

Management Of Hospital Waste In Tertiary Hospitals Of Karachi

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Abstract

To assess the present methods used for segregation, storage configurations, collection, and disposal systems in Karachi's tertiary hospitals. Using a convenient sample technique, a cross-sectional survey was done in ten tertiary hospitals in Karachi. The research tool was a self-administered questionnaire that included questions about hospital waste management and health waste management information. Hospital healthcare services may produce certain infectious wastes. Even though a large portion of hospital waste is categorized as general waste, which is like municipal solid waste in nature and can therefore be disposed of in municipal landfills, a small portion of infectious waste needs to be managed properly to reduce risk to public health. The many components of the hospital waste management system frequently interact with one another, necessitating a thorough examination to ascertain each component's function. Numerous factors, including the number of beds in the hospitals, have an impact on the development of hospital waste. Waste segregation and infectious waste treatment before disposal must be adequately carried out by the hospital management, particularly when scavenging occurs in dump sites in developing nations. More medical waste management education and training should be promoted in developing countries. More studies on teaching waste management to hospital staff members should be encouraged.

Keywords: Waste management, Biomedical waste, Tertiary Hospital, Healthcare staff.

Introduction

Hospital waste is a unique kind of garbage that is created in small quantities and has a significant risk of infection and harm. Inadequate and incorrect handling may have detrimental effects on the environment and the public's health (Fluke, 1998). Hospital waste management refers to the control of disease transmission through the management of biomedical waste generated by hospitals (Mahmood et al., 2001). Hospital waste management, including its segregation, collection, storage, transportation, and disposal, is poorly understood in developing nations (Ather, 2004; Hageman, 2002; Patil and Shekdar, 2001). According to studies, Pakistan produces about 2kg of waste per person per day, of which 0.1 to 0.5 can

be classified as dangerous waste. Biomedical hazardous or risky waste and non-risky waste are both included in hospital waste. Sharps, pharmaceutical, genotoxic, chemical, radioactive, infectious, and pathological wastes are the several categories of risk wastes. The non-risk waste consists of several sorts of trash, including packages, cardboard, and food scraps (Hashmi and Shahab, 2003).

It can be challenging and expensive to comply with the legal and regulatory obligations to generate, use, store, treat, and dispose of waste. Although the regulations are complex and lengthy to implement, they must be fully followed to show that the safety of the workforce and the environment has been guaranteed (Horvath, 1991; Ahmed, 1997). Each healthcare facility should create its own

documented waste-handling policies and procedures that are tailored to meet its unique needs (Hayashi and Shigemitsu, 2000).

The effective management of healthcare waste depends on good administration, organization, sufficient regulation, funding, and the active involvement of knowledgeable and qualified people (Hashmi and Shahab, 2003; Horvath, 1991). All those who are exposed to hazardous waste could be at risk. Those in the medical profession, hospital patients, hospital visitors, hospital staff (laundry, waste handlers, and transporters), and employees of waste disposal facilities like landfills or incinerators, including scavengers, are the main groups at risk. Although there are many illnesses that can be passed from person to person, hepatitis B, hepatitis c, and AIDS are the most serious (Ahmed, 2004).

The goal of this study was to evaluate the hospital waste management practices used by Karachi's tertiary hospitals and to learn about the hospital's policies addressing the secure disposal of hospital waste.

Material and Method

A cross-sectional study was carried out in ten tertiary hospitals in Karachi through convenience

sampling. In the study, hospitals with more than 200 beds were included. When visiting the tertiary hospitals, a checklist was used to record whether waste management techniques were present or not. To learn more in-depth information about waste management policy and employee training, the administrators of the institutions were interrogated. Health worker staff were asked a series of questions to extract their knowledge and information about biomedical waste management. To acquire the desired results, data were tabulated and analyzed in terms of percentages using MS Excel version 2010 and inferences were drawn from the results. A variety of graphs, such as bar charts, were also employed to clearly illustrate the situation effectively.

Results

Out of the 220 respondents, 68.18% were male (n=150) and 31.82% were female (n=70). Most respondents indicated that biomedical waste should be disposed of within 24 hours which is 53.6%. Infectious biodegradables were disposed of in yellow bags (54.5%) and Infectious non-biodegradable products were disposed of in red bags (62.7%). Mostly procedure used for biodegradable waste management was biological treatment (45.9%) (Table: 1).

Table: 1. Healthcare staff information about waste disposal

Waste Management	Options	Percentages
Biomedical Waste should not be stored beyond a limited time.	24hours	53.6%
	48hours	13.9%
	Don't know	15.5%
Infectious biodegradable products are disposed of in which colour container.	Yellow	54.5%
	Red	24.1%
	Don't Know	21.4%
Infectious non-biodegradable products are disposed of in which colour container.	Yellow	21.4%
	Red	62.7%
	Don't Know	15.9%
To control the offensive odour waste management should be treated by following procedures.	Recycling	25.5%
	Biological treatment	45.9%
	Buried	28.6%

The respondents showed considerable knowledge about biomedical waste and their needs to dispose

of, which are hazardous to health. 87.7% of respondents indicated that HIV and Hepatitis can

be spread through biomedical waste if not managed properly (Figure: 1).

