

Solid Waste Management – A Survey Based Analysis of Garhshankar Block, Hoshiarpur District, Punjab

Dr. Manbeer Kaur¹,
Dr. Janki Aggarwal²,
Neeraj Viridi³

Abstract-

Increasing piles of waste in urban areas are a common problem in most developing countries. This paper attempts to present the linkages between poor solid waste management, exposure and associated adverse health outcomes. It is projected that by 2025 there will be about 4.3 billion urban residents who on average will generate 1.42 kg of waste per day (Hoornweg and Bhada-Tata 2012). It is known that solid waste has effects on health and it is one of the major reasons why solid waste management is a top environmental and public health issue. However, while several causal linkages between exposure to waste and health outcomes for particular types of waste are well established, others remain unclear or not prioritized as public health issues especially in the rural and semi-rural areas. The challenge is the difficulty in ruling out other causes since other exposures in the environment potentially cause the same outcomes (Hu SW, Shy CM, 2001 and Vrijheid M, 2000). Additionally, some clinical outcomes such as cancers and other forms of degenerative disorders take long to manifest after exposure and loss to follow up of exposed individuals is a common challenge (Antwi SO, et al 2015 and Rushton L., 2003).

Human activities and their products are now recognized as the main cause of current global environmental and climatic changes that have direct effects on health and wellbeing (Whitmee S, et al., 2015). At a local municipal level, many human activities generate waste and these are major causes of environmental and health challenges including infectious diseases like malaria, cholera, dysentery, typhoid, dengue, respiratory complications and injuries among others (Cabral JP., 2010). The focal objective of this paper is to determine the awareness levels of the population on solid waste generation and its management as also assess their perceptions of its impact on health. How they envision the waste management problematic and how concerned are they about this growing problem. Do they segregate their waste? Do they know the harm generated by plastic bags and what are they doing to mitigate the problem. The survey of Garhshankar block of Hoshiarpur district in Punjab was conducted to record their responses to some of the questions raised. The survey was conducted online and through telephonic interviews. The findings of this survey can prove to be a pre-cursor to the launching of several small programs against this solid waste management issue.

¹ Dr. Manbeer Kaur, Assistant Professor in Zoology, Head of the Department (HOD), Department of Life Science, B.A.M. Khalsa College, Garhshankar, Hoshiarpur, Punjab. Email id-kaur.manbeer73@gmail.com

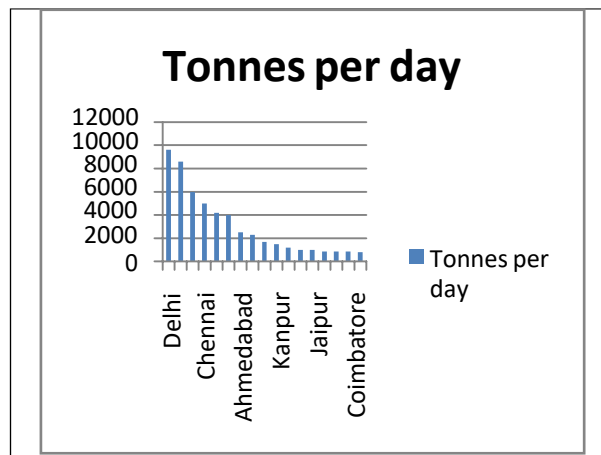
² Dr. Janki Aggarwal, Associate Professor in Commerce, Department of Commerce and Economics, B.A.M. Khalsa College, Garhshankar, Hoshiarpur, Punjab.

³ Neeraj Viridi, Assistant Professor in Chemistry, Department of Chemistry, B.A.M. Khalsa College, Garhshankar, Hoshiarpur, Punjab. Email id: viridi.neeraj123@gmail.com

Introduction

Solid waste is considered the waste produced by mankind through daily activities either intentionally or unintentionally. Solid waste is produced from households, industries, health institution and thermal plants, etc. It can be classified based on origin, nature, composition, degradation, material. Based on origin and composition waste can be classified as agricultural, domestic, municipal, industrial, biomedical waste. Municipal corporations manage solid waste by maintaining cleanliness by street sweeping, open dumping, of the waste that has been collected from houses by municipal committedesignated garbage collectors as is the common practice in India.

Top MSW Generating Cities in India 2016



Source: State Pollution Control Boards, Municipal Corporation and UN Population estimates

With rapid population growth and urbanization, annual waste generation is expected to increase by 70% from 2016 levels to 3.40 billion tonnes in 2050.

