

Stakeholders' Adherence and Practices On Solid Waste Management in Cagayan De Oro Legislative District

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ABSTRACT: Solid Waste Management (SWM) is a crucial component of sustainable urban development, ensuring environmental protection and public health. Understanding the level of compliance and the actual practices being implemented provides valuable insights for strengthening waste management policies and program. The main problem of this study was to determine the stakeholders' adherence and practices on SWM in the Legislative District of Cagayan de Oro City. Specifically, the study sought to find out: the respondents' designation; the respondents' level of adherence to SWM; the level of SWM practices; the significant relationship between the respondents' adherence to SWM and their practices; and the significant difference in the respondents' practices when grouped according to their designation. The respondents of the study were 200 stakeholders, including school heads, teachers, parents, barangay in-charge, and health personnel. A descriptive-correlational research design was utilized, employing purposive sampling. Data were gathered using a structured questionnaire adapted from Verzosa's SWM study. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used, while Pearson (r), determined relationships and Ttest / Ftest for differences among groups. Findings revealed that teachers represent the largest group of respondents, emphasizing their key role in promoting proper waste management. Stakeholders generally show high adherence to Solid Waste Management Act with reduce being the highest and reuse as the lowest. Further, stakeholders exhibit very high level of practices with disposal being the highest and reuse as the lowest. There was a significant relationship between adherence and SWM practices, while there were no significant differences in the respondents' practices across respondents' designations. It is concluded that strengthening reduction practices among stakeholders enhances overall waste management effectiveness. It is recommended that school heads strengthen the school's adherence to and practices of Solid Waste Management by empowering teachers as key implementers and role models of SWM initiatives.

KEYWORDS: adherence, practices on solid waste management

INTRODUCTION

Background of the Study

Inconsistent waste segregation, inadequate landfills and waste facilities, the absence of the Solid Waste Management Fund, and program implementation fragmentation are the primary problems and gaps in compliance with the Ecological Solid Waste Management Act of 2000 (RA 9003). According to a 2023 report by the Commission of Audit (COA), the government passed RA 9003 in an effort to enhance solid waste management. In order to accomplish the goals of the National Ecology Center (NEC), which is in charge of information dissemination, consultation, education, and training of various Local Government Units on ecological waste, it required the Department of Environment and Natural Resources (DENR) to develop policies and provide secretariat support for the implementation of the solid waste management plans.

Solid waste generation increased continuously throughout time rather than decreasing. They identified the main issues that contributed to this situation, including the uneven application of trash diversion and segregation, which resulted in a notable amount of mixed waste being discovered in landfills. Due to the MRFs' diminished capacity for diversion, landfill waste volumes surpassed their capacity and useful lifespans were shortened. Furthermore, there were not enough landfills or garbage facilities to serve all of the LGUs and barangays across the country. As of CY 2021, there are 245 operating Sanitary Landfills in the nation,

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which serve 478 (29.25 percent) of 1,634 LGUs, and 11,637 MRFs, which serve 16,418 (39.05 percent) of 42,046 barangays.

In several LGUs, the operation of illegal dumpsites was unavoidable due to a lack of disposal infrastructure. The Solid Waste Management Fund, a separate account in the National Treasury meant to finance the authorized solid waste management plans of LGUs, was not established, which was another of the issues mentioned. Last but not least, program implementation flaws prevented crucial interventions that would have produced correct and dependable data and guaranteed appropriate operationalization. Therefore, it is particularly noteworthy that the government has not yet recorded or evaluated progress toward achieving Sustainable Development Goal, which calls for a significant reduction in waste generation through prevention, reduction, recycling, and reuse by CY 2030.

Inadequate waste segregation procedures, inadequate collection and transportation infrastructure, inadequate landfill facilities, and low public awareness and participation are among the problems and gaps in the Ecological Solid Waste Management Act (RA 9003)'s implementation in Cagayan de Oro, Misamis Oriental. Coracero et.al. (2021) revealed in their study that solid waste management is seen as a critical worldwide issue that requires an immediate reaction from the government and its citizens. Waste in the Philippines is steadily increasing and is predicted to do so even more in the years to come. According to the analysis, the nation's growing solid waste volume, lax enforcement of the law, lack of hygienic landfills, and inappropriate disposal are all related issues with solid waste management.

