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*Research Article*

# **Biomedical Waste Management in Public Health Centers in Lome, Togo**

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## **ABSTRACT**

This study aims to contribute on improving the solid biomedical waste management in public health facilities in the municipality of Gulf 4 of Grand Lomé, by a descriptive method based on surveys and observations. 42.25% of the staff members were trained in biomedical waste management. Waste sorting was not effective in all units: 55.56% have already had at least one accident. These observations can be used to define a new strategy that will improve the management of solid biomedical waste in health facilities

**Keywords:** *Biomedical waste, biomedical waste management, sorting, accident.*

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## **INTRODUCTION**

Healthcare activities generate an increasing amount of infectious waste. In 2010, failures in the management of medical waste caused 33800 new HIV infections, 1.7 million cases of hepatitis B and 315000 cases of hepatitis C worldwide (Organisation Mondiale de la Santé. (2000). When biomedical waste is not well managed, it represents a danger for both health personnel and the whole community (USAID, 2011). Therefore, a good management of biomedical waste is one of the most important elements in promoting the safety of health care and the prevention of nosocomial and occupational diseases (Moumini, 2015). In July 2004, Togo ratified the agreements on the control of transboundary movements of hazardous waste and their elimination to the Basel Convention (Ministère de la santé, (2016).]; but the problem of biomedical waste management still remains a major concern. From this perspective, this study aims to inventory biomedical waste management in public health centers in health district N°4 in the municipality of Gulf 4 of Grand Lomé.

## **MATERIALS AND METHODS**

**Study site:** The surveys and observations were carried out in the following 3 public health centers in health district N°4 of the municipality of Gulf 4: Centre de santé de Kodjoviakopé, Medico-Social Center (CMS) Nyékonakpoè, and Medico-Social Center, UTB circulaire (Figure 1).

**Sampling:** Two groups of the staff members were targeted. Those from the departments which produce biomedical waste:

healthcare providers, the staff of the hygiene and sanitation department, the workmen, and the waste collectors. Also, the staff of the service of pharmacy, accountants, secretaries, data entry operators, drivers were not included. Out of 97 agents, 71 subjects took part in the survey including 56 care providers, 3 administrative managers, 3 waste collectors' managers and 9 workmen. Three technicians were deployed for the study, each equipped with personal protective equipment.

**Survey and observations:** The survey consisted of individual interviews using pre-designed questionnaires with the specific objectives. Observations on the practical aspects of the waste management were made, and digital photos were recorded.

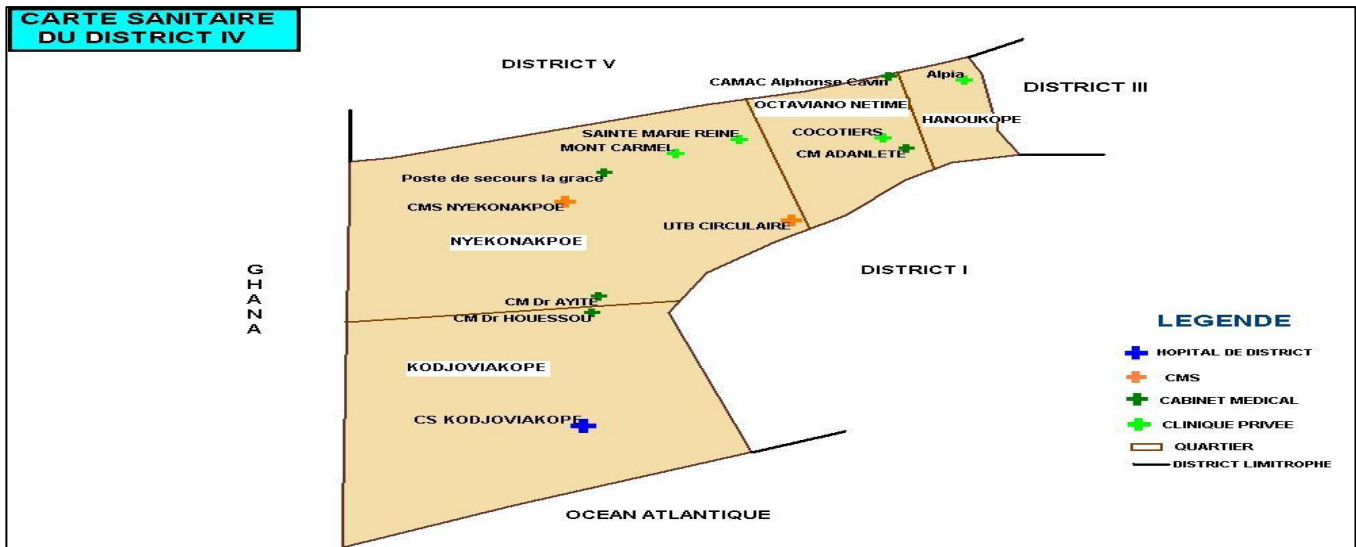
**Quantitative analysis:** The quantification of the waste was made by weighing the garbage bags using a Salter-type scale on the internal waste storage site.