The open dumping of solid waste is dangerous to the environment for several reasons and can cause various diseases to humans and other flora and fauna. Solid waste has been categorized into organic and inorganic solid waste based on nature. The inorganic solid waste also tends to include certain other lethal chemicals. Examples of inorganic waste include even diffused batteries and thermometers etc.

While the diffused batteries have lithium metals in them. Thermometers have mercury which is most dangerous if not disposed off properly. The onus of responsibility for proper management of solid waste lies with the municipal corporations. They should make a planned strategy to tackle the solid waste from its point of being generated to point of disposal. Openly dumped waste gets decomposed and liquefies into leachate that is a worst concoction of chemicals that seeps into the ground polluting the soil and the surface as well as ground water resources. This situation gets further aggravated when the decomposing waste tends to emit Green honey Cases like Mattane that can cause numerous maleffects like nausea, headaches and various other symptom among the people living in proximity to such opens garbage dumps and landfills.

Research Objective

The focal point of this research paper is to test the consciousness of the population of Garhshankar block in Hoshiarpur district about their perceptions and practices pertaining towards solid waste management. The reaction towards solid waste and its management varies from person to person or

Solid Waste Management – A Survey Based Analysis of Garhshankar Block, Hoshiarpur
District, Punjab

place to place in the Garhshankar block. Some people were concerned about the problem which solid waste can create when not managed properly while some were ignorant towards this issue and most tended to ignore it. The levels of awareness about the issue of solid waste and its management as well as the problems being experienced due to improper solid waste management.

Methodology

The methodology used for this study on solid waste management was to use the online platform of google forum survey and also conducting door-to-door focused interactions with people of Garhshankar block. The study was collaboratively conducted by the teaching faculty of the Departments of Science that is Zoology and Chemistry as well as Department of Commerce of the B.A.M. Khalsa College Garhshankar. The tools of enquiry for the study included a questionnaire with multiple-choice questions. These questions were mainly close-ended questions related to the capacity of generating solid and its management. The total sample size for survey was 240 respondents. The random sampling method was used.

Socio-demographic Profile

The socio-demographic profile of the participants in the survey.

Table 1: Distribution of the sample on the basis of Gender

Sr. No.	Gender	Frequency	Percentage(%)
1	Females	173	72
2	Males	67	28

The gender distribution analysis of the sample shown in the above Table 1 shows that the participation of the females in the survey on solid waste management in Garhshankar was almost double that of males. The percentage participation of the female was 72% while the male participation was 28%.

The distribution of the surveyed participated on the basis of age is depicted in Table 2.

Table 2: Age distribution

Sr. No.	Age distribution (in years)	Frequency	Percent age(%)
1	16-25	194	80
2	26-50	44	19
3	Above 50	2	1

The distribution of the sample on the basis of age shows that the age category of 16-25 years old are more interested in participating and giving their opinion on the issue of solid waste management. They were 80%. The next category was of the age group of 26-50 years 19%. The least participated in category was of the age group of the above 50 years old.

Table 3: Residence of Survey Participant

Sr. No.	Location	Density	Percentage (%)
1	Rural	129	54
2	Semi-urban	111	46

An analysis on the residential location of the respondents, showed the sample to be almost equally distributed among the respondents belonging to the rural as well as the semi-urban residential areas of the Garhshankar block of Hoshiarpur district. The percentage of rural participants is 54% while that of the semi-urban areas is 46%.

Table 4: Occupational Status of Population Survey

Sr. No.	Occupation	Frequency	Percentage (%)
1	Professors/ Teachers	42	18
2	Students	187	77
5	Farmers	4	2
6	Private Job	7	3

Students were represented the maximum and participation was 77 percent. The next were the Professors and Teachers with participation percentage of 18 percent. The least category was of those who held Private jobs with 3 percent and Farmers just 2%.

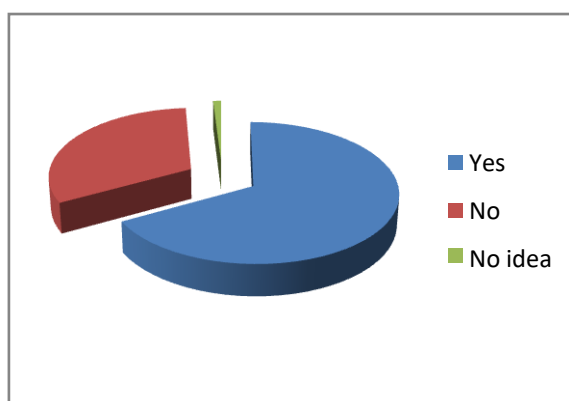


Fig-1: Awareness on growing problems of Garbage disposal

The survey was initiated by asking the respondents whether they were aware of the heaps of garbage lying around and if were facing any garbage problems in their residential area. There were 67 percent who responded in the affirmative. There were 32 percent were not suffering from any garbage problem. Only 1% had no idea about the garbage posing any problem. Thus, a majority reported that they were suffering from the improper disposal of Municipal Solid Waste in Garhshankar block of Hoshiarpur district.

