International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 20s, 2025
https://theaspd.com/index.php

Assessing Environmental Awareness And Waste Management Practices Among Rural Communities: A Pre-Intervention Study In Alipur Village, Gurugram

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Abstract
This research paper investigates the level of environmental awareness and sustainable waste management knowledge among the residents of Alipur Village, located in Sohna Tehsil of Gurugram District, Haryana. The study is based on the pre-intervention phase of a broader case study and aims to identify the community's awareness gaps before implementing educational or behavioral interventions. Using a structured questionnaire, data was collected from 120 residents representing diverse demographic categories-gender, education level, and economic status. The survey covered three core dimensions: general environmental awareness, knowledge of waste segregation, and practices regarding waste management. The findings revealed that approximately 75% of respondents lacked basic environmental knowledge, 80% were unfamiliar with waste segregation practices, and 70% admitted to poor waste disposal habits. Notably, higher awareness levels were observed among respondents with graduate-level education and those from economically stable households. The paper concludes with suggestions for targeted sensitization and education programs to build community capacity for sustainable environmental practices. This baseline assessment highlights the need for urgent attention toward environmental literacy in rural areas and serves as a model for similar studies in other regions.
Key words: *Environmental Awareness, Sustainable Waste Management, Rural Community Engagement.*
Authors

1. INTRODUCTION

Environmental degradation due to improper waste disposal and low awareness of sustainable practices is a global concern. The situation is particularly critical in rural regions where environmental consciousness is limited, and infrastructure for waste management is often inadequate or completely absent. As India continues to urbanize and develop, the rural-urban divide in environmental awareness has become more apparent. Villages, while rich in natural resources, are often at the receiving end of poor planning and lack of information dissemination regarding environmental protection.

This study was undertaken in Alipur Village, situated in the rapidly developing Sohna Tehsil of Gurugram District, Haryana. The focus of the study was to assess the level of environmental awareness and waste management practices among local residents before any interventions were introduced. While the broader project included awareness campaigns and infrastructure installation, this paper specifically examines the pre-test (baseline) survey to understand the foundational knowledge and practices of the community. The assessment was carried out through a structured questionnaire that captured three main dimensions: general awareness about environmental issues, understanding of waste segregation, and actual household waste management behaviors. The results form the foundation for future educational and behavioral interventions and are critical in understanding how awareness gaps vary across gender, education levels, and income categories.

By focusing only on the pre-intervention phase, this research aims to offer insights into the pressing need for environmental education in rural India. It emphasizes that without foundational knowledge, sustainability efforts are likely to fail. This paper presents not only a data-driven baseline but also makes the case for integrating environmental studies into rural outreach programs and policy-making.

2. Significance of the Study

The significance of this study lies in its potential to influence grassroots-level environmental policy and education strategies. In the context of India's commitment to the Sustainable Development Goals (SDGs)-particularly Goal 11 (Sustainable Cities and Communities), Goal 12 (Responsible Consumption and Production), and Goal 13 (Climate Action)-it is essential to understand how aware rural populations are about their roles in environmental protection. Alipur Village provides a representative case of many Indian rural communities where traditional practices and limited formal education coexist.

The findings from this baseline study offer actionable insights into the current environmental literacy and reveal the gaps that need urgent attention. By linking environmental awareness to variables like education and economic status, the study helps policymakers, educators, and local governments design customized intervention programs that are both effective and community-sensitive. Moreover, it highlights the role of student-teachers, local leadership, and institutional support in promoting long-term sustainable practices.

Table 1: Demography Profile of the Respondent.

