

Medical Garbage Management in Bangladesh

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Abstract

Medical wastes that are disposed in open places in the city are hazardous and toxic to any living being. There are strong initiatives for present medical waste management system by government or NGOs in Bangladesh. In this field, very few researchers and NGO members are continuing their initiatives. Sometimes, we put household medical wastes into kitchen's bin so housewives and children are more vulnerable because they handle those wastes with their bare hands. At present people are more conscious on their personal and social hygiene.

Introduction

Globally, Medical Waste Management (MWM) is a one of the crucial public health concerns with a huge environmental threat [1,2]. Medical waste including home care materials contains highly toxic metals, toxic chemicals, pathogenic viruses, and bacteria [3,4]. One report showed that 5.2 million people (including 4 million children) die from waste-related diseases in each year (United Nations Conference on Environment and Development [UNCED] in Rio de Janeiro in June 1992). As per World Health Organization, waste generated by health care activities includes a broad range of materials, such as used needles, syringes, diagnostic samples, blood, chemicals, pharmaceuticals, medical devices, and radioactive materials [5]. In Bangladesh, the medical waste generation rate is estimated to be 0.8 to 1.67kg/bed/day, so that annual medical waste generation rate will be 93,075 tons per year [6]. About one fifth of this waste would be

classified as highly hazardous waste by World Health Organization's (WHO) guidelines. Dhaka, the capital city in Bangladesh, about 840 clinics, hospitals, and diagnostic centers produce medical waste [7]. Besides, Bangladesh does not have any particular chemical policy [8].

Most toxic hazards come from clinics and hospitals, whereas few come from domestic and industrial sources. The contribution of infectious hazards, sharps, and pathological waste is 10.5%, 3.5%, and 1.5% respectively [9]. Medical wastes were disposed of in several places: the City corporation's dustbin, a pit near the hospital (dig a hole), an open field/road, or at the canal water/river. Uncontrolled burning of medical waste pollutes the air with acid gases, dioxins, furans, and heavy metals [10]. The World Health Organization [11] has classified medical waste into different types: a) infectious b) sharps c) pathological d) pharmaceuticals e) chemical f) radioactive g) pressurized containers h) heavy metals. Paper and plastic that is not dangerous to human beings [12]. Medical waste such as sharps can endanger human in a non-infectious way. The possible exposure pathways include direct contact, airborne transmission, contaminated water sources and the environment in general. A waste is considered hazardous if it exhibits any of the characteristics such being flammable, reactive, explosive, corrosive, radioactive, infectious, irritating, sensitizing, or bio-accumulative [13]. In the past, medical wastes were often mixed with household wastes and disposed in municipal solid waste landfills. The situation is worse because people at home are not aware of health effects of medical waste. In Bangladesh, most of the caregivers are of older age. They mix the medical waste with home waste, which is very serious to get infections. Bangladesh hospitals generate a total of 5562kg/day of wastes; of which about 77.4% are non-hazardous and about 22.6% are hazardous [14]. The average waste generation rate for the surveyed hospital is 1.9kg/bed/day or 0.5 kg/patient/day. In Bangladesh, proper medical waste management is a new phenomenon and government of Bangladesh is trying to develop a new and modern approach to deal with the medical waste properly. Project in Agriculture, rural industry, science and medicine (PRISM-Bangladesh), a reputed national NGO in Bangladesh, with the financial support from Canadian International Development Agency (CIDA) has recently developed a disposal facility for low cost medical waste treatment and management in Dhaka city. In the United Arab Emirates (UAE), there are over 800 clinics and hospitals that generate hazardous medical wastes [15,16]. The main method of medical waste treatment in most countries of the Middle East is incineration; however, other techniques that produce less pollution are now being introduced [17]. This review article mentions the health risks for those wastes and their management system as a whole.

Government Medical Colleges

People should know the basic personal hygiene. Many bad habits of people ultimately cause many common and finally serious diseases. If possible to ensure their healthy life-style the pressure in those hospitals will be reasonable. Syringes and needles have the highest disease transmission potential amongst all categories of medical waste. Last year the Bangladesh government collaborated with JICA to establish an incinerator far from Dhaka city. The World Health Organization also established two incinerators, which are now under process. Burying waste in a protected pit at least 2m deep and in incineration at temperatures above 800°C [18]. There is a huge gap on medical waste management system between different authorities and stockholders in Bangladesh. It is very important to increase awareness of hospital staff, employee training in hazards materials management, and waste minimization. Many hospitals sold the empty saline bags, bottles, syringes, and other materials for recycling purposes [19]. About 60% cleansers and 57% waste collectors/

local residents also suffered [9]. 38.1% of the concerned staffs have not received any training to handle medical waste. One study shows that among doctors, about 8% practiced properly, 32% improperly and 60% were uncertain of disposal practices. Among nurses it was about 5% the proper way, 35% the improper way, and 60% uncertain [20]. A survey determining prevalence of diseases within 15 days of disposal indicated that 41% of nurses suffered from diseases contracted in a short time (15 days).

Combined Military Hospitals (CMHs)

The environment in this place is excellent as a whole. Their management of that medical garbage is remarkable. They have different bins for storing different types of medical waste. Those wastes are collected by Cantonment Board and finally they incinerate it after isolating plastic or metallic materials.