Solid Waste Management – A Survey Based Analysis of Garhshankar Block, Hoshiarpur District, Punjab

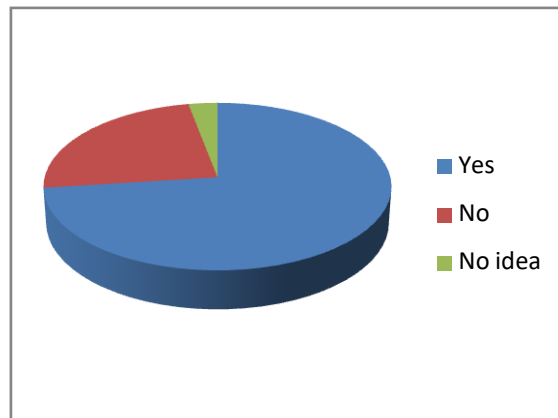


Fig-2: Segregation of Waste Adopted

Segregation of waste is a major issue in Solid Waste Management and when asked about it there were 73 percent responded in the affirmative and said that they segregate their waste. There were 24 percent who belonged to the category that does not segregate their waste. Another 3 percent respondents had no idea about segregation of waste and what it entailed. It makes it clear that majority of the people residing in the Garhshankar block of Hoshiarpur district have clarity about the segregation of the waste before its disposal.

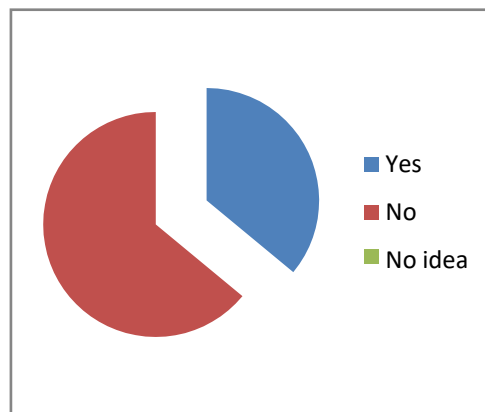


Fig 3: Use of Plastic Bags

Plastic bag usage has been banned in many areas of the country. This query was to ascertain how oriented the residents of Garhshankar block were towards the use of plastic bags. There were 64 percent emphasized that they did not use plastic bags regularly and 36 percent were using the plastic bags on a daily basis. It is encouraging to see that the larger proportion of people are aware of the plastic adverse impact of plastic bags use is harmful for the environment.

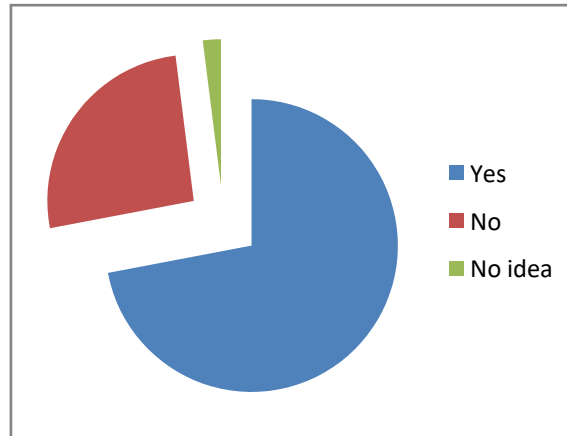


Fig 4: Observation on Garbage Spread Around in your Area?

When asked about their observations on garbage heaps lying around them there were 72 percent of the people who responded that they often see garbage spread around their residential area. A small percentage (26 percent) said that they did not see any garbage around their residential area and only 2 percent did not give any answer. On further discussion with the community members it was observed that there was general awareness in the community about the increasing solid waste and its management. They expressed their helplessness at the wide spread garbage heaps and their impact but were confused about what they could do to mitigate the harmful effects arising from the improper management of solid waste.

