuary attendants face at Ndola Teaching and Arthur Davison Children's Hospital mortuaries and to establish the infection control mechanisms in place. **Methods**: A descriptive cross-sectional study was done among all (12) mortuary attendants at the two facilities. Data was collected through questionnaire interviews and by observation. Then entered and analysed using descriptive statistics by SPSS Statistics version 20 software, and presented using tables and graphs. Ethical approval was obtained from the Tropical Disease Research Centre at Ndola Teaching Hospital. **Results:** 100% experienced frequent exposure to solvents, detergents and fixatives, 54.5% of which was frequent formalin exposure. 18.2% and 27.3% frequently experienced needle pricks and contact with cadaver fluids respectively. 36% had contact with verminous/infectious bodies once.100%, affirmed the existence of some form of control mechanisms but confirmed not receiving any vaccination, 45.5% said Personal Protective Equipment was only provided sometimes and they were forced to work even without PPE, 100% reported absence of Standard Operating Procedures and Manuals but indicated presence of reporting mechanisms in case of hazard exposure. **Conclusions**: Occupational health hazards are common in public mortuaries in Ndola and experiencing these hazards impacts on the worker's health and well-being, affecting their work performance and quality of services offered. The findings of this project will hopefully help develop plans to promote health and safety.

Keywords: Hazard, mortuary attendant, mortuary, Ndola Teaching Hospital (NTH), Arthur Davison Children's hospital (ADCH).

Introduction

Mortuary workers are often overlooked in studies on health and safety among health workers. This is probably because they are few in number. However, this does not eliminate the fact that their health is at risk due to the hazards they face as they perform their duties.

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The mortuary attendants at Ndola Teaching and Arthur Davison Children's Hospitals perform the following duties; collection and transportation of bodies from the wards to the mortuary, taking note of and recording the time of death and the time the body is taken to the mortuary. The body is then either prepared and put in the mortuary fridge or first taken for post-mortem in which they assist the pathologist perform then prepared and put in the fridge. Finally, when the family of the deceased come to collect the body it is handed over to them by the attendants. Considering the duties mortuary attendants perform, how they perform them and for how long they work, their health and well-being might be at risk as a result of the hazards they are

exposed to. If unchecked these hazards may lead to health problems affecting the mortuary attendants and eventually their friends, families and their communities at large. For example, if it happens that an attendant acquires an infectious disease, it means his/her family and community will be at risk of contracting the disease.

Just like any occupation, being a mortuary attendant requires having knowledge, skill and abilities and some training or experience to perform duties. One requires a working knowledge of the techniques involved in handling and preparation of bodies of deceased persons for post-mortem examination or burial, hospital methods and procedures and the care of surgical instruments and equipment and also about hygiene and personal safety. Lack of this vital knowledge together with other factors including; inadequate resources to obtain safety gear and equipment, lack of enough man power, failure to report all cases of hazard exposure, lack of Standard work procedures, poor mortuary maintenance and years of working experience may be associated with exposure to hazards [1]. Since very few people are willing to take up this occupation, mortuary attendants usually stay employed for decades (some work until their death) as a result the time of exposure to Hazards is increased putting their health at risk.

As part of the Government policy, an infection control program has been put in place at NTH and ADCH to protect the employees against the health risks of infection that they face as they perform their duties, to minimise the risk and also to control any infections that may occur. The program encompasses all members of staff at the health facilities and includes the following important aspects: surveillance for infections in patients and health personnel, education for infection prevention through training, orientation and seminars, consultation of the infection prevention control services and communication. Despite these measures being put in place, mortuary attendants still face other various hazards apart from infection including but not limited to chemical hazards, physical strain, work related psychological stress and hazardous environments that may result in hearing problems eye strain, electric shock or burns and fractures or dislocations[1]. The present study aimed at identifying the various occupational hazards that mortuary attendants face and the hazard control mechanisms put in place at NTH and ADCH.

Methods

Study design and location

A descriptive cross sectional study was conducted at Ndola Teaching Hospital and Arthur Davison Children's Hospital in Ndola town on the Copperbelt province in Zambia. These two hospitals are referral hospitals in the Northern region and are the only Hospitals with mortuaries in Ndola.

Study population

Mortuary attendants from the 2 selected public mortuaries in Ndola town that is from NTH and ADCH were targeted by this research project. There were 7 mortuary attendants at NTH and 5 at ADCH giving a total of 12. All attendants were asked to participate in the study since the population of mortuary attendants is small.

Data collection

Questionnaire interviews with the mortuary attendants were conducted to collect the data. The questionnaire included, socio-demographic characteristics, hazards faced, work shifts, vaccinations, history of any illnesses or allergies faced, use of protective clothing, standard operating procedures and manuals, post exposure prophylaxis .

