COMMUNITY PERCEPTION AND SUGGESTIONS FOR HEALTHCARE WASTE MANAGEMENT IN BO GOVERNMENT HOSPITAL, SOUTHERN REGION - SIERRA LEONE.

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Abstract

Medical wastes are generated by hospitals or clinical laboratories as a result of surgery, autopsies, or other medical procedures. Medical waste includes a wide range of materials, from used needles and syringes to bandages, body parts, diagnostic samples, blood, chemicals, drugs, medical devices, and radioactive materials. radiation. It can also be created at home. However, no matter where it is produced, medical waste has the potential to transmit disease to others. As a result, medical waste has become a public health problem attracting attention in both developed and developing countries. A cross-sectional study was conducted at Bo Government Hospital Sierra Leone to evaluate the health effects of medical waste disposal. The study involved 100 health workers and residents, using mixed methods and SPSS. Data was collected through surveys, observations, and charts. Interviews with community members revealed that healthcare waste contributes to skin diseases (100%), Malaria (83.6%), and other diseases. Some view these sites as public health threats, suggesting protective management and improvements to existing structures. Therefore, this study was designed to assess the community perception and suggestions for healthcare waste management in Bo government hospital southern region of Sierra Leone.

Keywords: Community Perception, Healthcare, Waste Management, Human Health.

Introduction

Waste is matter produced by human and animal activities that are unnecessarily or undesirably disposed of as waste or garbage (Afesi-dei et al.,2023). Elements that are considered garbage can include household waste, yard waste, hospital waste, old paint cans, etc. With the development of human society, a large amount of waste piles up like mountains, endangering human health and the environment (Marceta & Nađ, 2018). Therefore, daily human activities can generate a wide variety of waste from various sources (Salmenperä, 2021). Rapid urbanization, lack of efficient land use, and efficient maintenance systems for essential services have created serious environmental problems. The scale of the global waste problem is often reflected in the print media (Baba, 2015). In the UNIDO study, in addition to industrial waste, other important and hazardous waste sources were hospitals, clinics, and pathology laboratories (Ezeudu et al., 2022). Potential hazards to the environment and human health can be harmful if not handled properly. Medical waste is generated by hospitals or clinical laboratories as a result of surgery, autopsies, or other medical procedures. Medical waste includes a wide range of materials, from used needles and syringes to bandages, body parts, diagnostic samples, blood, chemicals, drugs, medical devices, and radioactive materials radiation (Odonkor & Mahami, 2020). It can also be created at home. However, no matter where it is produced, medical waste has the potential to transmit disease to others (Hassan & Bashir, 2020). As a result, medical waste has become a public health problem attracting attention in both developed and developing countries (Awodele, et al., 2016).

The urban growth that comes with population growth and the number of healthcare facilities trying to keep up have generated generations of medical waste. Improper disposal of medical waste is very unsanitary for the environment and leads to serious health threats to the population. The result of this medical waste is that it is a source of bacteria, for example: tetanus, anthrax, cholera, and diarrhea; fungal infections such as Candida cryptococcal; and viral infections, for example. hepatitis, polio (Adeoye et al., 2018). In addition, potable groundwater can be contaminated by leakage from landfills to aquifers and potable surface water, posing a danger to human health (Chhoden, et al. 2022). Hospital waste is also known as medical waste. Improper disposal of them is very unhygienic for the environment and has a significant impact on health if not managed properly. Therefore, it is necessary to assess the health and environmental impacts of medical waste to make appropriate recommendations (Blackman Jr, 2016). Therefore, this study assesses the community perception and suggestions for healthcare waste management in Bo government hospital southern region, Sierra Leone.

Objective of the study

The specific objective of the study is to assess community perception and suggestions for healthcare waste management in Bo government hospital in the southern region of Sierra Leone.

Research Question

1. What are the community perceptions and the suggestions for healthcare waste management in Bo government hospital in the southern region of Sierra Leone?