The Ecological Solid Waste Management Act of 2000, also known as RA 9003, is the nation's best option and emphasizes the importance of trash reduction, appropriate disposal, and segregation. Emphasis is also placed on the significance of imagining a trash-free Philippines and promoting public involvement and awareness. Valorization or the act of giving value, which can help address other environmental issues like the depletion of natural resources, is another potential answer to solid waste management. Only with the cooperation of all Philippine agencies and constituencies, active participation from the populace, and excellent governance would the stated remedies be feasible.

It is for this reason that this present study is proposed. It seeks to look into the stakeholders' designation as respondents to the study. This examines the extent of stakeholders' involvement in terms of practices at school, barangay, home, and health center. It explores the level of adherence to waste reduction, reuse, and recycling in the Solid Waste Management Act of 2000. Further, the level of practices in adherence to the Solid Waste Management Act of 2000 was also discussed in this study.

LITERATURE AND RELATED STUDIES

This section covered the literature and related studies taken from the books, articles, and periodicals that are related to the current study. It includes the stakeholder's designation as well as the respondent's adherence to the SWM Act 2000, such as reduce, reuse, recycle. In addition, respondents' SWM practices are also considered.

Stakeholders' Designation

All parties involved in the production, collection, and disposal of garbage are considered stakeholders in solid waste management, including the local government, citizens, businesses, formal and informal waste collectors, waste processing facilities, and environmental organizations. The United Nations Environment Program (2022) claims that ecosystems and human health are seriously at risk due to the growing amount and complexity of garbage generated by the contemporary economy. An estimated 11.2 billion tons of solid trash are collected annually worldwide, and the decomposition of the organic fraction of this waste accounts for roughly 5% of greenhouse gas emissions worldwide. Approximately 11.2 billion tons of solid trash are collected each year globally.

According to Valladolid and Blasé's (2023) research, the majority of schools consistently implemented SWM in both initiation and segregation. Conversely, the SWM procedures for integration and funding were only widely used within the schools. The results also showed that parents and stakeholders from local government units were very involved in schools' SWM procedures. Furthermore, there are no notable variations in the stakeholders' participation in the school's various SWM practices across all categories. Nonetheless, there are notable variations in the level of stakeholder participation by congressional district. Additionally, it was found that there was a substantial difference in their involvement in the majority of school procedures when their involvement was categorized based on the type of stakeholders.

Campuses generate a lot of waste, including liquid, solid, and e-waste. Inadequate waste management can result in environmental contamination and landfill overpopulation. A review study is conducted on various educational institutions worldwide as to how these institutions manage their waste. With the descriptive review study of published research papers, discussed waste handling and disposal practices in worldwide universities, and the innovations done in waste management in India and abroad, institutions can provide staff and students with opportunities to use innovative ideas in handling waste and minimize the global issues of waste management easily. Based on the review study, recommendations and findings are made (Sharma et al., 2023).

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School Head

Since education serves as a catalyst for sustainable growth, waste management in schools, which is under the responsibility of the school head, is essential as a prelude to increasing awareness and establishing social norms. The primary conclusions are as follows: the greatest number of publications on waste management in schools took place in 2022.

However, 2021 was the most significant year; the quantity of articles, organizations, journal rankings, and nations that conducted studies in this area; and there was little scientific cooperation. The common waste management in schools, waste impacts, and waste management systems are among the topics covered in papers in this area, including assessment, environmental management, and sustainable development. These findings will be of tremendous use to readers in determining the most important areas for study on sustainable development and school waste management (Haniva et.al, 2023).