Table 5: Community Action of MSW

Sr. No.	Responses	Density	Percentage (%)
1	Yes	219	91
2	No	21	9

The community members were queried on what they wanted to do about management of Solid Waste. A majority (91 percent) were deeply concerned about the issue of Municipal Solid Waste Management. They wanted to know what they could do to help safeguard their own and their families health. Especially after the lockdown due to the Covid 19 pandemic there has been an increasing consciousness about the environment and how best to ensure the health and well being of the flora and fauna in the region

Solid Waste Management – A Survey Based Analysis of Garhshankar Block, Hoshiarpur District, Punjab

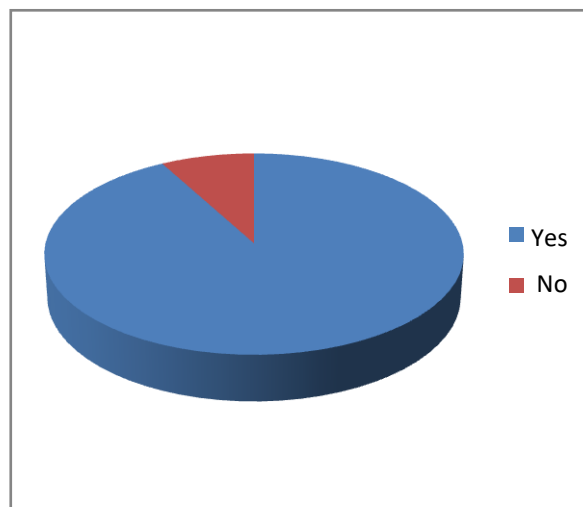


Fig-5: Concern for and Desire to work for Solid Waste Management

When enquired from the respondents, about whether they want to do something about the solid waste management or not. There were 8 percent who doesn't wanted to do anything about the issue. Among there 8 percent were majorly students and private jobs workers who were not at all concurred about the issue.

Qualitative Outputs

Solid waste is a threat to any area. Solid waste not only create smell but also create many health problems. This was the topic for the focus group discussion initiated with a number of community members. These qualitative responses have been presented as narratives.

1. *Problem you are suffering around your residence due to improper solid wastemanagement and Suggestions whatGovernment should do”.*

“Yes, I suggest that there should be proper registration of rag-pickers . The Union Ministry of Housing and Urban Affairs should help in reducing waste at source, recycling and reusing”.

Rampur Bilon, Male, Student

2. *Polluted Environment. Damages health resources Take necessary step to dispose of the waste in probably treated landfills”.*

Achalpur, Female, Student

3. *“Now it's going in right direction. As the people choose educated panchayat members. Yeah their was problem earlier but the work started at the ground level. Now the only suggestion for government is that we have the right members at the ground level make them stronger financially. They will show you the result”.*

Binewal, Male, Architectural Designer

4. *“The garbage is dumped on the side of the road and is not disposed off frequently. Many people in our locality are in the habit of throwing the waste in the plots of land not yet constructed by the people. It would be good if Government launches an awareness Campaign to make the people aware of the Solid Waste Management”.*

Garhshankar, Male, Lecturer

5. *“The sweepers are appointed for collection of waste from residential homes. But the left over’s are dumped on the side of roads and it lies there for number of days leading to foul smell being spread all over the surrounding area. The local residents are likely to suffer from diseases because of this. It would be highly appreciated if the government takes some steps to solve this problem”.*

Garhshankar, Male, Student

6. *No, Because I am a student Excess garbage piling up on the roads that is not picked up by anyone and made it clean. It looks bad . It can cause many diseases like diarrhea, jaundice, cholera etc. Due to gathering of garbage on roads or at any place some of the animals came their those who are left free after their use which cause the risk to safety of people because they start fighting also”.*

“All the garbage should be dumped in an area far from the city. A compost site should be created”. *“Running a scheme is not enough proper implementation should be done”.*

“Plastic bags should be avoided. Solid waste management can be done through recycling as it helps to reduce the volume of waste being disposed being in the landfill divert the waste to recycling companies and should be converted into new material”.