Category	Sub-category	Number of Respondents	Male	Female
Gender Distribution	Total	120	60	60
Education Level	Illiterate	20	8	12
Education Level	Primary (1st–5th)	30	15	15
Education Level	Secondary (6th–10th)	25	14	11
Education Level	Higher Secondary (11th–12th)	20	12	8
Education Level	Graduation & Above	25	11	14
Economic Status	Low Income (< ₹10,000/month)	40	18	22
Economic Status	Middle Income (₹10,000–₹25,000/month)	50	24	26
Economic Status	High Income (> ₹25,000/month)	30	18	12
Occupation	Agriculture	45	30	15
Occupation	Daily Wage Labourer	25	15	10
Occupation	Household/Unpaid Work	20	2	18
Occupation	Private/Govt. Job	15	10	5
Occupation	Students	15	3	12

Source: Field Work 2025

3. Review of Related Literature

Research on environmental awareness and sustainable waste management in rural India is relatively limited compared to urban studies. However, existing literature highlights a growing recognition of the role that local communities play in achieving sustainability goals. According to Ghosh (2018), environmental education is crucial for behavioral change, especially in semi-literate rural populations where informal knowledge and customs often guide waste disposal. Chatterjee and Kumar (2015) emphasized that awareness levels in rural areas are deeply tied to literacy and gender roles, where women are often responsible for managing household waste but lack access to information or resources. Narayan and Rao (2020) found that communities with higher access to education were more likely to participate in waste segregation practices and understand the impact of pollution on health and agriculture. Studies like Patel (2016) also reveal that environmental initiatives must be culturally and linguistically contextualized for rural settings, and interventions are more successful when local leaders and schools are

involved. Yet, as highlighted by Sharma and Bansal (2022), there is a significant gap in baseline data from rural communities to measure the need for and effectiveness of such interventions. This current study contributes to filling that gap by offering data from a pre-intervention survey conducted in a typical rural village.

4. Research Questions

1. What is the current level of awareness about environmental issues among residents of Alipur Village?
2. How much do the residents know about proper waste segregation methods?
3. What are the common waste disposal practices followed in the village?
4. Is there a correlation between respondents' awareness levels and their education, gender, or economic status?

5. Research Objectives

1. To assess the general environmental awareness of the community members in Alipur Village.
2. To identify the extent of knowledge regarding waste segregation among the respondents.
3. To examine the existing waste disposal habits practiced in the village.
4. To analyze the relationship between awareness levels and demographic factors such as gender, education, and income.

5. Research Methodology and Data Analysis

This study employed a Mixed Methods Research Design, integrating both quantitative and qualitative approaches to assess the level of environmental awareness and sustainable waste management practices among residents of Alipur Village, located in Sohna Tehsil, Gurugram, Haryana. The study aimed to generate a nuanced understanding of community knowledge, behaviors, and perspectives prior to any external intervention, offering both statistical and thematic insights into the environmental literacy of rural populations**.**

5.1 Research Design and Approach

The quantitative component was conducted through the administration of a structured pre-test questionnaire, developed by the research team based on extensive literature review, field knowledge, and expert inputs. This instrument was designed to assess three key dimensions:

1. General Environmental Awareness
2. Knowledge of Waste Segregation
3. Current Waste Management Practices

Each dimension consisted of close-ended questions, primarily dichotomous (Yes/No), and was supplemented with multiple-choice items. Demographic data including gender, age, education level, occupation, family size, and economic status were also collected to allow cross-sectional analysis.

The qualitative component comprised in-depth interviews and a Focus Group Discussion (FGD) with select respondents. These aimed to capture deeper attitudes, local knowledge systems, Behavioral patterns, and community narratives related to environmental sustainability. The interviews and FGD were audio-recorded, transcribed verbatim, and analyzed thematically using NVivo 14 Software. The pre-test questionnaire was developed collaboratively and reviewed by a panel of environmental education experts for content validity. A pilot test was conducted with 10 villagers to assess clarity, sequence, and reliability. Based on the feedback, minor modifications were made to the wording and layout. The final questionnaire was then translated into the local language (Hindi) to ensure linguistic and cultural appropriateness. The study involved a sample of 120 respondents, representing approximately 3.5% of the village's total population (3,398 as per Census 2011). A purposive sampling method was used to ensure gender parity (60 males and 60 females) and diversity in age, education, and income.

