



Health Hazards, Perceived Health Problems and Safety Compliances among Mortuary Workers in Ikwerre Local Government Area of Rivers State

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Author's contribution

This work was carried out in collaboration between both authors. Author NOE designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author UIP managed the analyses of the study and managed the literature searches. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJARR/2021/V15i330382

Editor(s):

(1) Dr. Fagbadebo Omololu Michael, Durban University of Technology, South Africa.

Reviewers:

(1) Hussein Ali Naji, Basrah University, Iraq.

(2) N. Ambiga, Alagappa University, India.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/68903>

Original Research Article

Received 20 March 2021

Accepted 26 May 2021

Published 01 June 2021

ABSTRACT

This study assessed Health Hazards, Perceived Health Problems and Safety Compliances among Mortuary Workers in Ikwerre Local Government Area of Rivers State. Descriptive cross-sectional study recruited 150 eligible respondents from private and public mortuaries, respectively, surveyed from selected mortuaries in Ikwerre Local Government Area of Rivers State. A structured questionnaires were administered to the respondents which comprises of socio-demographics, occupational history, knowledge and behaviour towards hazards encountered while at their workplace. Descriptive and analytical statistical tools were used to analyze the data. The majority of the respondents were exposed to hazards. The majority of respondents had knowledge of hazards associated with their job, while 11% used personal protective equipment (PPE) always. Hazards abound in mortuaries in Ikwerre L.G.A. even though most workers had received training on hazards and hazards prevention. There was also poor use of PPE by workers of these mortuaries in Ikwerre Local Government Area. It was recommended that health education, provision, enforcement and monitoring of the use of PPE be intensified among this group of workers as measures to mitigate hazards in the study area.

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Keywords: Hazards; mortuary; Ikwerre local government area; safety compliance; health risks.

1. INTRODUCTION

Workers in mortuaries are exposed to different hazards because of the nature of their jobs. However, compliance by worker requires the employer to do everything possible to provide necessary general and personal protective equipment (PPE), train, enforce and monitor compliance. Preservation of dead bodies has religious, cultural and even forensic uses. This, however, comes with attendant hazards, in which knowledge and safety practices could help in the prevention and control of these hazards [1]. The job schedule of mortuary workers which involves receiving the corpse, attending the various preservation processes and the delivery of the deceased may present with an array of hazards [2]. All mortuary workers such as diener, mortician/undertaker, pathologists, mortuary cosmetologist, etc. may encounter different hazards as they embalm, refrigerate, mummify, cremate, bury or even exhume bodies [1].

Healthcare workers irrespective of cadre or specialization are inadvertently exposed to chemical, biological, physical, mechanical and psychosocial occupational hazards [3]. Against the backdrop of mostly preventable risk of exposure to these hazards, the need for the use of PPEs to reduce the risk of contraction of disease or injury to health workers cannot be overemphasized. According to Nsubuga and Jaakkola [4] the healthcare workforce globally represents 12% of the entire working population, and in addition to the usual workplace-related exposures, healthcare workers and indeed mortuary workers are exposed to an array of hazards peculiarly innate to their work and workplace.

1.1 Objectives of the Study

The main objective of the study is to assess perceived health risks and safety compliances among mortuary workers in Ikwerre Local government Area of Rivers State. Specifically, this study intends to:

1. Determine occupational hazards among mortuary workers in Ikwerre Local Government Area of Rivers State.
2. Assess safety compliance among workers in the selected mortuary in Ikwerre Local Government Area of Rivers State.
3. Find out safety practices to mitigate hazards in the selected mortuaries in

Ikwerre Local Government Area of Rivers State.

1.2 Research Questions

1. What are occupational hazards among mortuary workers in Ikwerre Local government Area of Rivers State?
2. To what extent workers adhered to safety compliance to mitigate hazards in the selected mortuaries in Ikwerre Local Government Area of Rivers State?
3. What are the safety practices put in place to reduce hazards in the selected mortuaries in Ikwerre Local Government Area of Rivers State?

1.3 Research Hypotheses

1. There is no significant difference between occupational hazards and health risk among workers of selected mortuaries in Ikwerre Local Government Area of Rivers State,
2. There is no significant difference between safety compliance and mitigation of hazards among workers of selected mortuaries in Ikwerre Local Government Areas of Rivers State.

