A STUDY ON COMMUNITY AWARENESS AND PARTICIPATION IN SOLID WASTE MANAGEMENT IN GURUGRAM

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ABSTRACT

The garbage collection, transportation, and disposal systems in Gurugram are disorganized. The solid waste generated by the rapidly expanding metropolitan population exceeds the capacity of urban local bodies (ULBs). The environment and public health are at risk due to inadequate waste management. The current investigation investigates Gurugram's solid refuse management and proposes potential solutions.

Keywords- Solid waste management, Environmental sustainability

1. INTRODUCTION

Gurgaon is the metropolis that is expanding at the quickest rate in India. The city's citizenry are facing a health and sanitary hazard as a result of the rapid development and population growth. The city of Gurgaon generates biomedical waste and e-waste as a result of its expanding hospital sector and its substantial corporate sector. Industrial waste (such as sewage) is also produced in significant quantities by expanding industries. In 2011, the city had 1,514,085 residents and an urban area spanning 167 km2. According to the MCG, it produces 449 metric tonnes of MSW on a daily basis. MCG is accountable for the planning and administration of waste in Gurgaon. Only municipal garbage (primarily from the former Gurgaon) is the responsibility of MCG. Waste is managed in HUDA sectors by private contractors, RWAs, and HUDA staff. Generators' refuse is collected, transported, processed, and disposed of by MCG. It accumulates refuse from door to door. MCG has optimized the management of municipal waste.

Municipal Solid Waste Solid waste is comprised of solid or semi-solid domestic waste, sanitary waste, commercial waste, institutional waste, catering and market waste, and other non-residential wastes. It also includes street sweepings, silt that has been removed or collected from surface drains, horticulture waste, agriculture and dairy waste, treated bio-medical waste (excluding industrial waste), bio-medical waste and e-waste, battery waste, and radioactive waste that has been produced in the affected area (Gazette Notification, 2016).

Common objects such as product packaging, grass clippings, furniture, garments, beverages, food, refuse, newspapers, appliances, paint, and batteries are included in municipal solid garbage (Sharma, 2002). (Cointreau, 1982).

Definition of Solid Waste

According to the Indian Municipal Solid Wastes (Management and Handling) Rules, 2000, "Municipal Solid Waste" is defined as "commercial and residential wastes generated in municipal or notified areas in solid or semi-solid form, excluding industrial hazardous wastes but including treated bio-medical wastes." This definition applies to wastes that are generated in municipal or semi-solid form.

2. REVIEW OF LITERATURE

Dimpal (2012) examines urbanisation and solid waste management in India. His report describes urbanisation. High population growth, dwindling possibilities in rural areas, and a move from stagnant, low-paying agriculture to urban jobs contribute to urbanisation. Unexpected immigration has led to the expansion of slums, squatters, and informal housing in developing countries cities. Unscientific garbage handling creates health hazards and urban environment damage. Urbanization, changing lifestyles, and increased consumerism will make solid waste management in India more difficult. Financial constraints, institutional deficiencies, poor technological choices, and public apathy towards MSW have worsened the situation. Her report assesses India's current solid waste procedures and concerns. It also provides ways to deal with garbage in a healthy and environmentally responsible way, turning it into a resource.

Joseph, Rajendiran, Renthilnathanand Rakesh (2012) analysed trash creation, collection, disposal, and the legal environment to highlight sustainable solid waste management in Indian cities. The study focuses on increasing local capability with the help of educational groups. They've centralised the implementation of an integrated approach supported by political resolve to remedy the problem, which helps change citizens' perspectives and develop community participation for sustainable trash management. Saikia and Nath (2015) highlight that Tezpur's waste management system is very ancient and needs upgrading. Lack of collaboration between authorities hinders efficiency improvement. Encourage community participation and use technology. Authorities must require recycling and reuse.

Iyer emphasised sanitation (2017). Swacch Bharat Mission contributed to this. He said SBM is a complicated behavioural change movement. Plans, applications, and cleanliness efforts were organised across. Mass media awareness is crucial, but grassroots motivators employing interpersonal communication with the target audience are the key to change. SBM was gathering pace, but the centre and state governments knew it was hard to maintain. The author said everyone should help with the mission.

