

Research Article

Knowledge and Attitude of the Waste Handlers on Healthcare Waste in Bo Government Hospital Southern Sierra Leone

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Abstract

Hospital waste poses risks to patients and waste disposal personnel and poses a threat to public health and the environment. Medical waste management is a new issue that is made worse by a lack of funding, knowledge and training to support solutions. Since these wastes have the potential to directly affect environmental health risks as well as public health risks, their collection and treatment are crucial. Therefore, this study was designed to assess the knowledge and attitude of the waste handlers on healthcare waste generated in Bo Government Hospital. A descriptive cross-sectional study was conducted to evaluate the health impact of medical waste management at Bo Government Hospital in Sierra Leone. The author used mixed methods to combine semi-structured and self-administered quantitative questionnaires with physicians, nurses, pharmacists, laboratory technicians, cleaners, and residents. Near the hospital. A sample of 100 medical staff and residents living near the hospital was taken from Bo Government Hospital using a simple random sampling technique to collect data. Raw data come in a variety of forms, including measurements, questionnaire responses, and observations, and results are presented in tables, graphs, and verbatim using the Statistical Package for Science (SPSS) to present and analyze the collected data. All units participated in data collection, with Human Resources (HR) and laboratories identified as generating more waste, followed by Nursing and Main Theater, where nurses accounted for the majority (n = 27) of respondents participating in the survey, research, followed by cleaners. (n = 13) and CHO (10), the majority of whom were between the ages of 40 and 50 (35%). Some cleaners reported placing their hands on what were identified as major risk factors, endangering workers, despite significant efforts being made to ensure bags were securely tied (81.5%) and carts were washed and disinfected (66.2%). Garbage is not emptied during the day with trolleys (58.5%) being the common means of transportation, while 29.2% handle garbage directly, which can pose a risk. However, 62% of respondents had received formal training in medical waste management. It was recommended that the Ministry of Health continues to organize training courses, especially for cleaning personnel and lower-level employees who have direct daily contact with this waste.

Keywords

Knowledge, Attitude, Waste Handlers, Healthcare Waste

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1. Introduction

The hospital is one of those institutions visited by people from all work of life and culture, regardless of age, gender, race, and religion. Hospital waste poses risks to patients and waste disposal staff, as well as a threat to public health and the environment [8].

Medical waste includes all types of waste discharged from medical facilities such as general hospitals, medical centers, and clinics. Medical waste represents a small amount of the total waste generated in the community. However, these residues have the potential to transmit disease and pose additional risks to healthcare facility staff, patients, and municipalities when the waste is not managed appropriately [4]. Medical waste can be classified into different types depending on its origin, nature, and risk factors involved in handling, storage, and final disposal. The European Union has made particular efforts to standardize classification through the creation of the European Waste Directory [1].

Medical waste management is an emerging problem that is amplified by a lack of training, awareness, and financial resources to support solutions. The collection and treatment of these wastes are of great importance as they can directly impact health risks to public health and the environment [2].

The public is concerned about the generation, storage, handling, transportation, and disposal of medical waste, including infectious and toxic materials. In recent years, various treatment and disposal methods aimed at reducing the negative impact of medical waste have developed. For example, there should be available information on the quantity and characteristics of medical waste to facilitate the search for appropriate treatment methods [3]. In Sierra Leone, medical waste is still processed manually and disposed of alongside regular household waste, creating significant health risks for municipal workers, communities, and the environment [9]. The present study focuses on the assessment and health implications of medical waste management at Bo Government Hospital in Sierra Leone.

Aims and Objective of the Study

The aim of this study is to assess the knowledge and attitude of the waste handlers on healthcare waste in Bo Government Hospital Southern Sierra Leone.