Method

The study is adopted a descriptive cross-sectional design, to assess the health impacts of medical waste disposal at the Bo Government Hospital Sierra Leone. Researchers used mixed methods to complete semi-structured quantitative and self-administered questionnaires that included physicians, nurses, pharmacists, laboratory technicians, cleaners, and people living close to the hospital. A sample of 100 health workers and people living near the hospital was drawn from Bo government hospital using a simple random sampling technique for data collection. Raw data can take many forms, such as measurements, survey responses, observations, etc., and results can be displayed in charts, graphs, and text attributes using the Statistical Package for Social Sciences (SPSS) to visualize the collected data was displayed and analyzed.

Description of the Study Area

This study was carried out at Bo Government Hospital, located in the southern region of Sierra Leone. Bo City is the second largest city in Sierra Leone in terms of landscape/geographic location (after Freetown) and the largest city in the Southern Province. It is the capital and administrative center of Bo District. The city has a population of approximately 233,684 as of the 2017 census. After Freetown, Bo is the transportation, commercial, agricultural, and educational center of Sierra Leone. Bo has the highest literacy rate in Sierra Leone. The city has many primary schools, as well as several secondary schools, and a university, Njala University. Trading, gold, and diamond mining are important economic activities for the people as well as the agricultural production of rice, coffee, cocoa, and oil palm. Poverty is widespread throughout the country, and residents of Bo City are no exception.

Hospitals are busy healthcare facilities that provide life-saving services. This facility is the only referral hospital in the southern province serving the Pujehun, Bonthe, and Moyamba districts (Sengeh et al., 1997). Bo Government Hospital shares a major challenge affecting the health sector across the country, which is the lack of trained and competent medical staff, especially skilled midwives, who are essential in preventing maternal mortality. In addition to that inadequate infrastructure and critical equipment.

Study Design

A descriptive cross-sectional study was performed to assess the community perception and suggestions for healthcare waste management at Bo Government Hospital in Sierra Leone. The mixed methods were utilized which means both qualitative and quantitative data have been collected and analyzed. Combining qualitative and quantitative approaches has the argued advantage of creating a huge understanding of a research problem since both approaches have their strengths and weaknesses. A mixed methods approach can attempt to maximize the strengths while attempting to minimize the weaknesses of the two diverse approaches (Creswell 2014: 264). In this case, a combination of semi-structured and self-completed quantitative questionnaires and in-depth interviews were conducted for physicians, nurses, pharmacists, laboratory technicians, cleaners, and those who live near the hospital. Then, do triangulation to paint a clear picture of the current state of medical waste management in the hospital for insightful answers that help provide effective solutions and recommendations.

Study Population

The population for this study included two categories of people; the first category of people consisted of the healthcare workers, including physicians, pharmacists, nurses, laboratory technicians, preventive medicine officers, and the official infection control unit. The second category was cleaners and people living near hospitals such as Carpenters, Drivers, Gardeners, Health workers, Housewives, Petty traders, Public Servants, Retired, Teachers, Tailors, Students, Traders, and Widows.

Sample Size

In this context, sample size refers to a smaller group of subjects in the population from which the researcher intends to obtain information and then draw conclusions about the experiment (Kothari, 2004). The use of samples in research gives the researcher the ability to achieve goals with minimal resources (Griffith, 2013). For the purpose of this study, a sample of 100 health workers and residents living around the waste dumping site was obtained from Bo Government Hospital. Slovin's formula was used to calculate the sample size (Tejada & Punzalan, 2012):

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

where n = number of samples needed

N = population size

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

The total sample size of 100 people was divided into 65 healthcare workers and 35 people living around the waste dumping site.

Sampling process

For data collection, the multistage sampling techniques were employed. The first was a stratified sampling technique for the selection of sampled healthcare workers and people living near the hospital according to their profession. Each category was represented. This was done in order to have representation of all healthcare workers and people residing near the hospital in the population. The second was a simple random sampling technique for the selection of the sampled population. A simple random sample takes a small random portion of the entire population to represent the entire data set, where each member has an equal probability of been chosen using the lottery method. Thus, the selection of respondents was done randomly within the targeted population to ensure representative sampling and avoid any selection bias. Here, no further criteria were used. A total of 100 healthcare workers and people residing near the Bo government Hospital were selected as sample.

Data collection

There are two types of data collection, namely primary and secondary data collection. Primary data always refers to fieldwork, while secondary data collection involves a review of the literature.

Primary Data

The main tools used in primary data collection are personal observations, interviews, visits, and questionnaires. The Package Program of Social Science Statistics (SPSS) (version 25.0) was used for data entry and analysis.