Data analysis

Questionnaires were coded and checked for completeness. Data was then entered and analysed using descriptive statistics by IBM SPSS Statistics version 20 software. Presentation was done by use of tables and bar graphs.

Ethical consideration

Permission to carry out this study was obtained from the Tropical Disease Research Centre (TDRC) ethical committee at Ndola Teaching Hospital and from the Copperbelt University School of Medicine. Consent was also obtained from the respondents and participation was voluntary.

Results

Study population characteristics

The research was carried out at two public mortuaries namely Ndola Teaching Hospital mortuary and Arthur Davison Children's Hospital Mortuary. A total of 12 mortuary attendants were targeted (total number of mortuary attendants in the two mortuaries), but only 11 respondents (representing 91.67% of target group) participated in the study as the 12th attendant is now deceased. All the respondents were male. The mean age group was 46-55 years, mean grouped years of working experience was 6-10 years, 90.9% were married and 9.1% widowed, 72.7% had attained secondary education while 27.3% primary education. The above information is shown in table 1. The attendants work in 3 shifts of varying duration the longest being the night shift which lasts 13 hours and the other two are the morning and afternoon shifts which last 6 and 5 hours respectively.

Hazards faced

The respondents provided information on the frequency of exposure to various workplace hazards in their work experience. 100% experienced frequent exposure to solvents, detergents and fixatives, 54.5% of which was frequent formalin exposure. 18.2% and 27.3% frequently experienced needle pricks and contact with cadaver fluids respectively. 36.4% had contact with infectious bodies once. 90.9% frequently experienced physical strain that resulted in neck, back and arm pain. 100% had frequent work related psychological stress and 9.1% had experienced hearing problems once due to exposure to a noisy environment. 18.2% fell, slipped or tripped once resulting into a fracture or joint dislocation. None of the participants experienced any electric shock or eye strain due to poor lighting. The findings and analysis per category of hazard is shown in table 2.

Vaccination types received, illnesses and allergies experienced

The respondents provided data on whether they received any vaccinations or not and they were asked to name the vaccines if possible. All the 11 participants (100%) did not receive any vaccination against any disease. 90.9% of the participants had never developed any illness in the course of their duty, while 9.1% developed a respiratory condition and 9.1% affirmed having skin, respiratory and eye allergic reactions

Control mechanisms in place at Ndola Teaching and Arthur Davison Children's Hospitals

All of the 11 respondents (100%) affirmed there were some form of hazard control mechanisms in place at their work place and also confirmed that gloves and disinfectants were always provided. However, 54.5% affirmed availability of other Personal Protective Equipment (work suits, boots, safety goggles and face masks) while 45.5 % said they were only provided sometimes as shown in figure 1 below.

100% of the participants indicated that there existed formal hazard reporting mechanisms in their workplace. On reporting an exposure, all of the respondents said some form of action was taken to deal with the hazard. All the 11(100%) participants affirmed that there were no Standard Operating Procedures and Manuals available.

Table 1: Study population characteristics

Variables	Frequency(n=11)	Percentage (100)
Gender		
Male	11	100
Female	0	0.0
Age grouped (years)		
35-45	4	36.4
46-55	5	45.5
56-65	1	9.1
66-75	1	9.1
Marital status		
Single	0	0.0
Married	10	90.9
Widowed	1	9.1
Level of education		
Primary	3	27.3
Secondary	8	72.7
Tertiary	0	0.0
Work experience (years)		
1-5	2	18.2
6-10	4	36.4
11-15	3	27.3
16-20	1	9.1
20-25	1	9.9

Table 2: Hazards faced by mortuary attendants

Hazard	None (%)	One (%)	Two (%)	Other(%)	Frequently (%)
Needle prick or sharp instrument inoculation	81.8	0.0	0.0	0.0	18.2
Direct spillages of bodily fluids from cadaver	63.6	9.1	0.0	0.0	27.3
Direct skin contact with verminous/infectious body	63.6	36.4	0.0	0.0	0.00
Inhalation or skin contact with Solvents, detergents and fixatives	0.0	0.0	0.0	0.0	100
Inhalation or skin contact with formalin	45.5	0.0	0.0	0.0	54.5
Physical strain (resulting in Pain on neck , back and arms)	0.0	9.1	0.0	0.0	90.9
Noisy environment (resulting in Hearing damage or loss)	90.9	9.1	0.0	0.0	0.0
Work related psychological stress	0.0	0.0	0.0	0.0	100
Slip, tripor fall (resulting in Bone fracture/dislocation)	81.8	18.2	0.0	0.0	0.0
Poor lighting (causing Eye strain)	100	0.0	0.0	0.0	0.0
Electric shock or burn	100	0.0	0.0	0.0	0.0

