

A Study on Plastic Waste Management in Municipal Mysore

Author name 1 : **Rajendra KS**

Second author name 2 : **Madhunayaka**

MBA student ,Vidya Vikash Institute of Engineering and Technology, Mysuru

Assistant professor, Vidya Vikash Institute of Engineering and Technology, Mysuru

Abstract

Plastic waste has become one of the major environmental challenges faced by urban areas due to rapid population growth, increasing consumption, and inadequate waste management practices. This study focuses on plastic waste management in the Mysore Municipal area, examining the sources, collection, segregation, recycling, and disposal of plastic waste. The research evaluates the effectiveness of the municipal waste management system, the role of public awareness, and the participation of households, businesses, and local authorities in reducing plastic pollution. The study also identifies the key challenges, including improper disposal, limited recycling infrastructure, and the growing use of single-use plastics. Based on the findings, the study suggests measures such as strengthening waste segregation at source, improving recycling facilities, enhancing public awareness campaigns, and promoting sustainable alternatives to plastic. Effective implementation of these recommendations can contribute to a cleaner urban environment, improved public health, and sustainable waste management in Mysore.

INTRODUCTION

Mysuru, known as one of the cleanest cities in India, has adopted an effective and scientific approach to plastic waste management through the Mysuru City Corporation (MCC). The corporation has implemented source segregation, door-to-door waste collection, zero-waste management centers, material recovery facilities, and plastic recycling initiatives to ensure sustainable waste management. The city generates a substantial quantity of solid waste every day, including plastic waste, which is collected, segregated, processed, and recycled through specialized facilities. MCC has also collaborated with private organizations and promoted public participation to improve plastic waste handling and recycling practices. Furthermore, Mysuru has gained national recognition for innovative plastic waste recycling initiatives, including the processing of multilayer plastic waste into useful products and obtaining Extended Producer Responsibility (EPR) certification for plastic waste management. These efforts have contributed significantly to environmental protection, resource conservation, and the maintenance of the city's cleanliness standards. Therefore, the study of plastic waste management in Mysuru Municipality is important to understand the strategies, achievements, challenges, and future prospects of sustainable urban waste management.

LITERATURE REVIEW

Yadav and Devi (2009) conducted a case study on municipal solid waste management in Mysore and found that rapid urbanization and population growth increased the generation of solid waste, including plastic waste. **Lokeshwari and Nanjunda Swamy** (2012) examined municipal solid waste characterization, recovery, and recycling options in Mysore. **Betsurmath** (2025), in *Plastic Waste Management: The Mysore Experiment*, discussed the successful implementation of source segregation, zero-waste management, and the 4R principles (Reduce, Reuse, Recycle, Recover) by Mysuru City Corporation. **Dhanuja and Deskar** (2026) analyzed the role of Mysuru City Corporation in municipal solid waste management. The authors noted that Mysuru generates around 450 tonnes of waste daily and has established zero-waste management units and a centralized waste processing facility. **Niranjan et al.** (2025) used Geographic Information Systems (GIS) to optimize municipal solid waste collection in Mysuru. The study concluded that efficient collection routes. **Sunny and Rashmishree** (2017) studied leachate management at Mysore's waste disposal site. Their findings

indicated that improper disposal of mixed municipal waste, including plastics. Rakesh et al. (2024) investigated household waste management practices in the Mysuru region. The study found that waste segregation awareness among households improved plastic waste handling. Mysuru City Corporation's mentoring initiative (2025) demonstrated the city's leadership in waste management by sharing best practices with other urban local bodies. A recent report on plastic bottle recycling in Mysuru (2024) highlighted efforts by Mysuru City Corporation to introduce plastic bottle recycling machines. Recent inspections of Mysuru's waste management facilities (2025) recognized the city's effective handling of dry and wet waste streams.

