

Awareness, Attitudes, and Challenges of The Residents at Barangay Biliboy Diversion Road, Ormoc City on Garbage Disposal Practices

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Abstract

Proper household solid waste management is essential for environmental protection, public health, and community sustainability. This study assessed residents' awareness, attitudes, disposal behavior, and challenges concerning proper garbage disposal in Purok 3, Barangay Biliboy, Ormoc City, Leyte, Philippines. Guided by the Waste Management Hierarchy and Zero Waste Management principles, the study employed a quantitative descriptive research design involving 82 purposively selected respondents from 41 households. Data were collected using a validated, researcher-developed structured questionnaire and analyzed using descriptive statistics, particularly weighted means. Findings revealed high awareness of proper garbage disposal (WM = 4.30), strongly positive attitudes toward environmental cleanliness (WM = 4.55), and generally favorable disposal behavior (WM = 4.11). However, regular waste segregation received a comparatively lower rating (WM = 3.57), while irregular garbage collection (WM = 1.93), limited disposal facilities, barangay monitoring concerns, and plastic waste presented challenges to effective household waste management. Although respondents perceived their awareness as influencing disposal behavior, no statistically significant relationship was established through the descriptive analysis. The study concluded that sustained environmental education, improved waste collection services, and stronger community participation are necessary to enhance household waste management. Recommended interventions included environmental awareness campaigns, color-coded waste bins, designated garbage cages, community-led monitoring, recycling incentives, and regular clean-up activities. The study supports Sustainable Development Goals 3 (Good Health and Well-Being), 6 (Clean Water and Sanitation), 11 (Sustainable Cities and Communities), and 12 (Responsible Consumption and Production). Its sustainability implications include strengthening environmental responsibility, community participation, sanitation practices, and local waste management initiatives toward cleaner and healthier communities.

Keywords: Community Participation; Environmental Awareness; Garbage Disposal Behavior; Household Solid Waste Management; Sustainable Development Goals; Waste Management Challenges; Waste Segregation

1. Introduction

Proper solid waste management remains a significant environmental and public health concern in the Philippines. Increasing waste generation, inadequate collection services, and improper disposal contribute to pollution, sanitation problems, and health risks. In Purok 3, Barangay Biliboy, Ormoc City, garbage accumulation along the nearby Diversion Road has raised concerns regarding household disposal practices and community cleanliness. This study assessed residents' awareness, attitudes, and challenges regarding proper garbage disposal to identify opportunities for improving local waste management and environmental sustainability.

Solid waste management involves the collection, treatment, and disposal of discarded materials (Encyclopaedia Britannica, 2025). Improper disposal contributes to environmental degradation, contaminating air, water, and soil. Waste segregation supports reduction, reuse, and recycling practices that minimize environmental impacts. In Purok 3, Barangay Biliboy, delayed garbage collection may leave roadside waste exposed to animals and weather, contributing to scattered garbage along the nearby Diversion Road. These conditions highlight the importance of residents' awareness, responsible attitudes, and accessible waste management services.

Previous studies indicate that environmental awareness does not always translate into proper waste disposal. Cando, Guaynon, and Ledesma (2022) reported positive attitudes toward segregation but limited utilization of materials recovery facilities. Conversely, Ledesma, Tecson, and Baleta (2023) documented active recycling despite resource limitations, while Salud, Tamayao, and Bistayan (2025) found that demographic characteristics influenced household compliance. International studies identified similar barriers. Bidu, Jida, Kuma, and Gobana (2024) emphasized inadequate infrastructure, weak enforcement, and economic constraints. Tajuddin, Ridwan, and Mansor (2021) highlighted environmental education, while Zhang, Chan, and Wang (2021) emphasized community participation and stakeholder engagement. Collectively, these findings demonstrate that effective waste management requires awareness, appropriate facilities, and institutional support. Philippine studies have also examined household participation and waste-management awareness in different community settings (Arnold et al., 2021; Castin et al., 2022; Matic & Dayag, 2022; Treyes et al., 2023).

Globally, increasing municipal waste generation creates environmental and public health challenges. In the Philippines, household waste segregation and disposal remain concerns despite government initiatives. In Eastern Visayas, the Department of Environment and Natural Resources and Environmental Management Bureau have promoted responsible waste management through educational campaigns, including the Basura Buster initiative. Locally, garbage accumulation near the Diversion Road in Barangay Biliboy has raised sanitation concerns and prompted warnings regarding community cleanliness. Delayed collection and exposed household waste emphasize the need for improved disposal practices and coordinated local waste management.

