

A Study on Household Waste Management in Madhavaram and Kodungaiyur

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Abstract

Rapid urbanization in Indian cities has led to mounting issues in solid waste management, particularly in urban localities such as Madhavaram and Kodungaiyur in Chennai. This study investigates household waste management practices, awareness levels, challenges, and the effectiveness of local government interventions in these two zones. Data were collected from 200 households through structured questionnaires. Findings reveal gaps in segregation, limited awareness of composting, and inadequate municipal responses. The study recommends stronger community engagement, improved infrastructure, and consistent monitoring to enhance sustainable waste management.

Keywords: Waste segregation, household waste, Chennai, municipal solid waste, awareness, Madhavaram, Kodungaiyur, sustainable practices.

1. Introduction

Environmental conservation involves the protection and sustainable use of natural resources to preserve ecosystems, maintain biodiversity, and mitigate climate change. Effective conservation

not only benefits the planet but also safeguards human health and well-being for present and future generations. One critical aspect of conservation is waste management, which plays a key role in reducing environmental degradation and promoting sustainable development.

Waste management encompasses the systematic handling of waste from its generation to its final disposal, including processes such as collection, segregation, transportation, storage, treatment, and recycling. Central to effective waste management is the concept of the 7 R's: Refuse, Repurpose, Reduce, Reuse, Rot, Recycle, and Rethink. Adopting these principles can significantly reduce pollution and promote hygienic living conditions.

Improper waste disposal poses serious health risks, including infections, respiratory issues, and skin conditions—especially for workers involved in collection and landfill operations. Hence, responsibility must begin at the household level, with proper segregation of biodegradable, non-biodegradable, and hazardous waste.

Historically, waste disposal practices in Indian communities have been informal and unregulated. However, rapid population growth, urbanization, changing consumption habits, and technological advancements have intensified the waste management crisis. The need for structured, community-level interventions has become more urgent.

In this context, a survey was conducted among residents of Madhavaram and Kodungaiyur to assess their household waste management behaviors, awareness levels, and compliance with recommended practices. The findings offer insights into current challenges and highlight areas for improvement in sustainable waste handling at the community level.

2. Need for the Study

Following the correct methods for waste disposal will ensure lesser pollution and hazards for the environment. Proper waste management is necessary with steps involving the proper collection of waste and scientific treatments that may contribute less to water pollution, soil pollution and air pollution. It also prevents and reduce risks associated with improper handling of wastes by waste disposal workers, employees in landfill facilities and other related workmen.

3. Objectives of the Study

The study aimed to:

- Examine household waste disposal and segregation practices
- Analyze awareness and attitude toward composting and recycling
- Evaluate the role of local authorities in waste management
- Recommend strategies for improved household waste management

4. Methodology

A descriptive research design was adopted. Primary data were collected from residents of Madhavaram and Kodungaiyur—using structured questionnaires. The questionnaire included both close- and open-ended questions covering demographic details, types of waste generated, segregation practices, composting awareness, and feedback on municipal waste services. Secondary data were collected from municipal records, journals, and previous studies. Data were analyzed using percentage methods, Chi square analysis and basic statistical tools.

5. Results and Discussion

5.1 Demographics

Most respondents (45%) were aged 30–45, with a slight female majority (55%). Around 60% had completed secondary education, while 30% had higher education. The average family size was four members.

5.2 Types of Waste Generated

Respondents reported producing mostly organic waste (vegetable peels, food waste), followed by plastic, paper, and hazardous materials like batteries. However, most households disposed of all types in a mixed format due to lack of awareness and infrastructure.

5.3 Waste Segregation Practices

Only 22% of respondents practiced segregation into biodegradable and non-biodegradable waste. Many cited the lack of dual-bin systems and irregular municipal collection as reasons for not segregating.

5.4 Composting Awareness

Only 18% of respondents were aware of composting. Of those, a mere 6% actively practiced it. Most cited lack of space, time, and know-how as barriers. However, there was strong interest in learning about home composting if proper training and tools were provided.

5.5 Role of Local Bodies

A majority of respondents felt that municipal bodies were inconsistent. Only 28% believed the authorities were doing an effective job in collecting and disposing of waste. Many complained about irregular pickups, open dumping, and poorly maintained garbage bins.

6. CHI-Square Analysis:

It is found that family size and gender do not have a significant impact on how individuals manage household waste, follow government guidelines, or express gratitude toward sanitary workers. These demographic factors are not key influences on waste management behaviors or attitudes toward sanitation services. It is also found that there is no difference between how men and women express gratitude to sanitary workers, suggesting a general lack of recognition of their role. These results confirm that other factors, such as education level, socio-economic status, and cultural beliefs, are likely to play a more significant role in shaping waste management practices and attitude towards sanitation workers.

7. Findings

- A significant number of households (78%) do not segregate waste
- There is limited awareness of composting and recycling
- Residents are willing to engage if better infrastructure and education are provided
- Municipal services are seen as inefficient and lacking transparency
- Community-level participation is low but has potential for growth

8. Recommendations

- **Public Awareness Campaigns:** Municipal bodies should collaborate with NGOs to spread awareness about segregation and composting through workshops, leaflets, and digital platforms.

- **Infrastructure Development:** Dual-bin systems, more frequent pickups, and proper segregation points must be implemented.
- **Composting Incentives:** Provide subsidized compost bins and organize community composting hubs.
- **Monitoring and Accountability:** Implement digital tracking of waste pickups and maintain complaint redressal systems.
- **Community Participation:** Form resident welfare committees to monitor and assist in local waste management efforts.

9. Conclusion

The study reveals a clear gap between awareness and action in household waste management in Madhavaram and Kodungaiyur. With proactive support from local authorities and increased community engagement, sustainable solutions are attainable. Empowering residents with knowledge, infrastructure, and involvement mechanisms is key to achieving a cleaner urban environment.

10. References

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