Secondary Data

Secondary data such as available documents for example, various reports from different departments were used as a source of information.

Data Analysis and Presentation Tools

Data analysis is a practice in which raw data is sorted and arranged so that useful information can be extracted from it (Kyngäs, 2020). In this study, raw data came in various forms, including measurements, questionnaire responses, and observations. Tables, charts, and written descriptions of the data were used to analyze the data. These methods are designed to refine and distill the data so that readers can glean interesting information without needing to sort through all the data on their own. Statistical Package for Social Science (SPSS) was used to present and analyze the data that was collected. The services of a statistician were sought during this phase of the research process. The raw data was presented in tables, bar graphs, and pie charts. Microsoft Excel was also used to produce various graphs. Plates are used to present the collected data. Comments have been made on the results. Data from existing literature has been analyzed to help identify certain themes and trends. Descriptive statistics include measures of central tendency and dispersion measures 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 health facilities has been calculated. The data presentation methods used helped clarify the information and draw new conclusions.

Ethical Considerations

Permission to conduct this study was obtained from the hospital administrator prior to initiation. The hospital and respondents were aware that the survey was a purely academic requirement and that the information collected would be treated confidentially.

Results and Discussion

Different people of varying works of life in the community where healthcare waste is dumped were interviewed for their views on healthcare waste dumped within their environment and to propose suggestions for effective management. A variety of diseases have been indicated to be associated with health care waste, the majority of which are skin diseases resulting from contact with flies breeding at the site as highest (100%), followed by Malaria (88.6%); although a few people view the sites as public health threat; hence suggesting a variety of suggestions for protective management and efforts to improve on existing structures.

Department of Medical Waste Generation at the Facility

The chart (figure 1) below shows the medical waste generation points in the hospital, human resources (HR) department, and laboratory were identified as generating the most waste, followed by the lactation department and the main operating theatre because they work more with paper documents than with digital computer information. Specifically, the operating theater regularly handles items such as pads and surgical waste.

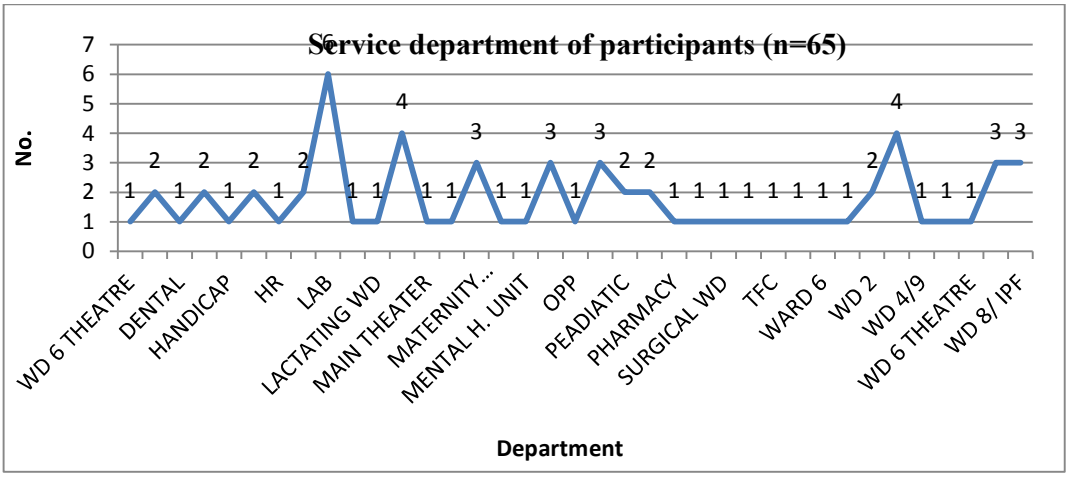

Fig. 1: Department generating healthcare waste at the facility

Demographic Characteristics of Participating Healthcare Workers

Distribution of Respondents by Age Group in Percentage

The results in Figure 1 show that the majority of participants were between the ages of 40 and 50 (35%).

Out of the 65 participants, the study population appeared to consist of much younger ages, ranging from 19 to 39 years old (n = 37). Overall participation for females was slightly higher than for males with a standard deviation of 1.2 and no statistical variance.

