

Medical Waste Management System in Bangladesh Hospitals: Practices, Assessment and Recommendation

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Abstract: Medical waste is of great importance due to its infectious and hazardous nature as it causes risks on environment and public health. The present study was conducted to evaluate the medical waste management system, practices and to determine the amount of waste generated at Jashore Medical College Hospital (JMCH) and Rangpur medical College Hospital (RnMCH) in Bangladesh. The observation was conducted on 13 wards of JMCH and 10 wards of RnMCH. The survey-based research was conducted to collect information about the practices related to waste segregation, collection procedures, type of temporary storage containers, on-site transport and primary dumping point, treatment of wastes, off-site transport and final disposal options. In addition, the amounts of essential gases viz., O₂, CO, CO₂ was also measured at different sites of waste disposal point.

The finding of this work shows that the mean amounts of daily wastes per day in 13 wards of JMCH is 284.70 kg of which 260.58 kg general and 24.12 kg medical wastes. The medical waste is only 8.47% of total waste generated. The overall average amount of total waste per day per bed in those 13 wards, during the study period 7.88 kg, the highest in emergency ward and the lowest 1.03 kg in the CCU ward per day per bed/patient. In RnMCH, in comparison to general wastes the medical wastes was less and it was 19.41% of total waste generated. It shows the highest (96.61 kg per day) amount of general waste from delivery ward and the lowest (2.53 kg per day) from Gastrology ward. The overall average amount per day per bed during the study period shows the highest 1.69 kg of wastes in delivery ward and the lowest 0.37 kg in urology ward per day per bed.

The measurement of different gases shows that amounts of different gases doesn't differ significantly. In 50 day's observation at JMCH site the mean amount of oxygen was 21.35±0.16ppm in the air on the disposal site, 20.62±0.22ppm in the air on 100 meter away from disposal site and 20.60±0.33ppm at distant place of disposal site. At the disposal site of RnMCH mean amount of oxygen was 21.37±0.17ppm in the air on the disposal site, 20.53±0.17ppm in the air on 100 meter away from disposal site and 20.71±0.17ppm at distant place. The amount of carbon monoxide is nil in the air in both cases. The mean amount of carbon dioxide is 447.09±14.37ppm in the air on disposal site, 471.28±15.66ppm on 100 meter away from disposal site and 444.15±21.37ppm in the city air in JMCH. The mean amount of carbon dioxide measured from different sites of RnMCH was also more or less same as JMCH; and these are 448.20±15.38 at the disposal site, 470.53±15.21 at 100meter away from disposal site and 443.76±20.30 distant place of waste disposal site.

The survey result shows that segregation of all wastes is not conducted according to consistent rules and standards where, in most cases, medical waste is disposed of with domestic wastes. As medical wastes pose a significant impact on health and environment. This study suggests urgent need for raising awareness and education on medical waste issues.

Key words: Medical waste, management system, hazardous, air gases.

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I. Introduction

Waste is unwanted or unusable materials that produce by various activities. Medical waste is describing as infectious and hazardous particles that produced by hospital, clinics and other healthcare facilities. Sometimes transfer disease, pathogen and exceeding risk to the waste collectors, cleaners, workers of the hospital community, patients and other community when waste was not controlled properly (Baveja, *et al.*, 2000; Silva, 2004). Mismanagement of medical waste, irregular disposal, open dumping of waste and open place dumping of waste extends the risk of public and environmental health.

World Health organization (WHO) has marked healthcare waste as harmful and hazardous waste and potentially dangerous of all waste appearance in communities (Sawalemet *et al.*, 2009). Of the total quantity of waste produced by hospital activities, about 80% general waste that like household waste and other 20% is

infectious, hazardous, toxic or radioactive waste. Medical waste is a serious threat to public health that requires immediate and special attention for safely handling and disposal. Besides, medical waste management (MWM) is such a public health issue due to containing germs and toxic chemicals (Akter and Trankler, 2003) that attracts the government of both industrialized and developing countries. If it is not managed timely and mixed with municipal solid waste, then it converts all into hazardous waste. Thus, it becomes difficult to handle and dispose large volume of medical waste. According to Pasupathi *et al.* (2011) observed approximately 75-90% of medical waste is nonhazardous and as harmless as any other municipal waste but remaining 10-25% is hazardous

Medical waste is also referred to as health care waste, hospital waste or clinical waste (Soncuya *et al.*, 1997; WHO, 1999; WHO, 2005). Akter *et al.*, (1998) classified medical wastes into four different categories based on their sources and potential hazards.

