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Household Waste Management Practices among the People of Shamli District: An Assessment

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Abstract		Original Research Article

Solid waste management has turn into a primary environmental issue in India. Improper disposal and waste management have a grim effect on the surroundings and human health condition (physically & mentally). This study aims to assess solid waste management among households of Shamli district. Simple random and systematic sampling techniques were used to select 344 respondents for the study. Simple frequency and percentage method was used to analyze the data. Results indicates that public waste collection area was far from households as endorsed by the majority (51.5%) of the respondents. The majority (51.5%) of the households spanned a distance of more than 15 minutes arriving to the dumping spot. In conclusion, the study found that community household waste dumping zone was outlying from households. This indicates that the distance from the resident place to the final waste disposal area covered more than 15 minutes to complete the journey. Based on the major findings of the study, researcher proposes that district assembly needs to provide waste collection trash to every household. It may oblige the residents not to dispose of their household waste randomly.

Keywords: Household waste, solid waste management, Shamli district.

1. INTRODUCTION

To Across the world, waste generation is a big challenge especially for developing countries such as India. Population growth and urbanization is caused to increase annual waste generation. Rapid population growth due to various factors such as living standards, education, employment and migration are overflowing the Indian cities [1]. These factors speeded up the generation frequency of municipal solid waste. The total solid waste generated by urban India is projected 284.40 metric tons per day and the actual waste collection is 156.38 TPD as reported by central pollution control board (CPCB,20182019) [2]. Furthermore, the world bank finance and advice committee has reported that annual waste generation has increased by 70% from 2016 levels and is expected to increase by 3.40 billion tons in 2050 [3].

Municipal solid waste (MSW) comprises all those unwanted items from household that are worthless and have no use for it. These wastes are generally called refuse or garbage containing food, paper, plastics, textiles, leather, wood, glass, metals, sanitary waste in septic tanks, and other wastes [6]. Household waste is disposable materials generated by households which is also known also known as domestic Waste or residential waste. This waste could be non-Hazardous and hazardous waste both. Nonhazardous waste includes food scraps, paper, etc. which can be recycled. While hazardous waste includes electric waste, paints, oils, batteries, plastic and household cleaners. It is of paramount importance that hazardous household waste is handled with care when we dispose of them.

Municipal Solid Waste in India has been neglected by most of the urban local bodies (ULBs), consequently its management has become a big challenge for Urban Local Bodies (ULBs) to keep cities unpolluted and hygienic. There might be numerous reasons for abandoning Municipal Solid Waste management such as non-availability of land for disposing waste and technological and financial obstructions of Urban Local Bodies. Which in return affects the collection efficacy, transportation and scientific disposal of waste [4]. There is an urgent need to improve solid waste management by implementing the initiatives taken by Indian Government such as

Clean India Mission (Swachh Bharat Mission) launched by Ministry of Housing and Urban Affairs, Government of India [5]. Hence, necessary measures need to take to address the issues related to solid household waste management in Indian cities.

This study is carried out to evaluate solid waste management among households of Shamli District. It is aimed to identify the capability of the public garbage tins, distance of dumping sites from the household and time required to reach to the disposing site in Shamli district. Moreover, this study undertook opinions of households in regard to make solid waste management better in district.

2. OBJECTIVES OF THE RESEARCH
This study is aimed to achieve following objectives:
1. To evaluate the generation of household waste among the people of Shamli district.
2. To inquire about distance from the place of residence to the dumping site in Shamli District
3. To identify the adequacy of the communal containers
4. To know the perception of people towards household waste disposal system in Shamli district.

3. METHODOLOGY
3.1. Description of the Study Area
This study was conducted in Shamli, a district of Uttar Pradesh. Shamli district is a newly formed district. It was under district Muzaffarnagar and a well-known tehsil of it before gaining the status of a district. It is located on Delhi-Shamli national highway, it is 100 km away from Delhi, 65 km from Saharanpur, 38 km from Muzaffarnagar, and only 38 km away from Panipat (Haryana). The border of this district is connected with district Muzaffarnagar in East and with Harayana in West and with Saharanpur in North and with district Baghpat it is connected in South [7]. According to the Census report of India (2011) population of Shamli was 107,266; out of which male and female are 57,187 and 50,079 respectively. The literacy rate of Shamli city is 80.32 percent of which

male and female literacy was 86.21 and 73.70 percent [8].