Geographical Area of the Study

At 28.3606 degrees North and 76.8721 degrees East, Gurugram can be found in the state of Haryana. around thirty kilometers to the south of New Delhi, the capital of India. The neighborhood is included inside the National Capital Region and is considered to be one of the satellite cities of Delhi. Haryana's economic center is located in Gurugram. Located in the south-eastern part of the state, the district has a northern boundary with Delhi. The cities of Jhajjar, Rewari, Mewat, Palwal, and Faridabad are all located along its eastern coastline. Gurugram is home to a number of hill ranges, including the Aravali and Mangar Bani. There are 22 districts in Haryana, and Gurugram is one of them. It has a total area of 1257 km2 (976 km2 rural and 281 km2 urban). Pataudi, Badshahpur, Gurugram (West), and Gurugram (South) are all subdistricts in the city of Gurugram. Gurugram, Sohna, Pataudi, Farrukh Nagar, and Manesar are further subdivided into four sub-tehsils and five revenue tehsils. Other sub-tehsils are also included. Pataudi, Gurugram, Sohna, and Farrukhnagar are all examples of rural development blocks at the moment. The tehsil of Gurugram encompasses 333 square kilometers, of which 131.8 square kilometers are rural and 201.3 square kilometers are urban. It is 250 square kilometers in size. Gurugram city, which is located in Gurugram tehsil, Gurugram district, was the primary focus of this research.

The management of solid waste in MCG areas is divided into four zones: Zone I, Zone II, Zone III, and Zone IV. Old Railway Road (Zone I) and the right (Zone II) are both accessible via the Khekri Dhaula Toll. One Sanitary Inspector, one Senior Sanitation Inspector, and one Sanitary Inspector are responsible for overseeing Zones I and II, which include 122 colonies. There is one contractor that is responsible for door-to-door collection, but there are other contractors who sweep the streets. There are certain areas in which MCG is active. Location: Zone III: Not a contractor who goes door-to-door. Roads are swept by three different businesses. An additional two sanitary inspectors and one Senior Sanitary Inspector are working with the SDO. In Zone IV, there is no private contractor that collects door-to-door payments. There are two firms that handle street sweeping. To assist the SDO, there are two sanitary inspectors.

Aim of the Study

The purpose of this research is to conduct "An Awareness Study of Solid Waste Management in Gurugram District," which is the title of the study. The following are the goals of the study:

1. To Conduct Research on the Social Aspects of the Management of Solid Waste in the Municipal Corporation of Gurugram
2. Investigate the current procedures for the management of solid waste in areas chosen from Zones I and II in the city of Gurugram.
3. To identify the most significant issues with the methods used for the management of solid waste in Zones I and II of the city of Gurugram.
4. To identify the issues that stakeholders are facing in relation to the methods that are being used for the management of solid waste in certain Zones I and II of the city of Gurugram.
5. To investigate the connection between people's awareness and their actual behaviours about the management of solid waste in the community.
6. To make suggestions for workable solutions that will result in the successful application of solid waste management procedures.

Hypothesis

The participatory waste management model is not holistically implemented in Zone I and Zone II of Gurugram district due to the lack of systematic integration of stakeholders in the solid waste management system.

There is a significant relation with respect to awareness and practise on solid waste management among the community people in Zone I and Zone II of Gurugram district.

3. METHODOLOGY OF THE RESEARCH

The research has utilized a descriptive design in order to capture the existing state of events in the subject of study at the moment in time when the inquiry is taking place. In order to provide a concise summary of the state of affairs that are the primary focus of the inquiry, the researcher has purposely relied on a positivist world view. As a consequence,

the approach is mostly quantitative. The degree of knowledge and perception that persons have about solid waste, as well as their involvement in waste management and the issues that are related with these topics, are all subjects of an investigation that is being carried out. In order to study the role that each household respondent plays in the effective management of the solid waste that is created, the objective of this research is to offer a full explanation of the numerous components that are involved in the process. Due to the architecture of the system, the replies from households are assembled into a more cohesive whole. This is only one of the many reasons why the system is so advantageous. Consequently, this would be of assistance in interpreting the subject matter from a variety of perspectives in a deductive fashion, as well as in producing a complete solution to the same problem in an inductive method. The study also includes a qualitative component, which is included within the framework of a descriptive design methodology. In order to do this, qualitative data is gathered from one of the families that took part in the research and then presented in a narrative fashion. This is done in order to validate the results as a whole.