In 2002, World Health Organization (WHO) did a research in twenty-two developing countries that showed the presentences of healthcare facilities that don't followed proper hospital waste disposal procurers range from 16% to 62% (WHO, 2005). In the developing countries medical waste are not judged as critical issue. In many countries household waste is mixed with medical waste that are very hazardous for public and environmental health risk. But in many countries, they do more or less proper methodology for waste collection.

For examples, Indonesian government controlled the auto disabled syringes most of the hospital. Syringes, needles, blades are collected in sharps containers. In India recycling of sharps waste and some other countries, but not found to be realistic.

In Saudi Arabia daily collect about 70 tons of medical waste. UAE generated about 21 tons per day of healthcare waste, other hand, per day, Abu Dhabi generated about 12 tons of medical waste. While Bahrain produces about 7.5 tons of infectious medical waste per day. India produces every day over 500 tons of hazardous waste.

A strategy also developed by WHO for reducing the health and environmental risk and benefits of using needle removing devices. Most of the developing countries waste collection, waste transportation, and disposal of waste remains a serious concern.

In Bangladesh, mainly the municipal authority transports the waste. PRISM (a private organization), Bangladesh also controlled medical waste management system in few cities. Open dumping of waste is common in many countries such like; India and Bangladesh.

The present research was conducted to explore the present practices of medical waste, assessment of waste disposal in two hospitals. And to recommend the effective method of waste management system. In addition, some important healthcare related air gases like O₂, CO and CO₂ amount has also measured at different place of waste disposal sites.

II. Methodology

The objective of the study was to approximate the quantity of medical waste in different wards at Jashore Medical College Hospital (Sadar Hospital) and Rangpur Medical College Hospital. Air gases presence on the disposal sites was also mind to the method of waste management system used for medical waste and suggest for safe handling and management of healthcare waste. To attain this objective, the study was designed to:

Collect data and information on the collection of waste, treatment, handling and disposal of medical wastes at Jashore Medical College Hospital (Sadar Hospital) and Rangpur Medical College Hospital.

Reporting and indicating the mismanagement of waste materials at both sites.

Survey and identify the different types of medical waste generating from the Hospitals.

Investigate what problems the hospital encounters in managing medical waste.

The methodology of this research study comprises actual observation of field and field level data collection through survey with questionnaires (Haque *et al.* 2021), inventory & personal interviews in formal and non-formal ways. Before entering in to the hospitals, the research group was trying to get permission from hospital authority.

The selected wards were visited in scheduled days, the wastes were segregated according their types and weighed. During the observation period in both the hospitals, enough time was allotted to get information from the waste collectors, nurses, cleaners, ward master to developed the report.

In this research, appropriate for the methodology following that used by Oweis *et al.* (2005). For this two-stage strategy was included:

Survey the procedures, rules and regulation from the hospitals glossary that followed by the personal concerning the waste management produced at Jashore Medical College Hospital and Rangpur Medical College Hospital.

In selected wards of the hospitals, the amount of waste generated was segregated, weighed and recorded.

Observation was also conducted on critical manner about the management and practices of medical waste by the waste collectors.

In Jashore Medical College Hospital, the data were collected from 13 different wards (Male model surgery ward, Male paying ward, Male medicine ward, Male surgery ward, Female surgery ward, Female paying ward, Female medicine ward, Labour ward, Child ward, Emergency ward, Intensive care, CCU and O.T.) and in Rangpur Medical College Hospital from 10 different ward (Child, Delivery model unit, Gynae 1 & 3, Gynae 2 & ENT, Male medicine, Female medicine, Gastrology, Urology, Burn and Surgery). The number of beds in different wards, and number of patents present on that day in different wards were also recorded.

