

Awareness and Practices on Household Waste Management of the Residents in Sto. Domingo, Ilocos Sur

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ABSTRACT

Improper household waste management poses significant environmental and health risks, emphasizing the importance of public awareness and sustainable practices. This study assessed the awareness and practices of household waste management among 106 residents of Barangay Borobor, Sto. Domingo, Ilocos Sur from March 2018 to March 2021. It examined awareness and practices related to segregation, reduction, reuse, recycling, and disposal and analyzed the relationship between residents' profiles, awareness levels, and waste management practices. A descriptive-correlational design was employed, with data collected through validated survey questionnaires. Results showed that residents were knowledgeable about waste management, particularly segregation and reuse. However, challenges were noted in the implementation of disposal and recycling practices. Correlation analysis indicated no significant relationship between residents' profiles and their awareness, but awareness levels were significantly linked to specific practices such as segregation, reduction, and reuse. The study found that while residents are intensely aware of proper waste management, practices require improvement through targeted interventions. Strengthening barangay-led initiatives, such as waste management committees and educational campaigns, and fostering partnerships with local organizations to promote sustainable practices are highly recommended. The barangay council is encouraged to institutionalize household waste management through ordinances and incentivize active community participation. Future research should explore the long-term impacts of improved waste management practices and strategies for enhancing community engagement.

Keywords: awareness, practices, household waste management

INTRODUCTION

"To waste, to destroy our natural resources, to skin and exhaust the land instead of using it to increase its usefulness, will result in undermining in the days of our children the very prosperity which we ought by right to hand down to them amplified and developed." These are such powerful words by a brilliant mind, writer, naturalist, soldier, and the 26th President of the United States of America, who won the Nobel Prize for Peace in 1906 for mediating an end to the Russo-Japanese War in 1904-1905, and whose influence continues to ring a "bell" today, the great Theodore Roosevelt. The Industrial Revolution, which began in

England in the 17th century or earlier and spread to the United States and later to other countries in Europe, Asia, Latin America, Canada, Australia, and parts of Africa, resulted in the establishment of factories that produced various goods on a large scale (Britannica.com). People had felt the multiple effects of the Industrial Revolution throughout the nineteenth century. It introduced new economic policies like capitalism and laissez-faire, which increased people's involvement in production, distribution, and consumption. The Industrial Revolution brought the emergence of machines and modern technology, allowing man to depart from time-consuming and labor-intensive pre-historic ways of production. However, as time passed, men began to feel the adverse effects of modernization (Quibilan, 2010). Waste is directly linked to human development, both technologically and socially. The composition of various wastes varied over time and location, with industrial development and innovation directly related to waste materials (Awunyo-Vitor et al., 2013).

Chaudhary (2013) asserts that natural resources such as wood, water, and oil are frequently processed in modern-day life, and skyscrapers and industries have begun to alter the landscape. In addition, malaria is spreading as a result of changing weather patterns. Extreme weather events exacerbate disease and death and make healthcare systems impossible to keep up with. Other health problems include increased hunger and poor nutrition in areas where people cannot grow or get enough food (United Nations). Poor waste management is one of the issues that cause environmental impacts like infectious diseases, land and water pollution, obstruction of drains, and loss of biodiversity (Ejaz et al., 2010). When waste is sent to the landfill, it can leak toxins that eventually get into the soil. This can contaminate the soil around the landfill area, affecting surrounding habitats. Plant and animal life may suffer from this exposure to toxic materials and chemicals. As for the case of the Philippines, based on the Waste Generation of 2016, Region I generates 1,830.64 tons of waste per day.

As a response to the surmounting effects of waste generation in different communities, the Philippine government had seen the necessity of the strict observance of the Implementing Rules and Regulations of RA 9003 (Solid Waste Management Act of 2000), which is liberally construed to carry out the National policy of adopting a three systematic, comprehensive, and ecological solid waste management program consistent with the pursuit of sustainable development. Waste management is a science that addresses the logistics, environmental impact, social responsibility, and cost of an organization's waste disposal (Licy et al., 2013). Yoda et al. (2014) substantiate that proper waste management is a public benefit and obligation. Ursulom et al. (2020) claimed that the citizens had high awareness, high availment, and high satisfaction with the following programs and activities: community-based greening projects, air pollution control programs, solid waste management, wastewater management, and clean-up programs/projects.