2. Methodology

A descriptive cross-sectional study was conducted to assess the knowledge and attitudes of waste managers towards medical waste at Bo Government Hospital, Southern Sierra Leone. Cross-sectional surveys are a standard approach to monitor the impact of natural and man-made disasters and interventions for assessing healthcare waste management [10]. The researcher used mixed methods to administer a combination of semi-structured and self-administered quantitative questionnaires to doctors, nurses, pharmacists, laboratory

technicians, cleaners, and those living near 'hospitals'. Then, perform triangulation to paint a clear picture of the current state of medical waste management in hospitals to get in-depth answers that help suggest effective solutions and recommendations.

2.1. Study Area

This study was conducted at Bo Government Hospital. This is the only hospital in the Central province. Bo Government Hospital is considered the most important and essential hospital in Bo. Therefore, it is expected that the level of awareness about the importance of proper medical waste management will be higher than other hospitals and clinics in the group. As a public hospital, the hospital has many departments such as patient rooms, emergency rooms, small operating rooms, main operating rooms, maternity rooms, laboratories, and X-ray rooms, among others.

2.2. Population of the Study

The population of this study included two types of people: First is the medical staff, including doctors, pharmacists, nurses, laboratory technicians, primary care and preventive medicine administrators, as well as the official infection control unit. The second category includes cleaners and people living near hospitals.

2.3. Sample and Sampling Technique

Sample size in this context refers to a smaller class together subjects obtained from the population from which the researcher intends to gain information and thereafter draw conclusions about the experience [6]. The use of a sample in research provides the researcher with the ability to realize the objectives with resources that are minimized [5]. For the purpose of this study, a sample of 100 health workers and people living near the hospital was drawn from the Bo Government Hospital.

Sample Size was calculated using the Slovin's Formula

$$n = \frac{N}{1 + Ne^2}$$

Where n= number of samples needed

N= population size

e= margin of error (use 5% or 0.05)

The total sample size of 100 is divided into 65 health workers and 35 are people living near the hospital.

2.4. Data Collection

A simple random sampling technique was used to collect

data. The selection of respondents was done randomly at the target hospital to ensure representative sampling and avoid any selection bias. There are two types of data collection, namely primary and secondary data collection. Primary data always refers to fieldwork, whereas secondary data collection relates to the literature review.

Primary Data: The main tools used in primary data collection were personal observation, interviews, visits, and questionnaires. Statistical Package of Social Science (SPSS) program (version 25.0) was used for data entry and analysis.

Secondary Data: Secondary data such as available documents, e.g., different reports from different departments also served as a source of information.

2.5. Data Presentation and Analysis

Data analysis is a practice in which raw data is sorted and organized so that useful information can be extracted [7]. In this study, raw data came in a variety of forms, including measurements, questionnaire responses, and observations. Tables, charts, and text descriptions of the data are used to analyze the data. These methods are designed to refine and distill data so readers can glean interesting insights without having to sort through all the data themselves. The Statistical Package for the Social Sciences (SPSS) was used to present and analyze the data collected. The services of a statistician were required during this phase of the research process. Raw

data are presented in tables, bar graphs, and pie charts. Microsoft Excel is also used to create various charts. Panels are used to display collected data. Comments were made on the results. Data from existing literature was analyzed to help identify certain themes and trends. Descriptive statistics include measures of central tendency and measures of dispersion used to analyze data from measurements and observations. The correlation coefficient between the amount of waste generated and the number of people visiting the surveyed medical facilities was calculated. The data presentation methods used helped clarify the data and draw new conclusions.

3. Results and Analysis

3.1. Departments Generating Healthcare Waste in the Facility

The below line chart (Figure 1) shows the medical waste generation points in the hospital, human resources (HR), and laboratory departments were identified as generating more waste, followed by the lactating ward and main theatre because they work more with paper than with digital computerization of information. Specifically, the theatre regularly disposes items such as sanitary napkins and surgical waste.