Secondary data were also collected from the hospital documents and PRISM Bangladesh office. Some authorities, doctors were also interviewed for collecting information. The questionnaire and data form, slightly modified, was based on the suggest of the WHO for assessment of healthcare waste management in developing countries (Haque *et al.*, 2021, Prusset *al.*, 1999, WHO 1999).

In Jassore Medical College Hospital, the research team started to work from January 2019, conducted some pilot observation, met with different authorities, done interviews. They collected wastes from different wards from March 2019 to August 2019. But in Rangpur Medical College Hospital, the research team started their observation from February 2019, after doing formalities, pilot observation, interviews, they collected data from April 2019 to July 2019.

In addition, amount of three important gases, viz., O₂, CO, CO₂, in the air at different sites of the waste disposal place, was also measured by digital gas meter. The selected sites were disposal site (DS), 100 meter away from disposal site (100DS) and long distant from disposal site (LDS).

Data Collection Tools: The wastes were firstly categorized into general and medical wastes, the solid hospital waste into some basic types such like; pathological waste, sharps waste, chemical waste and others. Two types of sharps waste such as; syringes and needles. Pathological waste can be divided into several types, such as; saline bag, cotton, glass bottles, hand gloves. Data were collected using four instruments (questionnaire, site visiting, electric devices and in-depth interview.

Data Analysis: Collected data were analyzed very carefully. In different days of the study period, the amounts of different types of waste generated at different ward of the said hospitals was measured and noted.

III. Result and Discussion

During this study period, data were collected from both the hospitals for 50 different days. Firstly, they were arranged on different day depending on their categories, mainly general and medical waste. It is very much pleasing to state that Jashore Medical College Hospital use colour coded bins to collect categorized wastes (Plate 1).



Plate 1. Colour coded bins to collect categorized waste.

The weekly average amount per day of 13 different wards of Jashore Medical College Hospital (JMCH) are calculated and presented in Table 1 & Table 2. Table 1 represents the average amount of general wastes per day of 13 different wards and Table 2 represents the average amount of medical wastes per day of those wards from March 2019 to August 2019.

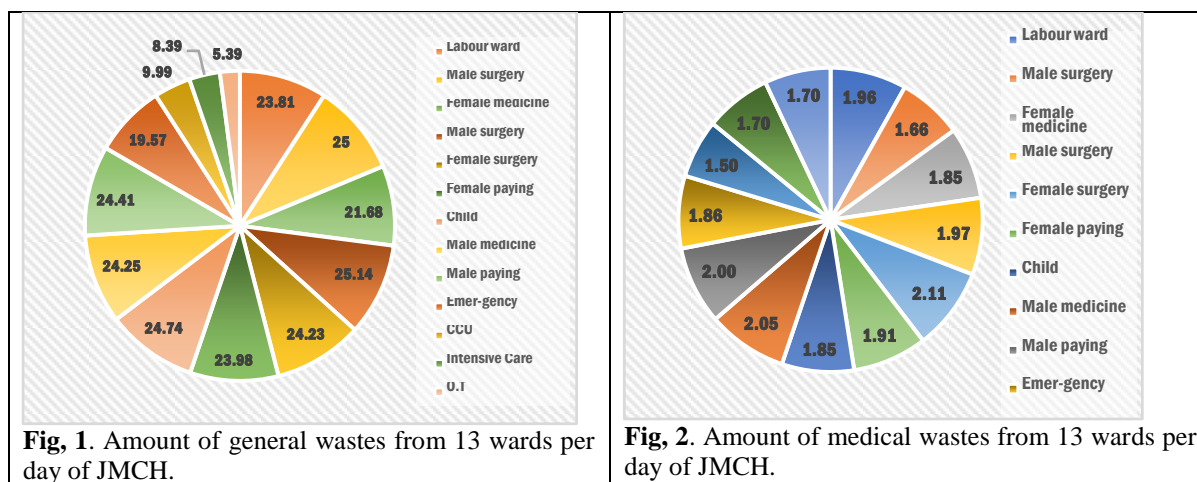
Table 1. General wastes of Jashore Medical College Hospital per day in different weeks March 2019 to August 2019.