The fundamental reason for efficient waste management is to safeguard the environment and the population's health and safety. To ensure the appropriate implementation of the local legislation (Municipal Ordinance No.12, Series of 2005, otherwise

known as the Comprehensive Solid Waste Management System), the Municipality of Sto. Domingo mandated that every barangay council (upon reorganization) create a special committee to serve as a localized overseer of the Municipality policies. In connection to the ordinance, specifically, residents are obliged to manage their household waste. Ravenhall (2021) defined household waste as any waste produced in the home environment. This waste may include both non-hazardous and hazardous waste. Household waste accounts for a significant amount of solid rubbish. Some are reusable, and others are non-reusable. The consequences are dangerous if it is not properly disposed of (Yadav & Mishra, 2004). The barangay officials and other organizations have been conducting programs on environmental protection, such as clean-up drives and proper waste disposal and segregation.

However, as observed, voluminous wastes are still found everywhere, specifically in the Borobor River, which results in flooding due to obstruction of waste. The barangay council has formulated policies, but young or older people violate these policies.

Additionally, Brgy. Borobor is the primary route for residents from the eastern barangays of Sto. Domingo, as the provincial road, is located beside the river. People who pass by sometimes throw their waste into the area, making it more difficult for the barangay officials and the residents to maintain cleanliness and sanitation. This dilemma has required every household to manage household waste to help their community maintain cleanliness and sanitation and prevent public health threats when wastes are not properly collected and disposed of. With that said, this study was conducted to assess respondents' level of awareness and determine their practices in household waste management for residents in Brgy. Borobor, Sto. Domingo, Ilocos Sur, from March 2018 to March 2021.

The researchers ascertained the significant relationship between the respondents' awareness level and the extent of their practices, between their profile and the level of their awareness, and between their profile and the extent of their practices on household waste management. The study's results will help the Barangay Council determine the causes and effects of this problem. They will further help five of them know which aspect or component of the program needs extra attention for its proper execution.

Moreover, the result of the study is significant to residents of Brgy. Borobor for the provision of pertinent data on household waste management; University of Northern Philippines (UNP) to inspire its BPA students to engage with researchers that help protect the environment and human lives; BPA Program as a basis for continually updating its curriculum, syllabi, references, or teaching strategies; and researchers as a benchmark for a related study.

Ultimately, this study is a humble contribution to the attainment of the Sustainable Development Goals (SDGs) by 2030, specifically goals 1 (Good Health and Wellbeing), 12 (Responsible Consumption and Production), 13 (Climate Action), 14 (Life Below Water), and 16 (Life on Land), as well as the attainment of *Ambisyon Natin 2040*, which is a vision that guides the future and serves as the anchor of the country's plans. By 2040, Filipinos will enjoy a firmly rooted (*Matatag*), comfortable (*Maginhawa*), and secure life (*Panatag na Buhay*).

Objectives of the Study

This study aimed to determine the level of awareness and practices regarding household waste management among residents in Brgy. Borobor, Sto. Domingo, Ilocos Sur, from March 2018 to March 2021. Specifically, it aimed to look into the following: (1) Socio-demographic Profile of the Respondents; (2) Level of Awareness of the Residents on Household Waste Management (3). Extent of Practices of Residents on Household Waste Management (4) Relationship between the Profile of the Respondents and the Level of Awareness of Household Waste Management (5) Relationship between the Profile of the Respondents and the Extent of Practices on Household Waste Management and (6) Relationship between Level of Awareness and Extent of Practices on Household Waste Management.

METHODOLOGY

Research Design

This study employed descriptive-correlational research by utilizing a survey questionnaire.

Participants of the Study

The participants were the 106 household representatives of barangay Borobor from March 2018 to March 2021 based on the number of households chosen through random sampling. Household representatives must be 18 years old and above. However, those below 18 years old were considered as their parents/guardians were absent, seriously ill, and illiterate.

Research Instrument

A validated questionnaire checklist was used to gather information pertinent to identifying the respondents' level of awareness and their extent of practices in household waste management in Borobor, Sto. Domingo, Ilocos Sur. The questionnaire has three parts: Part I is for the respondents' profiles. Part II is the respondents' awareness of household waste management, and Part III deals with their practices in household waste management.

Data Gathering Procedure

Permission to conduct the data-gathering was sought from the Barangay Chairperson. Upon approval, the questionnaire was administered to the residents.

Analysis of Data

Frequency count and percentage, frequency count and percentage for the profile; mean to determine the level of awareness and the practices on household waste management

of the respondents; and Simple Correlation Analysis to determine the significant relationship between the independent and dependent variables.

RESULTS AND DISCUSSIONS

This part presents the study's results, including the discussions based on the findings.

1. Socio-demographic Profile of the Respondents

A significant percentage of the respondents are aged 35 to 39 (18 or 16.98%). The majority of the respondents were female (67 or 63.79%), married (67 or 63.21%), and not affiliated with any organization (64 or 60.38%). Most respondents (42 or 39.62%) had received an average education or were college graduates. Many respondents (47 or 44.34%) are employed and have been residing in the barangay for 21 to 30 years (28 or 26.42%). Most respondents (92 or 86.79%) have not attended any training program.

