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A STUDY OF AWARENESS ABOUT RECYCLING AND MANAGING WASTE INSIDE THE COLLEGE CAMPUS WITH REFERENCE TO CHENNAI CITY

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ABSTRACT

This study analysis the level of awareness and perception of students regarding recycling and waste management practices within college campuses in Chennai city. It aims to identify students' knowledge of recycling, waste segregation practices, and their attitudes toward maintaining a clean and sustainable campus. A systematic questionnaire was used to gather primary data from 100 respondents and analyzed using statistical tools. The findings highlight the significance of environmental awareness and focus on the necessity of implementing effective recycling programs and waste management systems to foster sustainability within educational institutions.

keywords: Recycling, Waste Management, Environmental Awareness, Waste Segregation, Sustainability.

INTRODUCTION

Waste management has become one of the most serious environmental issues in rapidly growing urban areas such as Chennai. With increasing population, urbanization, and changing lifestyles, the volume of waste generated has significantly risen, placing greater pressure on waste management systems and environmental conservation efforts. Inefficient waste management practices can lead to pollution, health hazards, and degradation of natural resources, emphasizing the significance of efficient recycling and waste management practices.

Recycling is a key component of sustainable waste management, which helps reduce the amount of waste sent to landfills, conserves natural resources, and minimizes environmental impact. However, the success of recycling initiatives largely depends on the awareness, attitude, and participation of individuals. The educational institutions, particularly college campuses, play a vital role in shaping environmentally responsible behavior among young individuals. Students represent a significant segment of society and can act as catalysts for promoting sustainable practices both within and beyond the campus.

Despite various government initiatives and awareness programs in Chennai, improper waste segregation and limited participation in recycling activities continue to be major concerns. Many individuals lack adequate knowledge about proper waste disposal methods, the significance of segregation at source, and the environmental benefits of recycling. This gap between awareness

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and actual practice emphasizing the need for focused studies to understand the level of awareness and behavior among students.

This study aims to evaluate the awareness of recycling and waste management practices among students within a college campus in Chennai. It seeks to examine their knowledge, attitudes, and practices related to waste handling, as well as identify the challenges and barriers to effective waste management. The findings of this study can help institutions design better awareness programs and implement efficient waste management strategies within campus.

REVIEW OF LITERATURE

1. **Gajalakshmi Radhakrishnan & Sk Manivannan (2025)**
   The study found that higher food waste awareness among Tamil Nadu students leads to better waste management attitudes. It recommends environmental education and social media campaigns to encourage sustainable behavior.

2. **Astha Tripathi et al. (2024)**
   The study explains how circular economy principles and smart technology can help create zero-waste campuses. It highlights educational institutions as key promoters of sustainability.

3. **Enas Nagah Elhalwagy (2024)**
   The study describes higher education institutions as "mini cities" requiring systematic waste management strategies. It emphasizes academic engagement and environmental programs for sustainable campus management.

4. **Ashish Soni et al. (2023)**
   The study states that rapid urbanization has increased waste management challenges in India. It recommends integrated recycling systems to improve environmental and public health.

5. **Chao et al. (2023)**
   The study found that environmental concern, motivation, and altruism positively influence students' recycling behavior. It also highlights the role of place attachment in encouraging recycling.

6. **Lingqiong Wu et al. (2022)**
   The study found that environmental knowledge, personal norms, and perceived behavioral control strongly influence waste management behavior. It emphasizes psychological factors in improving recycling practices.

7. **Yildiz and Budur (2019)**
   The study found that curricular and extracurricular activities improve environmental awareness among college students and recommended regular environmental activities in educational institutions.

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RESEARCH GAP

Although several studies have examined waste management and recycling awareness, limited research has focused on the awareness, attitudes, and waste management practices of college students in Chennai. The existing studies lack adequate evidence regarding the disparity between students' understanding and their actual waste disposal behaviors, along with the success of institutional efforts like awareness campaigns and waste segregation systems. This study addresses these gaps by assessing students' awareness, attitudes, and waste management practices within college campuses in Chennai.

OBJECTIVES OF THE STUDY

- To identify the level of awareness about recycling waste among the students in various colleges in Chennai.
- To identify the level of awareness about managing waste among the students in various in colleges in Chennai.
- To identify the type of recycling waste inside the college.
- To analyze students' perception towards the recycling and managing waste inside the college.

RESEARCH METHODOLOGY

This research is based on primary data collected from 100 students from different colleges in Chennai through a structured questionnaire prepared through Google Forms using the Convenience Sampling method, over a period of six months. The data collected was analyzed by percentage analysis, Friedman test and inferential analysis to analyze the opinions of respondents regarding the interpret the level of awareness and perception of students regarding recycling and waste management practices within college campuses.

CONCEPTUAL FRAMEWORK

Recycling and effective waste management are essential for reducing pollution, conserving natural resources, and promoting sustainable development. In college campuses, practices such as waste segregation, paper and plastic recycling, composting, and reuse of materials help reduce environmental impact. Students’ awareness of these practices improve their understanding, participation, and responsible behavior toward waste management.

Student's perception toward recycling is influenced by their awareness, the availability of proper facilities, and institutional initiatives. Higher awareness and effective recycling systems encourage positive attitudes and greater participation, while lack of awareness and facilities can create barriers. Therefore, awareness, recycling practices, and perception are interconnected and play an important role in promoting effective waste management and environmental sustainability on college campuses.

