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Original Article

Health Management and Policy Section

Knowledge, Attitude and Practice of Healthcare Managers to Medical Waste Management and Occupational Safety Practices: Findings from Southeast Nigeria

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ABSTRACT

Introduction: Awareness of appropriate waste management procedures and occupational safety measures is fundamental to achieving a safe work environment, and ensuring patient and staff safety.

Aim: This study was conducted to assess the attitude of healthcare managers to medical waste management and occupational safety practices.

Materials and Methods: This was a cross-sectional study conducted among 54 hospital administrators in Ebonyi state. Semi-structured questionnaires were used for qualitative data collection and analyzed with SPSS statistics for windows (2011), version 20.0 statistical software (Armonk, NY: IBM Corp).

Results: Two-fifth (40%) of healthcare managers had received training on medical waste management and occupational safety. Standard operating procedure of waste disposal was practiced by only one hospital (1.9%), while 98.1% (53/54) practiced indiscriminate waste disposal. Injection safety boxes were widely available in all health facilities, nevertheless, the use of incinerators and waste treatment was practiced by 1.9% (1/54) facility. However, 40.7% (22/54) and 59.3% (32/54) of respondents trained their staff and organize safety orientation courses respectively. Staff insurance cover was offered by just one hospital (1.9%), while none of the hospitals had compensation package for occupational hazard victims. Over half (55.6%; 30/54) of the respondents provided both personal protective equipment and post exposure prophylaxis for HIV.

Conclusion: There was high level of non-compliance to standard medical waste management procedures, and lack of training on occupational safety measures. Relevant regulating agencies should step up efforts at monitoring and regulation of healthcare activities and ensure staff training on safe handling and disposal of hospital waste.

Keywords: Health hazard, Healthcare workers, Medical waste disposal, Occupational exposure

INTRODUCTION

There are about 59 million Health Care Workers (HCW) around the world, ranging from direct care providers to medical waste handlers, these large number of people are at risk of occupational hazard [1,2]. Healthcare is a high risk sector because of the high incidence of work related injuries and diseases due to inadequate or lack of compliance with standard waste management protocols and safety measures against occupational hazards [2]. The role of healthcare managers in this regard cannot be over emphasized, as their actions and inactions directly or indirectly jeopardize the safety of HCW under their care.

Healthcare facilities generate a lot of biomedical waste which are potentially hazardous and could significantly endanger the life of the workers, patients and members of the community, if not properly handled [1,3]. In waste management, healthcare waste holds high priority due to their hazardous nature. According to the World Health Organization (WHO), about 10-25% of healthcare wastes are hazardous, affect human health and pollute the environment [3,4].

Every organization and employer owes its employees the responsibility of providing a safe and healthy working environment, particularly in health care settings, where infectious and hazardous waste are generated on regular basis. The WHO in the year 2000 reported that 21 million HCW all over the world were infected with hepatitis B virus, two million infected with hepatitis C and 260,000 infected with HIV, following occupational exposure [4,5]. The risk of occupational exposure to hazardous biomedical waste is worse in developing countries, where 90% of HCW are at risk [6]. This of course is only a tip off the iceberg as most developing countries do not have a formal reporting system for such exposures; hence, there is under reporting and inadequate interventions [6]. This situation is further worsened by the complacency of healthcare managers to standard healthcare waste management protocols.

Exposure to infected blood and body fluids are the main route of transmission of bloodborne pathogens especially hepatitis B, C and HIV [7]. All persons who are in contact with hazardous medical wastes are at risk of being exposed. Many healthcare facilities in developing countries dispose their waste in dustbins along with general wastes; some even re-use sharps and syringes, thereby increasing the risk of transmission of infections [8]. Lack of awareness and training on the appropriate handling of medical wastes at all levels of manpower, including the healthcare managers has significantly contributed to increased incidence of occupational exposure [9].

Prevention of occupational exposure to healthcare waste involve strict adherence to universal precautions and standard methods of segregation and disposal of healthcare wastes [8]. The Centre for Disease Prevention and Control recommend that regardless of patient status, universal precautions must be consistently and correctly applied in management of healthcare wastes [8]. Universal precautions involves proper hand washing, use of face masks, protective eye shield, hand gloves, aprons and/or gowns, safety booths and other use of other personal protective equipments or devices during service delivery. Others, measures include care with handling of medical devices/instruments, proper segregation and disposal of medical wastes, immunization of HCW against preventable occupational diseases and post exposure prophylaxis where applicable [10-13].

The level of implementation and compliance with universal precautions differ from one health facility to another, and in some cases there is total absence of precautionary measures, while in other instances no form of insurance or compensation are provided for HCW [14]. This study was therefore conceived due to the significant public health importance of mismanagement of health care waste and the hazard it poses to individuals and society. The outcome of this study would enable policy makers take appropriate actions in ensuring the safety of HCW, patients and the environment from the harmful effect of biomedical waste.