The study was guided by the Waste Management Hierarchy and Zero Waste Management principles. Palmer (2005) emphasized waste prevention, reduction, reuse, recycling, and proper disposal, while Pongrácz, Phillips, and Keiski (2004) associated waste management with human behavior and socio-environmental systems. The Waste Management Hierarchy prioritizes prevention, reuse, recycling, recovery, and disposal (U.S. Environmental Protection Agency, 1989), while Zero Waste Management promotes the five principles of refuse, reduce, reuse, recycle, and rot, associated with Paul Palmer (2005). These frameworks support the assessment of sustainable household disposal practices. The study also adopted an input-process-output framework, identifying residents' awareness and challenges as inputs, attitudes toward garbage disposal as the process, and improved waste management approaches as the intended output.

Although previous studies examined household waste management awareness and practices, limited evidence addresses the specific disposal challenges experienced by residents of Purok 3, Barangay Biliboy, particularly those associated with delayed collection and garbage accumulation near the Diversion Road. This study therefore assessed residents' awareness, attitudes, and challenges regarding garbage disposal, examined the relationship between awareness and disposal behavior, and identified possible improvements. The assessment involved 82 purposively selected respondents, with two representatives per household, using a structured survey questionnaire. Findings were intended to support practical recommendations for barangay waste management initiatives.

The study aligns with SDG 3 (Good Health and Well-Being) by addressing sanitation-related health risks; SDG 6 (Clean Water and Sanitation) by promoting proper waste handling to minimize contamination; SDG 11 (Sustainable Cities and Communities) by supporting community cleanliness and sustainable waste management; and SDG 12 (Responsible Consumption and Production) by encouraging waste segregation, recycling, and responsible disposal. These connections emphasize the importance of effective household waste management in achieving sustainable communities.

The study contributes to environmental, public health, social, and institutional sustainability by identifying factors affecting household garbage disposal. Its findings may support pollution prevention, improved sanitation,

environmental awareness, and community participation. Furthermore, the study provides barangay officials and local government units with evidence for strengthening waste management programs, collection procedures, and environmental policies. These contributions support cleaner, healthier, and more sustainable communities in Barangay Biliboy, Ormoc City.

2. Material and methods

2.1 Research Design

The study utilized a quantitative descriptive research design to determine residents' awareness, attitudes, and challenges concerning garbage disposal practices. Structured survey questionnaires were administered to gather measurable data on waste segregation, collection, environmental cleanliness, and household waste management.

2.2 Locale of the Study

The study was conducted in Purok 3, Barangay Biliboy, Ormoc City, Leyte, Philippines. The area consists of closely situated households near the Diversion Road, which provides access to a nearby tourist destination. Although Purok 3 was not identified as the direct source of improper waste disposal, its proximity to the road exposed residents to concerns involving garbage accumulation, delayed collection, and community cleanliness. These conditions made the area relevant for assessing household waste management practices.

2.3 Respondents of the Study

The respondents comprised 82 residents representing 41 households in Purok 3, Barangay Biliboy, with two respondents selected from each household. Based on Barangay Hall of Biliboy (2023) records, the community had approximately 350 residents. Participants were permanent residents aged 18 years and above who were directly involved in household garbage disposal. Their responses provided information on waste management awareness, attitudes, practices, and challenges.

2.4 Sample and Sampling Procedure

Purposive sampling was employed to select participants with direct experience in managing household waste. According to the National Center for State Courts (2024), purposive sampling involves selecting individuals based on specific characteristics, experiences, or predetermined criteria. From approximately 350 residents, 82 qualified respondents representing 41 households were selected. Eligible participants were permanent residents aged 18 years or older who were directly involved in household garbage management and willing to participate. Nonresidents and individuals below 18 years old were excluded.

2.5 Research Instrument

A researcher-developed structured questionnaire consisting of closed-ended questions served as the primary data collection instrument. It contained four components assessing residents' awareness of proper garbage disposal, attitudes toward environmental cleanliness, the influence of awareness on disposal behavior, and challenges in household waste management. Responses were measured using a five-point Likert scale ranging from Strongly Agree to Strongly Disagree. The questionnaire used clear and understandable language and was subjected to pilot testing with 30 respondents and subsequent validation and revision before final administration.