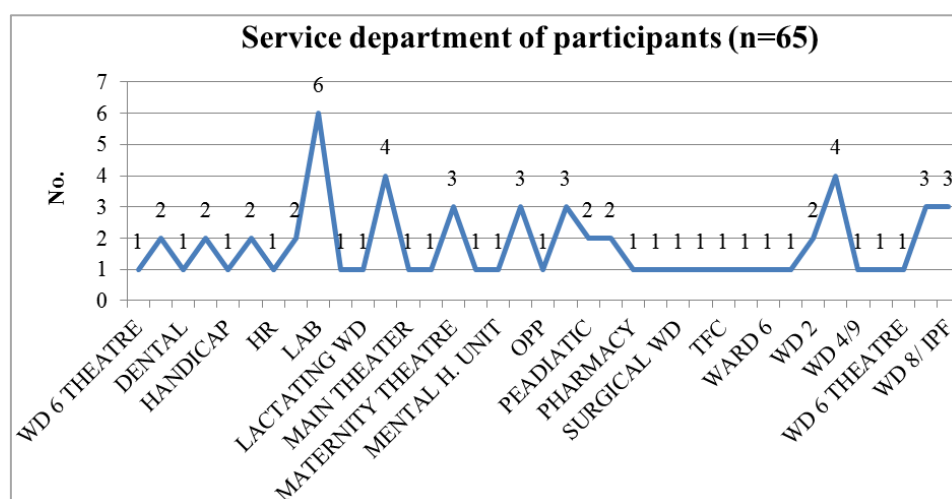


Figure 1. Sources of healthcare waste generation in Bo government Hospital.

3.2. Personnel Involved and Risk Factors in Healthcare Waste Management

From Figure 2 below, nurses made up the majority (n=27)

of respondents participating in the study, followed by cleaning staff (n=13) and CHOs (10). This accounts for these as having been directly involved in generating waste within the facility.

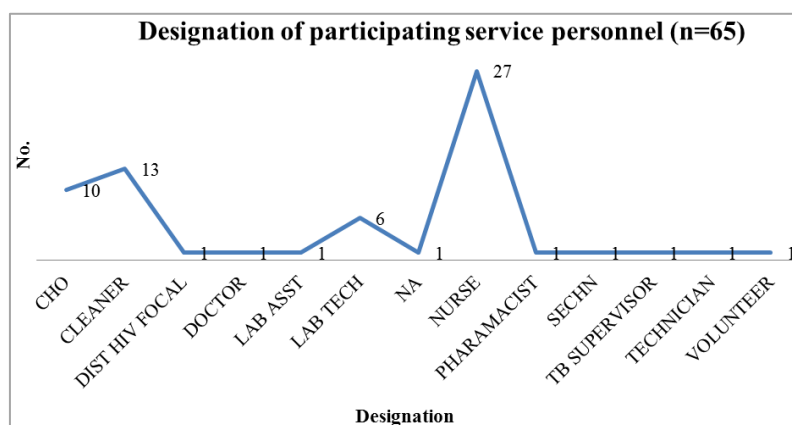


Figure 2. Service staff at the facility.

3.3. Demographic Characteristics of Participating Healthcare Workers

3.3.1. Distribution of Age Groups for Healthcare Workers in Percentages

Result in figure 3 below reveals that among healthcare workers surveyed, the age group from 40 to 50 accounted for the largest proportion (35%) Next is the age group from 30 to 39 years old.

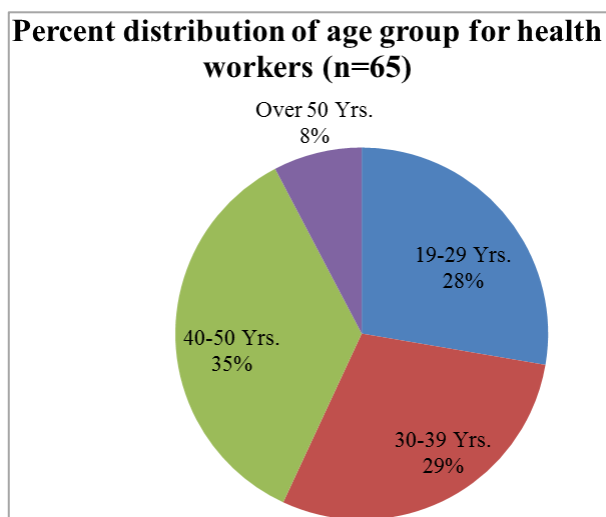


Figure 3. Percentage distribution of age groups for health workers.