STATEMENT OF THE PROBLEM

Plastic waste has become a major environmental concern in urban areas due to its nonbiodegradable nature and increasing consumption. In Mysuru city, rapid urbanization, population growth, commercial activities, and changing lifestyles have significantly increased the generation of plastic waste. Although the Mysuru City Corporation (MCC) has implemented several initiatives such as source segregation, material recovery facilities, plastic recycling projects, and awareness programs, effective plastic waste management continues to face challenges. These challenges include improper segregation of waste at the household level, inadequate public awareness, illegal dumping of plastic waste, insufficient recycling infrastructure and financial constraints in implementing advanced waste management technologies. Mysuru generates a substantial quantity of plastic waste every day, creating pressure on the existing collection, transportation, processing, and disposal systems. Improper management of plastic waste contributes to environmental pollution, blockage of drainage systems, health hazards, and degradation of urban aesthetics. Therefore, there is a need to assess the effectiveness of the current plastic waste management practices of Mysuru Municipal Corporation, identify the existing gaps and challenges, and suggest sustainable measures for improving plastic waste collection, segregation, recycling, and disposal in the city. This study aims to examine these issues and contribute to the development of an efficient and environmentally sustainable plastic waste management system in Mysuru.

NEED FOR THE STUDY

The study on plastic waste management in Mysuru Municipal Corporation is important because plastic waste has become one of the major environmental challenges in urban areas. Rapid population growth, urbanization, increased consumption of packaged products, and the widespread use of single-use plastics have significantly increased the quantity of plastic waste generated in Mysuru. Improper disposal of plastic waste causes soil, water, and air pollution and poses serious risks to public health and the environment.

OBJECTIVES

1. To analyse the current level of public awareness and individual attitude toward plastic pollution and waste management.
2. To examine the frequency and effectiveness of household-level plastic waste management and recycling practices.
3. To evaluate key barriers or facilitators that influence the transition from awareness to active plastic waste mitigation.

HYPOTHESIS

NULL HYPOTHESIS

1. H_0 There is no significant relationship between municipal plastic waste management practices and the effectiveness of plastic waste disposal in Mysore.

ALTERNATIVE HYPOTHESIS

1. H_1 There is a significant relationship between municipal plastic waste management practices and the effectiveness of plastic waste disposal in Mysore.

RESEARCH METHODOLOGY

This study adopts a descriptive and analytical research design to examine the existing plastic waste management practices in Mysuru Municipal Corporation, identify challenges, and suggest measures for improvement. The methodology focuses on collection, segregation, transportation, recycling, and disposal of plastic waste.

SAMPLING DESIGN

Sampling Method: Simple Random Sampling Sample Size: 100 respondents (households and commercial establishments) .Respondents will be selected from different wards of Mysuru to obtain representative data.

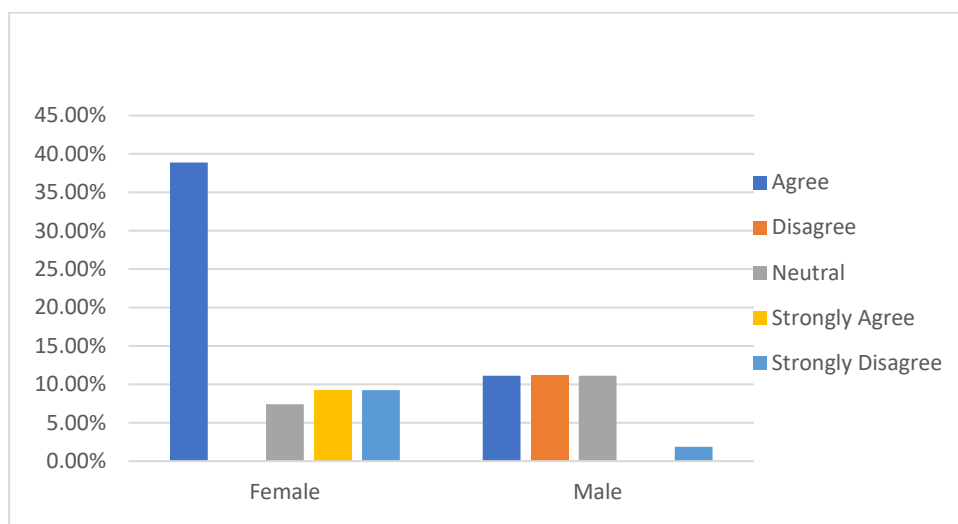
Limitations of the study

- ☐ **Data Constraints and Quantification Gaps:** Studies often rely heavily on secondary municipal data or seasonal sampling
- ☐ **Focus on Mixed MSW vs. Dedicated Plastic Streams:** Many local assessments evaluate general Municipal Solid Waste (MSW) rather than tracking segregated plastic polymers (PET, HDPE, LDPE, single-use plastics) individually
- ☐ **Stakeholder Representation Biases:** Research often emphasizes institutional data from the Mysore City Corporation (MCC) over qualitative data from frontline sanitation workers (*Pourakarmikas*) and residents.