Teacher

Teaching children the fundamentals of environmentally friendly waste management in the classroom as part of sustainable development, they can help their communities adopt sustainable waste management practices and set an example for their families. At the same time, there is a wealth of research on municipal or other waste management, but the quantity of studies done in the field of education. There are a few institutions and organizations, particularly in education, that serves as the foundation for being compelled to act properly toward the environment because of moral and ethical concerns. Students will eventually hold leadership positions in their respective fields (Hanedar et al., 2021).

One way to address the issue of waste in schools is to create plans for effective strategies for reducing the quantity of waste produced. This is essential to preserving the quality of life for people, maintaining environmental sustainability, and making use of the waste-related economic opportunities. Waste can also be utilized as an ecologically sustainable energy source (Saleh et al., 2020). To put into practice, an understanding of the type of trash is essential for an effective waste management system, considering the resources at hand, and the community's environmental circumstances (Pardini et al., 2020).

In 2020, Reyes and Madrigal conducted a descriptive-correlational study to assess the awareness, attitude, and level of solid waste practice among high school students at a Diocesan Catholic school. According to the study's findings, students of all sexes and academic levels showed a high level of awareness, a very positive attitude, and considerable practice in solid waste management. Furthermore, it was shown that students' sex and their academic standing, awareness, and practice were strongly correlated. Additionally, solid waste management awareness, attitude, and practice were correlated. Finally, it demonstrated that awareness and attitude are significant determinants of solid waste management practice.

Moreover, according to the study's findings, students of all sexes and academic levels showed a high level of awareness, a very positive attitude, and considerable practice on solid waste management. It was shown that students' sex and their academic standing, awareness, and practice were strongly correlated. Additionally, solid waste management awareness, attitude, and practice were correlated. Finally, it demonstrated that awareness and attitude are significant determinants of solid waste management practice. It also provided baseline data for developing a comprehensive and effective solid waste management program to reduce the solid waste problem at the school.

Parent

According to the study of Bose (2020), in order to minimize waste going to landfills and maximize resource recovery, a barangay solid waste management program usually focuses on household-level waste source segregation, collection of segregated waste, establishment of a Materials Recovery Facility to process recyclables, encouragement of composting of organic waste, and the implementation of awareness campaigns to inform locals about proper waste disposal practices by parents. These programs are frequently overseen by a dedicated Barangay Ecological Solid Waste Management Committee that manages implementation and monitoring within the community.

Uncontrolled solid waste creation and unlawful dumping are the current global environmental disasters, posing a serious threat to both the environment and public health. Ineffective waste management can contaminate the air, water, and soil. Therefore, the study looked at how well the rules and the prohibitions against certain acts of barangays were being applied, as judged by community leaders overall, as well as by their income and geographic location. It also looks at the difficulties the barangays have had implementing RA 9003 and the city's local legislation, as well as the suggestions made by community leaders (Go & Caelian, 2020).

Research on the significance of solid waste management from 2020 to 2025 frequently emphasizes the need for policy interventions to support sustainable waste management practices, the growing global waste generation brought on by population growth at home, the environmental effects of inappropriate disposal, the economic potential of recycling and resource recovery, Investigating solid waste management initiatives and regulations put in place to provide a secure and healthful learning environment at Anao-Kiling Elementary School in Roxas, Isabela, is the goal of this study. Stakeholder representation, proper program information distribution, and the necessity of focused solutions to implementation issues are all emphasized in the

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conclusions. According to a study of Espiritu (2024), developing a sustainable and healthful learning environment requires the use of comprehensive waste management techniques.

Furthermore, the rate of waste generation in households is increasing globally. According to the World Bank Group Report in 2022, 2.24 billion tons of solid garbage were produced worldwide in 2020, or 0.79 kg per person each day. Annual garbage creation is predicted to rise by 73% from 2020 levels to 3.88 billion tons in 2050 due to high population expansion. Residents in developing countries, particularly the urban poor, are more negatively impacted by waste that is not sustainably managed than those in wealthy countries. More than 90% of rubbish in low-income nations is frequently burned outdoors or dumped in uncontrolled landfills.

