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HOUSEHOLD WASTE MANAGEMENT: THE INFLUENCE OF HARITHA KARMA SENA ON THODUPUZHA TALUK

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Abstract

Waste management has become a critical public health issue in Kerala due to population growth and improper disposal practices like dumping and burning. This has led to severe environmental and health problems. To address this challenge, the government has implemented various green initiatives, including Haritha Kerala Mission, a pivotal program in household waste management. Haritha Mission facilitates collecting and recycling plastic and non-degradable waste through volunteers. As environmental awareness rises, the mission is poised for expansion. This study investigates the effectiveness of the Haritha Karma Sena mission in enhancing household waste management practices in Thodupuzha Taluk, Kerala. It aims to assess awareness and implementation of waste segregation, recycling, and proper disposal methods among residents, while evaluating the mission's influence on fostering sustainable habits.

Keywords: Waste Management, Haritha Kerala Mission, Awareness, Attitude, Adoption.

Introduction

The issue of sustainable waste management has become a pressing concern in the context of rapid urbanization and industrialization across the globe (Jaiswal & Kumar, 2019). Solid waste management has been an integral part of every human society, and the approaches for it should be compatible with the nature of a given society. (Sustainable Solid Waste Management: An Integrated Approach for Asian Countries, n.d.) (Sigongan et al., 2023)

The state of Kerala in India has taken a proactive step in addressing this challenge through the Haritha Karma Sena mission. This initiative aims to establish a decentralized and participatory approach to solid waste management, empowering local communities to take ownership of the process. Kerala's Haritha Karma Sena mission is a key component of the state's strategy to transition towards a more sustainable circular economy, which involves minimizing waste, promoting recycling and reuse, and closing the loop on material flows (Jaiswal & Kumar, 2019). This study investigates the impact of the Haritha Kerala Mission on household waste management practices in Thodupuzha Taluk, Kerala. It examines how the mission has influenced waste segregation, recycling behavior, and community awareness, and evaluates its effectiveness in fostering sustainable habits at the grassroots level.

Statement of problem

Plastic waste poses a significant environmental and public health challenge due to its non-biodegradable nature and improper disposal methods, including dumping and burning. Despite government initiatives like the Haritha Kerala Mission and Swachh Bharat Mission, aimed at promoting sustainable waste management practices at the household level, the effectiveness of these programs in fostering awareness, adoption of proper disposal methods, and reducing plastic waste generation remains unclear. This study aims to investigate the extent of awareness, adoption, and disposal practices of household waste among residents of Thodupuzha Taluk, Kerala, to assess the impact of existing initiatives and identify potential areas for improvement in waste management strategies.

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Scope of the Study

This study analyzes and evaluates household waste management practices facilitated by the Haritha Karma Sena program in Thodupuzha Taluk, Kerala.

Objectives

- Determine the level of awareness among households regarding the goals and objectives of the Haritha Kerala Mission.
- investigate the extent to which households are implementing the recommended waste management practices promoted by the Haritha Kerala Mission
- Assess household perceptions regarding the impact of the Haritha Kerala Mission on the surrounding environment.

Literature review

Zurbrugg (2002) highlights that while the per capita waste generation in developed and developing countries may be similar, the key difference lies in waste management practices. Developed countries focus on segregation, processing, and resource recovery, whereas developing countries like India and Thailand primarily rely on landfilling.

Hayami (2006) observes that the informal recycling sector, involving rag pickers, waste buyers, and middlemen, operates in a complex and undocumented manner. This lack of record-keeping makes it challenging to accurately quantify recovered materials and can lead to biases or misrepresentations in recycling data and revenue estimates.

Kumar K. N. and Goel (2009) state that basic source segregation of wet and dry waste is mostly limited to mega and metro cities where urban local bodies (ULBs) manage composting. In most areas, waste is disposed of in a mixed manner. Households typically use 16–20 L plastic containers or buckets for waste, with variations in size, shape, and material based on the economic status of the household.

Methodology

This study employs an empirical research design to investigate the impact of the Haritha Kerala Mission on household waste management practices. Data collection involved both primary and secondary sources. Secondary data was obtained from relevant government websites, providing contextual information on the Haritha Kerala Mission and its implementation.

Primary data was collected through a structured questionnaire administered to a sample of 45 households selected from three wards within Thodupuzha Taluk. The selection of households was based on convenience sampling. The questionnaire assessed household awareness of the Haritha Kerala Mission, adoption of waste segregation practices, and perceptions regarding the mission's impact on the environment.