DATA ANALYSI

1.Age group

Count of 1. Age group	Column Labels				
Row Labels	19-25	26-40	40 about	Under 18	Grand Total
Female	55.56%	9.26%	0.00%	0.00%	64.81%
Male	12.96%	0.00%	1.85%	20.37%	35.19%
Grand Total	68.52%	9.26%	1.85%	20.37%	100.00%



Analysis

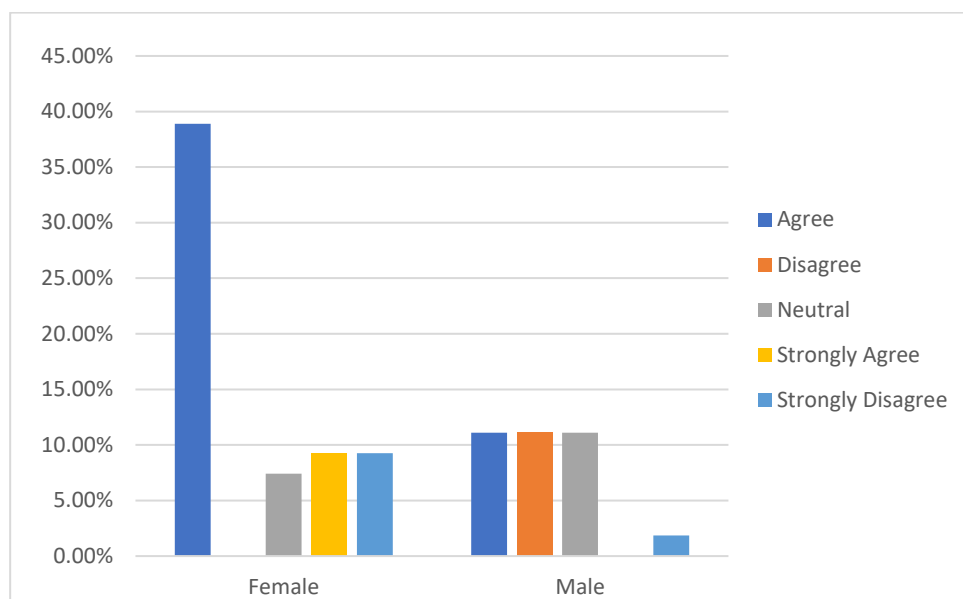
The age and gender distribution of respondents shows that the majority are female respondents (64.81%), while male respondents account for 35.19% of the total sample. The largest age group is 19–25 years (68.52%), indicating that most respondents are young adults. Among females, 55.56% belong to the 19–25 age group and 9.26% are in the 26–40 age group, with no female respondents under 18 or above 40 years. Among males, 20.37% are under 18 years, 12.96% are in the 19–25 age group, and 1.85% are above 40 years, while no male respondents fall in the 26–40 age category. Overall, the data reveals that the survey is predominantly represented by young female respondents aged 19–25 years, making this group the most significant contributor to the study.

Interpretation

The chart indicates that female respondents constitute the majority of the sample and show the highest level of agreement with the statement, with approximately 39% selecting "Agree." Female respondents also exhibit stronger opinions, as notable proportions selected "Strongly Agree" and "Strongly Disagree" (about 9% each), while around 7% remained neutral. In contrast, male respondents are fewer in number and their responses are more evenly distributed, with approximately 11% each selecting "Agree," "Disagree," and "Neutral," and only a small proportion (about 2%) choosing "Strongly Disagree." Overall, the findings suggest that females are more likely to agree with the statement and express stronger attitudes, whereas males tend to hold more balanced or moderate views.