These actions have detrimental effects on the environment, public health, and safety. Inadequate waste management can encourage urban violence, act as a haven for disease-carrying insects, and contribute to global warming by producing methane. Particularly in East Asia and the Pacific, the installation of sustainable disposal sites, such as contemporary sanitary landfills, the closure and restoration of outdated and unofficial dumpsites, and the bolstering of local institutions and policies are all to be supported by a \$100 million loan in Indonesia.

In China, domestic kitchen trash separation has been encouraged by a results-based incentive program. The development of a state-of-the-art anaerobic digestion facility to ferment and recover energy from organic waste was made possible by the \$80 million loan. Similar to how investments in solid waste management in Vietnam help keep drains clear, in the Philippines, Metro Manila is lowering the danger of flooding by reducing the amount of solid waste that ends up in waterways. Waste management initiatives are helping to reduce marine trash, especially in Manila Bay, by emphasizing better collection systems, community-based strategies, and offering incentives.

Barangay In-Charge

In solid waste management, the perception of barangay officials through the Barangay Solid Waste Management In-charge is very important because they are responsible for implementing and enforcing waste management policies at the community level. They also influence residents' attitudes and behaviors regarding proper waste disposal through leadership, awareness campaigns, and setting an example within their barangay. Since they have a direct impact on the general cleanliness and environmental health of their barangay through their enforcement of regulations, implementation of community initiatives, and education of residents, barangay officials' knowledge of proper waste management practices is vital. In other words, their awareness is the key to effective waste management at the grassroots level (Romero, 2020).

Manayad et al.'s study. (2024) assessed well that the current waste management system law is working in the City of Manila. It also looks for areas that could have improvement in order to support environmentally friendly waste management techniques. The results show a high dependence on conventional trash disposal techniques and a low uptake of recycling and composting initiatives. This demonstrates the implementation gap. In order to promote sustainable waste management, the study emphasizes the necessity of improved infrastructure development and community education. It suggests encouraging the 3Rs (reduce, reuse, recycle), setting up seminars and in-service training, running public awareness campaigns, purchasing cutting-edge recycling equipment, fortifying waste management laws, and assisting community-based endeavors.

The findings of the study of Sanchez (2023) showed the barangay's level of solid waste management awareness. It was high, indicating that people in the community are aware of the barangay's solid waste management initiatives. Finally, the community's awareness of solid waste management does not influence their disposal practices; rather, their practices of segregation, reduction, reuse, and recycling influence their awareness of solid waste management. The practices of segregation and reduction were practiced, reuse was highly practiced, and recycling and disposal were less practiced. As a result, it is advised that the barangay hold another seminar to reaffirm the penalties for breaking solid waste management regulations.

This study of Sambat et al. (2024) investigated parents' solid waste management habits and awareness. In a barangay in Magalang, Pampanga, it demonstrates the importance of solid waste segregation for parental involvement and how it affects parents' attitudes and behaviors. By understanding more about the customs and proper segregation in their society, the parents gain knowledge from this study. Overall, the findings show how important it is to properly classify waste, raise awareness, include the community, be inventive, and be sustainable in order to enhance waste management. Recycling and rubbish collection are regarded as sources of happiness, despite obstacles such as a lack of awareness and uneven efforts. Parents also stress the importance of solid waste management laws, appropriate segregation, and offering rewards to encourage sustainable practices in the barrio.

Barangay Health Center In-charge

This study of Mukena et al. (2020) highlights the main determinants of waste management practices, such as access to waste management facilities and demographic traits. Additionally, it suggests doable tactics, including health centers/buildings through the Health Center Solid Waste Management In-charge to adhere to recycling and sorting facilities, improving educational

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initiatives catered to regional needs, and putting in place consistent enforcement measures. These tactics are meant to increase adherence to waste management guidelines and promote an environmentally conscious culture. The investigation's findings demonstrate the vital role that continuous education and infrastructure development play in filling in current knowledge gaps and promoting efficient waste management procedures. By offering insightful information to stakeholders involved in urban environmental management, community leaders, and politicians, this study establishes a fundamental step toward improving sustainable urban growth and efficient waste management in Windhoek.