Data collection was carried out in July 2025. The second and third authors were responsible for conducting the fieldwork, administering the questionnaires, and facilitating the interviews and FGD. The first author handled the data cleaning, coding, and analysis, supported by authors four and five. The final manuscript draft was prepared and reviewed collaboratively by authors five and six, who also undertook proofreading and editorial revisions.

6.Data Analysis Dimension wise

The analysis of responses across three defined dimensions reveals the following insights:

- **Dimension 1:** General Environmental Awareness: 75% of the population lacks basic understanding.
- **Dimension 2:** Sustainable Waste Management Knowledge: 80% unaware.
- **Dimension 3:** Community Participation & Practices: 70% unaware.

This highlights a critical knowledge gap in sustainable practices, especially waste segregation and management.

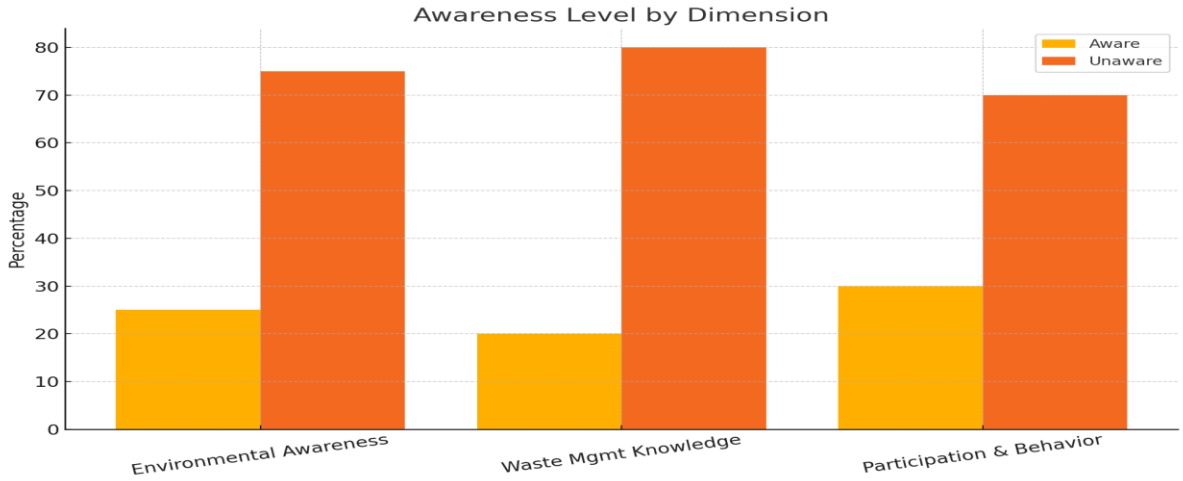

Figure 1: Awareness Level by Dimension

6.1 Awareness by Education Level

The educational qualification of respondents has a direct correlation with their level of awareness. Respondents with graduate-level education and above showed 85% awareness across all three dimensions, while those below graduation had significantly lower awareness (25%).

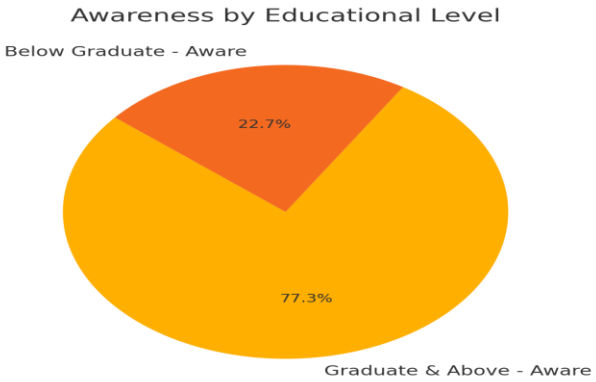

Figure 2: Awareness by Educational Level

6.3 Awareness by Economic Status

Economic status also affects awareness levels. Respondents from upper economic classes displayed high levels of awareness (above 75%), while BPL and APL respondents showed less than 25% awareness in most dimensions. This may be attributed to access to resources, education, and information.