2. I am well-informed about the long-term environmental impacts of improper plastic waste disposal

Row Labels	Agree	Disagree	Neutral	Strongly agree	Strongly disagree	Grand Total
Female	50.00%	0.00%	3.70%	1.85%	9.26%	64.81%
Male	11.11%	11.11%	11.11%	0.00%	1.85%	35.19%
Grand Total	61.11%	11.11%	14.81%	1.85%	11.11%	100.00%



Analysis

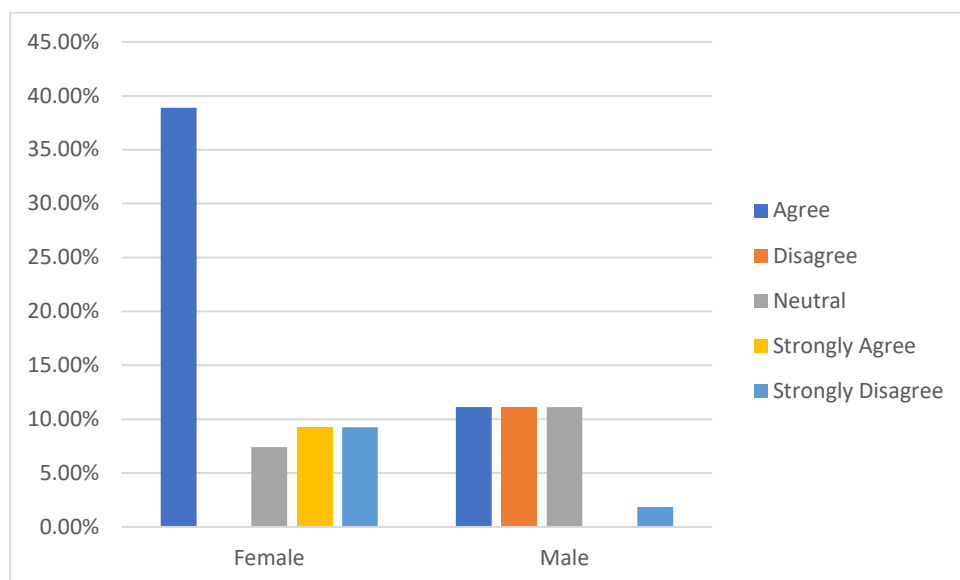
The table shows the opinions of male and female respondents regarding plastic waste management in Mysore Municipal Corporation. Out of the total respondents, **64.81% were female** and **35.19% were male**. Overall, **61.11% of the respondents agreed** with the statement, indicating a positive opinion. **14.81% were neutral**, while **11.11% disagreed** and **11.11% strongly disagreed**. Only **1.85% strongly agreed**. The results indicate that most respondents, especially female participants, have a positive view of plastic waste management. However, the neutral and negative responses suggest that there is still a need to improve awareness and the effectiveness of plastic waste management practices.

Interpretation

The chart indicates that female respondents show a stronger level of agreement compared to male respondents. The highest percentage is among females who selected “Agree” (about 39%), suggesting that most female participants have a positive perception of the statement being measured. Among females, smaller proportions chose “Neutral” (around 7%), “Strongly Agree” (about 9%), and “Strongly Disagree” (about 9%), while almost none selected “Disagree.” In contrast, male responses are more evenly distributed, with approximately 11% each selecting “Agree,” “Disagree,” and “Neutral,” and only a small percentage (about 2%) choosing “Strongly Disagree.” Overall, the findings suggest that females are generally more supportive of the statement,

3.residential Area type

Row Labels	Rural	Urban	Grand Total
Female	51.85%	12.96%	64.81%
Male	9.26%	25.93%	35.19%
Grand Total	61.11%	38.89%	100.00%