Population and Sampling Procedure of the Study

The current research was carried out in Gurugram, which is located in the state of Haryana, in order to gain an understanding of the solid waste management techniques that are in place in the city of Gurugram, as well as people's engagement in the management of solid waste. Only two of the four Zones were included in the present study, Zones I and II (225 houses each), for a total of 450 families that served as respondents for the purpose of gaining an understanding of their perspectives about the management of solid waste. The topic is examined from a variety of perspectives throughout the course of the study. The amount of solid trash that is produced by households in the area will serve as the starting point for the investigation. When looking into the issue of waste generation, the focus of the study is on the type of garbage produced, the amount of waste produced, and the factors that contribute to the production of waste in excessive quantities. The 'management' component is another main point of the research that has been done. The terms "collection," "segregation," and "disposal and recycling" are going to be the primary focal points of the inquiry into waste management. Given that the purpose of the study is to determine the role that home respondents play in the efficient management of solid waste.

Tools of Data Collection

Socio-demographic data sheet

Interview schedules on solid waste and waste management that were developed for the houses that responded to the survey.

The socio-demographic data was prepared in order to offer questions to the respondents, which included information regarding their age, education, sex, religion, dwelling type, and other characteristics relating to the topic. Details such as socio-economic situations, the type of profession, leisure features, and sources of revenue for the livelihood have also been included as part of the study and obtained using the socio-demographic schedule. This information was gathered as part of the research process. In addition, a detailed interview schedule was established with the purpose of eliciting the respondents' perspectives on the generation, segregation, disposal, recycling, and reuse of solid waste. In addition to determining the responses' perceptions, the respondents' levels of knowledge on the management of solid waste were also evaluated. The use of the schedules has allowed for the identification of the respondents' perceptions and levels of knowledge in relation to the management of solid waste.

4. METHOD OF DATA COLLECTION

Face-to-face interviews with the households that responded to the survey were used to acquire the primary data. The primary data was gathered over the course of a period of six months, beginning in June 2020 and ending in November 2020. The duration of each interview was twenty-five minutes. The secondary data that was necessary for the study was gathered from a variety of sources, including journals, reports, periodicals, books, seminar sessions, government publications, websites, policy and programme notes, and other documents connected to waste management.

Data analysis

In order to conduct an analysis, the main data that was gathered from the field was reviewed, revised, categorised, and coded. The initial investigation of the data consisted of a descriptive statistical analysis of the primary factors that were being investigated. Tables and figures are used to present the results of this process, which include frequency distributions, percentage breakdowns, means, and standard deviations. Inferential statistical methods are utilised as well, and the findings are summarised in tables for your convenience. Statistical Package for Social Science, Version 25 was used to perform an analysis on each and every piece of primary quantitative data.

Limitations of the study

1. The scope of the study is limited to just two areas in Gurugram: Zones I and II.

2. The only people who have been taken into consideration are stake holders from Zones I and II in Gurugram.

3. The production of garbage by industries and other large-scale commercial parties was not taken into account at any point in the analysis.

Problems encountered in solid waste management service in Zone I and Zone II

1. Insufficient service coverage (some people not given service)
2. An unacceptable level of service (not frequent enough, spill, etc.)
3. The inability to make administrative and financial decisions due to a lack of power
4. An insufficiency of available financial resources
5. A lack of staff with appropriate training
6. A dearth of available vehicles
7. A lack of necessary apparatus
8. Old vehicle/ equipment frequent breakdown
9. Difficulty in acquiring replacement parts
10. An inability to do maintenance or repairs on the vehicle or the equipment
11. There is no uniformity in the vehicles or the equipment.
12. Lack of an adequate institutional framework for the administration of solid waste services
13. The absence of legislation
14. The absence of enforcement measures and the competence to implement them
15. A failure to plan ahead (short, medium and long term plan)
16. Rapid urbanisation is outpacing the capability of service providers
17. The unchecked growth of illegal squatter settlements
18. It is difficult to find and purchase a location for a dump.
19. Cover material is difficult to get as a result
20. Unsatisfactory collaboration on the part of government agencies
21. a lack of cooperation from the general public
22. an unchecked use of packaging material
23. an inadequate reaction to the reduction of trash (reuse and recycling)
24. A scarcity of private contractors with the necessary qualifications
25. Difficult to control contractual service
26. An absence of regulation regarding hazardous waste