Ward	Labour ward	Male surgery	Female medicine	Male surgery	Female surgery	Female paying	Child	Male medicine	Male paying	Emergency	CCU	Intensive Care	O.T
Ward No.	02	03	04	05	06	07	08	09	10	15	17	22	25
March 19	26.02	25.87	23.37	24.88	26.33	23.51	26.82	22.67	25.38	26.68	11.33	12.00	5.21
April 19	22.80	26.50	20.80	24.80	24.90	24.88	25.26	25.80	24.30	13.00	11.20	5.88	5.13
May 19	23.67	25.12	23.00	26.92	22.83	24.92	22.93	25.67	25.67	15.33	10.00	7.42	5.33
June 19	21.51	24.67	20.67	25.56	22.08	23.28	24.22	24.33	24.39	20.78	8.56	8.11	5.47
July 19	22.72	25.04	20.83	23.96	24.63	24.36	25.21	24.83	23.17	19.00	9.46	8.14	5.81
Aug 19	26.16	22.80	21.40	24.70	24.58	22.90	24.00	22.20	23.54	22.60	9.40	8.80	5.38

Table 2. Medical wastes of Jashore Medical College Hospital per day in different weeks March 2019 to August 2019.

Ward	Labour ward	Male surgery	Female medicine	Male surgery	Female surgery	Female paying	Child	Male medicine	Male paying	Emergency	CCU	Intensive Care	O.T
Ward No.	02	03	04	05	06	07	08	09	10	15	17	22	25
March 19	2.45	1.66	1.90	2.08	2.57	2.26	1.89	2.22	2.07	2.29	1.38	1.79	1.70
April 19	1.83	1.72	1.70	1.80	1.79	1.76	1.84	1.79	1.91	1.61	1.47	1.61	1.54
May 19	1.83	1.74	1.80	1.91	1.84	1.79	1.76	1.92	1.92	1.64	1.50	1.61	1.68
June 19	1.88	1.67	1.80	1.96	2.00	1.87	1.85	2.17	1.91	1.71	1.50	1.68	1.75
July 19	1.83	1.63	1.84	2.04	1.97	1.79	1.81	2.19	2.07	1.72	1.75	1.71	1.80
Aug 19	1.95	1.56	2.04	2.02	2.49	1.96	1.92	2.02	2.11	2.16	1.37	1.78	1.75

The overall average or mean amount of general and medical wastes collected from 13 different wards of Jashore Medical College Hospital is shown in Fig. 1 & Fig. 2.



It was observed through an interview with waste collectors, cleaners, workers and disposal staff that, the hospital produced about 400 kg of waste from these wards. The finding of this works shows that the mean amounts of daily wastes per day in 13 wards of JMCH is 284.70 kg of which 260.58 kg general and 24.12 kg medical wastes. The medical waste is only 8.47% of total waste generated.

The monthly average amount of total wastes per day per bed is presented in Table 3. The overall average amount per day per bed during the study period is shown in Fig. 3. It shows the highest 7.88 kg of wastes in emergency ward and the lowest 1.03 kg in the CCU ward per day per bed/patient.

Table 3. Monthly average amount of total wastes per day per bed in different wards of JMCH.