3.3.2. Sex Distribution of Service Personnel in Facility in Percentage

As illustrated in the figure below, the gender ratio of the participants did not differ much, although females had the highest response rate a little (52%).

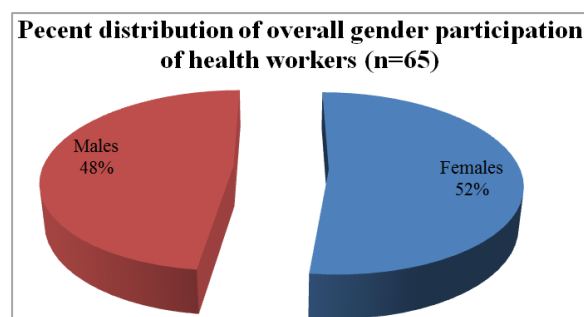


Figure 4. Percentage of the sex distribution of service personnel in the facility.

3.4. Educational Attainment of Service Personnel in the Facility

From the figure below, of the survey participants, more than half of them (n=33; 51%) had a Diploma in their field of expertise. This may reflect the fact that the majority of them were nurses and CHOs, whose training level was diploma level. Next are the cleaners who stop at the primary level; although very few professional cadres have high professional qualifications including postgraduate qualifications.

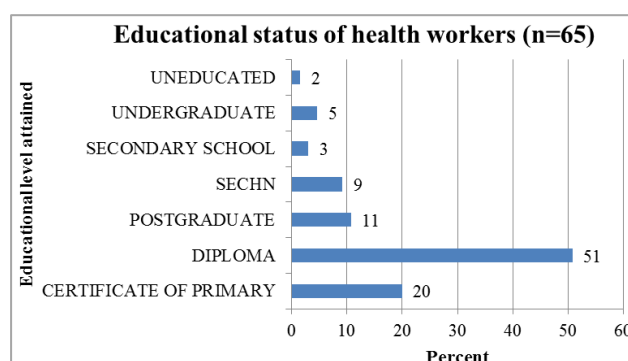


Figure 5. Education level of service staff at the facility.

The graph in [figure 6](#) below depicts training exposures of service personnel on healthcare waste management, 62% of respondents had had formal training on healthcare waste management compared to 38% without any form of training; with Hospital management and exposure to IPC training ranking high as training authorities. Although a good number could not indicate the duration of training, more than half of the respondents had had 2 – 3 days training while, although minimal fewer specialist staff had IPC trainings with specialist agencies for lengthy periods.

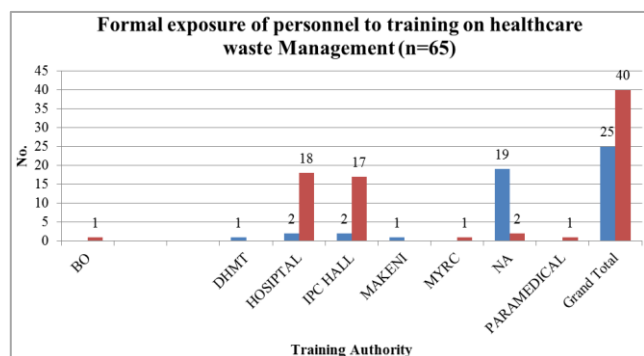


Figure 6. Training exposures of service personnel.

The below table ([Table 1](#)) indicates that the majority had 2-3 days of training (52.3%), and a good number did not indicate training duration (30.8%). Some had had one day training (10.8%), and few had more than three days of training (6.2%).

Training duration of service personnel.

Table 1. Duration of training.