MATERIALS AND METHODS

This was a cross-sectional survey (conducted between 1st March and 31st March 2016) of respondents representing 54 health care facilities from 13 Local Government Areas (LGA) in Ebonyi state, Nigeria. Ebonyi state is one of the five states in the Southeast Geopolitical zone of Nigeria; it has 13 LGA's. It also has an estimated population of about 2,176,947 people (according to the 2006 National Population Census) and occupies a land mass of 5935 km [15]. The state has a total of 65 registered health facilities, of which only 54 consented to participate in the study. The consenting health facilities were made up of one Federal Teaching Hospital, four general hospitals, four missionary hospitals and 25 private hospitals and 20 primary health centers. Four respondents (each representing a health facility) were randomly selected by balloting from each of the 12 LGA's, except Abakaliki LGA which had six respondents, representing six health facilities. Abakaliki LGA was allotted a larger proportion since about 20% of the health facilities in the state were within its vicinity. The respondents who were health facility managers (medical directors and health facility administrators) were made up of 11 doctors, 25 nurses and 18 midwives, apart from being administrators they were also health care service providers in their facilities.

Ethical approval was obtained from the ethical committees of the state ministry of health and health facilities that participated in the study, and all consenting representatives of the selected health facilities where recruited for the study.

Validated pretested semi-structured questionnaires were used for collection of both qualitative and quantitative data from the respondents. Data on knowledge of waste management, occupational hazards and safety, existing practices and information on measures to prevent occupational hazards were obtained. The hospital names and names of respondents were kept anonymous to ensure confidentiality and unbiased responses.

STATISTICAL ANALYSIS

Data were analyzed with SPSS statistics for windows (2011), version 20.0 statistical software (Armonk, NY: IBM Corp), the process involved descriptive statistics.

RESULT

The 54 participating health facilities selected from a total of 65 registered health facilities in the state represented 83.1% participation. [Table/Fig-1] shows the level of knowledge regarding standard biomedical waste management and practices by the 54 respondents from the participating health facilities. It clearly shows that only one (1.9%) respondent had appropriate knowledge of standard waste management procedures, while the other (98.1%) exhibited poor or total lack of knowledge. Their knowledge regarding waste management was acquired mainly from reading books and posters.

Unfortunately, just about 2/5th (22/54; 40.7%) had received some forms of training on waste management and occupational safety. Majority (39/54; 72.2%) did not practice proper waste segregation before disposal, while only one facility (1.9%) practiced standard waste disposal methods. Sharp safety boxes were available in all the facilities as reported by the healthcare managers. Majority of the waste were collected with a common waste bin and subsequently disposed by open dumping (50/54; 92.6). Incineration was only practiced by only one facility (1.9%), however, waste treatment prior to disposal was not practiced in any of them [Table/Fig-1].

Surprisingly, only one (1.9%) of the health facility admitted having a written policy or code of conduct for members of staff to protect them from occupational hazard. On employment, safety orientation

Variables	Frequency (n)	Percentage (%)
Appropriate knowledge of waste management		
Yes	1	1.9
No	53	98.1
Have you been trained on waste management		
Yes	22	40.7
No	32	59.3
Practice of waste segregation		
Yes	15	27.8
No	39	72.2
Standard waste disposal		
Yes	1	1.9
No	53	98.1
Means of waste disposal		
Sharp boxes	54	100
Color coded bins	0	0
Common waste bin	54	100
Open dumping	50	92.6
Incineration	1	1.9
Waste treatment	0	0

[Table/Fig-1]: Level of knowledge and compliance with standard waste segregation and disposal, N=54.

Variables	Frequency (n)	Percentage (%)
Safety code of conduct for staff		
Yes	1	1.9
No	53	98.1
Training/re-training of staff		
Yes	22	40.7
No	32	59.3
Safety orientation on employment		
Yes	32	59.3
No	22	40.7
Provision of insurance cover		
Yes	1	1.9
No	53	98.1
Compensation following harm		
Yes	0	0
No	54	100
Vaccination against HBV		
Yes	10	18.5
No	44	81.5
Post-exposure prophylaxis for HIV		
Yes	30	55.6
No	24	44.4
Provision of personal protective equipment		
Yes	30	55.6
No	24	44.6

[Table/Fig-2]: Measures to prevent/mitigate occupational hazards among healthcare workers, N=54.

Variables	Frequency (n)	Percentage (%)
Government monitored		
Yes	0	0
No	54	100
Willingness to improve		
Yes	54	100
No	0	0

[Table/Fig-3]: Government monitoring to ensure compliance with safety standards and willingness to improve on current practice, N=54.

of staff was provided by a little over half of the facilities (32/54; 59.3%), while training and retraining was practiced by 40.7% (22/54). None had insurance cover or compensation packages, in the event of occupational exposure. Data on vaccination against Hepatitis B virus, availability and provision of post-exposure prophylaxis and personal protective equipment for employees are shown in [Table/Fig-2].