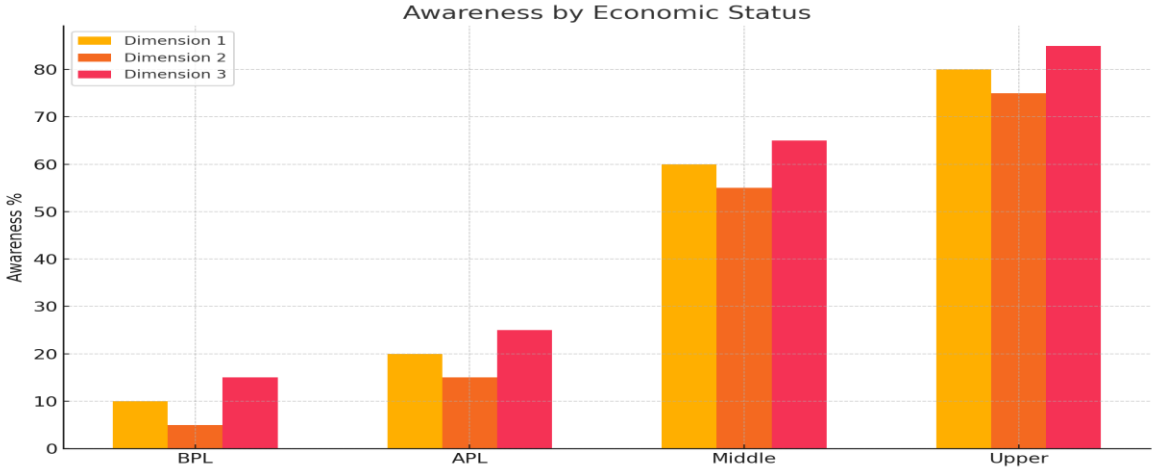

Figure 3: Awareness by Economic Status

International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 20s, 2025
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6.4 Gender-Based Observations

A significant finding is the role of educated females, who were observed to have higher awareness than their male counterparts across all dimensions. This suggests that educated women can be key agents in promoting environmental responsibility in households and communities. The pre-test survey has revealed substantial gaps in environmental and waste management awareness among residents of Alipur Village. This analysis provides the groundwork for a structured intervention to promote sustainable community behavior and enhance environmental literacy.

6.5 Focus Group Discussion (FGD) Analysis

As part of the intervention programme, a Focus Group Discussion (FGD) was conducted to gather deeper insights into the perceptions, attitudes, challenges, and suggestions of the community members regarding environmental awareness and waste management practices. The FGD included a diverse group of participants—male and female residents, school teachers, students, local leaders, and volunteers-representing various age groups, educational backgrounds, and socio-economic statuses.

The FGD was held after the main intervention activities (Nukkad Natak, school sessions, door-to-door visits), allowing participants to reflect on their learning experiences, changes in behavior, and the relevance of the programme to their daily lives. The session was moderated by members of the School of Education and was structured using semi-open-ended questions to facilitate free and participatory dialogue.