5. RESULTS AND FINDINGS

In Zone I, the majority of the stakeholders, which accounts for 58 percent, are between the ages of 30 and 40 years old. This is followed by 27 percent of the stakeholders who are between the ages of 20 and 30 years old. Eleven percent of respondents are between the ages of 40 and 50 years old, and four percent of respondents are between the ages of 50 and 60 years old. In Zone II, the majority of the stakeholders are between the ages of 30 and 40 years old (52 percent), followed by 26 percent of stakeholders who are between the ages of 20 and 30 years old, 19 percent of respondents who are between the ages of 40 and 50 years old, and 3 percent of stakeholders who are between the ages of 50 and 60 years old.

An examination of the data according to gender reveals that the proportion of male respondents in Zone I is 52 percent, which is a little higher than the proportion of female respondents in that zone, which is 48 percent; however, the proportion of female respondents in Zone II is 58 percent, while the proportion of male respondents in that zone is 42 percent.

The methods pertaining to the effective execution of solid waste management, such as timely collection of garbage, suitable route plan for waste collection vehicle, and landfill management, are not being properly executed. As a result, it has come to light that the management of solid waste in the municipalities that were chosen suffers from an absence of adequate execution.

The findings of the study indicate that the majority of the garbage produced is plastic waste.

Based on the findings, one can draw the conclusion that the inhabitants collect rubbish in their homes using containers made of plastic. For the collection of the waste from the household, you need no more than two containers of a more compact size. The residents of the city do not cover the trash cans that are kept inside their homes. The dry trash and

the moist trash are not collected in distinctive containers because this practise is not followed.

After much consideration, it has been determined that residents should empty the container used for the collection of home garbage once per day or once every other day into a public bin or a waste collection vehicle.

It has come to light that municipalities place garbage collection vans at the doorsteps of residents in order to facilitate garbage collection. However, residents are forced to contend with rubbish collection vans that operate inconsistently. The majority of the time, waste collection vehicles is completely stuffed with waste as they travel from house to house collecting it.

The findings of the study indicate that the amount of waste produced each day is a significant factor in determining the kind of vehicle used by town municipalities for the collection of garbage.

The findings lead us to the conclusion that certain municipalities and districts do not routinely replace the public waste containers.

It has come to light that the machinery and tools utilised for the management of solid waste in the municipalities of the selected towns are antiquated. Since new equipment is not purchased as frequently as it should be, this has a negative impact on the collection and transportation of solid waste.

It has been determined that the number of transport vehicles for solid waste management in the selected town municipality is insufficient due to either a shortage of funding or the redirection of funds to any other project.

It has come to light that the transport trucks utilised for the collection of solid trash in the municipalities are not kept in the appropriate condition due to the difficulties associated with management and the improper management of monitoring procedures.

Based on the findings, it can be deduced that the residents of the selected municipalities do not have adequate knowledge regarding the management of solid waste.

Based on the evidence presented, it can be deduced that the residents of the municipalities under consideration do not provide the level of cooperation that is required for effective management of solid waste.

6. CONCLUSION

In conclusion, it can be stated that the aforementioned issues pertain to the management of solid waste in the communities that were chosen. 1) A failure to properly plan and carry out the action. 2) An insufficient amount of motivation among the personnel 3) The utilisation of antiquated machinery for the collecting of solid waste. 4) The utilisation of vehicles that are not suitable for the collection and transportation of waste. 5) Inadequate vehicle upkeep and repair 6)Poor public bin management. 7) An insufficient amount of financing from the government 8) A lack of understanding on the part of the general population regarding the management of solid trash 9) A lack of participation from the general population in the management of solid waste

It has come to light that the various stakeholders in the municipalities that have been chosen have the following challenges with relation to the management of solid waste.

o A lacklustre attitude among the personnel. 2) Inadequate methods of trash disposal. 3) The lack of awareness among the general people. 4) A failure to adequately plan and carry out the action. 5) There is insufficient waste management in public areas. 6) A failure to properly manage landfills.