Long-term solid waste management issues exist notwithstanding the numerous seminars held, solid waste management regulations put into place, and important initiatives to lower the amount of garbage in the neighborhood without landfills and the like. The community's health and waste management are therefore more at risk as a result. Therefore, Sanchez (2023) conducted a study to evaluate the community's awareness and practices in Brgy. Cawilan, Tagana-an, and Surigao del Norte in terms of managing solid waste. The findings showed the barangay level of solid waste management awareness was high which indicates that the community is aware of the barangay's solid waste management initiatives. The reuse techniques were highly practiced, recycling and disposal techniques were recycled, and segregation and reduction techniques were used. Approaches were less common, and finally, the community's awareness of solid waste management has an impact on its practices in terms of segregation, reduction, reuse, and recycling, but not on its understanding of disposal.

Moreover, UNEP (2024) reported that according to projections, the amount of municipal solid trash generated will increase from 2.1 billion tons in 2023 to 3.8 billion tons by 2050. An estimated USD 252 billion was spent on trash management directly worldwide in 2020. The cost increases to USD 361 billion when the hidden costs of pollution, bad health, and climate change due to improper waste disposal methods are taken into account. If waste management is not addressed immediately, this yearly global cost might nearly triple to an astounding USD 640.3 billion by 2050. To prevent the worst, it is crucial to understand the significance of solid waste management. Multinational development banks, national governments, municipalities, manufacturers and retailers, the waste management industry, and individuals are all given advice and recommendations in this research.

Adherence on Solid Waste Management Act 2000

Despite the adoption of the Ecological Solid Waste Management Act (RA 9003) in the Year 2000, solid waste management in the Philippines continues to confront difficulties. Despite the fact that the legislation offers a framework for waste management, there are still gaps in management and increased trash output because of poor compliance and enforcement. By 2025, it is anticipated that the Philippines will produce 23.6 million tons of solid garbage yearly. Solid waste management is seen as a critical worldwide issue that requires the government and its citizens to act immediately. Waste in the Philippines is steadily increasing and is predicted to do so even more in the years to come.

According to the analysis, the nation's growing solid waste volume, lax enforcement of the law, lack of hygienic landfills, and inappropriate disposal are all related issues with solid waste management. The Ecological Solid Waste Management Act of 2000, also known as RA 9003, is the nation's best option and emphasizes the importance of trash reduction, appropriate disposal, and segregation (Coracero, 2021).

Reuse

Many countries have issues in managing solid waste. Poor solid waste management will cause a variety of health, environmental, and socioeconomic issues. The results show that students have sufficient knowledge in terms of the definition of solid waste, the consequences of improper solid waste disposal, prohibited solid waste activities, school initiatives related to solid waste, the relevance of solid waste management, and student responsibilities. However, pupils lack knowledge of the various rules related to solid waste management. This awareness is spread by television or radio, parental guidance, and social media. The study of Molina and Catan (2021) found that students use effective solid waste management procedures, including segregation for reduce, reuse, recycle, and dispose.

To achieve the study's goal, a cross-sectional survey of 739 women trading in three main urban markets in Owerri was conducted. Motivation to manage waste for disease control was effectively predicted by the type of trading item. Cochran-Armitage tests of trend show that there is no statistically linear trend between the proportions of understanding the 3Rs and the rankings for methods of seeking health. Understanding the 3Rs was not determined by the health-seeking method, as most methods were motivated to manage waste discordantly. PCA on the incidence of waste-related disorders had a two-component structure with acute and chronic dimensions; vegetables and plastics were the most common waste streams, with plastics being the most reused waste type, whilst the government is primarily responsible for trash disposal. The report, according to the study of Ezedike (2020), offers a knowledge transfer method for establishing sustainable waste management techniques.