6. KEY THEMES IDENTIFIED

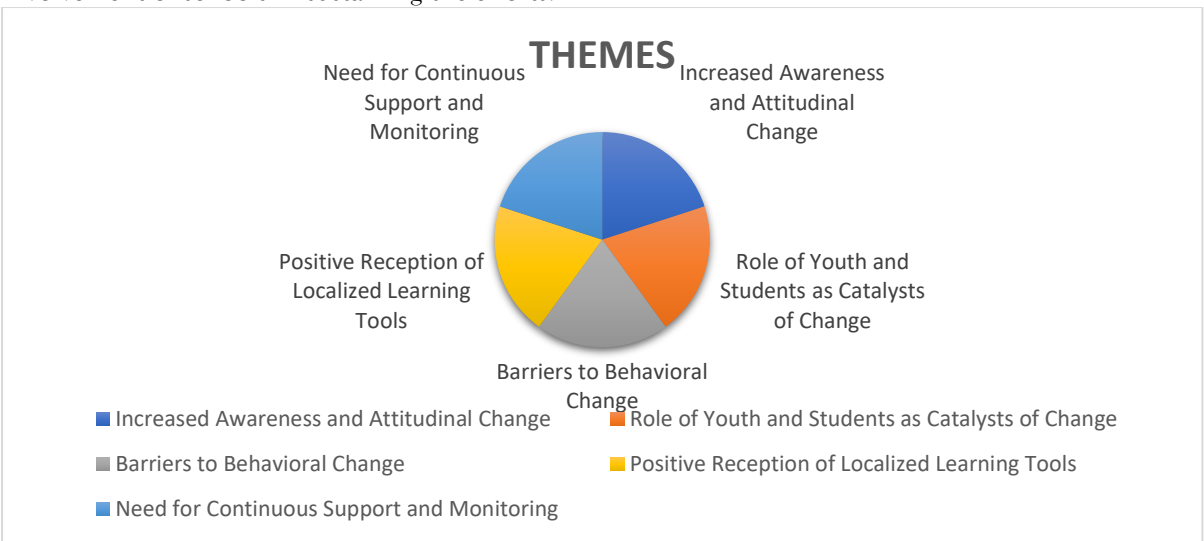
6.1. Increased Awareness and Attitudinal Change: Participants reported that they had developed a clearer understanding of environmental issues such as pollution, water contamination, and the harmful effects of plastic waste. Many admitted that the issue had never seemed urgent before, but the intervention made them more conscious of their surroundings.

6.2. Role of Youth and Students as Catalysts of Change: There was consensus that school children had a powerful impact in spreading messages to families. Participants noted that their children began educating parents about dustbin usage, waste segregation, and cleanliness, reinforcing that change starts from home.

6.3. Barriers to Behavioral Change: Despite increased awareness, some participants acknowledged challenges in adopting new behaviors. These included lack of waste disposal infrastructure, habits of burning waste, and initial hesitation due to peer influence or family norms.

6.4. Positive Reception of Localized Learning Tools: The use of Nukkad Natak, wall paintings, and visual posters was highly appreciated. Participants noted that local language and culturally relevant examples made the messages easier to relate to and understand.

6.5. Need for Continuous Support and Monitoring: Several respondents stressed the importance of regular follow-up, suggesting monthly awareness drives, monitoring by Panchayat officials, and the involvement of schools in sustaining the efforts.



In conclusion, the FGD provided rich qualitative evidence to support the quantitative findings of the post-test. It confirmed that community engagement, student participation, and localized interventions are key to lasting impact.

Summary of Findings

The study revealed several key insights into the environmental awareness and waste management practices of residents in Alipur Village. Firstly, a substantial proportion of the population-approximately 75%-lacked a basic understanding of environmental concepts, including pollution, sustainability, and ecological responsibility. Knowledge about sustainable waste management practices was also critically low, with 80% of respondents unaware of the importance of segregating wet and dry waste or the consequences of improper disposal. In terms of actual practices, nearly 70% of participants admitted to engaging in unsustainable waste disposal methods such as burning or dumping in open spaces, reflecting a lack of awareness and inadequate infrastructure.

A significant relationship was observed between education level and environmental awareness. Respondents with graduate-level education or higher demonstrated an 85% awareness rate across all dimensions, whereas those with lower educational qualifications showed limited understanding, with awareness levels around 25%. Economic status similarly influenced awareness: respondents from higher-income households exhibited greater environmental consciousness (above 75%), while those from lower-income backgrounds, particularly BPL and marginal APL families, showed less than 25% awareness in most areas. These findings suggest that both education and financial stability contribute positively to environmental literacy.