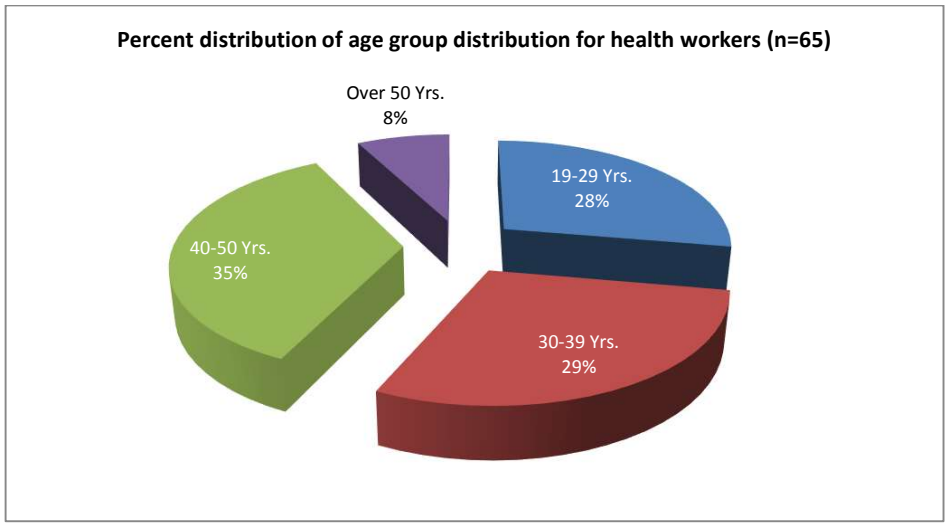

Fig.2. Percentage distribution of age group respondents

The Education Level of Service Staff at the Facility

Of the survey participants, more than half of them (n=33; 51%) had a Diploma in their field of expertise. This could reflect the majority of nurses and CHOs (Figure 3), whose training level is diploma level. Next are the cleaners who stop at the primary level; although very few have high professional cadres such as postgraduate qualifications attained.

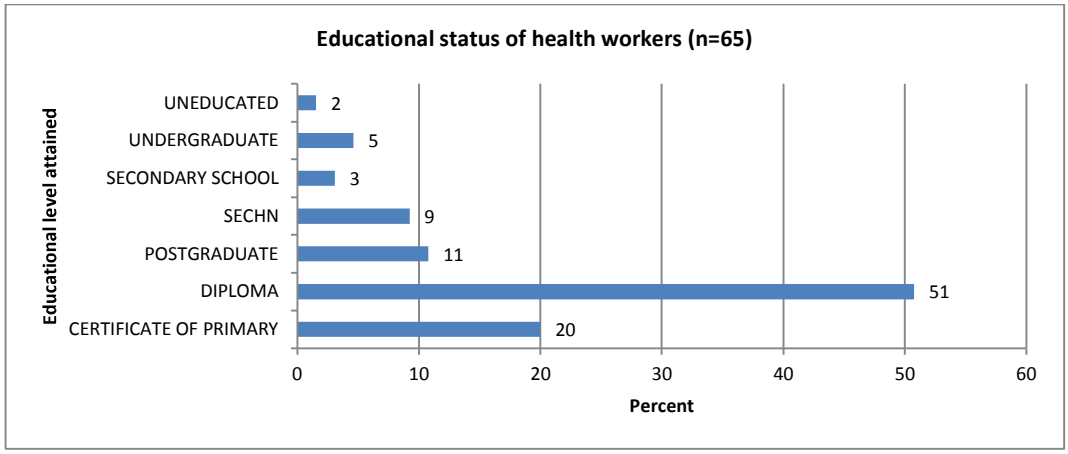

Fig 3: Education Status of Health Workers

Community Representation as Accessed

The community members who reside near the dumping site and were interviewed included carpenters, drivers, gardeners, health workers, housewives, petty traders, public servants, the retired, students, tailors, teachers, traders, and widows as shown in the table below:

Table 1. Community Representation as Accessed

Community persons interviewed near dumping site	*No*
Carpenter	2
Driver	1
Gardener	1