2.6 Data Gathering Procedure

The researchers obtained formal permission from the Barangay Biliboy Office before conducting the study. Following questionnaire development, a pilot test involving 30 respondents was conducted, and the instrument was reviewed by validators. Their recommendations were incorporated before final approval. The finalized questionnaires were personally administered to qualified residents through face-to-face surveys coordinated with barangay officials. Participants received explanations of the study's purpose and instructions before answering and were encouraged to provide responses based on their actual garbage disposal experiences.

2.7 Data Analysis Techniques

The collected data were analyzed using descriptive statistical techniques, particularly weighted means, to summarize responses across the five-point Likert scale. Responses were organized and interpreted to determine residents' awareness, attitudes, disposal behaviors, and challenges. The analysis identified common patterns and areas requiring improvement, providing a basis for recommendations to strengthen household garbage disposal practices and community waste management strategies. The analytical process followed the development of research questions, review of related literature, formulation of theoretical and conceptual frameworks, questionnaire development, and identification of qualified respondents. These procedures guided data collection, statistical interpretation, and the formulation of recommendations aligned with the study objectives.

2.8 Ethical Considerations

The study adhered to ethical principles of autonomy, beneficence, justice, privacy, and confidentiality. Approval was secured from the Barangay Biliboy Office, and participants provided informed consent after receiving

explanations of the study's objectives and procedures. Participation was voluntary, and respondents could decline, skip questions, or withdraw without consequences. Participants were treated fairly and respectfully, and no identifying information was recorded in the questionnaires. Survey responses were securely stored, consent forms were maintained separately, and only summarized findings were reported. The study involved minimal anticipated risk because participation was limited to answering questions about household garbage disposal. Researchers remained available for clarification, and the findings were intended to support community environmental initiatives. Copies of the completed research were designated for submission to the school library and Barangay Biliboy Office to promote transparency and dissemination.

3. Results and Discussion

3.1 Residents' Awareness, Attitudes, and Garbage Disposal Behavior

3.1.1 Awareness of Proper Garbage Disposal Practices

The respondents demonstrated a high level of awareness regarding proper garbage disposal, with an overall weighted mean of 4.30 (Strongly Agree). Attendance at waste management seminars obtained the highest mean (4.45), followed by knowledge of waste segregation (4.41), hazardous waste disposal (4.27), and local waste management ordinances (4.23). Awareness of garbage collection schedules received the lowest mean (4.12). These findings indicate that residents reported substantial knowledge of waste management principles. However, relatively lower awareness of collection schedules suggests a need for improved communication between barangay officials and households. This observation is consistent with the findings of Cando, Guaynon, and Ledesma (2022), who identified adequate household knowledge alongside limitations in waste management practices. Research on household waste management has similarly considered awareness and reported disposal practices in the Philippines (Limon et al., 2022).

3.1.2 Attitudes Toward Garbage Disposal and Environmental Cleanliness

Respondents demonstrated positive attitudes toward proper garbage disposal, obtaining an overall weighted mean of 4.55 (Strongly Agree). Recognition of the environmental consequences of improper disposal received the highest mean (4.62), followed by willingness to segregate waste (4.56), concern for community health (4.56), support for stricter regulations (4.55), and personal responsibility for cleanliness (4.48). These findings reflect favorable environmental attitudes and willingness to participate in responsible waste management. However, positive attitudes alone do not guarantee consistent practices. Research involving learners has also examined associations between waste-management awareness, attitudes, and practices (Britos & Sambo, 2024).

3.1.3 Household Garbage Disposal Behavior

Respondents reported generally favorable garbage disposal behavior, with an overall weighted mean of 4.11 (Agree). Consistent application of proper disposal methods received the highest mean (4.33), followed by avoiding open dumping and burning (4.24), applying waste management knowledge (4.24), and using appropriate disposal or collection methods (4.18). Regular waste segregation received the lowest mean (3.57). The results indicate that residents generally reported responsible disposal practices, although regular waste segregation remained comparatively less consistent. This finding is comparable to the observations of Ledesma, Tecson, and Baleta (2023), who emphasized household participation in segregation and recycling despite resource limitations. It also suggests the importance of strengthening practical waste segregation initiatives. A systematic review identified household waste sorting and composting interventions as approaches for improving disposal behavior (Sewak et al., 2021).