3.2 Study Design
The study employed quantitative data using questionnaire. Field survey was conducted to know the status of Household waste management. The questionnaire though was self-constructed, rephrased into the local language for respondents for literacy reasons. The respondents were not able to answer in English. Content and face validity of the questionnaire was checked by experts before administrating the questionnaire. The final questionnaire encompassing of 21 questions are divided in four major areas: Demographic information (6 items); distance from place of residence to dumping site (1 items); time required reaching dumping site (4 items); type of household waste generated (8 items); and health outcomes (2 items).

3.3 Sampling technique and sample size
Simple random sampling was used to obtain the data. The district under study was thus divided into 3 areas as per the researcher's convenience. 114 respondents were then selected from each of the three sub- areas for the study. A total of 344 respondents were selected for the study.

3.4 Data collection
This study commenced on 5th March 2022 and ended on 21st March 2022. Survey method was used to collect the responses and fill out the questionnaire by the respondents.

4. STATISTICAL ANALYSIS AND INTERPRETATION
Data obtained from the questionnaire was analyzed by using simple frequency tabulation and percentage methods. Frequencies were counted for each item and then the percentage was calculated. The tables and graphs are presented here.

In this study, the socio-demographic characteristics of the respondents include gender, age, religion, and educational level, as presented in Table 4.1.

Table 4.1: Socio- demographic characteristics of respondents

Variable	Response	Frequency	Percentage
Gender	Male	318	92.2
	Female	26	7.8%
	Total	344	100%
Age	25 to 35	90	26%
	36 to 45	71	21%
	46 to 55	66	19%
	56 to 65	117	34%
	Total	344	100%
Religion	Hindu	113	32.8
	Muslim	231	67.1

	Total	344	100%
Educational Level	No Formal Education	60	17.45%
	Elementary	72	20.93%
	Secondary	45	13.09%
	Higher Secondary	99	28.78%
	Graduate	39	11.34%
	Post Graduate	29	8.43%
	Total=	344	100%

The gender distribution shows that majority (92.2%) of the respondents were males in the study while (7.8%) were females. The population comprises of 67.1% Muslims and 32.8% Hindus. The age distribution demonstrated that 117 (34%) of the respondents were within the age range of 56–65 years, 66 (19%) in the range of 46-55 years, 71 (21%) in the range of 36-45 years and 90 (26%) are in the range of 25-35 years. The majority (66%) of the respondents were Muslims. Large proportions (70%) of the respondents were also married. Moreover, a substantial percentage (17.45%) of the respondents had no form of education as compared to those who had elementary (20.93%), Secondary (13.09%), Higher Secondary (28.78%), Graduate (11.34%) and Post Graduate (8.43%) education.
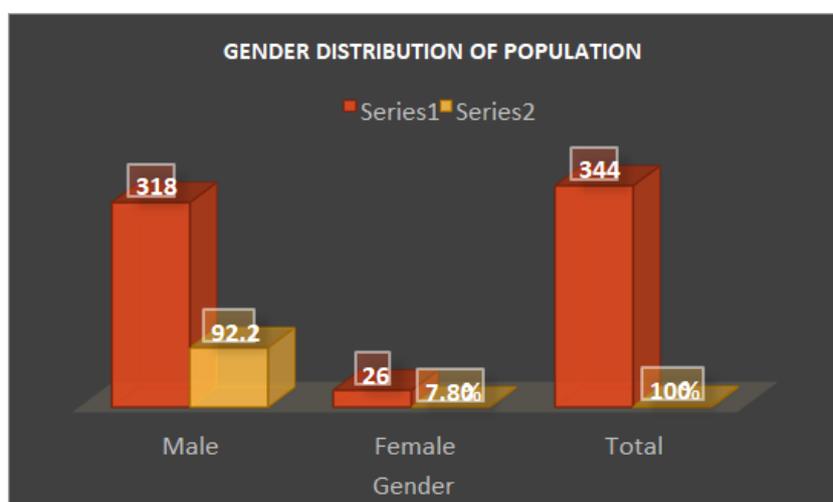