1.4 Literature Review

Workplace hazards in the mortuaries include chemical (exposure to formalin, detergents and other solvents), physical (electric shocks, burns, hearing problems, eye strain, allergic reactions, radiation, manual handling, etc.), mechanical (cuts, pricks, sharps, slips, trips and falls), biological (viruses, bacteria, fungi, etc.) inherent in the cadavers as a result of cause of death and instruments and psychosocial (i.e., work-induced stress, stigmatization, depression, substance abuse) among others are implicated (Kantor, Poblete and Pusateri, 2018). Chemical hazards in the mortuary may lead to health effects such as respiratory irritation, eye irritation, skin irritation, dermatitis, respiratory sensitization (possibly leading to occupational asthma), cancer and allergies. Exposure to formaldehyde, disinfectants, fixatives and solvents during the autopsy process or subsequent processing of tissue or cleaning of the environment, dust/aerosol from cutting and latex consumables are common hazards that mortuary workers may be exposed to. For instance, despite the effective disinfectant property of glutaraldehyde, it is not

recommended for use in the mortuary and post-mortem even as it has long been implicated as an asthagen, causing ill-health, with dermatitis and respiratory problems as main symptoms [5]. According to Advisory Committee on Dangerous Pathogens [6] biological hazards, like infections are key concerns. These may become manifest due to exposure to contaminated blood, body fluids or tissues through aerosols from bone and tissue sectioning example, tuberculosis in infected lungs, blood product of a deceased with hepatitis B virus (HBV), HIV and Ebola virus (as carrier or confirmed case, contacts or bodies exposed to rodents, needle stick, bone or sharp medical instrument inoculations puncture wounds, direct splashes or spillages of infectious material, incorrect or careless work techniques, e.g., failure to adhere to hygiene procedures and failure to vaccinate against common diseases). Douglas & Peterside [7] revealed in their study that majority (94%) of the hazard's respondents were exposed to mechanical slips, trips and falls. The majority (93%) of respondents had safety training on the hazards associated with the mortuary, while 11% used personal protective equipment (PPE) always. They went further to state that hazards abound in mortuaries in Port Harcourt City even though most workers had received training on hazards and hazards prevention. There was also a poor use of PPE. It is recommended that health education, provision, enforcement and monitoring of the use of PPE be intensified among this group of workers. According to Advisory Committee on Dangerous Pathogens [6] it is possible for tuberculosis to remain undetected until a patient dies, autopsy exposure is said to be far more infectious than exposure during life. In a study of hospitals in Dundee, Scotland, 50% of autopsied active tuberculosis cases were not recognized before death.

Furthermore, Tinubu, Mbada, Oyeyemi, Fabunmi [1] opined that there are issues of poor use of PPEs, compliance in reporting and operations control mechanisms, vaccination and poor reaction by the relevant authorities when there are breaches in occupational harm/ hazard exposure. Consequently, activities include evaluation of the physical state of facilities for compliance with safety and health standards, safety protocols and their implementation, workers orientation, training, knowledge and practices and risk surveillance/assessment of facilities. Again, factors such as immunization of the workers, safety and comfort of workers and even customers should necessarily come to the

fore. According to the work of Ogunnowo, Anunobi, Onajole and Odeyemi [8] on the level of awareness of occupational hazards and practice of universal safety precautions in mortuaries in South West Nigeria; a total of 76 mortuary workers with an average age of 38.2 years were sampled, male 92% while female 8%. 45 (59.2%) of the respondents were aware of hazards at work. The hazards identified were HIV/AIDS (97.7%), tuberculosis (82%) and formalin-related morbidity. However, 14 respondents (18.4%) rated the work-related risks faced as a moderate/high risk. Only 36.8% of the respondents always used face masks in the course of their duties. About 40 (53.3%) had received at least one dose of hepatitis B vaccine. There was no association between awareness of hazards and practice of universal safety precautions. According to Gangoles, Casals and Forcada [6] the use of appropriate protective clothing and the observance of control of hazardous substances and health regulations help protect cadaver handlers.

According to Meel [9], it is noteworthy that most bodies coming to the mortuaries do not necessarily come with the cause of death which could just be anything. The majority of mortuary workers are blue collar in education and standard of living. Therefore, they are not aware of hazards inherent in a corpse late alone application of control and preventive measures. Studies such as these are to determine and bring to the fore this range of health hazards with a view to instituting preventive and control measures. This study, therefore, assessed health hazards, health risk and safety compliance among workers in mortuaries in Ikwerre Local Government Area of Rivers State.

