

Medical Waste Management Practices in Sylhet City among Healthcare Providers

Md. Monjurul Habib Choudhury¹, Nilufar Jahan², Tafhim Ahmed Rifat³, Progya Laboni Tina⁴,
Md. Samir Uddin*⁵

Abstract

Introduction: In the present world, large amount of wastes are clinical wastes, generated during diagnosis, treatment and research purpose. Most of the clinical wastes are hazardous like infectious, toxic of radioactive compounds. It is challenging to ensure proper waste management for developing countries like Bangladesh. **Materials and Methods:** This cross sectional study was conducted among doctors, nurse, nursing assistants, OT technicians, janitors, helper, sanitary worker and security guards at different private hospitals, clinics and diagnostic centers in Sylhet city. 300 healthcare staffs were purposively interviewed to evaluate the extend practices of biological or hospital waste management from January 2021 to December 2021. The study was conducted after taking informed written consent. **Results:** The outcomes of the present study indicated that maximum of the study participants were knowledgeable. But majority (71%) still do not use PPE (Personal protective equipment), 53% were not immunized against hepatitis B. They also had less practice to keep the hospital wastes in correct color coded container and less practice of washing the waste container properly. **Conclusion:** Most participants valued the significance of waste management practice to prevent health hazards but average practice was observed among them. For proper waste handling and disposal, frequent awareness program should be conducted among the health personnel.

Keywords: Hospital waste, management, biological hazard, medical waste, practice.

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1. Dr. Md Monjurul Habib Choudhury

Assistant Professor
Department of Community Medicine
Parkview Medical College, Sylhet.

2. Dr. Nilufar Jahan

Associate Professor (CC)
Department of Eye
Parkview Medical College, Sylhet.

3. Dr. Tafhim Ahmed Rifat

Assistant Professor (CC)
Department of Community Medicine
Sylhet Women's Medical College, Sylhet.

4. Dr. Progya Laboni Tina

Lecturer
Department of Community Medicine
Parkview Medical College, Sylhet.

*5. Corresponding Author:

Prof. Dr. Md. Samir Uddin

Professor & Head
Department of Anatomy
Parkview Medical College, Sylhet.
Email: dr.samir69@gmail.com
Mobile: 01711934668

Introduction:

The waste material that are generated in the hospitals, clinics, laboratories or research centers are known as medical waste (MW) or biomedical waste (BMW)¹. These types of waste materials not only threaten environment, but also harmful for the patients and health care professionals². Biological wastes are of different categories like, human anatomical waste, animal waste, micro-biological or bacteriological waste, sharp waste, discarded medicine or cytotoxic drugs, incineration and chemical waste³. Cholera, diarrhoea, wound infection, respiratory tract infection, hepatitis, tuberculosis may be associated with improper hospital waste management². Doctors, nurse, laboratory technicians, cleaning stuffs are more vulnerable to the harmful effects of such wastes. Biomedical waste should be separated at the source of generation, keep them in a specific color coded container or bag before their final disposal⁴. Studies found that, better academic knowledge is possessed by doctors, but practical knowledge is more among nurses, janitors and sanitary workers⁵. Proper attention is necessary for collection, transport, storage and proper disposal of biochemical waste is crucial. Several problems are associated with inappropriate waste management. These includes insufficient training, lack of knowledge, careless of maintaining waste management protocol, inadequate funding, lack of man power, unavailable disposal system and many others. Most importantly monitoring system is not available in many health institutes³. Many countries in the world cannot regulate the waste management system properly or they are not very much concerned about the situation. Infect training facilities for health care providers are not available in many medical institutes⁴. To prevent hospital acquired infections and personal protection, clinicians and hospital stuffs need acquaintance of proper awareness and practice on the topic of medical waste². Several studies were conducted to evaluate the knowledge, attitude, practice (KAP) of biological waste management in our country. But no studies found so far to evaluate the practice of hospital waste management among health care workers in the hospitals of Sylhet city. Consequently, this study was

supervised to assess the practice of waste management among health professionals in hospitals of Sylhet city for the better management of the hospital wastes.

Materials and Methods:

The study is a questionnaire-based observational study conducted on the health care workers. Health care professionals, agreeable to take part in the research study including doctors, nurse, nursing assistants, OT technicians, janitors, helper, sanitary worker, even security guards were involved. Total 300 participants of different private hospitals, clinics and diagnostic centers from Sylhet city took part into the study from January 2021 to December 2021. For collection of data, purposive sampling methods were implied. A structured questionnaire was used for the collection of data. Total 23 questions were included into the questionnaire regarding practice and attitude of waste management. Before data collection, the nature, purpose of the study was explained to the participants and asked for their spontaneous collaboration. Participants were allowed to withdraw him or herself anytime from the study. Data collection, processing and analysis was done by Department of Community Medicine, Park view Medical College Hospital, Sylhet. All the data were processed and analyzed in SPSS (Statistical Package for the Social Sciences) version 22. Tables and graphs are used for data presentation.