Female, WARD No. 8 Adarsh Nagar, Garhshankar

7. *“Citizens are throwing plastic bottles, polythenes in the empty plots due to which our colony is becoming unclean. This leads to many diseases. Bins should be installed in every locality to tackle this grave problems”.*

Garhshankar , Female, Student

8. *“Colony members are throwing their house waste like plastic bottles in spare areas which are harmful not only for citizens, but, domestic animals can eat such materials that can lead to many diseases. To avoid that many people are setting the garbage on fire which results in air pollution, therefore, some regulations need to be put in place to fix the duties of sweepers to collect the waste from every house”.*

Garhshankar, Female, Student

9. *“Sweepers after collecting garbage from houses are throwing it in spare areas which makes the city polluted, so, government should take some measurable steps to solve this issue. There should*

be three bins to prevent garbage problems, First bin should be of plastic wastes, second of vegetables peels, third for recycling. Hopefully, this can reduce some waste pollution problem”.

Garhshankar, Male, Student

Therefore managing waste properly is essential for building sustainable and livable cities, but it remains a challenge for many developing countries and cities. Effective waste management is expensive, often comprising 20%–50% of municipal budgets. Operating this essential municipal service requires integrated systems that are efficient, sustainable, and socially supported.

Number of dustbins should increase. Plastic bags should be banned. Proper segregation, reuse and recycling of solid waste should be done. The ban on plastic bags should be implemented by educate about solid waste management.

Municipalities in towns and the local panchayats in villages should create awareness camps regarding garbage disposal and pollution control.

Conclusion

- (i) Carefully selected landfills need to be made at places on the outskirts of cities/towns for proper solid waste disposal.
- (ii) People must be made aware to segregate their waste.
- (iii) The well-planned treatment of the solid waste includes minimal waste production, proper handling of the waste and recycling of solid waste.
- (iv) The strategy of Refuse, Reuse and Recycle must become universally applicable.
- (v) The municipal corporation should conduct door to door awareness drive to guide people to decrease the waste generating to as low as possible.
- (vi) Proper handling of the created waste should be done.

References:

1. Antwi SO, et al. Exposure to environmental chemicals and heavy metals, and risk of pancreatic cancer. *Cancer Causes Control*. 2015; 26(11):1583–91.
2. VandanaBharti, JaspalSng, A.P. Singh, A Review on Solid Waste Management Methods and Practices in India, *Trends in Biosciences*, 2017, 4065-4067.
3. Sunil J. Kulkarni, Review on Solid Waste Management with Emphasis on Hazardous Waste, *International Journal of Research and Review*, 2016, 3(12).
4. Abdhahah K. Zibra, TilahunNigatuHaregu, Blessing Mberu, A review and framework for understanding the potential impact of poor solid waste management on health in developing countries, *Archives of Public Health*, 2016. DOI 10.1186/s13690-016-0166-4
5. Cabral JP. Water microbiology. Bacterial pathogens and water. *Int J Environ Res Public Health*. 2010;7(10):3657–703.
6. LinaRahayuSuardi, BudhiGunawan, MahfudArifin, Johan Iskandar, Review of Solid Waste Management in Waste Bank Activity Problems, *Internatonal Journal of Environment, Agriculture and Biotechnology*, 2018, 3, 1518-1526.
7. Giovanni Vinti, Valerie Bauza, Thomas Clasen, Kate Medlicott, Terry Tudor, Christian Zurbrugg, MentoreVaccari, Municipal Solid Waste Management and Adverse Health Outcomes: A Systematic Review, *International Journal of Environment Research and Public Health*, 2021, 18, 4331.

8. Hoornweg D, Bhada-Tata P. (2012) What a Waste: A Global Review of Solid Waste Management. In: Urban development series, knowledge papers. Washington: World Bank; 2012.
9. Hu SW, Shy CM. Health effects of waste incineration: a review of epidemiologic studies. *J Air Waste Manag Assoc.* 2001;51(7):1100–9.
10. Pratap Kumar Swain, TrinathBiswal, R.B.Panda, A Short Review on Solid Waste Generations, Recycling and Management in the Present Scenario of India, *Journal of Industrial Pollution Control*, 2018, 34.
11. Bupe Mwanza, Anthony Phiri, Design of a waste management model using integrated solid waste management, *International Journal of Water Resources and Environmental Engineering*, 2013, 5, 110-118.
12. Rajkumar Joshi, Sirajuddin Ahmed, Status and challenges of municipal solid waste management in India: A review, *Cogent Environmental Science*, 2016.
13. Rushton L. Health hazards and waste management. *Br Med Bull.* 2003;68:183–97.
14. Vrijheid M. Health effects of residence near hazardous waste landfill sites: a review of epidemiologic literature. *Environ Health Perspect.* 2000;108 Suppl 1:101–12.
15. Whitmee S, et al. Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation-Lancet Commission on planetary health. *Lancet.* 2015;386:1973–2028.