



## **Solid Waste Management Practice in Mymensingh Municipal Area, Bangladesh**

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### **Abstract**

The study was conducted to investigate the present solid waste management practice in Mymensingh municipal area especially in Ward 04 and 06. Huge solid wastes are generated every day in these wards but the waste management is not properly done because of their irregular waste management activities or unconsciousness. Maximum respondents discharged 1kg solid waste from their households per day and the respondents were 64%. Other 18% household discharged 0.5 kg and another 18% discharged 2 kg solid waste from their house per day. A majority percent of people dumps the produced solid waste in their living surroundings which produce various hazards in human health and environmental problems. This improper waste management can be managed by the regularity of management work, building awareness of the people and improving waste treatment. The municipality and other related NGOs should work together to solve these issues. It was revealed from the study that due to lack of people knowledge about solid waste management, lack of adequate budget for waste management, lack of available transport vehicles for waste management, lack of proper solid waste treatment plant etc. The total solid waste management system required following the recommendation which include proper planning, creating awareness, developing infrastructure, providing logistic support and finally involving NGOs, CBOs, public in this process. A sustainable solid waste management can be established which can lead the studied area to a healthy setting.

**Key Words:** Collection pattern, Management practice, Municipal area, Solid waste

### **Introduction**

Municipal solid waste (MSW) becomes a serious problem in developing country, especially in urban areas where the large and rapid population growth occurs. As a developing country like Bangladesh a huge amount of solid waste generated in municipal areas but most of them are not managed properly. For unplanned solid waste management practice causes various problems in human life. Inherent human desire in resources consumption governs the waste generation capacity. People are growing rapidly in municipal areas and increase solid waste for their daily resource consumption.

MSW quantity and composition therefore depend on population density, source diversity and the income of the people in the locality. With increase in population, economic activity and the income, the (MSW) quantity and composition including the non-biodegradable and hazardous wastes is bound to increase. The evolutionary waste quantity and characteristics accordingly challenge the municipal authorities in management, demanding more and more resources and technological capability. In developing countries where resources and capacity is constrained, the challenges thus become serious. (Penjor, 2007)

MSW can harm humans and environments well-being, but also represents a potential source of materials. Prevention of waste is more desirable than recycling, and recycling more than disposal. While most high

income countries (HIC) have designed highly complex and cost-intensive waste management systems to reach the objectives of SWM, countries with low and middle income (World Bank 1999) and thus lower revenues from taxes and contributions to finance their waste management systems, find it difficult to apply these systems (Brunner and Natw, 2008). The study was conducted to assess the present status of SWM practice in Mymensingh municipal area.

### **Materials and Methods**

#### ***Study area***

The study site was Ward no 04 and 06 under Mymensingh Municipal Area (24°45'00"N 90°25'00"E/ 24.7500°N 90.4167°E), north side of Dhaka (capital of Bangladesh). It's one of the largest municipal area in Bangladesh with an area of 21.73 km<sup>2</sup> that bared a huge Population number 225811 where male 51.91%, female 48.09% and density of population per sq km 10392 (BBS, 2001).

#### ***Study duration***

The study was conducted from 29 January 2011 to 4 February 2011.

#### ***Research design and data collection***

This study mainly focused on the present status of solid waste management practice in Mymensingh Municipal area usually in ward no 04 and 06. Data collection included solid waste collection, transportation, and storage and disposal system in selected area. These

studies identify the lacking of waste management and the authority future management plan. Both qualitative and quantities data were collected through direct field observation of the study area, focus group discussion with the stakeholders, secondary information were also collected for proper documentation, like research articles, books, periodicals. Both primary and secondary sources were used to collect data as fulfillment of the study.