Health Worker	1
House Wife	4
Petty Trader	1
Public Servant	1
Retired	1
Student	4
Tailor	1
Teacher	4
Trader	12
Widow	2
Grand Total	**35**

Community people living around waste dumping sites were engaged to give their natural perception about health care waste management, which consisted of a variety of occupations as reflected in Table 1; with almost equal female (n=18; 51%) to male (n=17; 49%) ratio (Table 2; all being adults with minimum age of 19 and maximum age of 70; mean age 35, with 0 statistical difference (Table 2)

Table 2. Age Group to Sex Distribution of Community Participants

Age group	*Females*	*% of females*	*Males*	*% of males*	*Total*	*Overall %*
18 – 27	2	11.1	3	17.6	5	14.3
28 – 37	3	16.7	5	29.4	8	22.9
38 – 47	4	22.2	4	22.2	8	22.2
48 – 57	2	11.1	5	29.4	7	20.0
Above 57	7	38.9	0	0.0	7	20.0
Total	18		17		35	
%	51.4		48.6			

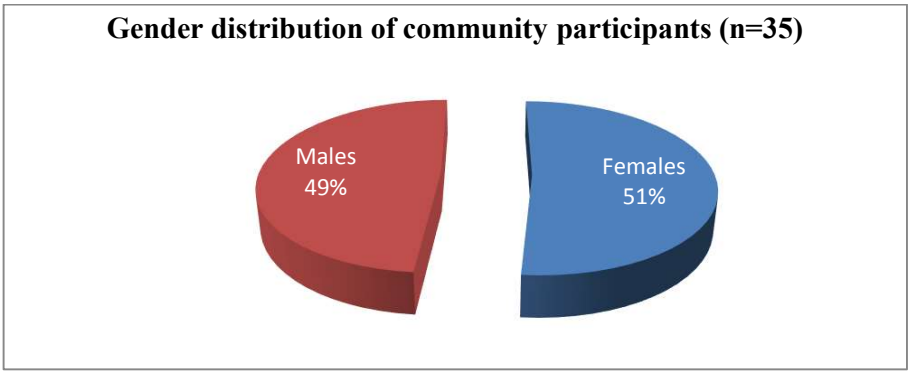

Figure 4. Showing Gender distribution of community participants

Community Perception

Table 3. Perceived Illnesses Community People Associate with Healthcare Waste

Length of stay in the area	*No disease*	*Diarrhea*	*Hepatitis*	*Malaria*	*Skin disease*	*Other Disease*
Less than one year	1			1	1	
More than five years	21	1	2	25	28	6
Two Years	4			5	6	2
Grand Total	26	1	2	31	35	8
	74.3	2.9	**5.7**	**88.6**	100.0	4.8

A variety of diseases have been perceived in multiple-choice questions by community people about healthcare wastes dumped in areas with everyone mentioning skin as the highest (100%), followed by Malaria (88.6%).

Table 4. Community Perceived Alternative Suggestions of Health Care Waste Management

Alternative suggestions for proper management of healthcare waste in the community	*No.*
Burn it outside the hospital	1
Burning should be done elsewhere other than the hospital	1
Dumping it preferable	1
Is unhealthy and improper, so it must be relocated elsewhere	1
No response	24
Should be seven miles away from the city	1
Suggest to be decompose	2
To relocate the dumping site	3
Transport it far from the residential area	1
Grand Total	**35**

Table 5. Possible Suggestions for Improvement of Healthcare Waste Management

Suggestions on possible improvements in the waste management system	*No.*
Away from the hospital is preferable	2
Burn the waste outside the hospital is preferable	1
Create a special dumping space	1
The government provides a site for hospital waste	1
No response	9
Outside the hospital environment	2
Recycle and for agricultural purposes	1
Relocate the site elsewhere	1
To burn the waste outside the hospital	2
To control the smoke	1
To create a special dumping site for medical waste	1
To deposit it out of the city	1
To deposit the waste in another area	2
To dispose of the waste outside the hospital	1
To divert the smoke into the atmosphere	1
To manage the waste outside the hospital environment	1
To provide a pipe to expel the smoke up	1
To relocate the dump site	3
To stop burning the waste within the hospital	1
To take the waste outside the hospital area	2
Grand Total	**35**

A variety of suggestions have been revealed by community people on proper healthcare waste management (Table 4) and possible and applicable improvements (Table 5).