Results:

Socio-demographic characteristics of the study population was shown on table I. Subjects from 20 to 60 years were involved, where 55% were female. Only 6% doctors participated in the study and 35% were maid. Experience in the medical section was <5 years were found among 56% subjects. Knowledge regarding hospital or biological waste management on study subjects were shown on table II.

Table I: Frequency distribution of socio-demographic characteristics of the participants (N=300)

Characteristics	Sub group	Frequency	Percentage
Age	20- 30 years	51	17
	31- 40 years	126	42
	41- 50 years	87	29
	51- 60 years	36	12
Sex	Male	135	45
	Female	165	55
Occupation	Doctor	18	6
	Nurse	48	16
	Nursing assistant	18	6
	Maid	105	35
	Sanitary worker	15	5
	Security guard	21	7
	Word boy	15	5
	Word master	3	1
	Ambulance driver	6	2
	Helper	24	8
Education	OT technician	27	9
	Post graduate	3	1
	MBBS	15	5
	Graduate	39	13
	HSC	42	14
	SSC	63	21
Working experience	Primary	90	30
	Uneducated	48	16
	< 5 years	168	56
5 -10 years	105	35	
11-20 years	257	9	

Table II: Knowledge on medical waste management (N=300)

	Sub group	Frequency (n)	Percentage (%)
Knowledge about waste management	Poor	198	66
	Average	84	28
	Good	18	6
Attitude about collection of waste	Positive	288	96
	Negative	12	4
Disposal should be a priority	Yes	279	93
	No	21	7
Waste disposal responsibility	Everyone	285	95
	Admin	15	5
Attitude about safe disposal of waste	Positive	252	84
	Negative	48	16
Practices of separate collection	Yes	168	56
	No	132	44
Practices of labeling infectious and non-infectious waste bins	Yes	225	75
	No	75	25
Provision of personal protective items by the hospital	Yes	261	87
	No	39	13
Hand washing practice	Yes	294	98
	No	6	2
Receiving training on waste management	Yes	285	95
	No	15	5
Do you maintain a record for BMW	Yes	240	80
	No	60	20
Have you been immunized against hepatitis B	Yes	141	47
	No	159	53

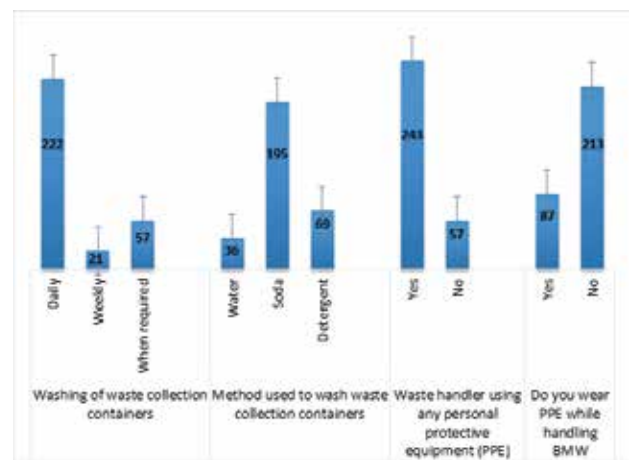


Figure-1: Waste management practice by hospitals

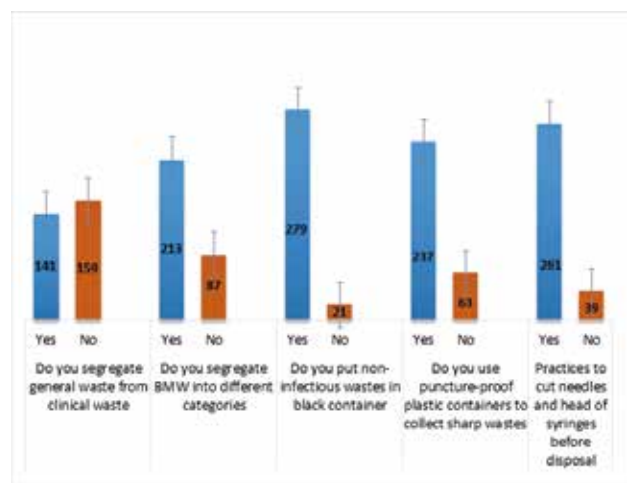


Figure-2: Practice of waste disposal

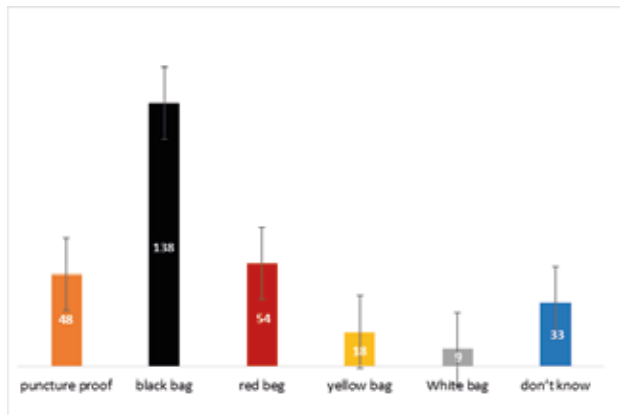


Figure-3: Practices of disposed of items contaminated by blood

Discussion:

There is a tremendous growth of hospitals and clinics in Sylhet city due to increased demand of healthcare facilities. Hospitals and clinics of Sylhet generates 0.934 kg/bed/day of waste every day and the amount is higher than outdoor clinics and diagnostic centers⁶.

Poor practice of waste disposal (66%) was observed in this study. Only 6% revealed that they possessed good knowledge about hospital waste management. Although the knowledge is poor, 96% and 93% of them had positive attitude about proper waste collection and disposal. Majority (93%) of them think that waste disposal is the responsibility of everyone. Abdo 2019 also found positive attitude of waste management among the health personals. They also mentioned some other studies similar with this findings⁷. Doctors had less waste management practice than other medical stuffs in this study. This findings are contrary with Mattoo, Hameed and Butt 2019 (Asif et al)⁵. Another study in Bangalore, India found better waste management among doctors and nurses.⁸ A study in Nigeria 45% doctors and 33% nurses received training on proper waste management (Imam)². Study in Rawalpindi, Pakistan reveled that majority subjects (77%) did not get any training (Asif et al)⁵. In the present study, 95% medical person received training on waste management from their institute. 87% participants confirmed that personal protective items are provided by their working place and 81% uses PPE (Personal protective equipment) during waste handling. A study revealed, workers other than doctors and nurses did not use PPE regularly while handling wastes. It may be due to their poor knowledge regarding hazards of biomedical wastes⁸. As hand washing is the primary concern of everyone, 98% had hand washing practice. In the question of immunization, 53% were not immunized against hepatitis B virus. Basavaraj, Shashibhushan and Sreedevi 2021 found all the doctors and nurses received hepatitis B vaccine in their study, but 29.5% stuffs were not immunized⁸. There are several recommendations and guidelines for proper waste management. Specific color coded baskets or bags should use for waste disposal and the containers must be covered³. Form this survey we

came to know that 47% medical personal do not separate general waste from the clinical waste and 29% do not separate waste into different categories. Karenzi et al. conducted a study in Rwanda and found majority nurse did not segregate waste material into categories⁹. The current study demonstrated that 75% label the infectious and non-infectious waste separately. Human or animal tissue waste should keep in yellow container. Only 6% subjects in this study knew the fact that blood contaminated items should be placed on yellow container. Rest had wrong idea about disposal of the blood stained items. Microbiology or soiled waste should keep in red container, blue or transparent container should use for sharp waste. Discarder medicine, cytotoxic drugs, chemical and incineration waste should be place on black containers³. 93% participants in our study put noninfectious waste in black containers. 87% disposed needle, head of the syringe before disposal and aware of needle stick injury. 74% agreed to wash these waste containing container daily. Waste disposal in color coded container is still properly not known by health personals in our study. A study in India found that their participants were well awarded about the color coded disposal system⁸. 65% from this study think that soda should be used for the washing of the waste container. But the washing or cleaning method is different for different containers. Red, white and blue container should be treated with autoclaving, microwaving or dry heat. Yellow container should be incinerated or deeply buried¹⁰. Fully covered vehicles should use for transports of the wastes. International infectious substance symbol must be present in the bags and containers containing infectious wastes. Incineration of human tissue, autoclave the instruments, waste containing containers or vehicles washing facilitates should be available in all health care institutes. Maintenance of waste record is mandatory. In this study, 80% maintained the record of biological waste management. Doctors had less tendency to maintain record of biomedical waste than nurses and other hospital stuffs were found in another study⁸. Above all, a proper monitoring committee must be present to ensure proper waste management in the concerned institute³. We conducted our survey on the private hospitals and clinics. But could not reach into government hospitals. The result of this survey may be different in government hospitals. Future study is recommended to be conducted at government hospitals.



Figure: International infectious substance symbol



Figure-4: Color coded container for waste disposal

Conclusion:

Average waste management practice was observed in the participants of this study. Periodic training and education program regarding collection, storage, transport and safe disposal of hospital or biological waste is necessary for health care providers and hospital staffs to improve the waste disposal practice. Strict enactment of waste management guideline is also recommended.

Conflict of Interest: None.

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