Description	Days/Duration of training	%
2-3 DAYS	34	52.3
Not indicated	20	30.8
One day	7	10.8
More than three days	4	6.2
Grand Total	65	100.0

4. Discussions

From the result in ([Figure 1](#)) above shows that for the medical waste generation points in the hospital, human resources (HR), and laboratory departments were identified as generating more waste, followed by the lactating ward and main theatre because they work more with paper than with digital computerization of information. Specifically, the theatre regularly disposes items such as sanitary napkins and

surgical waste. Regarding Personnel involved and risk factors in healthcare waste management as contained in [Figure 2](#) above, it was revealed that nurses made up the majority (n=27) of respondents participating in the study, followed by cleaning staff (n=13) and CHOs (10). This accounts for these as having been directly involved in generating waste within the facility. As indicated in the result in [figure 3](#) above, findings reveal that among healthcare workers surveyed, the age group from 40 to 50 accounted for the largest proportion (35%) followed by the age group from 30 to 39 years old. The gender ratio of the participants as illustrated in the figure above, did not differ much, although females had the highest response rate a little (52%).

The educational attainment of the survey participants indicates that more than half of them (n=33; 51%) had a Diploma in their field of expertise. This may reflect the fact that the majority of them were nurses and CHOs, whose training level was diploma level. Next are the cleaners who stop at the primary level; although very few professional cadres have high professional qualifications including postgraduate qualifications. The chart ([figure 6](#)) above shows that service personnel have received formal training in medical waste management, 62% of respondents have received formal training in medical waste management compared to 38 % who did not receive any form of training; Hospital management and training exposure IPC is highly ranked as a training agency. Although many could not indicate the length of training, more than half of those surveyed had attended a 2–3-day training course, although very few professional personnel had attended IPC training courses with professional agencies for a long time.

5. Conclusion

In conclusion, it is observed that among the departments in the facility, the human resource is found to generate more waste than the others. Second is the laboratory department followed by the lactating, and the main theatre. Nurses comprise the majority (n=27) of respondents participating in the study, followed by cleaning staff (n=13), and CHOs (n=10). This explains why they are directly involved in generating waste within the facility. Among the healthcare workers surveyed, the age group that accounted for the largest proportion is between 40 to 50 years (35%). This is followed by the age group from 30 to 39 years old. The gender ratio of participants was not significantly different, although women had a slightly highest response rate (52%). Among the surveyed participants, more than half (n=33; 51%) had a diploma in their field of expertise. This may reflect the fact that the majority of them were nurses and CHOs, with training at the diploma level. Next are the cleaners stopping at primary level; although very few professional staff have high professional qualifications, including post-graduate degrees.

Finding also reveals that training of service personnel on medical waste management, 62% of respondents have re-

ceived formal training on medical waste management, compared to 38% who have not received any form of training; Hospital management and training exposure IPC is highly ranked as training authorities. Although many could not indicate the length of training, more than half of those surveyed had attended a 2–3-days training course, although very few professional staff had attended IPC training courses with professional authorities for a long time.

Furthermore, based on observation, more than ½ of service personnel have received formal training in medical waste management, with 62% of respondents receiving formal training in medical waste management compared to 38 % who did not receive any form of training; Hospital management and training exposure IPC is highly ranked as a training agency. Although many could not indicate the length of training, more than half of those surveyed had attended a 2–3-day training course, although very few professional personnel had attended IPC training courses with professional agencies for a long time.

6. Recommendation

The following recommendations are derived from the findings of this study.

- 1) Service personnel receive adequate formal training to improve the knowledge and attitude of medical waste handlers toward the disposal of medical waste to prevent health risks and hazards.
- 2) The Ministry of Health continues to organize training courses, especially for cleaning personnel and lower-level employees who have direct daily contact with this waste.
- 3) PPE is provided to staff and regular monitoring is performed to verify compliance with standard operating procedures.
- 4) Further research may be needed to evaluate best practices based on scientific evidence.

Ethical Consideration

Approval to conduct this study was requested from the hospital administration before commencement. The hospital and respondents were informed that this study was an academic inquiry only and therefore the information collected would be treated with the strictest confidentiality.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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