Furthermore, all the healthcare managers admitted that their activities with respect to healthcare waste management and occupational safety procedures has never being subjected to scrutiny by relevant government agencies. However, all of the respondents showed willingness to improve on their current practice in the interest of their staff, patients and the community [Table/Fig-3].

DISCUSSION

The present study revealed that healthcare managers despite being made up of doctors, nurses and midwives had insufficient knowledge of waste management in the health sector. This is consistent with the findings by Ozder A et al., in Istanbul where hospital managers similarly demonstrated insufficient knowledge on the most important problems of disposal of medical waste, prior to receiving training on waste management [16]. The 1.9% who had appropriate knowledge of standard hospital waste management was far less than the 24% reported by Nagaraju B et al., in India [17], but consistent with the 4% reported by Uddin MN et al., in Bangladesh [18]; this is worrisome considering the high risk and burden of transmission of infectious diseases faced by health care service providers globally, and more especially in low income countries like Nigeria [19,20]. Thus, appropriate knowledge of standard waste handling procedure is necessary to create a safe work place and environment; as such people, particularly hospital staffs should be educated or trained on these procedures.

Majority (39/54; 72.2%) did not practice proper waste segregation before disposal, while only one facility (1.9%) practiced standard waste disposal methods. However, sharp safety boxes were available in all the facilities. Majority of the waste were collected with a common waste bin and subsequently disposed by open dumping (50/54; 92.6). Incineration which is recognized as a standard and effective means of biomedical waste disposal, was practiced by only one facility (1.9%) [21,22].

Unsafe and inappropriate means of biomedical waste were practiced by the various facilities studied. The results showed that hazardous waste were not properly collected, segregated and disposed in an appropriate manner. There was a lot of open dumping of potentially infectious materials and general absence of incinerators to treat waste materials. Standard practice recommends incineration of hazardous products from health facilities [21,22]. This is however lacking in most of low resource settings like ours, as observed in the present study. Such noncompliance with standard precautions was also reported by Kumar A et al., in Parkistan [23] and Amosu AM et al., in Nigeria [24].

The study by Oliveira AC et al., showed that non-compliance with standard precautions was more likely in settings with unskilled workers [11], this is consistent with the findings of the present study which showed that only 40.7% of healthcare managers and their staff had training on biomedical waste management, and that only 59.3% of staff received safety orientation on employment, making them inappropriately skilled in the act of handling hazardous hospital waste. Despite studies which have shown that the use of personal protective equipment was associated with low level of occupational hazards; especially from sharps and infectious body fluids [25,26], it was noted that only about one-third (30%) of HCW were provided with personal protective devices as well as had access to post exposure prophylaxis to HIV following occupational exposure, This value is higher than the findings in Tanzania where 22.5% has such access [26]. All health care workers should be adequately immunized for hepatitis B infection due to its immediate and long term sequel, however only 18.5% of the participants in this study had been fully vaccinated. This finding is consistent with the 22.4% reported by Ibekwe in Abakaliki, but at variance with the 40% reported by Yousafzai in Pakistan [27,28].

Unlike in advanced settings and societies, there was a general lack of work ethics and code of conduct/policy on occupational safety in all the health facilities, Coupled with lack of insurance cover and compensation [29-32], such action will put workers at undue risk, as well as demotivate them in the course of service delivery. Moreover, this study found that there was lack of supervision by relevant safety regulation agencies which were expected to monitor standards, ensure strict adherence to safety procedures and provide technical support. This is a major setback in ensuring a safe work environment for staffs, clients and the community. However, it was gratifying to note that all the respondents were willing to implement standard precautions in their facilities, if they get the needed support from relevant government agencies.

CONCLUSION

This study showed that there was poor knowledge of, and high level of non-compliance to standard medical waste management procedures, in addition to lack of regular training and update on occupational safety measures. There was also poor monitoring and regulation of healthcare activities, safe handling and disposal of hospital waste.

We therefore recommend the need for regular training and re-training of health care managers and other cadres of HCW, on standard methods of healthcare waste management and occupational safety procedures. Government and its regulating agencies should enact and enforce legislations that will ensure strict adherence to standard methods of waste disposal. Furthermore, government at all levels should have the political will to provide funding and technical support in areas of occupational safety and biomedical waste management. Employers should also provide adequate personal protective devices, insurance cover and vaccination against vaccine preventable diseases, as well as offer post exposure prophylaxis to those who had risky occupational exposure to infectious and hazardous materials.

LIMITATION

The limitation of this study was mainly the lack of actual verification of waste management practices and availability personal protective devices/equipment reportedly said to be in place at the various health facilities. Observing and citing of these by the researcher would have confirmed the information provided. However, its main strength was that information obtained were primary data obtained by direct interviews.

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