**Primary data collection through Questionnaire survey**

To find out the solid waste management practice in study area, the primary data was collected from various classes of people of the selected area and the respondents were selected randomly. The primary data was collected through questionnaire survey from day labor, rickshaw and van puller, business man, student, job holder and housewife to assess the exact situation of solid waste management with direct field observation. Primary data was also collected by visited the waste collection process and the selected dumping area in Shambhugang. Visiting the selected ward as well as sighting the dustbin of the road site and its situation was also observed. For assessing expert opinion the key informant interview was conducted with the various stakeholders who were expert and associated with solid waste management practice in the selected area. The engineer of municipality, Mymensingh and the planner as well as engineer of Perfect action Bangladesh and Mati Bangladesh in Mymensingh municipal area and given an opinion about present solid waste management in Mymensingh municipal area and their upgrading process for better solid waste management and their future plan for solid waste management .

**Secondary data collection**

Secondary data about population, volume of waste generation, activities exiting on solid waste management in selected study area were collected. It was collected from Mymensingh municipality. From we collect information about CBOs (Community Base Organization), amount of transport responsible for solid waste management, time of collection and disposal of waste. Some power point presentation and photograph were also collected from NGOs named Perfect Action Bangladesh as well as a report on “improving solid waste management in pilot areas in Mymensingh Pourashava” from Mati Bangladesh NGOs.

**Data analysis**

Though the data had been collected from various sources so it transcribed. The data was classified

according to the contents. The organized data was then overviewed to get a general sense of emerging trends, patterns and concepts. The data was divided into broad categories like waste generation, waste collection and transportation, waste decision making process, public involvement in the decision making process and so on. The collected data is analyzed by using computer based statistical software package SPSS 14.00 for Windows 7 and Microsoft office excel 2007.

**Results and Discussion**

**Demographic and socio-economic data on the area level**

People lived in the study area (wards no.04 and ward no. 06) were 9281 and 14096. Where male population was 4703 and female 4578 in ward no. 04 and the people lived under 1903 families. In ward no. 06, male population was 7434 and female 6662 under 283 families (BBS, 2001). Hundred respondents were interviewed in the study area. Both male and female respondents were in interview, where 17% female and 83% male respondent.. But we collected majority of data from male respondent because of their occupation which is related with our study. We had considered mostly a range of 31-40 years interval as respondent because of considering mature one.

**Education level and occupation**

The study areas were well educated where 25% of respondents were HSC pass to under graduate level.

**Table 1.** Education level of the respondent in the study areas

Education level of the respondent	Percent (%)
Uneducated	21.0
Primary school pass	14.0
Under SSC pass	4.0
SSC pass	7.0
HSC pass	21.0
HSC pass to Under graduate	25.0
Graduated	8.0
Total	100.0

The above table showed that, the percentage of uneducated people was about 21% where encompasses mostly the rickshaw puller, day laborer and other percentage shows that people were educated in primary, SSC, HSC, Under graduate and graduate level.

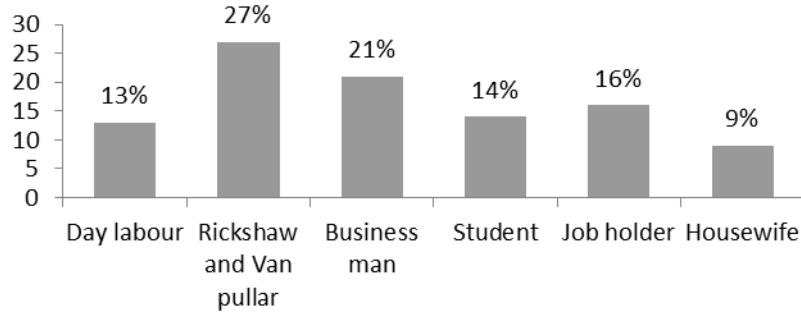


Fig. 1 Occupation of the respondent

**Occupation of the respondent**

We encompassed all classes of respondent for our study those who were directly involved with the solid waste management activities. We selected a considerable number of rickshaw and van puller as well as business man at about 27% and 21%. We collected 9% information from housewife, 14% from student, 16% from job holder and other 13% from day labor respondents.

**People’s idea about solid waste**

Most of the respondents had a common idea about solid waste as well as its management and a very few (2%) were unaware about solid waste which generated from their houses.