### **Statistical analysis:**

The information was processed with the EPI Info7.2.2.6 software. The consistency and consistency of the information collected on the instruments was checked twice. The data obtained were analyzed by Excel software and the results were presented by tables and graphs.

## **RESULTS AND DISCUSSION**

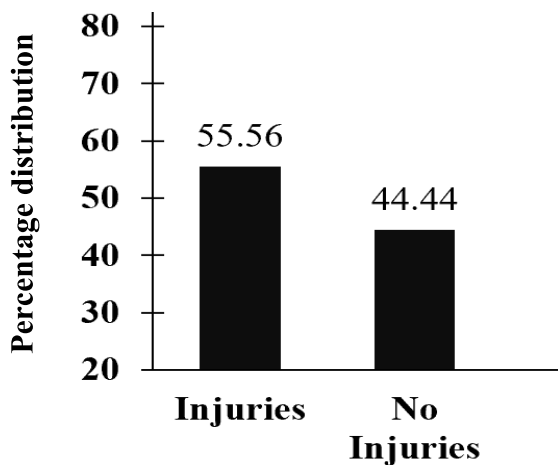
The survey shows that 42.25% of the agents received training on the management of biomedical waste whereas 57.75% did not receive any training.



**Plate 1:**  
Map of health district N°4 (Reference: Direction of health district N°4)

**Table 1:**  
Distribution of the personnel in relation to training on biomedical waste management

Training	Frequency	%
Yes	30	42,25
No	41	57,75
Total	71	100,00



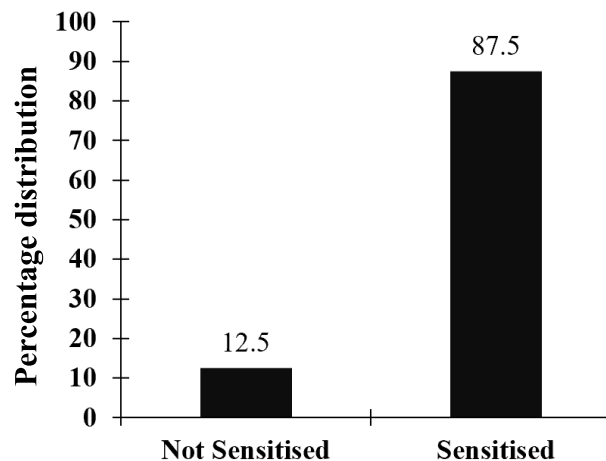
**Figure 1:**  
Distribution of respondents in relation to injuries due to biomedical waste.

These values are slightly higher than those obtained by Saizonou *et al.* (2013) in Benin. They found that only 40% of the agents involved in the management of biomedical waste in Benin had received training.