Analysis

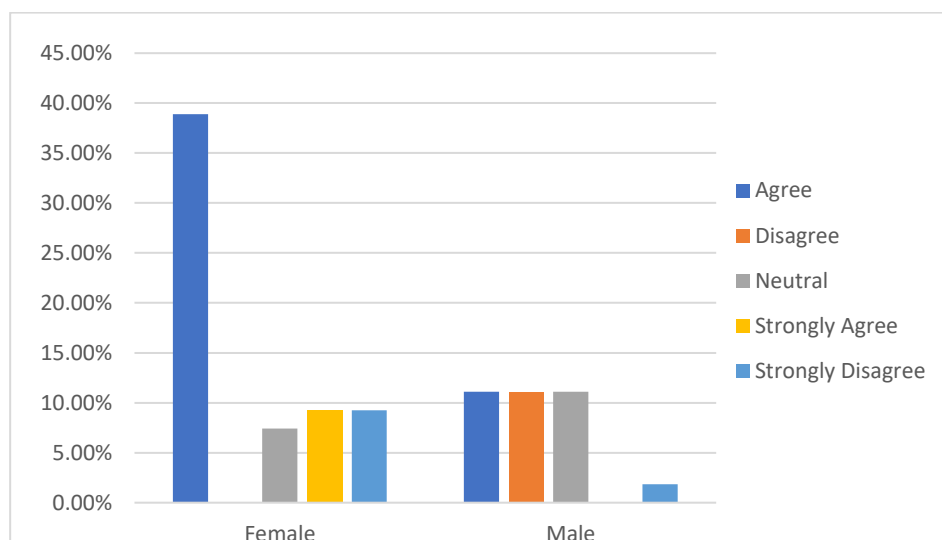
The data show that the majority of respondents are female, accounting for 64.81% of the total sample, while males represent 35.19%. In terms of residence, rural participants make up a larger proportion of the sample (61.11%) compared to urban participants (38.89%). Among females, a substantial majority (51.85%) are from rural areas, with only 12.96% residing in urban areas. In contrast, male respondents are more concentrated in urban locations (25.93%) than in rural areas (9.26%). These findings suggest that the sample is predominantly composed of rural females, whereas males are more strongly represented in urban settings. This distribution highlights notable differences in the demographic composition of respondents based on both gender and place of residence.

Interpretation

Based on the bar chart in image_25788a.png, there is a distinct contrast in survey responses when segmented by gender. Among female respondents, a significant majority (nearly 40%) expressed that they "Agree" with the statement, while the remaining responses are spread relatively evenly under 10% across "Neutral," "Strongly Agree," and "Strongly Disagree," with no representation for "Disagree." Conversely, male respondents show a perfectly uniform, lower distribution (around 11% each) across three specific categories—"Agree," "Disagree," and "Neutral"—with only a minimal percentage choosing "Strongly Disagree" and zero representation for "Strongly Agree." Overall, this indicates a much stronger consensus and positive leaning among females compared to a highly split or indifferent sentiment among males.

4. Local government policies and public campaigns effectively promote the reduction of plastic waste in my community.?

Row Labels	Agree	Disagree	Neutral	Strongly Agree	Strongly Disagree	Grand Total
Female	42.59%	3.70%	3.70%	5.56%	9.26%	64.81%
Male	12.96%	9.26%	11.11%	0.00%	1.85%	35.19%
Grand Total	55.56%	12.96%	14.81%	5.56%	11.11%	100.00%



Analysis

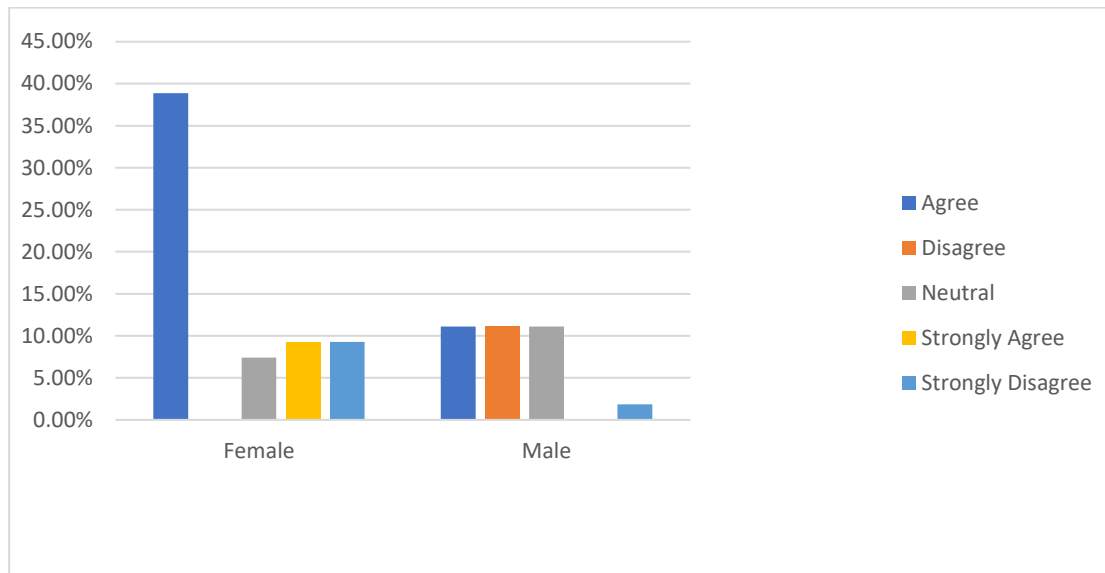
The dataset reveals a significant gender disparity in both overall participation and specific sentiments, with female respondents constituting the majority of the sample at 64.81% compared to males at 35.19%. With a combined total of 61.12% either agreeing or strongly agreeing with the statement. This overall trend is heavily driven by female respondents, who exhibit a strong consensus with approximately 74.30% expressing agreement (65.72% "Agree" and 8.58% "Strongly Agree") and only a small fraction dissenting. Only 36.83% of males agreed, while a notable 31.57% remained completely neutral, and more than a quarter (26.31%) actively disagreed. Furthermore, while females showed strong conviction with 5.56% of the total sample (8.58% of females) selecting "Strongly Agree," absolutely no male respondents (0.00%) chose this option, highlighting that female sentiment is overwhelmingly cohesive and supportive,