2. METHODOLOGY

The study was carried out in Ikwerre Local Government of Rivers State. It is the cosmopolitan city of 638,360 according to population census 2011 with mainly white- and blue-collar workers - the oil industry and the civil service dominating the workforce. It is mainly a Christian populace with English, Pidgin English, Ikwerre and the Igbo languages mainly spoken. The local government has both public and private mortuaries. Working hours and conditions of service are essentially the same. Respondents were aged between 20 and 65 years and work in shifting. This is a male-dominated profession with most of them barely acquiring a secondary school certificate. Descriptive cross-sectional study with a sample size of 150 calculated using

the formula for proportion (with a study of 27% prevalence) with a 10% allowance for non-response. Inclusion criteria were workers of selected mortuaries who were at least 18 years and had worked for at least 1 year. Respondents were sampled (stratified) proportionate to the total number of workers in each facility to reach the sample size of 150. Eligible respondents were chosen in each facility to arrive at the allotted proportionate number. Study instruments included a structured, closed-ended, interviewer-administered questionnaire pre-tested among mortuary workers at the University of Port Harcourt Teaching Hospital (UPTH). The questionnaires probed socio-demographics, past medical history, knowledge, safety compliance among workers towards hazards in the mortuary. The study was carried out on a daily basis for 2 weeks during break period (12–2 pm) with minimal interference with their job. Following retrieval of the coded questionnaires and check for completeness, data were entered into Microsoft Excel worksheet. These were then analyzed using the statistical package for social sciences, the SPSS software version 20 (IBM SPSS statistics 20). The mean and standard deviation were calculated, and ANOVA test was used to determine statistical significance. Data were thereafter presented in tables.

3. RESULTS

3.1 Data Presentations

3.1.1 Socio-demographic data

Table 1 shows that more males (100.0%) were engaged in this job and 50 (10%) of the respondents were female workers. 30 (30.0%) falls under twenty (20) years of age, 35(35.0%) falls under 21-25 years of age. 26 – 30 years were 35. 25(25.0%) falls under 31 – 35 years of age while 40 and above were 25 years of age. With 50% of respondents having secondary education, this endeavour is essentially a blue-collar job. Workers with 1 – 4 years of working experience were 30 (30.0%), 4-8 were 50(50.0%), and 8-10 were 35 (35.0%) while 10+ were 35 (35.0%).

Research Question 1: What are occupational hazards among mortuary workers in Ikwerre Local government Area of Rivers State?

Table 2 above show that respondents accepted that exposure to formalin, exposure to detergents and other solvents, electric shocks, burns, hearing problems, eye strain, allergic reactions,

radiation, manual handling, cuts, pricks, sharps, slips, Trips and fall, bacteria, viruses and fungi etc. are hazards in their workplace with their mean score above the criterion mean of 2.5.

Research Question 2: To what extent workers adhered to safety compliance to mitigate hazards in selected mortuaries in Ikwerre Local Government Area of Rivers State?

Table 3 above shows that majority of the respondents disagreed that they engaged in safety training, periodic medical exercise, safety talks, attend safety training regularly but agreed that personal protective equipment are provided by the management and that they adhered to personal protective equipment (PPE). This also showed that they had poor safety compliance in their workplace.

Research Question 3: What are the control measures put in place to reduce hazards in the selected mortuaries in Ikwerre Local Government Area of Rivers State?

Table 4 shows that control measures are not in place to mitigate hazards in the selected mortuaries in Ikwerre Local government Area of Rivers State.

Hypotheses

Hypothesis 1: There is no significant difference between the perception of male and female respondents on occupational hazards and health risks among workers of selected mortuaries in Ikwerre Local Government Areas of Rivers State.

Table 5 showed the z-test analysis of male and female opinion on the significant difference between occupational hazards and health risks among workers of selected mortuaries in Ikwerre Local Government Area of Rivers State. The result shows that the z-calculated value of 1.36 is less than the z-critical value of 1.96 at 148 degree of freedom and 0.05 alpha significant levels. Hence, the null hypothesis is accepted which there is no significant difference between the perception of male and female respondents on occupational hazards and health risks among workers of selected mortuaries in Ikwerre Local Government Areas of Rivers State.

Hypothesis 2: There is no significant difference between the perception of male and female respondents on safety compliance and mitigation of hazards among workers of selected mortuaries in Ikwerre Local Government Areas of Rivers State.