Descriptive statistical techniques, including simple averages and graphical representations, were utilized to analyze the collected data and present the findings in a concise and informative manner.

Theoretical background

Kerala, with its abundant natural beauty, has always been known for its clean and green environment. However, in recent times, the state has been struggling with waste disposal. With a population of over 33 million people, Kerala generates

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approximately 10,000 tons of waste every day. Unfortunately, only a small fraction of this waste is treated or disposed of responsibly.

To overcome the challenge of waste disposal, the Kerala government has initiated several measures that can help in efficient waste management. One of the most important steps is the establishment of a decentralized waste management system.

Decentralized waste management

Decentralized waste management* focuses on handling waste at the source, promoting waste segregation, composting, and recycling at the household or community level. This approach minimizes the volume of waste transported to landfills and central facilities. Programs like the Haritha Kerala Mission and initiatives through local self-governments encourage households to compost biodegradable waste using methods like biogas plants or aerobic composting. Material Recovery Facilities (MRFs) at the Panchayat level sort and process non-biodegradable waste for recycling, ensuring localized waste management solutions.

Institutional Framework for Solid Waste Management in Kerala

The Kerala government has established a multi-layered institutional framework to address the challenges of solid waste management. This framework involves the active participation of various stakeholders:

Local Self Governments (LSGs): Local Self Governments (LSGs), including Gram Panchayats, Municipalities, and Corporations, are the primary agencies responsible for planning, implementing, and enforcing waste management activities within their respective jurisdictions. Their key responsibilities encompass waste collection, transportation, processing, disposal, and crucial roles in community mobilization and awareness campaigns.

Suchitwa Mission: a state-level agency, that provides technical guidance, financial support, and capacity building to LSGs, assisting them in developing and implementing comprehensive waste management plans. It also monitors the performance of LSGs in achieving waste management targets.

Clean Kerala Company: a public sector undertaking, that focuses on the commercial handling of non-biodegradable waste, including collection, transportation, and recycling, playing a vital role in managing plastic waste and other non-recyclable materials.

Kudumbashree: a network of women's self-help groups, plays a crucial role in the implementation of the Haritha Karma Sena program. Kudumbashree members are trained to provide technical services and solutions for waste management at the household level, including waste segregation, composting, and vermicomposting.

Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS): provides employment opportunities for rural households in waste management activities, such as the construction of compost pits, vermicomposting units, and waste processing facilities, contributing to the creation of rural infrastructure for sustainable waste management

Haritha Kerala Mission: a flagship program of the Kerala government, that provides overall technical and managerial support for all waste management initiatives. It focuses on promoting environmental conservation, sustainable waste management, and water resource rejuvenation, conducting awareness campaigns, supporting research and innovation, and facilitating the exchange of best practices.

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Harithakarma Sena: A Community-Driven Approach to Waste Management

The Harithakarma Sena is a pioneering initiative in Kerala that empowers communities to effectively manage household waste. Recognizing that household waste constitutes a significant portion of municipal solid waste, the program focuses on a decentralized approach that emphasizes community participation and sustainable practices.

Source Segregation and Collection

A cornerstone of the Harithakarma Sena is the principle of "primary segregation" at the source. Households are encouraged to separate waste into biodegradable and non-biodegradable categories. This crucial step significantly improves the efficiency of waste processing by minimizing contamination and facilitating the recovery of valuable resources. Trained members of the Harithakarma Sena conduct door-to-door collections, ensuring that segregated waste is transported to appropriate processing centres.

Processing and Resource Recovery

Collected waste is transported to Material Collection Facilities (MCFs) established at the local level. These facilities serve as hubs for sorting and preliminary processing. Recyclable materials such as plastic, glass, and metal are segregated for further processing.

From the MCFs, waste is then transferred to Resource Recovery Facilities (RRFs). At these facilities, advanced sorting and treatment methods are employed. Biodegradable waste undergoes composting or is converted into biogas, transforming organic waste into valuable resources. Non-biodegradable waste is prioritized for recycling, minimizing the need for virgin resources and reducing environmental impact. Furthermore, the program actively promotes reuse initiatives, encouraging the upcycling of old materials into new products, thereby extending the lifecycle of resources.

Community Empowerment and Sustainability

The Harithakarma Sena not only provides a robust system for waste management but also empowers local communities. By involving community members in waste collection and processing, the program fosters a sense of ownership and responsibility. This community-driven approach ensures the long-term sustainability of the program and promotes environmental awareness among residents.