Average amount of waste (G+M) per day per bed in different wards of JMCH.													
Ward	Labour ward	Male surgery	Female medicine	Male surgery	Female surgery	Female paying	Child	Male medicine	Male paying	Emergency	CCU	Intensive Care	O.T.
Ward No.	02	03	04	05	06	07	08	09	10	15	17	22	25
March 19	1.84	1.99	1.52	1.76	1.78	2.07	2.14	1.35	2.05	11.56	1.05	3.96	1.43
April 19	1.44	1.66	1.41	1.56	1.58	2.09	2.09	1.58	2.07	6.25	1.10	2.22	1.33
May 19	1.56	2.28	1.48	1.60	1.60	2.06	1.85	1.59	1.77	6.91	0.99	2.73	1.45
June 19	1.48	2.13	1.40	1.64	1.57	1.98	1.86	1.45	2.02	9.44	0.88	2.99	1.42
July 19	1.52	2.15	1.38	1.58	1.65	1.79	2.00	1.46	1.97	6.22	1.05	2.88	1.64
Aug 19	1.61	2.08	1.40	1.68	1.75	1.88	1.98	1.35	2.08	6.91	1.09	3.40	1.53

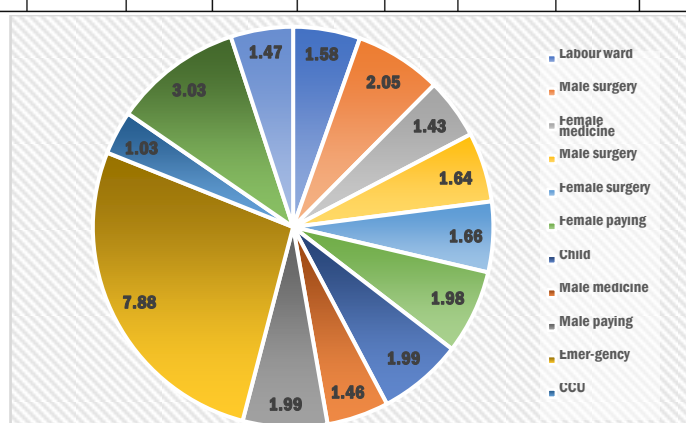


Fig. 3. The overall average amount of wastes per day per bed during the study period in JMCH.

In Rangpur Medical College Hospital (RnMCH), the study was conducted on 10 different wards. Observation was also conducted on 50 different days from April 2019 to July 2019. The monthly average amount general and medical wastes per ward is presented in **Table 4**. In comparison to general wastes the medical wastes was less and it was 19.41% of total waste generated.

Table 4. Monthly average amount of general and medical waste per day in different ward of RnMCH.

Ward	Child	Delivery	Gynae 1, 3	Gyane 2 & ENT	Med. M	Med. F	Gastrology	Urology	Bum	Surgery	
Ward No.	8	11	12	13	29	30	33	34	37	15	
General waste	April 19	20.75	93.75	67.25	45.5	17.75	24.13	12.50	12.75	19.63	40.63
	May 19	25.38	101.0	67.5	45.38	14.94	19.5	10.75	11.56	17.56	42.06
	June 19	25.44	95.44	71.56	44.67	16.00	18.33	10.78	10.67	15.11	40.44
	July 19	20.24	96.24	69.29	45.35	16.94	18.88	10.35	11.12	17.59	19.82
Medical waste	April 19	5.89	15.22	9.78	7.22	4.67	2.44	3.11	4.89	6.11	7.33
	May 19	3.17	12.17	11.58	7.75	4.67	4.17	2.00	2.67	5.42	6.92
	June 19	4.00	18.33	12.44	7.56	3.44	5.00	2.00	3.67	6.89	7.11
	July 19	8.06	16.65	11.71	7.53	3.82	5.35	3.00	2.41	5.41	7.18

The mean amount of waste generation in different wards of RnMCH from April 2019 to July 2019 is shown in **Fig. 4 & Fig. 5**. It shows the highest (96.61 kg per day) amount of general waste from delivery ward and the lowest (2.53 kg per day) from Gastrology ward.