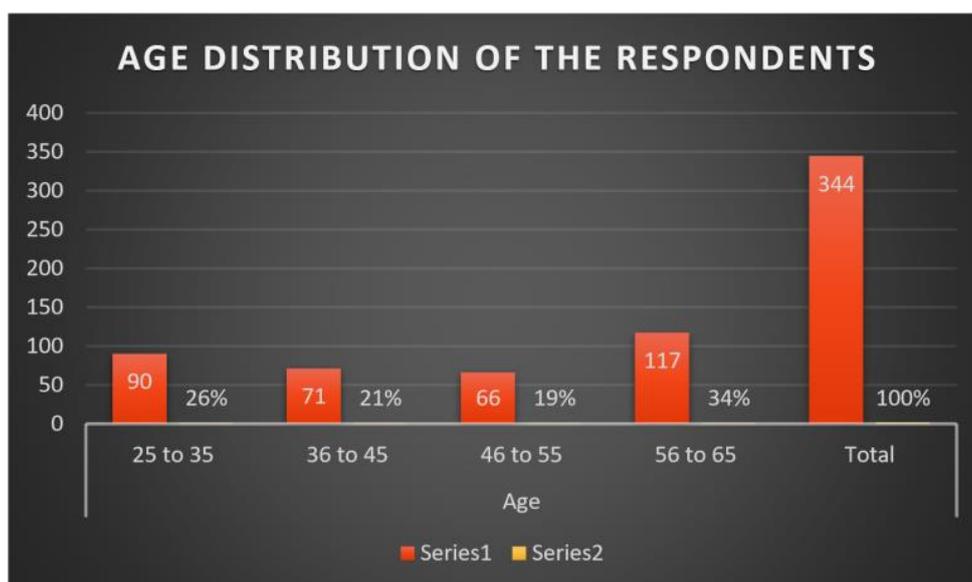**Figure 1: Showing the Male- Female distribution of the total population**

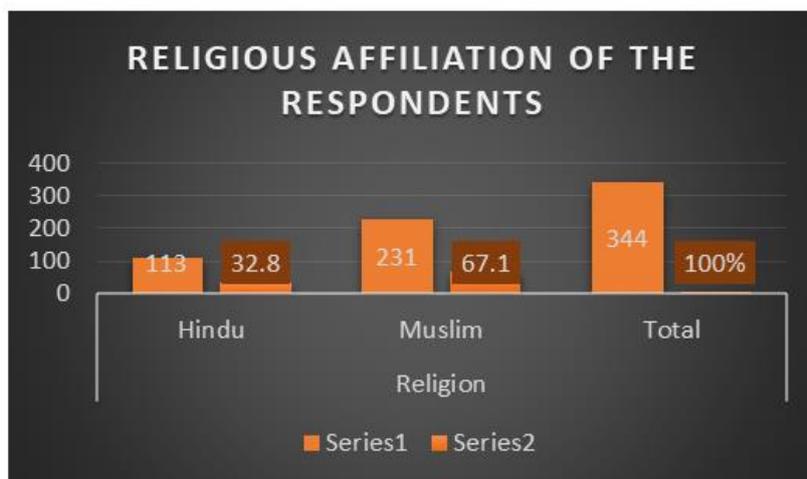**Figure 2: Representing the age distribution of the population**

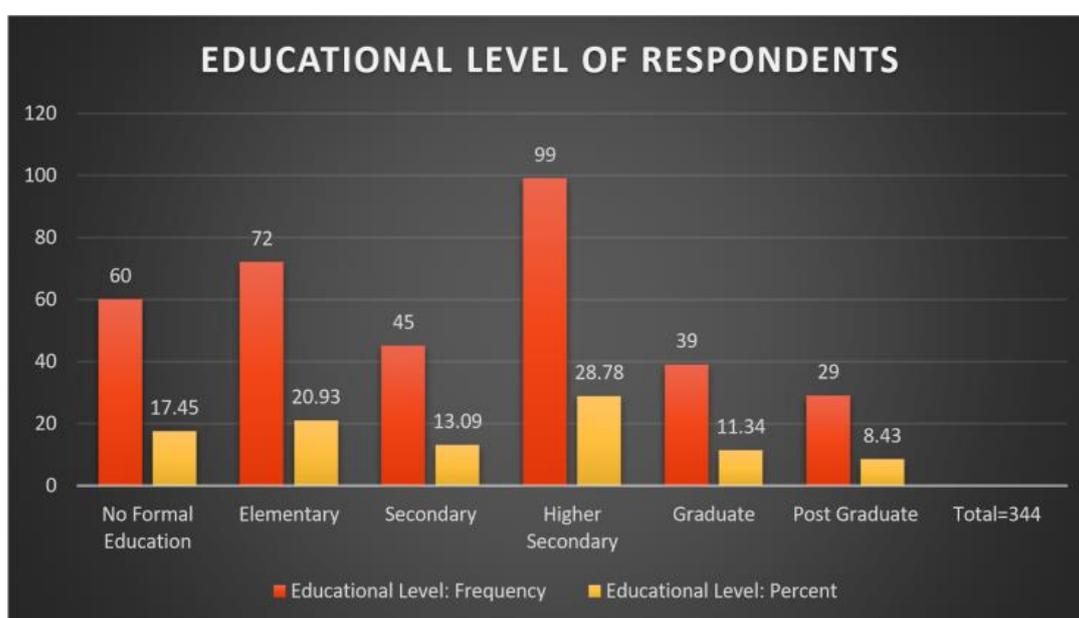**Figure 3: Displaying the religious affiliation of the population**