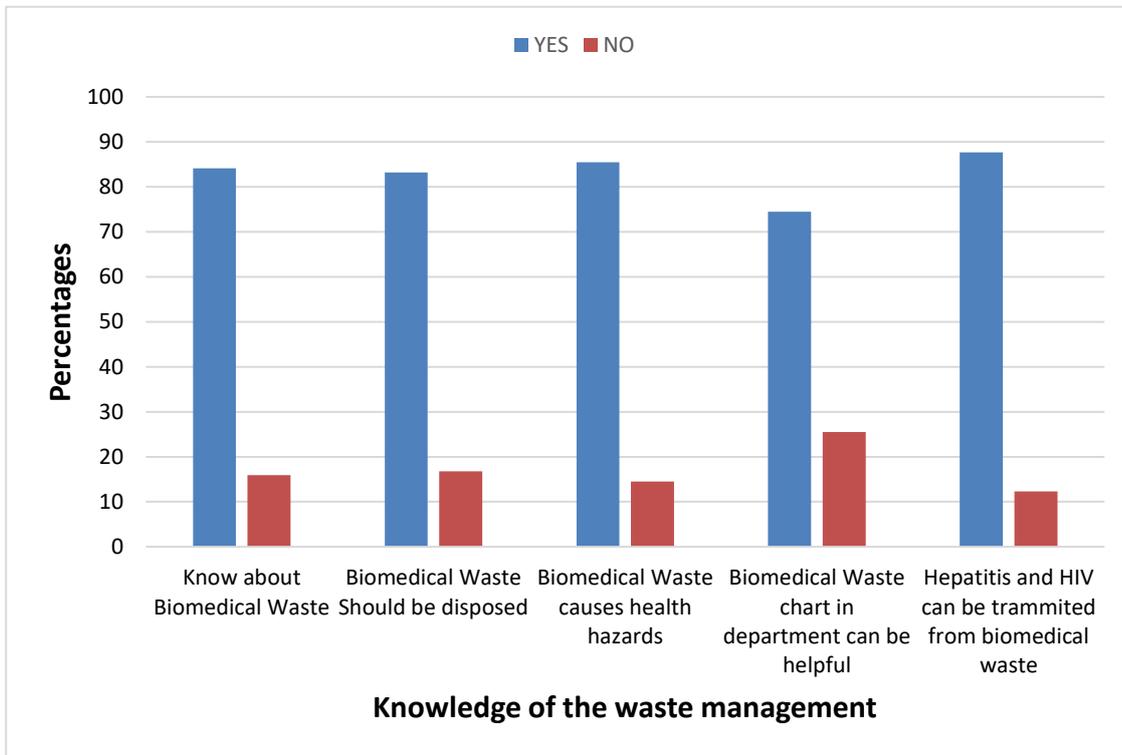


Figure: 1. Respondent knowledge and practices of waste management.

The response rates of 41.4% show that they have training on waste management, meanwhile, 85.9% of respondents mentioned that time-to-time

training should be conducted on advancement in waste management. 92.3% of administrative staff indicated the safe handling of the waste by taking safety measurements (Figure: 2).