Result and Discussion

Profile of respondents

The general profile of respondents is shown in the below table no1.1

Table1.1 General Profile of respondents

Categories		**Frequency**	**Percentage**
Gender	Male	11	24.4
	Female	32	71.2
	Prefer not to say	2	4.4
Age of respondents	Below 40	35	77.7
	40 -50	9	20
	Above 50	1	2.3

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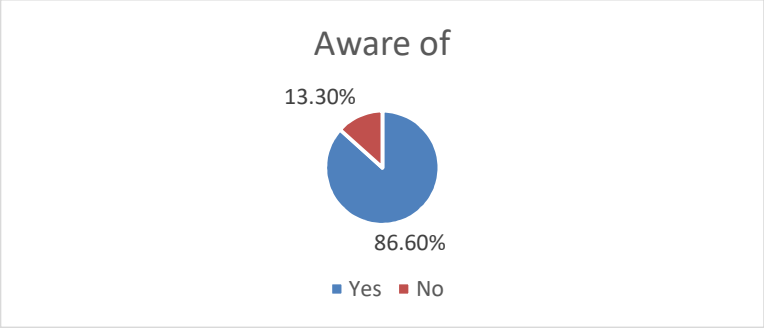
Education qualification	SSLC	3	7
	Plus two	16	35.5
	Graduated	23	51.1
	Post Graduation	2	4.4
	Others	1	2.2
Occupation	Homemaker	34	75.5
	Govt. employee	3	6.6
	Private employee	8	17.7

Primary source

The data in table no 1.1 reveals a sample predominantly comprising young females. A substantial majority of respondents are below 40 years of age, and women significantly outnumber men. Educationally, the sample is well-educated, with a considerable portion holding graduate degrees, followed by those with a Plus Two qualification. Occupationally, homemakers constitute the largest group, while private sector employees also form a significant segment.

Awareness of respondents towards the mission

The following diagram 1.1 reveals the awareness level of respondents towards the Haritha mission.



Primary source diagram 1.1

The diagram 1.1 indicates a high level of awareness among respondents regarding the project. A significant majority of respondents, 86.7%, are aware of the project. Only a small minority, 13.3%, are not aware of the project.

Awareness level of respondents about the main goal of Haritha mission

Table no 1.2 Goals of Haritha Mission

Category	**Percentage**	**Rank**
Promote sustainable waste management	18.6	3
Reduce plastic pollution	23.3	2
Support recycling initiatives	7	4
All of the above	51.2	1

Primary source

Table no 1.2 shows that a significant majority, 53.3% (approximately 24 individuals), correctly identified that the mission aims to achieve "All of the above" goals, encompassing sustainable waste management, reducing plastic pollution emerged as the second most recognized objective, with 23.3% of respondents (roughly 10 individuals) identifying it.

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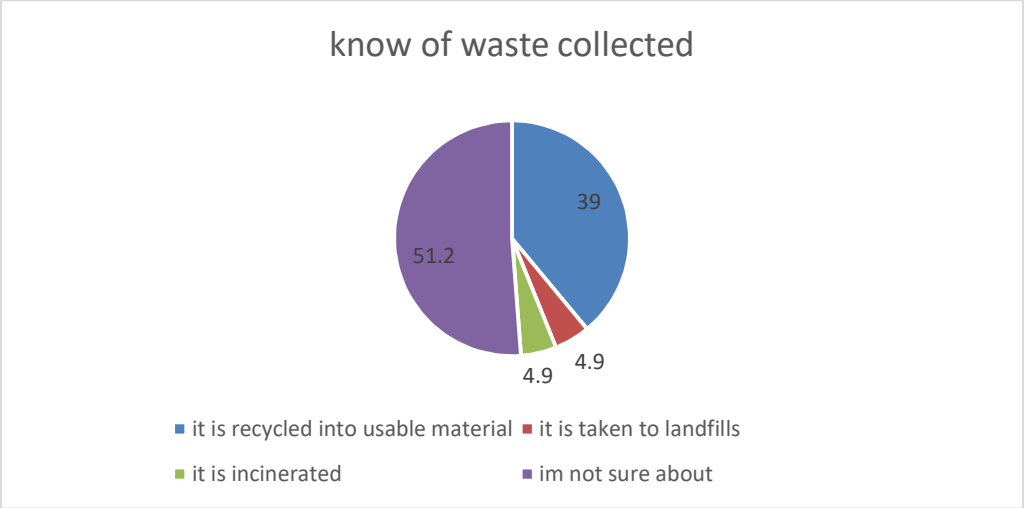
Know the waste disposal ways.