2. Level of Awareness of the Residents on Household Waste Management

Table 1 summarizes the Level of Awareness of the Residents on Household Waste.

Table 1

Summary of Level of Awareness of the Residents on Household Waste Management in Borobor, Sto. Domingo, Ilocos Sur

Variable	Overall Mean	Description
Segregation	3.50	Very High
Reduce	3.49	Very High
Reuse	3.50	Very High
Recycle	3.48	Very High
Disposal	2.84	High
General Overall	3.36	Very High

Overall, the respondents' level of awareness of household waste management in Borobor, Sto. Domingo, Ilocos Sur is "Very High" with a mean of 3.36. In particular, the respondents have a "Very High" awareness of segregation and reuse ($M = 3.50$). Meanwhile, the respondents have a "High" level of awareness of disposal ($M = 2.84$).

The results show a very high public awareness of residents on household waste management, indicating that they know the basics of handling waste and the proper way of storing it in their bins. However, their awareness may still be improved. The results affirm the study of Abbas et al. (2020) that public awareness is an essential tool for increasing public participation in sustainable waste management programs. By being aware of household waste

management, people will understand the consequences of improper waste and how it may seriously threaten their lives and well-being.

3. Extent of Practices of Residents on Household Waste Management

Table 2 summarizes the extent of practices on the Residents' Level of Awareness of Household Waste.

Table 2

Summary of Extent of Practices of the Residents on Household Waste Management in Borobor, Sto. Domingo, Ilocos Sur

Items	Overall Mean	Description
Segregation	3.06	High
Reduce	3.32	Very High
Reuse	3.40	Very High
Recycle	2.94	High
Disposal	2.58	High
General Overall	3.10	High

Table 2 shows that the residents' general overall extent of practice is "High," with a computed mean of 3.10. In particular, they have a "Very High" extent of practices on reuse ($M = 3.40$) and reduce ($M = 3.32$). However, the results on the extent of services concur with the study of Gadenne et al. (2009) that despite having a "Very High" level of awareness, the level of implementation of environmental-friendly practices was only "High."

Data suggests that the residents carried out different activities to reduce and minimize the problems brought about by improper household waste management. With a little push, support, and education to improve people's practices and perceptions regarding waste management, it can minimize some of the challenges confronting municipalities in waste management (Yoada et al., 2014).

4. Relationship between the Profile of the Respondents and the Level of Awareness of Household Waste Management

Table 3 shows the relationship between the Profile of the Respondents and the Level of Awareness of Household Waste Management.

Table 3
Correlation Coefficients between the Profile of the Respondents and the Level of Awareness of Household Waste Management

Profile	Awareness Segregation	Awareness - Reduce	Awareness - Reuse	Awareness - Recycle	Awareness Disposal	Overall Awareness
Age	0.00	0.01	0.03	0.06	-0.06	0.02
Civil Status	0.05	0.01	0.03	0.05	0.12	0.06
Sex	0.00	-0.09	-0.08	0.11	0.04	-0.01
Highest Educational Attainment	-0.05	0.02	0.06	0.03	-0.05	0.02
Sources of Family Income	0.02	-0.09	-0.15	-0.11	-0.10	-0.11
Membership in an Organization	0.00	0.00	-0.02	0.04	0.04	0.01
Number of Training Attended	-0.04	0.02	-0.04	-0.02	-0.08	-0.03
Residency in the Barangay	-0.02	0.04	0.08	0.10	-0.08	0.05

*. Significant at 0.05 level.

Table 4 clearly shows that no significant relationship exists between the profile of respondents and their level of awareness of household waste management. The overall r value of awareness is 0.02, 0.06, -0.01, 0.02, -0.11, 0.01, -0.03, and 0.05, respectively. Therefore, the null hypothesis stating no significant relationship between the mentioned variables is not rejected. Age, sex, highest educational attainment, sources of family income, membership in an organization, number of training programs attended, and residency in the barangay is not associated with the level of awareness of the respondents on household waste management.

Another implication of sex and awareness is that males tend to have a higher level of awareness. While those with the highest educational attainment and awareness, those with a lower level of education tend to have a higher level of awareness.

5. Relationship between the Profile of the Respondents and the Extent of Practices on Household Waste Management

Table 4 shows the relationship between the Profile of the Respondents and the Level of Awareness of Household Waste Management.

It can be gleaned from the table that a significant relationship exists between the profile of respondents and the highest educational attainment and recycling practices. There is also a significant relationship between the respondents' sex and disposal practices. Therefore, the null hypothesis stating no significant relationship between the profile of respondents and the extent of their practices in household waste management is rejected.

Practices related to recycling and disposal are associated with the profile of respondents with the highest educational attainment and sex.