3.2 Challenges Encountered in Household Garbage Disposal

The respondents reported an overall weighted mean of 2.86 (Neutral) for household waste management conditions and challenges. Community cooperation received the highest mean (3.49), followed by waste bin availability (3.15), concerns regarding plastic waste (2.98), and barangay information dissemination and monitoring (2.76). Regular garbage collection obtained the lowest mean (1.93, Disagree). These findings identify irregular garbage collection as a principal concern affecting household waste management. Responses concerning disposal facilities and barangay monitoring also indicate areas requiring further assessment. Similar challenges were identified by Bidu, Jida, Kuma, and Gobana (2024), who highlighted inadequate collection services, infrastructure, and enforcement as barriers to effective waste management. Household waste separation research has identified information and infrastructure barriers alongside environmental concerns (Kushwah et al., 2023).

3.3 Awareness and Reported Waste Disposal Behavior

The respondents demonstrated high awareness of proper garbage disposal (4.30) and generally favorable reported disposal behavior (4.11). They also agreed strongly that their knowledge influenced their disposal practices (4.24). However, regular waste segregation received a lower mean (3.57), indicating differences between reported awareness and the consistent application of particular disposal practices. These findings suggest that residents perceive their knowledge as relevant to their waste management behavior. Nevertheless, the descriptive results do not establish a statistically significant relationship between awareness and behavior because no correlation

coefficient or significance test was reported. This distinction is consistent with the knowledge–practice gaps described by Cando, Guaynon, and Ledesma (2022). Qualitative research has highlighted motivation, opportunity, and practical ability in household waste segregation (Sahoo et al., 2022).

3.4 Proposed Strategies for Improving Household Waste Management

Based on the identified concerns, the study proposed continued environmental awareness campaigns, improved garbage collection schedules, additional color-coded waste bins, and initiatives promoting plastic waste reduction. Other recommendations included community-led Eco-Watch groups, incentive-based recycling programs such as “Basura Mo, Pagkain Mo,” regular clean-up drives, and designated garbage cages to prevent waste scattering before collection. These proposed strategies address the comparatively lower ratings for collection regularity, segregation practices, and barangay monitoring. Strengthening coordination between residents and local authorities may improve the implementation of household waste management programs. Zhang, Chan, and Wang (2021) emphasized the importance of stakeholder participation and inclusive community planning in supporting sustainability initiatives. A systematic review also examined informational, incentive-based, and infrastructural interventions to promote household waste segregation (Trushna et al., 2024).

4. Conclusion & Recommendations

The study revealed that residents of Purok 3, Barangay Biliboy, Ormoc City demonstrated high awareness of proper garbage disposal (WM = 4.30), positive attitudes toward environmental cleanliness (WM = 4.55), and generally responsible waste disposal behavior (WM = 4.11). Despite these favorable findings, regular waste segregation remained comparatively less practiced, while irregular garbage collection, inadequate monitoring, limited disposal facilities, and plastic waste posed challenges to effective household waste management. Although residents perceived their awareness as influencing their disposal behavior, the descriptive findings did not establish a statistically significant relationship between these variables. Overall, the study highlighted the importance of sustained environmental education, improved waste management services, and active community participation in promoting sustainable garbage disposal practices.

It is recommended that Barangay Biliboy, in coordination with the City Environment and Natural Resources Office (CENRO), strengthen environmental awareness campaigns on waste segregation, recycling, and plastic waste reduction. Garbage collection schedules should be improved, supported by additional color-coded waste bins and designated garbage cages to prevent waste scattering before collection. Community participation should be encouraged through resident-led Eco-Watch groups, regular clean-up drives, and incentive-based recycling programs such as “Basura Mo, Pagkain Mo.” Furthermore, consistent barangay monitoring, community coordination, and the promotion of reusable materials and environmentally friendly packaging are recommended to improve household waste management and maintain community cleanliness.

The study was limited to 82 purposively selected respondents representing 41 households in Purok 3, Barangay Biliboy, Ormoc City, excluding residents from other puroks and barangays. Data were obtained through structured, self-reported questionnaires, which may not fully reflect actual household garbage disposal practices. The descriptive research design and use of weighted means also limited the assessment of relationships between awareness and disposal behavior. Furthermore, the study focused on identifying existing conditions and proposing improvements without evaluating the implementation or effectiveness of the recommended waste management strategies.

5. Compliance with ethical standards

The authors acknowledge the residents of Purok 3, Barangay Biliboy, Ormoc City, for their participation and the Barangay Biliboy Office for authorizing the conduct of the study. Participation was voluntary, informed consent was obtained, and data were collected through non-invasive survey questionnaires while maintaining confidentiality and ensuring that no identifying information was disclosed. The study documentation did not specify any external funding or conflicts of interest.

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