Primary source diagram 1.2

Diagram 1.2 reveals that public awareness regarding waste disposal methods is varied. A significant majority, 51.2%, are unaware of the waste disposal methods. However, a considerable portion, 39%, correctly understand that waste is often recycled into usable materials

Adoption behavior of household

Table no. 1.3 shows the adoption behavior of households before and after.

Table no 1.3 Adoption behaviour

Category	Always	Often	Sometimes	Never
I segregate the waste as per the volunteers' advice	14	14	**12**	**5**
I hand over these segregated waste items to volunteers.	31	6	**6**	**2**
I usually dump it or burn it before.	21	22	**2**	**0**

Primary source

Table 1.3 provides insights into the adoption behavior of households regarding waste segregation and disposal practices. A significant majority of households always hand over segregated waste items to volunteers, indicating a high level of participation in waste management initiatives.

While 14 households always segregate waste as per volunteers' advice, 14 households often do so. This suggests a positive trend toward adopting proper waste segregation practices. However, 21 households have dumped or burned their waste before.

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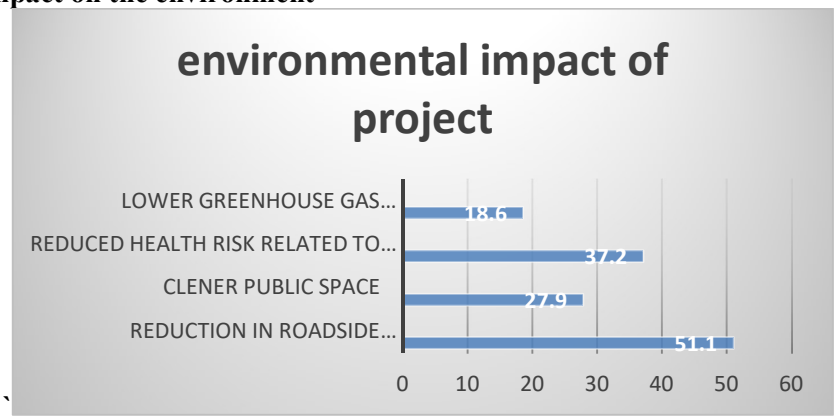
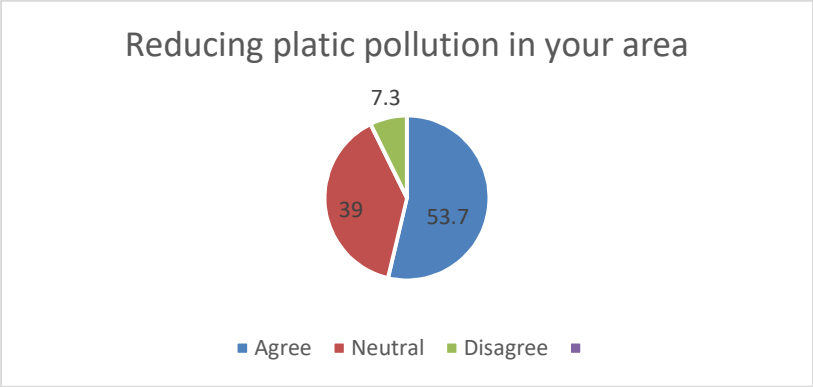
Project impact on the environment



Primary source diagram 1.3

The diagram 1.3 illustrates the perceived environmental impact of the project, as ranked by respondents. Most respondents (51.1%) believe the project will significantly reduce roadside dumping and burning of plastic waste, highlighting its potential to curb pollution and improve environmental quality. Notably, a considerable portion (37.2%) also perceive a positive impact on reducing health risks associated with improper waste disposal. While perceived impacts on cleaner public spaces (27.9%) and lower greenhouse gas emissions from waste management (18.6%) are also recognized,

Impact on surroundings



Primary sources diagram 1.4

Diagram 1.4 illustrates public opinion on the impact of reducing plastic pollution, a significant majority of respondents,53.7%, agree that the mission has enabled the reduction of plastic waste in their area. Conversely, only 7.3% disagree with this statement.

Conclusion

The study underscores a mixed scenario of public awareness, attitudes, and behaviors toward waste management within the context of the Haritha Mission. While many exhibit positive attitudes and engage in waste segregation, a lack of awareness about sustainable disposal methods persists, with some still relying on harmful practices like dumping and burning. Public perception acknowledges the mission's environmental benefits, such as reducing roadside dumping and health risks.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However, more awareness is needed about its broader impacts like cleaner spaces and reduced greenhouse gas emissions. The findings highlight the need for targeted awareness campaigns, community engagement, and improved infrastructure to promote sustainable practices and enhance the mission's effectiveness in creating a cleaner and healthier environment.

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