Table 4
Correlation Coefficients between the Profile of the Respondents and the Extent of Practices on Household Waste Management

Profile	Practices Segregation	Practices Reduce	Practices Reuse	Practices Recycle	Practices Disposal	Over-all Practices
Age	-0.08	-0.08	0.03	0.01	0.08	0.00
Civil Status	-0.08	-0.05	-0.09	-0.05	-0.01	-0.07
Sex	0.10	-0.15	-0.07	-0.12	-0.25*	-0.14
Highest Educational Attainment	-0.02	-0.14	-0.06	-0.23*	-0.08	-0.13
Sources of Family Income	0.05	-0.11	-0.05	-0.11	-0.02	-0.06
Membership in Organization	0.03	-0.06	-0.03	0.02	0.03	-0.01
Number of Training Attended	0.02	-0.11	-0.13	-0.01	0.03	-0.07
Residency in the Barangay	0.00	0.01	0.07	0.11	0.16	0.10

Table 5
Correlation Coefficient between Level of Awareness and Extent of Practices on Household Waste Management

Level of Awareness	Practices Segregation	Practices - Reduce	Practices Reuse	Practices - Recycle	Practices Disposal	Overall Practices
Awareness-Segregation	0.45*	0.39*	0.46*	0.12	0.07	0.39*
Awareness-Reduce	0.41*	0.49*	0.51*	0.18	0.21*	0.48*
Awareness- Reuse	0.45*	0.50*	0.53*	0.21*	0.15	0.49*
Awareness-Recycle	0.35*	0.39*	0.44*	0.09	-0.02	0.34*
Awareness- Disposal	0.21*	0.19	0.19*	-0.12	-0.49*	0.00
Over-all Awareness	0.45*	0.49*	0.53*	0.14	0.02	0.44*

6. Relationship between Level of Awareness and Extent of Practices in Household Waste Management

Table 5 shows the Relationship between the Level of Awareness and the Extent of Practices in Household Waste Management.

There is a significant correlation between the level of awareness in reduction and the practices of segregation, reduction, reuse, disposal, and overall practices. The correlation between awareness of reduction and disposal practices is weak with an r-value of 0.21. The correlations between awareness of reduction and practices in segregation, reduction, reuse, and overall practices are statistically significant.

There is a significant relationship between the level of awareness of reuse and the waste management practices of households. Generally, all the indicators of awareness and practices were found to be statistically correlated. This means that awareness of households is a critical function in establishing good waste management practices.

Awareness of waste management influences how households manage their wastes. Increased awareness often leads to improved waste management practices. However, in some cases, despite high awareness, improvements may not be evident, like in the case of awareness on disposal practices.

CONCLUSIONS

Respondents are female-dominated; most are married and not affiliated with any organization. A significant percentage of the respondents belong to the middle-age bracket, are employed, and have been residing in the rural for a long time. A substantial percentage of the respondents had received an average education or were college graduates. Most respondents are highly conscious of household waste management and actively apply their knowledge in managing household waste. Generally, high awareness contributes to a high level of practice in waste management.

RECOMMENDATIONS

Based on the findings and conclusions, it is recommended that the residents, regardless of their age, sex, and socio-economic status, engage in practicing household waste management. In collaboration with the barangay's various organizations, the officials may continue organizing activities to realize household waste management fully. The barangay officials may mobilize its waste management committee to strengthen household waste management implementation. They may also provide an enabling environment to trigger the residents' active participation, such as conducting a yearly "Search for the Cleanest, Greenest, and Safest Abode" in their barangay. Barangay officials may build up a strong linkage with the business sector and nongovernmental organizations (NGOs) to encourage and promote effective public, public-private, and civil society partnerships, complemented by multi-

stakeholder partnerships that mobilize and share knowledge, expertise, technology, and financial resources, to support the achievement of household waste management. Barangay officials may maximize the use of social media to intensify the Information Education Communication (IEC) Campaign further to increase their knowledge and understanding of household waste management. The barangay officials may institutionalize household waste management by enacting barangay ordinances to establish an awards system, other incentives and sanctions in the barangay, and various rules and regulations to implement the program.

ETHICAL STATEMENT

Participation in this study was voluntary. Respondents participated based on informed consent. The principle of informed consent involved researchers providing information and assurances about participating to allow the informants to understand the implications of participation, be fully informed, and freely decide whether or not to do so without the exercise of any pressure or coercion. The use of offensive, discriminatory, or other unacceptable language was avoided in the formulation of the questionnaire. The privacy and anonymity of respondents were of paramount importance. The answers of the respondents were treated with an adequate level of confidentiality. Maintenance of the highest level of objectivity in discussions and analysis was observed throughout the research.

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