Table 1. Socio-Demographic distribution of respondents

Socio-Demographic Variables (n=385)	Frequency (N = 150)	Percentage (%)100
Gender		
Male	100	90
Female	50	10
Age (Years)		
≤ 20	30	30.0
21- 25	35	35.0
26 – 30	35	35.0
31 – 35	25	25.0
>40	25	25.0
Marital Status		
Single	76	46.0
Married	74	44.0
Educational Level		
Primary	25	25.0
Secondary	100	50.0
Tertiary	25	25.0
Years of Job Experiences		
1-4	30	30.0
4-8	50	50.0
8-10	35	35.0
10+	35	35.0

Table 2. Occupational hazards among mortuary workers in ikwerre local government area of rivers state

S/N	Item/Variable	Mean	SD	Decision
1	Chemical hazards	2.99	0.82	Significant
	Exposure to formalin			
2	Exposure to detergents and other solvents	3.02	0.83	Significant
Physical hazards				
3	Electric shocks	3.05	0.80	Significant
5	Burns	3.00	0.83	Significant
6	Hearing problems	3.03	0.85	Significant
7	Eye strain	3.04	0.77	Significant
8	Allergic reactions	3.04	0.81	Significant
9	Radiation	2.81	1.05	Significant
10	Manual Handling	2.85	1.01	Significant
Mechanical hazards				
11	Cuts	2.76	1.07	Significant
12	Pricks	2.96	0.99	Significant
13	sharps	2.93	0.98	Significant
14	Slips	2.80	1.05	Significant
15	Trips and fall	2.81	1.07	Significant
Biological hazards				
16	Viruses from exposed communicable diseases	2.80	1.09	Significant
17	Bacteria from waste materials	2.84	1.04	Significant
18	Fungi from unclean materials	2.85	1.02	Significant

Table 3. Safety compliance to mitigate hazards in selected mortuaries in ikwerre local government area of rivers state

S/N	Item/Variable	Mean	SD	Decision
1	Workers engaged in safety training organized by the management	2.19	1.13	Disagree
2	Periodic medical exercise/checkup	2.28	1.11	Disagree
	Workers engaged in safety talks	2.30	1.20	Disagree
5	Personal Protective Equipment (PPE) are provided by the management	3.00	0.83	Agree
6	Workers adhered to the use of PPE	3.03	0.85	Agree
7	Workers attend safety training regularly	2.40	1.08	Disagree

Table 4. Control measures put in place to reduce hazards in selected mortuaries in ikwerre local government area of rivers state

S/N	Item/Variable	Mean	SD	Decision
1	Workers participate in safety meetings, check cards (safety observation cards).	2.29	1.17	Disagree
2	Management demonstrates commitment to effective implementation of occupational health and safety rules.	2.19	1.28	Disagree
3	Management ensures workers go for pre-periodic medical examination.	2.31	1.07	Disagree
4	Management ensures health/safety policies are updated.	2.23	1.13	Disagree
5	Management demonstrates leadership in appreciating personnel who comply with OHSR	2.22	1.23	Disagree
6	Management ensures that risk assessments are carried out before any routine job task.	2.30	1.18	Disagree

Table 5. Z-test table between the perception of male and female respondents on significant difference between occupational hazards and health risk among workers of selected mortuaries in Ikwerre Local Government Area of Rivers State

Variables	N	\bar{x}	S. D	df	Z-cal	Critical value	Decision
Male	100	2.53	1.59	148	1.36	1.96	Accepted H ₀₁
Female	50	2.47	1.57				

Table 6. Z-test table between the perception of male and female respondents on significant difference between safety compliance and mitigation of hazards among workers of selected mortuaries in Ikwerre Local Government Area of Rivers State

Variables	N	\bar{x}	S. D	df	Z-cal	Critical value	Decision
Male	100	3.17	.45	148	1.18	1.93	Accepted H ₀₁
Female	50	3.13	.56				

Table 6 showed the Z-test analysis of significant difference between male and female workers' opinion on the perception of male and female respondents on significant difference between safety compliance and mitigation of hazards among workers of selected mortuaries in Ikwerre

Local Government Area of Rivers State. The result shows that the z-calculated value of 1.18 is less than the z-critical value of 1.93 at 148 degree of freedom and 0.05 alpha significant levels. Hence, the null hypothesis is accepted which states that There is no significant

difference between the perception of male and female respondents on safety compliance and mitigation of hazards among workers of selected mortuaries in Ikwerre Local Government Areas of Rivers State.