Interpretation

Based on the bar chart provided in image_25dd24.png, there is a distinct contrast in survey responses when segmented by gender. Among female respondents, a significant majority (nearly 39%) expressed that they "Agree" with the statement, while the remaining responses are spread relatively evenly under 10% across "Neutral," "Strongly Agree," and "Strongly Disagree," with no representation for "Disagree." Conversely, male respondents show a perfectly uniform, lower distribution (around 11% each) across three specific categories—"Agree," "Disagree," and "Neutral." "Strongly Disagree" and zero representation for "Strongly Agree." Overall, this indicates a much stronger consensus and positive among males.

5.I feel a strong personal, moral responsibility to minimize my daily plastic consumption.?

Row Labels	Agree	Disagree	Neutral	Strongly Agree	Strongly Disagree	Grand Total
Female	38.89%	0.00%	7.41%	9.26%	9.26%	64.81%
Male	11.11%	11.11%	11.11%	0.00%	1.85%	35.19%
Grand Total	50.00%	11.11%	18.52%	9.26%	11.11%	100.00%



Analysis

The data analysis demonstrates a pronounced gender imbalance in participation and a stark divergence in viewpoints, with female respondents making up the clear majority of the sample at 64.81% compared to males at 35.19%. Across the entire surveyed population, sentiment leans heavily positive, as exactly half (50.00%) of the respondents "Agree", approximately 74.30% of females express a positive stance (60.01% "Agree" and 14.29% "Strongly Agree"), while completely avoiding the standard "Disagree" option (0.00%). exactly 11.11% of the total sample (31.57% of males) each selected "Agree," "Disagree," and "Neutral," while females showed strong conviction with 9.26% of the total sample selecting "Strongly Agree," absolutely zero representation (0.00%) in this category,

Interpretation

Based on the bar chart provided in image_25ec66.png, there is a distinct contrast in survey responses when segmented by gender. Among female respondents, a significant majority (nearly 39%) expressed that they "Agree" with the statement, while the remaining responses are spread relatively evenly under 10% across "Neutral," "Strongly Agree," and "Strongly Disagree," with no representation for "Disagree." Conversely, male respondents show a perfectly uniform, lower distribution (around 11% each) across three specific categories—"Agree," "Disagree," and "Neutral"—with only a minimal percentage choosing "Strongly Disagree" and zero representation for "Strongly Agree." Overall, this indicates a much stronger consensus and positive leaning among females compared to a highly split or indifferent sentiment among males.

SPSS TEST

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The categories of 1. Age group occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
2	The categories defined by 2. Gender = Female and Male occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.041	Reject the null hypothesis.
3	The categories of 3.. Highest Level of Education Attained occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
4	The categories of 4.Monthly Household Income (Approximate) occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
5	The categories defined by 5. Residential Area Type = Rural and Urban occur with probabilities 0.5 and 0.5.	One-Sample Binomial Test	.134	Retain the null hypothesis.
6	The categories of 6.I am well-informed about the long-term environmental impacts of improper plastic waste disposal. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
7	The categories of 7.I clearly understand the differences between recyclable, compostable, and single-use plastics. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
8	The categories of 8.Local government policies and public campaigns effectively promote the reduction of plastic waste in my community. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
9	The categories of 9.I feel a strong personal, moral responsibility to minimize my daily plastic consumption. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.
10	The categories of 10.I believe that individual actions (like switching to reusable bags) can significantly reduce global plastic pollution. occur with equal probabilities.	One-Sample Chi-Square Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