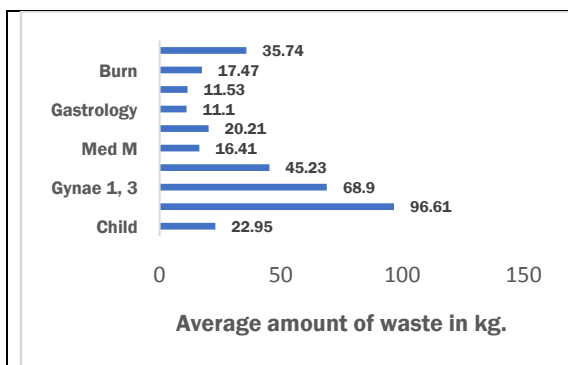


Fig. 4. Amount of general wastes from 10 wards per day of RnMCH

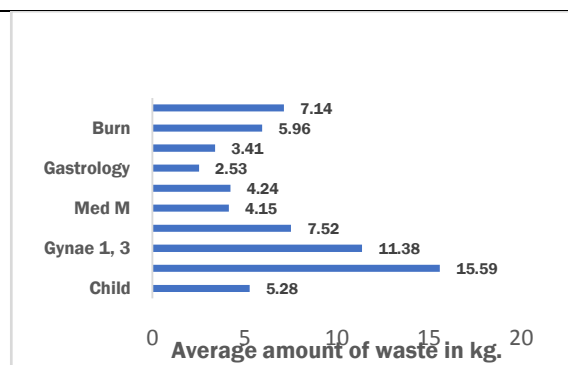


Fig. 5. Amount of medical wastes from 10 wards per day of RnMCH

The monthly average amount of total wastes per day per bed in 10 wards of Rangpur Medical College Hospital is presented in Table 5. The overall average amount per day per bed during April 2019 to July 2019 is shown in Fig. 6. It shows the highest 1.69 kg of wastes in delivery ward and the lowest 0.37 kg in urology ward per day per bed.

Table 5. Monthly average amount of total wastes per day per bed in different wards of RnMCH.

Ward	Amount of waste (G+M) per day per bed in different wards of RnMCH									
	Child	Delivery	Gynae 1, 3	Gyane 2 & ENT	Med M	Med F	Gastrology	Uroloy	Bum	Surgery
Ward No.	8	11	12	13	29	30	33	34	37	15
April--19	0.87	1.65	1.51	1.38	0.76	0.94	0.43	0.37	1.03	1.03
May--19	0.90	1.70	1.51	1.38	0.77	0.92	0.43	0.38	1.03	1.04
June--19	0.91	1.73	1.62	1.36	0.73	0.88	0.43	0.37	1.00	1.01
July--19	0.91	1.69	1.55	1.38	0.75	0.92	0.44	0.35	1.02	0.99
Average	0.90	1.69	1.55	1.38	0.75	0.92	0.43	0.37	1.02	1.02

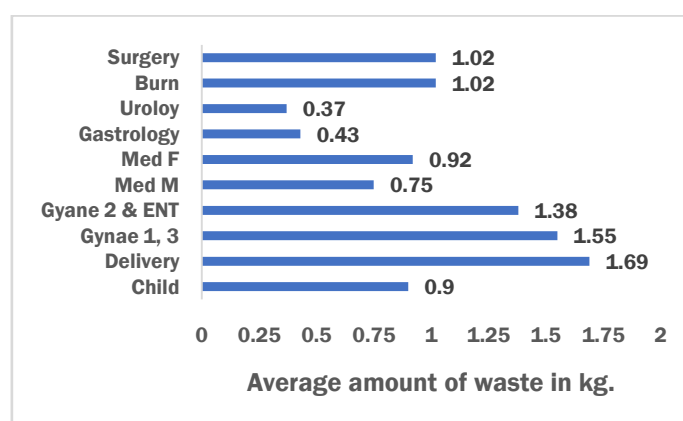


Fig. 6. Mean amount of total wastes per day per bed in different wards of RnMCH.

The Atmosphere has two main components: nitrogen(78%) and oxygen(21%). These make up 99% of the volume of "dry air". Oxygen is the most important and it is removed from atmosphere by when organic matter decays, combines with other substances, or is taken in during breathing. It is added to the atmosphere through photosynthesis by plants.