**Types and volume of waste generation from household**

Table 2. Volume of solid waste discharge from respondent house per day

Volume of solid waste discharge from respondent house per day	Percent (%)
0.5kg	18.0
1 kg	64.0
2 kg	18.0
Total	100.0

Maximum respondents discharged 1kg solid waste from their households per day and the respondents were 64%. Other 18% household discharged 0.5 kg and another 18% discharged 2 kg solid waste from their house per day.

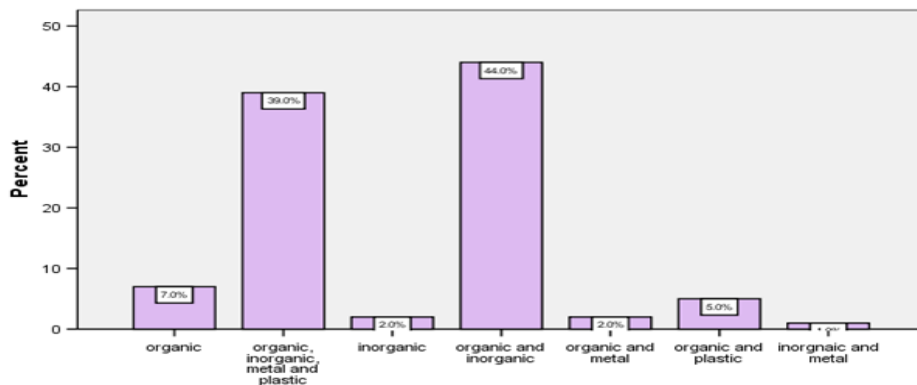


Fig. 2 Types of solid waste discharge from respondent house

Based on the actual measurement it was founded that the organic and inorganic waste were mostly discharge from respondent households and its amount of 44%. The Organic, inorganic and metal solid wastes were discharged by 39% of respondents household. So it’s seen that majority of the respondent discharge organic, inorganic and metal solid waste and trace amount discharge plastic and other solid waste.

**Collection pattern for municipal solid waste**

Collection pattern of solid waste is irregular. Municipality installed at about 21 CBOs (Community Based Organization) for waste collection and transport vehicles for waste transport. Municipality provide 7 garbage truck, 140 hand driving van, 1 beam lifter, 2

pickup car, 18 power trolleys, 1 chain bold dozer for regular collection and transportation.

**Peoples idea about solid waste management**

With best regards to field observation it is found that the uneducated respondents were mostly unaware

about solid waste management. They were likely to throw waste in road side and other places which create various problems in study area. On the other hand, the educated people were aware about solid waste management.

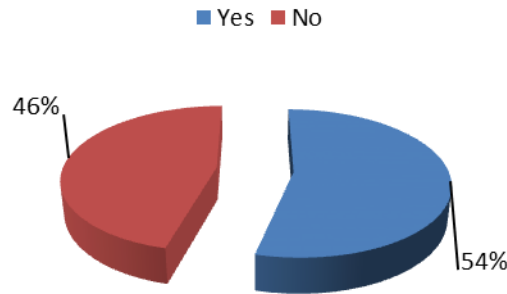
**Table 3.** The relationship between education level and respondent idea about solid waste management

		Respondent idea about solid waste management		Total
		satisfactory	unsatisfactory	
Education level of the respondent	Uneducated	0	21	21
	Primary school pass	0	14	14
	Under SSC pass	1	3	4
	SSC pass	6	1	7
	HSC pass	19	2	21
	HSC pass to under graduate	25	0	25
	graduated	8	0	8
Total		59	41	100

From the above values it is seen that the uneducated people give the unsatisfactory result about solid waste management comparative with the educated people.

They are willing to throw waste beside their living area.

**Reuse of solid waste**



**Fig. 3** Reuse of solid waste by respondent

The wastes can be used in various purpose that can help to make our environment neat and clean. From the above values it is seen that at 54% people reused of their solid waste and 46% people were out of this.

From the 54% of respondent who reuse solid waste were mostly reuse paper, metal and can at about 24% and paper and plastic is about 11%.

**Table 4.** Types of waste reuse by the respondent

The degradable wastes under study area were used for making bio fertilizer UGIIP<sub>2</sub> pilot project.