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DATA ANALYSIS AND INTERPRETATION
PRCENTAGE ANALYSIS

FEATURES	FACTORS	FREQUENCY	PERCENTAGE
Gender	Female	80	80.0
	Male	19	19.0
	Prefer not to say	1	1.0
Age	Below 18	8	8.0
	18-20	41	41.0
	20-25	45	45.0
	More than 25	6	6.0
Type of Institution	Arts and science college	70	70.0
	Engineering college	6	6.0
	Medical college	4	4.0
	Law college	18	18.0
	Other	2	2.0
Course of Study	UG	70	70.0
	PG	29	29.0
	Research scholar	1	1.0
Awareness of availability of separate waste bins in the canteen/food court	Yes, consistently	56	56.0
	Only in some areas	39	39.0
	No, there is only one common bin	5	5.0
Respondents' perception of overall campus cleanliness and waste management	Very Clean and Organised	68	68.0
	Moderately Clean	29	29.0
	Unorganized and littered	3	3.0
Respondents' perception of the most effective approach to improve Students' Recycling Habits	Strict rules and monitoring	47	47.0
	Awareness workshops and seminars	39	39.0
	Providing better infrastructure	11	11.0
	Other	3	3.0

Source : Primary data

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INFERENCE

The demographic analysis reveals that the majority of the respondents are female (80%), belong to the 20–25 years age group (45%), are studying in Arts and Science Colleges (70%), and are Undergraduate (UG) students (70%). Overall, the demographic characteristics show that the study primarily represents undergraduate female students aged 20–25 years from Arts and Science Colleges.

The findings reveal that separate waste bins are widely available on campus, most respondents perceive the campus as clean and well organized, and strict rules and monitoring are considered the best approach to improving recycling habits among students.

INFERENTIAL ANALYSIS

CHI-SQUARE TEST

Relationship between age and awareness and perception of recycling and waste management practices inside the college campus

Particulars	Responses	Pearson Chi square	P-Value
Below 18	8	53.779	0.013
18-20	41		
20-25	45		
More than 25	6		
Total	100		

Source : Computed data

H_0: There is no significant relationship between age and awareness and perception of recycling and waste management practices inside the college campus.

H_1: There is a significant relationship between age and awareness and perception of recycling and waste management practices inside the college campus.

INFERENCE

It is inferred that there is a significant relationship between age and awareness and perception of recycling and waste management practices inside the college campus among the respondents. Since the p-value is 0.013, which is less than the 0.05 level of significance. Hence, the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore, there is a significant relationship between age and awareness and perception of recycling and waste management practices inside the college campus.

FRIEDMAN TEST

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Particulars	Mean Rank	Ranking
My college conducts awareness programs related to waste management	3.45	I
Faculty members encourage students to follow proper waste disposal practices	2.72	V
Students are responsible for managing waste inside the college campus	3.02	II
I separate my waste (e.g., keeping plastic/paper separate from food) before disposal	2.83	IV
I feel that the waste collected on campus is actually recycled and not just dumped	2.99	III

Particulars	Value
Number of Respondents (N)	100
Chi-Square	19.297
Degrees of Freedom (df)	4
p-value	.001

Source : Computed data

INFERENCE

The Friedman Test shows a significant difference in the ranking of awareness and perception of recycling and waste management practices, as the p-value (0.001) is less than 0.05. The awareness programs conducted by the college were identified as the most influential factor in shaping students' awareness and perception. Students also recognized their responsibility in managing waste and showed moderate confidence in the campus recycling process. Waste segregation

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practices among students were moderate, while faculty encouragement was ranked as the least influential factor.

FINDINGS

- Most of the respondents were female undergraduate students aged 20–25 years from Arts and Science colleges and were aware of the GCC Source Segregation System.
- The majority indicated the availability of separate waste bins, perceived their campus as clean and organized, and believed that waste is segregated and recycled within the campus.
- Respondents expressed positive perceptions towards waste management, with the highest level of agreement for colleges conducting waste management awareness programs, followed by faculty encouragement and student responsibility.
- Chi-square test showed a significant relationship only between age and awareness of the GCC Source Segregation System, while the Friedman test identified awareness programs as the most influential factor affecting students' perceptions of recycling and waste management.

SUGGESTIONS OF THE STUDY

- Conduct regular awareness programs such as seminars, workshops, campaigns, and guest lectures to further improve students' knowledge and participation in recycling and waste management activities.
- Strengthen waste segregation practices by installing clearly labelled colour-coded bins (for plastic, paper, food waste, etc.) at all strategic locations across the campus, especially in canteens and common areas.
- Increase faculty involvement in promoting proper waste disposal practices, as faculty encouragement received the lowest rank in the Friedman Test. Faculty members can motivate students through classroom discussions and regular reminders.
- Implement stricter waste management policies and monitoring mechanisms within the campus, as many respondents perceived strict rules and monitoring as the most effective way to improve recycling habits.
- Ensure transparency in the recycling process by informing students about how segregated waste is collected, processed, and recycled. This will strengthen students' confidence that waste is actually recycled rather than simply dumped.

CONCLUSION

The study concludes that college students in Chennai possess a good level of awareness regarding recycling and waste management practices. Most respondents are aware of source segregation, environmental awareness programs, and waste management facilities available on their campuses. They also recognize the importance of proper waste disposal and believe that students, faculty members, and Green Clubs share the responsibility for maintaining a clean and sustainable campus. Although awareness levels are high, active participation in recycling activities needs further improvement. The findings also indicate that strict rules, regular awareness programs, and better waste management infrastructure can effectively promote recycling habits among students.

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Overall, the study highlights that continuous environmental education and greater student involvement are essential for strengthening sustainable waste management practices in colleges.

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