Figure 4: Showing the educational level of respondents

Table 4.2: Type of Household waste generated and not generated

Type of solid waste	Household Waste Generated		Household Waste not Generated	
	Frequency	Percentage	Frequency	Percentage
Plastic and Rubber	297	86.3%	45	13.08%
Organic or Vegetables	344	100%	0	0%
Glass and Ceramic	114	33.1%	222	64.5%
Paper	255	74.1%	81	23.5%
Textile	201	58.4%	135	39.2%
Wood	78	22.6%	258	75%
Electronic Waste	84	24.4%	252	73.2%
Others	237	68.8%	99	28.7%

The findings in Table 4.2 indicates that 86.3% of the households are generating plastic and rubber while 13.08 are not generating. 100% of the respondents are generating organic and vegetables household waste. Glass and Ceramic waste are generated by 33.1% of the total population as opposed to 64.5%of not generated. 74.1% population were responded positively when asked about the generation of paper waste, while 23.5% were those who were not generating. 58.4% of the population are generating textile waste while 39.32% are not generating. Majority of the population (75%) (73.2%) are not generating wood and electronic household waste as against of (22.6%) (24.4%) are generating the wood waste

respectively. Other household waste like food waste is being generated by majority of the population (68.8%) and 28.7% of the population is not generating the food waste.
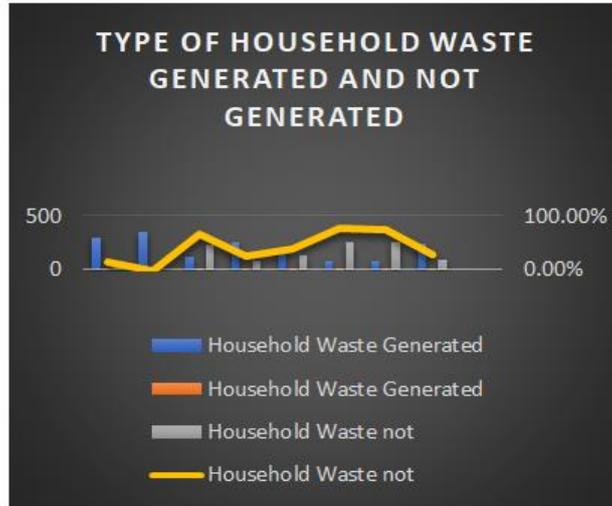

Figure 5: Demonstrating generated and not generated household waste

Table 4.3: Distance from house to dumping site

DISTANCE	FREQUENCY	PERCENTAGE
100-500M	93	27.04%
500-1KM	75	21.9%
1-1.5KM	78	22.7%
1.5-2KM	98	28.5%

It has been found that 27.04% of the respondents are having 100-500 meters of distance, 21.09% are having 500-1km, 22.7% having1-1.5 km and 28.5% having 1.5-2 km of distance to the dumping site from their place of residence.
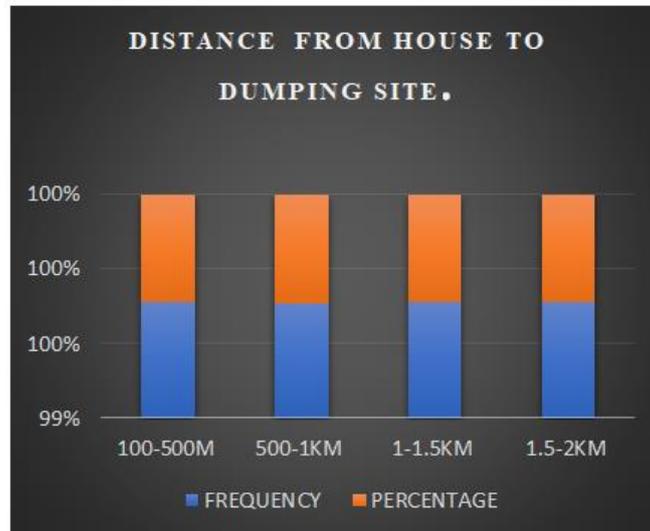