N Par Tests

Descriptive Statistics			
	Mean	Std. Deviation	N
9.I feel a strong personal, moral responsibility to minimize my daily plastic consumption.	3.33	1.166	54
11.I consistently segregate my plastic waste from organic and other dry waste at home before disposal	3.30	1.075	54
12.I actively clean and dry plastic containers (like milk pouches or food containers) before sending them to recycling.	3.70	1.341	54
13.I purposefully reuse single-use plastic items (like grocery bags and plastic bottles) multiple times before discarding them.	3.24	1.181	54
14.I systematically drop off my plastic waste at designated community recycling centers or give it to authorized waste collectors.	3.50	1.060	54
15.I actively choose products with minimal or eco-friendly packaging over those wrapped in heavy plastic, even if it costs slightly more.	3.43	1.126	54

Descriptive Statistics					
	N	Mean	Std. Deviation	Minimum	Maximum
9.I feel a strong personal, moral responsibility to minimize my daily plastic consumption.	54	3.33	1.166	1	5

Residuals Statistics					
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.95	4.80	3.33	1.015	54
Residual	-1.476	1.316	.000	.573	54
Std. Predicted Value	-2.350	1.447	.000	1.000	54
Std. Residual	-2.450	2.184	.000	.952	54
a. Dependent Variable: 9.I feel a strong personal, moral responsibility to minimize my daily plastic consumption.					

Chi Square Test

Frequencies

9.I feel a strong personal, moral responsibility to minimize my daily plastic consumption.			
	Observed N	Expected N	Residual
1	6	10.8	-4.8
2	7	10.8	-3.8
3	9	10.8	-1.8
4	27	10.8	16.2
5	5	10.8	-5.8
Total	54		

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	54.583	5	10.917	30.084	.000 ^b
	Residual	17.417	48	.363		
	Total	72.000	53			
a. Dependent Variable: 9.I feel a strong personal, moral responsibility to minimize my daily plastic consumption.						
b. Predictors: (Constant), 15.I actively choose products with minimal or eco-friendly packaging over those wrapped in heavy plastic, even if it costs slightly more., 13.I purposefully reuse single-use plastic items (like grocery bags and plastic bottles) multiple times before discarding them., 14.I systematically drop off my plastic waste at designated community recycling centers or give it to authorized waste collectors., 11.I consistently segregate my plastic waste from organic and other dry waste at home before disposal, 12.I actively clean and dry plastic containers (like milk pouches or food containers) before sending them to recycling.						

Test Statistics

Test Statistics	
	9.I feel a strong personal, moral responsibility to minimize my daily plastic consumption.
Chi-Square	31.185 ^a
df	4
Asymp. Sig.	.000
a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 10.8.	

Findings

- Mysore city generates a significant quantity of plastic waste every day due to population growth, urbanization, and increased use of single-use plastics.
- Many households and commercial establishments do not properly separate plastic waste from other solid waste, reducing recycling efficiency.
- A large section of the public has limited awareness of proper plastic waste disposal, recycling methods, and the environmental impacts of plastic pollution.
- The municipal corporation faces difficulties in the collection, transportation, segregation, and recycling of plastic waste because of limited infrastructure and manpower.
- Effective implementation of plastic waste management rules, regular awareness campaigns, and active participation from citizens can significantly improve plastic waste management in Mysore.

Conclusion

Plastic waste management is a major environmental challenge in the Mysore Municipal Corporation area due to increasing urbanization, population growth, and the widespread use of single-use plastics. The study indicates that while the municipal corporation has taken several initiatives, such as door-to-door waste collection, waste segregation, awareness campaigns, and implementation of plastic waste management rules, challenges remain in achieving effective and sustainable plastic waste management.

Suggestions

- ☐ Households, commercial establishments, and institutions should be encouraged to separate plastic waste from biodegradable and other recyclable waste before disposal.

- The Mysore Municipal Corporation should conduct regular awareness campaigns through schools, colleges, community groups, and social media to educate citizens about responsible plastic waste disposal and recycling.
- The municipality should expand door-to-door collection services and establish more plastic waste collection and recycling centers to ensure proper disposal and reuse of plastic materials

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