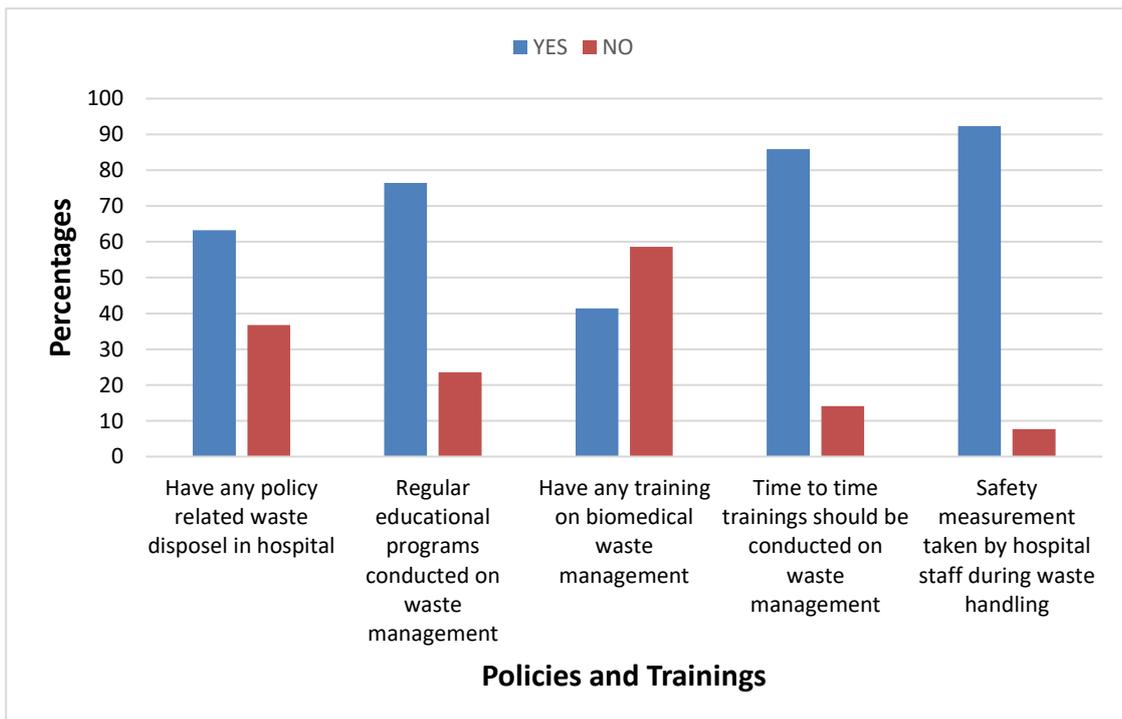


Figure: 2. Waste management policies and Training.**Discussion**

The generator of waste is responsible for ensuring proper disposal. To avoid pollution and illness both inside the hospital and around the perimeter, hospitals have a social responsibility to maintain a clean environment and properly dispose of medical waste (Ahmed, 2004; Hayward, 1992). The hospital waste management plan describes how to interpret the law or follow a set protocol to accomplish key components for setting up an appropriate hospital waste management system. Hospitals were found to have effective waste management teams and well-organized waste management programs in the current investigation.

The rate of dangerous and infectious biomedical waste creation appears to be minimal; its environmental relevance is substantially greater. For biomedical waste source separation, the HCWM is quite satisfactory when using colour coding.

In a previous study, more medical waste management education and training should be promoted in poor countries. The use of innovative technologies in hospital waste management, particularly of hospital biomedical waste, could change how hospitals in developed and developing nations dispose of their waste in the future (Farooqi et al., 2022). There should be more studies done on educating hospital staff about waste management, especially on recycling hospital waste and its safety.

Conclusion

The emphasis should be on the "Management" component of the process rather than the "technological fix," which is an expensive diversion rather than an effective solution if the primary purpose of waste management is to limit disease transmission from waste products. Technology shouldn't be used as a substitute for the system; rather, it should be adapted to the circumstances and integrated into the management system to reach the ultimate objective. Technology selections should consider regional conditions and needs. It is necessary to establish operating

guidelines for approved treatment technologies that are consistent with the global norms followed by industrialized nations.

Reference

1. Ahmed, R. (1997). Hospital waste management in Pakistan: Case study report special waste fractions. *Hospital Waste*.
2. Ahmed, S. (2004). Hospital waste sickening public and environment. *Daily Times*, 7.
3. Ather S. (2004). Hospital waste management. *J Coll Physicians Surg Pak*, 14, 645-6.
4. Farooqi, U. G., Shahbaz, N., Khan, F. A., Aleem, S. A., Ali, M., & Kaleem, U. (2022). Investigating Healthcare Waste Regulation: Employees' Knowledge, Perceptions and Practices with Regard to Recycling. *Annals of the Romanian Society for Cell Biology*, 26(01), 1189-1195.
5. Fluke C. (1998). Handling hazardous waste. *J Health Mater Manage*, 6, 70-3.
6. Hageman, J. P. (2002). Handling, Storage, Treatment, and Disposal of Mixed Wastes at Medical Facilities and Academic Institutions. *Health Physics*, 82, S66-S76.
7. Hashmi, S. K., & Shahab, S. (2003). Hospital and biomedical waste management. *Community medicine and public health*. 4th ed. Karachi: Time Publishers, 426-37.
8. Hayashi, Y., & Shigemitsu, M. (2000). Proper disposal (management) of medical wastes--infection prevention and waste management (Clean Hospital Project) at Hiroshima City, Asa Hospital. *Rinsho byori. The Japanese Journal of Clinical Pathology*, 26-31.
9. Hayward, E. (1992). The ethical responsibility of the hospital to the environment. *Hospital Materiel Management Quarterly*, 14(2), 19-27.
10. Horvath, A. (1991). Management of waste disposal in medical institutions. *Orvosi Hetilap*, 132(17), 919-924.
11. Mahmood, U. R., Saqib, S., Raza, M., & Wsqar, A. (2001). A study of waste generation, collection and disposal in a tertiary hospital.

12. Patil, A. D., & Shekdar, A. V. (2001). Health-care waste management in India. *Journal of environmental management*, 63(2), 211-220.