Discussions

All units had been engaged for series of information with the human resource (HR) and laboratory

branch diagnosed as producing more waste accompanied by Lactating ward and foremost theatre for which nurses shape the bulk (n=27) of respondents taking part with in the study, accompanied by cleaners (n=13) and CHOs (10), majority of whom had been in a while 40 – 50 (35%) in (figure1).

Finding also revealed that majority of the participants were within the ages between 40 – 50 (35%). Out of the 65 participants, the study population consisted of much younger ages of 19 – 39 (n=37). Overall female participation was slightly more than the males with standard deviation of 1.2 and no statistical variance (Figure 2).

Findings furthermore revealed that community residents living around dumping sites were asked to give their natural perception of medical waste management, which includes a variety of occupations, as reflected in (Table 1); with almost equal proportions of women (n=18; 51%) and men (n=17; 49%). All adults with a minimum age of 19 years and a maximum age were 70 years; the mean age was 35 years, with no statistical difference. The age group with the highest number of participants were 57 years and above had more participants 7 (38.9%) who were predominantly females took part in the survey with 0 (0.0%) male participant giving a total of 7 with an overall percentage of 20% participated in this survey. In the age group 28 to 37, more males 5 (29.4%) as compared to their female counterparts 3 (16.7%) given a total of 8 (22.9%) took part in the survey. This was followed by the age group 48 to 57 where 5 males (29.4%) with 2 females (11.1) with a total of 7 (20.0%) participants. The age group 38 to 47 had equal participants of 4 females and 4 males giving a total of 8 (22. 2%) participants. The age group 18 to 27 has 2 (11.1%) females and 3 (17.6%) males with a total of 5 (14.3%) (Table 2). A variety of illnesses were seen in multiple-choice questions asked by community members about medical waste dumped in the areas, in which people mentioned skin diseases as the highest (100%), followed by malaria (88.6%), 26 (74.3%) people made no respond as found in (Table 3) above. Also, various suggestions have been shown by the community people on proper healthcare waste management. 24 persons out of 35 made no response with 3 persons who suggested that the dumping site be relocated and only 2 persons suggested that the waste be decomposed as indicated in (Table 4) above. Regarding possible improvement in the waste management system, 9 persons out of 35 did not respond, with only 3 persons who suggested relocating the dumping site as in (Table 5) above.

Conclusion

Of the observed population, more than ½ of them (n=33; 51%) had attained Diplomas in their expert fields, with few professional cadres, with 62% of respondents having formal training. Therefore, from the community perspective, different people; all adults from age 19 to 70 of both sexes with almost equal ratios from varying works of life were interviewed for their views on healthcare waste dumped within their environment and to propose suggestions for effective management. A variety of diseases have been indicated to be associated with health care waste, the majority of which are skin diseases resulting from contact with flies breeding at the site as highest (100%), followed by Malaria (88.6%); hepatitis (5.8%), other diseases (4.7%) with diarrhea been the least disease (2.9%) Although a few people view the sites as public health threat; hence suggesting a variety of suggestions for protective management and efforts to improve on existing structures. Some suggested that the waste be decomposed, and others concluded that the dumping site be relocated far away from the city. Amidst various suggestions from people, the majority of the respondents did not respond at all.

Recommendations

From the research results, the following recommendations are drawn from a community perspective:

i. Medical waste must be disposed of in a safe and protected environment for the sole purpose of preventing health risks and hazards.
ii. Encourage intensive autoclaving for waste incineration because of its danger.
iii. To ensure good practices,
    a. dumping site is recommended to be relocated; to be located away from the hospital is preferable.
    b. To take the waste outside the hospital area, he Ministry of Health and Sanitation should continue to provide advanced training, especially for sanitation workers and other lower-level managers who are in direct and daily contact with waste.
    c. The Ministry of Health should provide sorting bins for waste to be sorted at the point of generation.
    d. To make sure employees receive PPE and are regularly monitored for compliance with standard operating procedures.
iv. For policy regulation, the Department should establish monitoring mechanisms and disciplinary measures in case of non-compliance with the procedures.
v. For Research, further research may be needed to evaluate best practices based on scientific evidence.

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