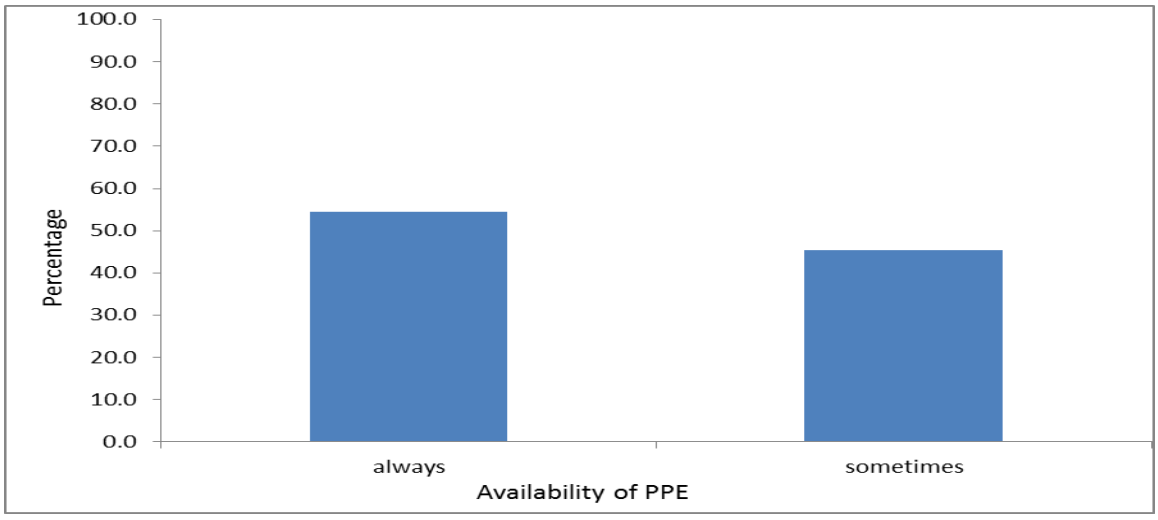

Fig 1: Availability of Personal Protective Equipment

Discussion

There are few studies done on occupational health and safety hazards that mortuary attendants face in countries world- wide and Zambia is no exception. The majority of these few studies have put great focus on exposure of mortuary attendants to biological hazards (exposure to blood and other bodily fluids) because these hazards pose the major risk, putting minimal focus on other aspects of occupational hazards like psychological, chemical, ergonomic and musculoskeletal hazards. This study was carried out to determine the many hazards faced by mortuary attendants and it revealed that occupational hazards are common in public mortuaries.

The findings indicate that 18.2% of all the mortuary attendants had frequently experienced needle pricks during their working experience predisposing them to infections. In comparison with the findings in teaching hospitals in south west Nigeria which showed that 73.5% of mortuary attendants had experienced needle-stick injury [2] the mortuary attendants in the present study may be considered less exposed. Among those who had pricked themselves, 100% had a working experience of less than 15 years, showing a possible inverse relationship between needle pricks and years of work experience. Apart from years of work experience, other possible factors associated that may be associated include; inadequate information on proper handling of sharps and non-adherence to standard precautions [1].