The results also showed that 55.56% of accidents are related to the management shortfall of biomedical solid waste in the district. Although the investigation showed that the workmen have appropriate protective equipment, an improvement in the number and level of the staff

would be an asset to avoid accidents related to the management of infectious waste.

In the absence of training, the health system in Togo has defined an Information Education and Communication (IEC) strategy which makes it possible to sensitize staff, patients, and caregivers on several topics including waste management (Ministère de la Santé et de la Protection sociale, Togo (2016), This study showed that 87.50% of healthcare providers participated in IEC on the management of infectious waste and the risks associated with its handling (Figure 2). These results confirmed a study by Badjelbia in 2015 reported 85.53% at the CHU Campus of Lomé (Pahorski, 2015).



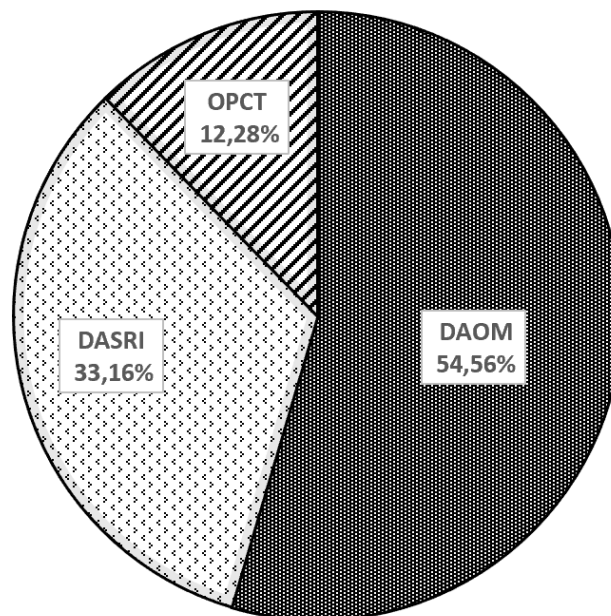
**Figure 2:**  
Distribution of sensitized cleaning workers

Another important element in the process of biomedical waste management is waste sorting. Observations showed that waste sorting is not effective in the health facilities of District N° 4. Both in the bins and on the disposal site, waste similar to household waste (DAOM) is mixed with waste from health care activities at risk of infection (DASRI). Examples are

shown in Plate 2 and Plate 3. This deficit observed in terms of waste sorting could be explained by the lack of well-coded containers and also the lack of training (Figure 1).

Studies by Sow *et al.* (2017) and Kouakou (2011) reported similar trends in Senegal and Burkina Faso, respectively. Therefore, it appears that the systematic waste sorting is not effective in many health facilities in the above West African countries.

The waste quantification in the health facilities showed that it was composed of 54.56% of waste similar to household waste, and 45.44% of waste from health care activities at risk of infection (Figure 4). According to the World Health Organization standards, waste properly sorted represents approximately 75 to 85% of the overall waste produced (Organisation Mondiale de la Santé, 2000). This confirms once again that sorting was not effective in the assessed health facilities. But similar results were obtained in Algeria by Sedrati *et al.* in 2017 who reported that biomedical waste was made up of 58% waste similar to household waste and 42% waste from health care activities at risk of infection (Nourelhouda *et al.*, 2017)].



**Figure 4 :**

Waste quantification

DAOM = Waste Similar to Household Garbage

DASRI= Waste from Health Care Activities with Infectious Risks

OPCT= Sharp Pointed Objects



**Plate 2**

Mixture of DAOM and DASRI in a bin intended for the DAOM.



**Plate 3**

Mixture of DAOM and DASRI in a bin intended for DASRI

In conclusion, this study showed that health facilities of health district N°4 of Lomé produce a significant amount of biomedical waste every week. Although 42.25% of the staff members have been trained in biomedical waste management, waste sorting is not effective in all units, and 55.56% have already had at least one accident. This study therefore supports the efforts made by the Togolese health authorities and could therefore serve as a source for defining a new strategy to improve the management of biomedical waste in health facilities.

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