		Frequency	Percent (%)
Waste type	paper	6	6.0
	paper, plastic, cloth, metal and can	1	1.0
	metal and can	1	1.0
	plastic	4	4.0
	paper, metal and can	24	24.0
	paper and plastic	11	11.0
	paper and cloth	5	5.0
	plastic, metal and can	1	1.0
	cloth, metal and can	1	1.0
	Total	54	54.0
Missing	missing value	46	46.0
Total		100	100.0

**Solid waste management by local peoples**

About 13.59% respondents in the study areas used the community dustbin, 4.41% respondents threw wastes in any convenient space or the streets, 5.51% threw it in the drainage where in irregular cleaning by sweeper. 39.40% threw waste into open area such as fields in their neighborhoods, 13.02% threw in the ponds or river and other 10.39% threw it into holes they dig on their own land.

**Municipal waste cleaner**

On the basis of questionnaire survey among local people, most responds were said that municipal solid wastes are mainly collect by sweeper. About 79% respond are said sweeper collect waste and others don't know.

**Municipal waste management**

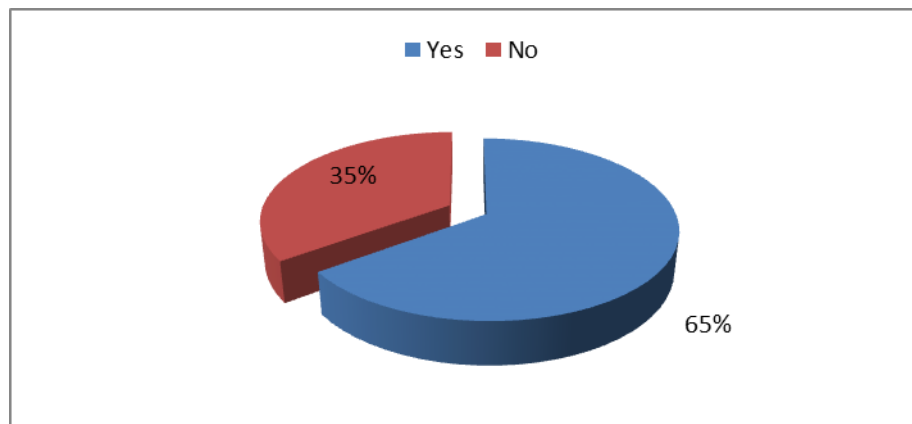
The peoples of ward 04 and 06 are thinking the waste management of Mymensingh municipal area was not well developed.

**Respondent opinion about waste management**

21% respondents said that waste management was properly but majority were not agreed with them. 16% say waste management was not properly and 40% said need to improve and 23% respondents people have no idea.

**Respondent feelings about the street of Mymensingh Municipal Area**

Majority of respondents feel dirtiness in the municipal street and this amount was 65% and 35% respondent feel no dirtiness in the streets.



**Fig. 4** Respondent feelings about dirtiness in the street of Mymensingh Municipal Area

***Requirements for Solid waste management in Mymensingh municipal area***

A verity of respondent in ward 04 and 06 gave different opinion for improving solid waste management in Mymensingh municipal area. Maximum respondents said that more vehicles were required to improve solid waste management and its 18% and 12% respondents said about required adequate budget and 12% said required more sweeper. 13% respondent said enlarge dumping site and 10% said to improve waste treatment plant for proper management and some respondent said to improve sweeper regular activity and improve their behavior. And 23% respondents had no idea about solid waste management improvement in Mymensingh municipal area.

**Conclusion**

The solid waste management in Mymensingh municipal area appeared to be inadequate and it should be improved. The solid waste should be disposed off scientifically through sanitary landfill and recycle. Segregation of recyclable material would also leads to reduce in quantity for final disposal. Higher priority needs to be assigned to the management of municipal solid waste by the local authority and a system approach needs to be adopted for optimizing the entire operation of SWM encompassing segregation at source, timely and proper collection, transportation

routes and types of vehicles and development and proper operation of sanitary landfill site. Mymensingh municipality might need to look for better solution of waste disposal considering unavailability of landfill and disposal site.

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