Pathogens like viruses and bacteria bring about the risk of infection in mortuaries especially in high risk autopsies and in cases of spillage of body fluids from cadavers leading to direct contact. These hazards pose particular risks including Human Immunodeficiency Virus (HIV), Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), Creutzfeldt-Jakob disease (CJD), rabies, yellow fever and viral haemorrhagic fevers [3].The study revealed that 27.3% of the participants frequently had direct contact with body fluids from cadavers and 9.1% experienced this once. These results were attributed to incorrect work technique (failure to adhere to hygiene practices), inadequate working space and improper handling of bodies due to lack of proper equipment such as trolleys to carry the dead bodies and faulty elevators. In comparison to the findings among mortuary attendants in Maryland, where 19% of participants reported at least one blood borne exposure in a period of 6 months [4], these figures are quite high. 36.4% of the participants reported to have been in contact with a verminous /infectious body once which is high as opposed to 17.2% in a study done in Nairobi [1]. The respondents said this happened when they had to get rid of the unclaimed bodies that had been in the mortuary for too long that they began to decay and in a situation where there was an out- break of certain infections such as cholera. Most employers fail to follow adequate health and safety measures in place at their workplace to safeguard not only the employees and management but also clients/customers and other stakeholders who might have some kind of interest in the company or institution [5].Inhalation or skin contact with Solvents, disinfectants and fixatives was one of the most common hazards with 100% of the respondents experiencing it frequently. This was due to the fact that the mortuary attendants use the various solvents and chemicals to clean and disinfect the mortuary floors and surfaces every day. 54.5% of the attendants were specifically exposed to formaldehyde (formalin) frequently putting them at risk of the many health effects that it has. However, 45.5% had no contact at all. This is due to the fact that of the two mortuaries targeted, mortuary attendants at ADCH mortuary do not conduct embalming hence accounting for the 45.5% who had no exposure. In comparison to a study done in Nairobi where 71.9% very frequently exposed to these chemicals [1] the findings in the present study are high. A study conducted on formaldehyde exposure hazards and health effects identified the following major health effects: carcinogenicity, allergic contact dermatitis, asthma and asthmatic-like symptomology [6]. Formaldehyde was also identified as having a negative influence on fertility [7].90.9% were frequently exposed to physical strain which resulted in neck, back and arm pain and 9.1% were exposed only once in contrast to a study done in the former Republic of Transekei which revealed that only 25% of the mortuary attendants experienced physical strain leading to neck, back and arm pain [8]. The respondents claimed their work was physically demanding and the fact that they are few in number makes matters worse because each person was forced to do more than they were expected. Other possible contributing factors to the neck, back and arm pain include; lack of proper equipment to transport dead bodies, awkward or sustained postures and age, the elderly mortuary attendants were at high risk of musculo-skeletal disorders. Only 9.1% of the respondents experienced hearing problems .this was attributed to the noisy sounds produced by dragging cold trays of the mortuary fridges and wailing relatives of the deceased. All 11 (100%) participants frequently experienced psychological stress this contradicts with the results in a study done in Nairobi showing a lower percentage of 32.8 [1]. This resulted mainly from constantly dealing with the bereaved families that are depressed and stressed on the loss of a loved one and stigma and isolation from some family and society members as a result of some cultural beliefs against being a mortuary attendant.

Trips or falls that resulted in fractures or dislocations were experienced only once by 18.2% of the participants which is lower than the findings of a study done in Port Harcourt giving 94% [9].This may have resulted due to uneven, slippery, obstructed or poorly lit walkways or floor, poor housekeeping, and presence of fluids.

According to the present study, none of the mortuary attendants experienced any eye strain, electric shock, electric burn or fire as compared to a study done in

Nairobi which revealed that 17.2% experienced frequent eye strain and 9.4% electric shock [1].

100% of the participants confirmed they did not receive any vaccination against any disease. This was very poor as compared to 53.3% of the respondents who had received at least one dose of hepatitis B vaccine in a study among mortuary attendants in South West Nigeria [10]. Mortuary workers who have not been vaccinated are at risk of infection on exposure to contaminated or infected fluids or bodies. 63.6% of the respondents said they were not vaccinated because the facilities did not provide the vaccines and 36.4% said it was due to lack of knowledge about severity and vaccine efficacy. 9.1% of the participants developed a respiratory condition and 9.1% affirmed having skin, respiratory and eye allergic reactions these numbers are low in comparison to those from a study done in Nairobi where 12.5% had developed one illness and half of the respondents had developed one allergic condition while 37.5% had developed two allergic conditions [1]. The allergic reactions could be attributed to exposure to various substances mainly chemicals (formalin, solvents, detergents and fixatives), latex and dust in the mortuary [1].

100% of the mortuary attendants reported that there existed some form of infection control mechanism that they complied to and a formal reporting mechanism on exposure to hazards resulting into adequate action being taken unlike 89.1% reported in Nairobi [1] and 68.5% in Sawangi [10]. However, 45.5% said apart from gloves the other personal protective equipment (PPE) was only provided sometimes and so they were forced to work even without the PPE resulting in more exposure to various hazards. All the attendants also reported the absence of Standard operating procedures and manuals.

Conclusion

Occupational health hazards are common in public mortuaries in Ndola town some hazards being more common than others. Inhalation and skin contact with solvents, disinfectants and fixatives together with work related psychological stress were the most frequently experienced hazards followed by musculo-skeletal hazards resulting in neck, back and arm pain then followed by formalin inhalation and contact then direct contact with infectious cadavers and contact with body fluids from cadavers. Needle pricks and trips and falls that resulted in fractures or dislocations were the least experienced hazards. Experiencing these hazards has an impact on the worker's health and wellbeing hence affecting the productivity and leading to compromise on the services offered. Inadequate protective mechanisms remain a major challenge in solving the occupational health challenges among mortuary attendants. The findings of this project will hopefully help to develop plans that may be used to look into matters associated with health and safety among members of staff particularly in the mortuaries thus improving the work output of mortuary attendants and enhancing the quality of mortuary services.

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