Private Hospitals and Clinics

These places more or less better than the government organizations, but they have lacking of quality physicians. Moreover, the treatment cost is very high in those areas.

Municipality

Most waste is disposed in municipal bins (59%) without any separation [21]. Municipality of any cities is doing well for collecting these medical wastes. They isolate different items of medical waste. Plastic materials can be used in recycling, metallic waste for selling, and finally cloth like materials is incinerated.

Concluding Remarks

In globe, Bangladesh is very small country and is over populated. Here, there are few medical facilities according to the number of people. In private hospitals, they provide good facilities whereas in other places those are worse. Most of the people of Bangladesh either they are well educated or not they are not enough conscious of contagious and common illness. Many times they go to hospital in simple cases and for this some critically injured or diseased person do not get medical facilities. Some have bad habits and therefore they pollute the environment of the clinics and hospitals. They throw medical disposal anywhere. We should provide real knowledge to each people. In this case, all educational institutions can play an effective role. If all teachers come forward and provide their prolong hands for the people it will be good. Around the hospitals, clinics, pharmaceuticals, residences, road-side dustbin if there are such medical wastes many diseases happen, especially in poor waste collector boy or girl. Domestic animals mainly cat and dog is very common in any dustbin and when those animals will come in home people can be affected easily. Sometimes those diseases can be very serious or fatal for their life. Autoclaves can be introduced into small clinics and laboratories to help with disinfections. Government and private hospitals may establish central incinerators system by their own human resources following many other countries.

Bibliography

1. Jang, Y. C., Lee, C., Yoon, O. S. & Kim, H. (2006). Medical waste management in Korea. *J. Environ. Manage.*, 80(2), 107-115.

Ashraful Kabir (2020). Medical Garbage Management in Bangladesh. *CPQ Medicine*, 8(5), 01-05.

2. Levendis, Y., Atal, A., Carlson, J. & Quintana, M. (2001). PAH and soot emissions from burning components of medical waste: examination/surgical gloves and cotton pads. *Chemosphere*, 42, 775-783.
3. Coronel, B., Dorosellet, P., Behrt, H., Moskovtchenko, J. F. & Freney, J. (2002). In situ decontamination of medical wastes using oxidative agents: a 16-month study in a polyvalent intensive care unit. *J. Host. Infect.*, 50(3), 207-212.
4. Chintis, V., Chintis, S., Vaidya, K., Ravikant, S., Patil, S. & Chintis, D. S. (2004). Bacterial population changes in hospital effluent treatment plant in central India. *Water Research*, 38(2), 441-447.
5. World Health Organization (WHO) (2008). Medical waste. Geneva, Switzerland: Author.
6. Visvanathan, C. (2006). Medical waste management issues in Asia. In: Asia 3rd Conference.
7. Patwary, M. A., O'Hare, W. T., Street, G., Elahi, K. M. & Sarker, M. H. (2009). Quantitative assessment of medical waste generation in the capital city of Bangladesh. *Waste Management*, 29(8), 2392-2397.
8. Bangladesh Environmental Lawyers Association (1996). The Environmental Preservation Act 1995 (Unofficial English version). Dhaka, Bangladesh: Author.
9. Akter, N. (2003). Appropriate management options for developing countries (the case of Bangladesh and Thailand) [doctoral dissertation]. Pathumthani, Thailand: Asian Institute of Technology.
10. World Bank (2000). Health care waste management guidance note. Washington, DC: Urban Development and Health, Nutrition and Population Team, World Bank.
11. WHO (The World Health Organization) (2010). Waste management at medical centers.
12. WasteMed (2010). Types of medical waste.
13. LaGrega, G. M. D., Buckingham, P. L. & Evans, J. C. (2001). Hazardous Waste Management, 2nd Edition, Mc-Graw Hill.
14. Hassan, M. M., Ahmed, S. A., Rahman, K. A. & Biswas, T. K. (2008). Pattern of medical waste management: existing scenario in Dhaka city, Bangladesh. *BMC Public Health*, 8, 36.
15. UAE Yellow Pages, 'Clinics and Hospitals' (2010).
16. Middle East Health Care Intelligence (2010).
17. Shareefdeen, Z. M. (2012). Medical waste management and control. *J. of Environmental Protection*, 3, 1625-1628.

18. Syed, E. H., Mutahara, M. & Rahman, M. (2012). Medical Waste Management (MWM) in Dhaka, Bangladesh: it's a review. *Home Health Care Management and Practice*, 24(3), 140-145.
19. Kazi, N. M. (1998). Waste management in Dhaka. Paper presented at: Dhaka City Management Reform Workshop, organized by BRAC and Bangladesh Center for Advanced Studies. Dhaka, Bangladesh.
20. Akter, N. & Kazi, N. M. (2000). Environmental investigation of medical waste management systemic Bangladesh with special reference to Dhaka city, Mohakhali, Dhaka, Bangladesh: BRAC, Research and Evaluation Division.
21. Akter, N. & Kazi, N. M., Chowdhury, M. R. (1999). Medical waste disposal in Dhaka city: In environmental evaluation (special publication). Dhaka, Bangladesh: International Center for Diarrhoeal Disease Research (ICDDR,B).