The purpose of this study of Moralesa and Ocob (2020) was to ascertain the students' level of solid waste management knowledge and attitude, their level of solid waste management implementation in terms of segmentation, waste reduction, recycling, reuse, and disposal, and the correlation between the students' capacities and solid waste management implementation

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level. The findings showed that students' solid waste management implementation and capacity are at a positive level. It has an important connection. Students' knowledge capacity and waste reduction during SWM implementation are at a high positive level. In order to encourage everyone to separate, recycle, and reuse, the school community, including stakeholders, is urged to keep using policies and providing suitable supplies.

Reduce

The adherence of the Solid Waste Management Act of 2000 on Reduce emphasizes how crucial appropriate trash disposal, recycling, and segregation are to lowering greenhouse gas emissions from landfill decomposition. Public engagement, which has been demonstrated to be crucial in advancing sustainability and lowering waste output, is emphasized by this law (Orbe, 2022).

The study uses desktop research methodology, which is founded on a thorough examination of secondary data and literature, including published articles and government documents. The transportation infrastructure is frequently inadequate and unofficial, even if the majority of trash is stored in outdated or badly maintained facilities like storage tanks. Landfills, open-air incinerators, and uncontrolled dumping are the main ways of disposal. Climate change, methane emissions, toxic leachate, land degradation, and air and water pollution are all consequences of such practices. Residents of marginalized social groups are disproportionately affected by these repercussions, which have a substantial negative impact on the environment and public health. Recommendations for reducing the dangers to public and environmental health posed by the current SWM practices in the Global South are included in the Abubakar et al. (2022) paper conclusion.

The findings of the study of Edullantes et al. on the adherence of reduction show that the participants have had adequate knowledge of solid waste management as well as positive attitudes and behaviors about solid waste reduction. Additionally, individuals noted the significance of rewards, civic engagement, and political will toward improved at-source waste segregation. These findings show a beneficial influence on the lives of the residents of the community as a consequence of a community-based push for environmental education. Although the findings offer significant hints on the influence of community-based programs, care needs to be taken while interpreting the results due to certain methodological restrictions.

Recycle

In order to solve this growing problem, an investigation was conducted to Swachha Bharat Abhiyan 3R philosophy, dry and wet trash, the necessity of separating biodegradable and non-biodegradable waste, the necessity of outlawing plastic, and the necessity of lowering the production of solid waste. The way the city's municipal corporation manages solid waste management has left many of the younger participants unhappy. They are also ready to help and overcome obstacles that will eventually damage the environment. To tackle the escalating solid waste issue, the Indian government has to employ a workforce that is so sensitive as emphasized by the study of Lad et.al. (2020).

According to the survey of Komba (2021), each person in Freetown generates 0.45 kilogram of solid trash daily on average. It was also determined that the majority of recyclable materials include plastic bags, scrap metals, and various pieces of old furniture, with biodegradable and organic materials accounting for between 75 and 85 percent of the overall waste stream. Over the last ten years, the problems with Freetown's municipal solid waste management have been evident. Insufficient approved dumping locations for trash disposal, institutional incapacity, and the increase in urbanization following the 11-year, violent civil war that concluded in 2001 stand out among many other causes. The modern solid waste disposal strategy in Freetown was thoroughly examined in this project in an attempt to identify the most practical solid waste disposal options and praise methods for improving its operations. The study came to the conclusion that a coordinated approach is needed to address solid waste in the Freetown Municipality. That is, the government is working with private solid waste management players to improve urban economic development, sustainable environmental practices, public health, and a creative energy paradigm.

Paper and cardboard are among the recyclable items that make up the majority of municipal solid waste. It is produced in educational institutions, particularly universities, via a variety of facilities, including cafeterias and offices. Solid waste can harm the environment if there is no efficient management scheme in place. The purpose of this essay is to evaluate the solid waste management procedures used at Imam Abdulrahman Bin Faisal University in Dammam, Saudi Arabia. According to data gathered by Dahlawi and El Sharkawy (2021), on the makeup of MSW samples, only 1% of the materials were non-recyclable, while 80% of the wastes were recyclable and 19% were compostable. Paper and plastic make up over 73% of recyclable materials, indicating the urgent need for an efficient solid waste management program. The breakfast meal had the highest recorded FPW value.