Gender-based patterns also emerged, with educated female respondents displaying consistently higher awareness across all dimensions compared to their male counterparts. Women, particularly homemakers, showed a strong grasp of household-level waste management and expressed willingness to adopt more sustainable practices, indicating their potential role as influential agents of change within the community.

Insights from the Focus Group Discussions (FGDs) further supported the quantitative findings. Participants reported a notable shift in attitudes and awareness following the intervention. Many acknowledged that they had not previously considered environmental protection a priority, but now viewed it as essential. Children and youth, particularly school-going students, played a catalytic role by transferring knowledge to their families and encouraging responsible practices. However, some barriers to behavior change remained, including entrenched habits, lack of waste collection infrastructure, and social resistance. The use of culturally relevant tools such as Nukkad Natak (street plays), wall posters, and local language messaging was widely appreciated for making complex information more relatable and accessible. Participants emphasized the need for continued community support, monitoring, and school involvement to sustain behavioral change over time.

Overall, the findings underscore a critical need for structured, inclusive, and ongoing environmental education programs in rural settings. They highlight the importance of targeting under-informed groups-particularly those with limited education or economic means-and leveraging schools and community leaders as partners in driving environmental awareness and sustainable waste management.

8. CONCLUSION

This pre-intervention study presents a comprehensive picture of the environmental awareness levels and waste management behaviors of a rural community in Haryana. The findings indicate a critical awareness gap, with low environmental literacy particularly evident among those with lower education and income levels. While the majority of participants expressed a willingness to learn and change, they lacked the conceptual clarity, tools, and community support to act upon that willingness. The quantitative results demonstrate that education is a strong predictor of environmental awareness, and this is further corroborated by qualitative insights from interviews and focus group discussions. Gender also plays a significant role: female respondents, especially homemakers, had intuitive knowledge about cleanliness and environmental care but were not empowered with technical information or infrastructure to apply it. The qualitative themes revealed deep-rooted perceptions, such as viewing environmental protection as the government's responsibility, and highlighted a lack of urgency about long-term ecological impacts. However, they also brought to light the aspirational mindset of the community, showing that with proper support and education, behavioral transformation is not only possible but desired.

This study lays the groundwork for the subsequent interventions that were undertaken and demonstrates the importance of conducting baseline research before launching awareness programs. It also contributes to the limited body of literature on environmental education in rural India, providing both policymakers and educators with evidence-based insights for designing community-sensitive programs.

Acknowledgement

We express our sincere gratitude to the participants of Alipur Village, the Principal of Alipur School, and the village Sarpanch for their active involvement. Special thanks to Prof. Dr. Tania Gupta, Dean, School of Education, for her valuable guidance, and to the Management of K. R. Mangalam University for their financial and institutional support in facilitating this study.

Ethical Considerations

The research was conducted following all standard ethical procedures for human subjects. Informed consent was obtained from all participants prior to data collection. Participants were informed about the purpose of the study, the voluntary nature of their participation, and the confidentiality of their responses. Data were anonymized, and no identifying information has been disclosed.

Conflict of Interest Statement

The authors declare that there is no conflict of interest related to this research. All opinions, findings, and recommendations expressed are solely those of the authors and are not influenced by any personal or institutional interest.