Figure 6: Showing the distance from house to dumping site

Table 4.4: Time required reaching to the dumping site

TIME (Minutes)	FREQUENCY	PERCENTAGE
0-5 min	51	14.8%
6-10 min	33	9.59%
11-15 min	21	6.10%
More than 15 min	239	69.5%

It has been found that 14.8% of the respondents are covering the distance in 0-5 minutes of duration, while 9.59% of respondents are taking 6-10 minutes in reaching to the dumping site. 11-15 minutes are being taken by 6.10% of the population whereas the majority (69.5%) of the population are required to take more than 15 minutes in reaching to the dumping site.
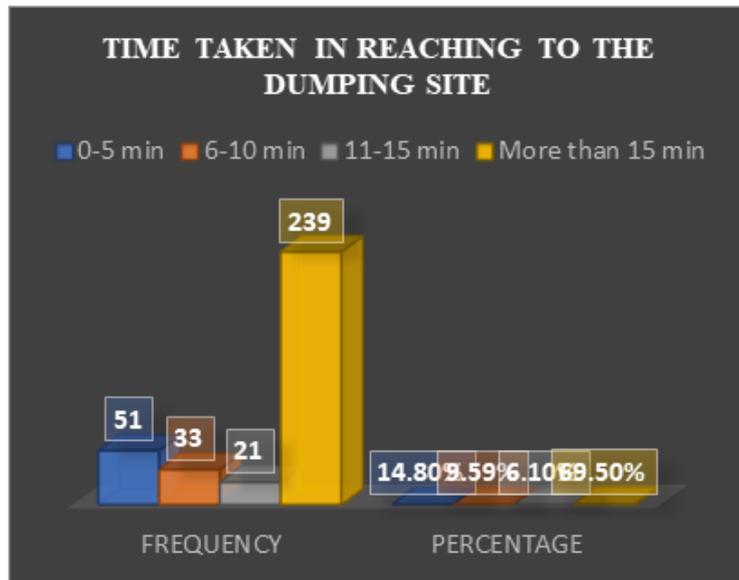

Figure 7: Displaying the time taken in reaching the dumping site

When the respondents were asked about whether they are satisfied with the household waste disposal system. The recorded responses were as:

Table 4.5: Satisfaction Level of towards the disposal use of household waste

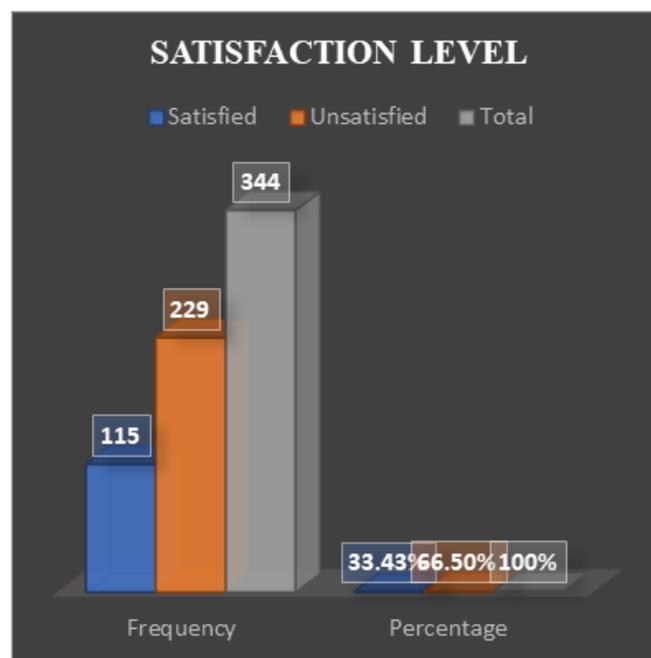| Level of Satisfaction	Frequency	Percentage
Satisfied	115	33.43%
Unsatisfied	229	66.50%
Total	344	100%

Figure 8: Showing the satisfaction level of the respondents towards the disposal use of household waste

5. CONCLUSION

The study was carried out to evaluate solid waste management among households in Shamli District. The key findings include: waste dumping points were far from the household, the number of waste collection points for the public was few, and the distance from the house to the final waste disposal site covered more than 15 minutes journey. Moreover, the majority of the respondents (66.5%) are not satisfied with the management. They further reported that inappropriate waste disposal caused to poor sanitation resulting in the outbreak of diseases such as diarrhea, malaria, dengue, and allied health issues.

Lastly, it is suggested that the provision of garbage containers or bins should be made available at authorized points of collection. This could be the most useful and efficacious mechanism for improving the household waste management challenge as it will improve public health. Besides, that the district needs systematic and logical planning to address the key issues associated with Household waste management.

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