4. DISCUSSION

Mortuaries could be very unsafe places to work given the various hazards associated to working there. The study is in line with the study of Douglas & Peterside [7] on the assessment of workplace hazards in mortuaries in Port Harcourt, Nigeria. Port Harcourt which they revealed in their study that majority (94%) of the hazard's respondents were exposed to mechanical slips, trips and falls. The majority (93%) of respondents had safety training on the hazards associated with the mortuary, while 11% used personal protective equipment (PPE) always. They went further to state that hazards abound in mortuaries in Port Harcourt City even though most workers had received training on hazards and hazards prevention. Exposure to chemical substances such as formalin through inhalation and direct skin contact accounted for 58% response. However, the major resultant effect of this exposure was skin rashes in 29% respondents due to exposure to chemical substances such as formalin.

The findings of the current study show that despite the high level of awareness of these hazards among the mortuary workers, the problems caused by the hazards still persist. Biological (from body parts, exudates and even blood) and chemical hazards (from especially formalin ranging from respiratory symptoms to chemical dermatitis) were seen during work through. The study shows that despite the high level of slips, trips and falls by the participants at least on one occasion, there was no incidence of fracture, dislocations or disabilities. Wet floors, obstructions, poorly lightings, poor housekeeping, slippery floors and manual lifting of bodies are the main complaints resulting in slips, trips and falls.

Obed Douglas, & Alice [10] revealed in their study that exposure to chemical substances such as formalin through inhalation and direct skin - contact was accounted. However, the major resultant effect of this exposure was skin rashes respondents. The explanation to this is that despite the relatively high formalin concentration and poor labelling regulation, good ventilation in and around the facilities markedly reduced its irritating and damaging effects on the nasal

membrane and eyes. No participant complained of respiratory problems primarily caused by chemical hazards; however, there was a complaint of skin lesions by some workers. Skin contact allergy was identified by the researcher in the study, could be attributed to exposure to various hazards mainly chemicals such as formalin, solvents and detergents. The study showed that embalmers in both the public and private mortuaries in Rivers State occupationally exposed to formaldehyde have significant risk of developing carcinogenic and non-carcinogenic related health problems. It is therefore, recommended that operators of mortuaries and Rivers State Government should provide FA monitoring device and continuous health education for workers.

Needle pricks and sharps injuries were also reported by the participants. Non-adherence to precautions of sharps handling, improper use of hand gloves are some possible factors associated with this high prevalence of sharp inoculations. Direct contact due to spillage of body fluids may result in infection. Such exposure was attributed to failure to adhere to the safety practices, inadequate space for working, improper body handling. In Maryland, 19% of participants reported at least one blood-borne exposure in a period of 6 months, while their counterparts in South West Nigeria teaching hospitals reported 85.5% of exposure to blood pathogens. Electricity hazards are among the least among mortuary attendants, accounting for small percentages exposure by respondents in the study. Bad electric fittings/connections, wet surfaces close to electrical appliances, especially during cleaning, are to blame.

Pain on the back, neck and arms was rarely reported despite claims by the workers that their job is physically demanding. Contributing factors such as poor posture due to inappropriate bench height, static, awkward or sustained postures and lifting heavy weights/the deceased did not result in such complaints. Psychosocial hazards such as work-induced stress, stigmatization, depression and substance abuse are common complaints among workers in the facilities. Interaction with the bereaved relatives of the deceased is a common source of psychological hazards.

5. CONCLUSION

The need for protecting healthcare employees and indeed mortuary workers can never be overemphasized going by the spectrum of

hazards they face on daily basis. The study showed that mortuary workers are faced with biological (blood and exudates), chemical (formalin), mechanical (slips, trips and falls), etc., but with major influences from needle prick/cuts, slips, trips and falls, chemicals/formalin contacts and electricity, these lead to incidence of puncture/cuts injuries, skin lesions and allergies, some cases of electrocution, etc. However, it is worthy to note that rules and policies are limited in their ability to prevent harm and require mindfulness by those who are supposed to follow them to be effective.

6. RECOMMENDATION

It is recommended that the individuals involved in the mortuary works should be aware of the hazards and risks associated with such work not only for them but also for Public Health and the environment; therefore, significant steps should be taken at all times to minimize these risks. It is recommended that PPE should be provided and its use by the mortuary workers enforced. There is a need for a good reporting system for mortuary accidents and vaccination of all workers against all possible workplace hazards.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/68903>