The research indicates that the performance of the selected municipalities with regard to the timely collection of waste, waste disposal methods, budgetary allocation, placement of public bins, regular replacement of public bins, adequate equipments for waste collection, and dumping site management is average. On the other hand, the research indicates that the performance of the selected municipalities with regard to the separate collection of dry and wet waste is poor.

Given the current state of affairs, it can be deduced that public bin sites, the frequency of waste collection, the techniques of waste collection, the methods of waste separation, and the waste recycling system that are put into place in municipalities are not satisfactory.

We have reached the conclusion that there is no feedback system about the practises of solid waste management in the areas that were selected.

The majority of the extra garbage generated by floating populations is controlled by increasing the number of temporary staff members involved in the process of solid waste management.

The floating population may produce a maximum of ten tonnes of garbage that is in excess of what is needed.

22 The majority of the cities and towns have their very own composting facility.

7. SUGGESTIONS FOR SOLID WASTE MANAGEMENT

1. Educate people and raising awareness about waste management
2. Encourage laws that deal with proper waste disposal.
3. Regulations regarding negative externalities (people/industry/institution etc. are not willing to reduce their garbage and this harmful behaviour should be punished)
4. Make Effective waste management systems and resource management plans
5. Re-use and recycling of materials
6. Use a reusable bottle/cup while travelling
7. Use reusable bags
8. Composting/ Organic Waste Recycling
9. Waste to Energy Incineration
10. Choose sustainable plastic-free options Such as:
11. Locally made
12. Plastic-free
13. Sustainable
14. Cruelty-free
15. Avoiding toxic waste
16. Such as: Bleach, furniture, carper or oven cleaners, air freshener, antifreeze, all-purpose cleaners etc.
17. Saying NO to single-use plastics

8. REFERENCES

[1] Anand, S. (2010). Solid waste management. Mittal Publications.

[2] Brickwedde Richard J. (2006). Recent Developments: Solid Waste Management. The Urban Lawyer, (38) (3),539-543.

[3] Burns, D., & Heywood, F. (2004). Making community participation meaningful: a handbook for development and assessment. Policy Press.

[4] Kumar. M, and Nandini. N. (2013). Community attitude, perception and willingness towards solid waste management in Bangalore city, Karnataka, India. International Journal Of Environmental Sciences, 4 (1),87-95.

[5] Schertenleib, R., & Meyer, W. (1992). Municipal Solid Waste Management in Developing Countries: Problems and issues; need for future research. IRCWD News, 16.

[6] Srinivasan Krithika. (2006). Public, Private and Voluntary Agencies in Solid Waste Management: A Study in Chennai City. Economic and Political Weekly, 41(22),2259-2267.

[7] Kumar, S. (2022). A quest for sustainium (sustainability Premium): review of sustainable bonds. Academy of Accounting and Financial Studies Journal, Vol. 26, no.2, pp. 1-18

[8] Allugunti V.R (2022). A machine learning model for skin disease classification using convolution neural network. International Journal of Computing, Programming and Database Management 3(1), 141-147

[9] Allugunti V.R (2022). Breast cancer detection based on thermographic images using machine learning and deep learning algorithms. International Journal of Engineering in Computer Science 4(1), 49-56

[10] Dimpal Vij, "Urbanization and solid waste management in India: Present practices and future challenges", International Conference on Emerging Economies – Prospects and Challenges (ICEE- 2012), Procedia - Social and Behavioral Sciences 37(2012) 437 – 447

[11] Nyandra, M., Kartiko, B.H., Susanto, P.C., Supriyati, A., Suryasa, W. (2018). Education and training improve quality of life and decrease depression score in elderly population. Eurasian Journal of Analytical Chemistry, 13(2), 371- 377.

[12] Widana, I.K., Sumetri, N.W., Sutapa, I.K., Suryasa, W. (2021). Anthropometric measures for better cardiovascular and musculoskeletal health. Computer Applications in Engineering Education, 29(3), 550–561. https://doi.org/10.1002/cae.22202

[13] Exposto, L. A. S., & Januraga, P. P. (2021). Domestic waste characteristics and the management systematic review. International Journal of Health & Medical Sciences, 4(2), 253-259. https://doi.org/10.31295/ijhms.v4n2.1731