5. REFERENCE

6. Central Pollution Control Board (CPCB). (2016). Solid Waste Management Rules, 2016. Ministry of Environment, Forest and Climate Change, Government of India.
7. Chatterjee, S., & Kumar, R. (2015). The Gendered Dimensions of Waste Management: A Study of Women's Roles and Awareness in Rural Communities. Indian Journal of Gender Studies, 22(1), 45-62.
8. Damerell, P., Howe, C., & Milner-Gulland, E. J. (2013). Child-oriented environmental education can effectively promote conservation knowledge and behaviour.[19] Environmental Conservation, 40(2), 1-11.
9. Debrah, J. K., Vidal, D. G., & Dinis, M. A. P. (2021). Raising awareness on solid waste management through formal education for sustainability: A developing countries evidence review. Recycling, 6(1), 6.
10. Etim, E. (2024). Leveraging public awareness and behavioural change for entrepreneurial waste management. Heliyon, 10(21).
11. Farooq, M., Cheng, J., Khan, N. U., Saufi, R. A., Kanwal, N., & Bazkiaei, H. A. (2022). Sustainable waste management companies with innovative smart solutions: A systematic review and conceptual model. Sustainability, 14(20), 13146.
12. Ghosh, A. (2018). Environmental Education for Sustainable Development in Rural India: A Behavioral Approach. Journal of Environmental Pedagogy and Sustainable Development, 24(3), 112-128.
13. Henao-Rodríguez, C., Lis-Gutiérrez, J. P., & Sierra, A. S. G. (2024). Factors Influencing Environmental Awareness and Solid Waste Management Practices in Bogotá: An Analysis Using Machine Learning. Air, Soil and Water Research, 17, 11786221241261188.
14. Joshi, R., & Ahmed, S. (2016).[20] Status and challenges of municipal solid waste management in India: A review. Cogent Environmental Science, 2(1), 1139434.
15. Karachalios, I., & Manesis, N. (2025). Fostering environmental awareness in primary school students: evaluating the impact of a waste management education program. European Journal of Education Studies, 12(4).
16. Kidd, R., & Byram, M. (1982). Demystifying pseudo-freirian development: The case of Laedza Batanani. Community Development Journal, 17(2), 91-105.
17. Kollmuss, A., & Agyeman, J. (2002). Mind the Gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? Environmental Education Research, 8(3), 239-260.
18. Kumar, S., et al. (2017). Challenges and opportunities for municipal solid waste management in India. Journal of Environmental Management, 198, 14-25.
19. Mia, M. M. (2025). Waste management techniques to promote sustainability and green practices. Management of Environmental Quality: An International Journal, 36(1), 183-207.
20. Narayan, T. S., & Rao, K. V. (2020). The Impact of Educational Attainment on Community Participation in Solid Waste Segregation Practices in South India. Journal of Social Change and Development, 45(2), 210-225.
21. Patel, R. (2016). Engaging Local Leaders and Schools in Environmental Interventions: A Culturally-Responsive Framework for Rural Settings. Community Development and Environmental Action, 14(4), 33-49.
22. Pretty, J. N. (1995). Participatory learning for sustainable agriculture. World Development, 23(8), 1247-1263.
23. Rao, S. K., & Shantaram, M. V. (2013). Solid waste management in rural areas: A case study. International Journal of Environmental Sciences, 3(1), 349-357.
24. Sharholy, M., Ahmad, K., Mahmood, G., & Trivedi, R. C. (2008).[21] Municipal solid waste management in Indian cities–A review. Waste Management, 28(2), 459-467.
25. Sharma, A., & Bansal, P. (2022). Measuring What Matters: The Critical Gap in Baseline Data for Assessing Environmental Interventions in Rural India. Indian Journal of Environmental Assessment, 8(1), 1-15.
26. Tang, W., & Azman, M. (2024). Enhancing environmental awareness through public awareness programs. Journal of Energy and Environmental Policy Options, 7(2), 10-16.
27. Utami, N. H., Putra, A. P., Ajizah, A., Amintarti, S., & Nurtamara, L. (2025). Participatory Strategies for Fostering Environmental Awareness and Domestic Waste Management through Waste Segregation among Primary School. Unram Journal of Community Service, 6(2), 378-383.
28. Valbuena, V. T. (1996). Folk media in development communication. Journal of Development Communication, 7(2), 15-25.