Carbon Dioxide is the second most important greenhouse gas on Earth. Enters the atmosphere through the decay of vegetation, volcanic eruptions, respiration, burning of fossil fuels, and from deforestation. It is removed from the atmosphere by photosynthesis, and the oceans. Concentration has been increasing due to human activities, mainly burning fossil fuels and deforestation. The amount of carbon dioxide has increased over 42% since 1750, from 280 ppm to 400 ppm. There is concern that this will strengthen the natural greenhouse effect leading to global warming, sea level rise, and other potentially harmful climate changes.

The presence of air gases O₂, CO, CO₂ at different places of waste disposal site of two hospitals was measured and the mean value is presented in **Table 6**. The gases were measured from disposal site (DS), 100 meter away from disposal site (100DS), long distant from disposal site (LDS). The amount of gases was measured with oxygen meter, carbon dioxide meter, and carbon monoxide meter. The observation shows that amounts of different gases doesn't differ significantly. In 50 days, observation at JMCH site the mean amount of oxygen was 21.35±0.16ppm in the air on the disposal site, 20.62±0.22ppm in the air on 100 meter away from disposal site and 20.60±0.33ppm at distant place of disposal site. At the disposal site of RnMCH mean amount of oxygen was 21.37±0.17ppm in the air on the disposal site, 20.53±0.17ppm in the air on 100 meter away from disposal site and 20.71±0.17ppm at distant place. The amount of carbon monoxide is nil in the air in both cases. The mean amount of carbon dioxide is 447.09±14.37ppm in the air on disposal site, 471.28±15.66ppm on 100 meter away from disposal site and 444.15±21.37ppm in the city air in JMCH. The mean amount of carbon dioxide measured from different sites of RnMCH was also more or less same as JMCH; and these are 448.20±15.38 at the disposal site, 470.53±15.21 at 100meter away from disposal site and 443.76±20.30 distant place of waste disposal site.

Table 6. Mean amount of different gases at selected site of JMCH and RnMCH.

Gases	O ₂			CO			CO ₂		
	DS	100DS	LDS	DS	100DS	LDS	DS	100DS	LDS
JMCH	21.35	20.62	20.60	0.00	0.00	0.00	447.0	471.2	444.15±21.3
	±0.16	±0.22	±0.33	±0.00	±0.00	±0.00	9	8	7
							±14.3	±15.6	
RnMCH	20.37±0.1	20.53±0.1	20.71±0.1	0.00	0.00	0.00	7	6	443.76
	7	7	7	±0.00	±0.00	±0.00	448.2	470.5	
							0	3	±20.30

DS =disposal site, 100DS =100 meter away from disposal site and LDS=Long distant from disposal site.

The World Health Organization defines healthcare waste as the total amount of waste from hospital establishment, research facilities, lab and emergency relive donations (WHO, 1999).In effects, different techniques have been used all over the world to estimate amount of healthcare trashes. They include the use of physical finding, questionnaire authority and quantification (Olubukola, 2009; Phengxayet *al.*,2005). Recent research in African country has estimated that about 0.657 to 0.760 kg/bed/day waste generated (Longe and Williams, 2006) and as 1.8 kg/bed /day. Bhuiyan (1999) reported that one of the clearest impacts of rapidly increasing urbanization and economic development can be witnessed in the form of the help of municipals solid waste. In the Asia-Pacific region, waste management has become an important issue, and it is essential to be resolved through an integrated community, private-sector and policy base approach. Bangladesh being a member of Asian Productivity Organization that manage with a survey on waste management practices and to highlights issue, problems and the initiatives undertaken to equipment them.

Medical waste amount for a very little fraction, about one percent of the total amount of general wastes generated in Bangladesh (World Bank, 2002). But when this little amount of infectious waste in not controlled properly, it gets mixed with household general waste, and the whole waste become infectious and that waste become dangerous for environment and health risk. Until recent past, there was no standard system for medical waste management in Bangladesh. Very recently, government of Bangladesh is trying to develop a system to control a standard medical waste management system.

The finding of the research study indicated that the Jashore Medical College Hospital (Sadar Hospital) is standard for colour coding segregation and treatment of system. PRISM Bangladesh controlled the waste management of Jashore Medical College Hospital. The Hospital authority and PRISM Bangladesh tries to follow WHO requirements, there is some turning from the standard guideline. But even now, the staff of Jashore Medical College Hospital have poor awareness about the waste collecting and disposing method. Some of the waste collectors use safety mask but most of them are not wear the masks. It has been noticed that most of the waste collectors do not use hand gloves, boot and safety cloths. Sometimes waste collectors carrying waste in the bucket or tubs. But in Rangpur Medical College Hospital a little guideline is maintained for waste collection. Even colour coded bins are not used to collect wastes.

The standard guideline of the waste collectors from all hospital should carry waste by trolley but often they carry waste in their own hand without hand gloves. Therefore, the standard medical waste management practice is highly needed for in hospitals. Most of the hospital staff are not proper trained, minimum guideline and supervisor. Moreover, the number of waste management staff is inadequate. Researchers, through seminars and workshop, advised the hospital waste collector's staffs about the need of proper training regarding the medical waste management.

For standard segregation and color coding, the hospital authorities should follow the WHO guideline. PRISM Bangladesh controlled the treatment and disposal of medical waste of Jashore Medical College Hospital. They use incineration method for treatment. They incinerate medical waste only one day per week. They will try to follow WHO recommendation properly. Therefore, the Jashore Medical College Hospital should try to improve their waste management system.

IV. Recommendation

There are a number of recommendations for the management of hazardous waste from healthcare or hospital. Medical facilities in different hospitals in Bangladesh that are characterized by the mismanagement refuse waste storage facilities, lack of proper knowledge and training of waste collectors, irregular disposal method and inappropriate protective gear for refuse waste collectors. Now in Bangladesh standard and scientific hospital waste management is a new appearance. Bangladesh government is trying to develop a standard and scientific method to deal with the healthcare waste properly. Canadian International Development Agency provide financial support to PRISM Bangladesh. PRISM Bangladesh have recently provided standard disposal method for less cost hospital waste management in different city in Bangladesh. (PRISM Bangladesh, 2005).

In the light of above observations made a number of recommendations are thereby made with the hope of improving the waste management system of Medical College Hospitals. In order to arrange a standard and systematic medical waste management in hospitals, the following recommendations should be considered:

Separating different categories of waste at the point of generation and keeping them separated from each other. By doing this, appropriate resources recovery and recycling techniques can be applied to each isolate waste. The total quantities of hazardous waste and infectious waste that must be treated according to special requirements are minimized. If not isolated, all medical waste must be treated as potentially infectious.

To avoid the health and environmental risk effect from the infectious waste, it needed to formulate standard management regarding this issue.

The hospital waste management issue is becoming very critical in view of the growing quantities of medical risk waste, fast increasing HIV/AIDS incidence among certain groups. Planning of proper training regarding this issue could minimize the environmental and health risk. Moreover, the training could increase attention to human blood and fluid safety, disposal of syringe, blades, needles and other infectious waste.

Infectious waste should be transported in wheeled leak proof containers. They should be clearly noted and systematically clean.

This hospital should develop the proper management of disposal of medical waste. It's very important to formulate a hospital waste management method separately from the healthcare waste management system. This should be done by including environmental health specialists in management team.

For control infection, environmental health experts must be including in the management team in the hospital, as well as some waste management experts. This will decrease the environmental and human health risk.

The hospital should offer regular proper training and education of all waste cleaners, from doctor to ward boy, laborer, waste collectors. Training is essential to develop awareness of health safety and environmental issue. It is also important for workers, waste collectors and cleaners to know and understand the potential risks associated with medical waste.

And finally, the hospital must set a subcommittee in management team to be responsible for medical waste management system in the hospital. The subcommittee should be in charge of periodic reviewing and resolving medical waste management issues in the hospital. This committee should also monitor the activities of the private waste management company to ensure that they perform their duties expected.

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