Solid Waste Management Practices

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Many countries have issues in managing solid waste. Poor solid waste management will cause a variety of health, environmental, and socioeconomic issues. The results show that students have sufficient knowledge in terms of the definition of solid waste, the consequences of improper solid waste disposal, prohibited solid waste activities, school initiatives related to solid waste, the relevance of solid waste management, and student responsibilities. However, pupils lack knowledge of the various rules related to solid waste management. This awareness is spread by television or radio, parental guidance, and social media. The study of Molina and Catan (2021) found that students use effective solid waste management procedures, including segregation for reduce, reuse, recycle, and dispose.

The purpose of this study of Moralesa and Ocob (2020) was to ascertain the students' level of solid waste management knowledge and attitude, their level of solid waste management implementation in terms of segmentation, waste reduction, recycling, reuse, and disposal, and the correlation between the students' capacities and solid waste management implementation level. The findings showed that students' solid waste management implementation and capacity are at a positive level. It has an important connection. Students' knowledge capacity and waste reduction during SWM implementation are at a high positive level. In order to encourage everyone to separate, recycle, and reuse, the school community, including stakeholders, is urged to keep using policies and providing suitable supplies.

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Segregation

Long-term solid waste management issues exist notwithstanding the numerous seminars held, solid waste management regulations put into place, and important initiatives to lower the amount of garbage in the neighborhood without landfills and the like. The community's health and waste management are therefore more at risk as a result. Therefore, Sanchez (2023) conducted a study to evaluate the community's awareness and practices in Brgy. Cawilan, Tagana-an, and Surigao del Norte in terms of managing solid waste.

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Reduce

Since the environmental movement began in the 1960s, there has been a broad understanding of the dangers that unsustainable SWM practices pose to the environment and public health (Abubakar et al.,2022). Even though modern technology can drastically cut down on hazardous material emissions, the global South's public sector was unable to improve SWM enough, and pressure from financial institutions and other donor organizations resulted in privatization policies at the end of the decade. However, the way that the world currently thinks about solving municipal solid waste management issues is evolving because privatization was unable to deliver municipal solid waste management services to underprivileged and marginalized areas. This perspective was altered by the 1990s when municipalities found it impossible to properly evacuate and dispose of waste without the active participation of service users and other stakeholders, despite the fact that contemporary technology can greatly reduce emissions of dangerous substances.

Further, they added that household waste is dumped in landfills or dumpsites in the majority of developing nations; most of these facilities are expected to fill up within ten years. It was acceptable to dispose of waste in an unsustainable way, such as by burning it in an open area, usually close to impoverished neighborhoods on the outskirts of the city, or by throwing it into bodies of water. In a similar vein, a number of cities continue to employ outdated or badly maintained infrastructure, as well as unregulated open-air rubbish burning and informal disposal. These activities frequently have an impact on underprivileged social groups in the vicinity of the disposal sites. Furthermore, this strategy presents a number of sustainability issues, such as contamination of the environment, resource depletion, and public health issues like the spread of infectious illnesses.

The globe produces 2.01 billion tons of solid trash annually, and by 2025, that amount is predicted to rise to 2.2 billion tons. It was predicted that garbage creation will quadruple globally by 2050; therefore, improved management practices and recycling plans are urgently needed to address this complex issue. Unfortunately, inadequate waste management has a negative impact on society's health. Despite being the most important infrastructure to be constructed in society, waste management is still not widely acknowledged in many developing nations.

Despite major advancements and improvements over the past few decades, 2 to 3 billion people worldwide still do not have access to waste collection services. The current study's goal is to provide a summary of the various waste management strategies that are successfully used in various nations, as well as the necessary action plans. In conclusion, in order to guarantee its decrease, Asian nations must allocate more funds for the management of solid waste. Additionally, zero waste cannot be achieved with the waste management techniques now in use. Therefore, it is necessary to adopt new techniques (Nimita, 2022).

Reuse

To achieve the study's goal, a cross-sectional survey of 739 women trading in three main urban markets in Owerri was conducted. Motivation to manage waste for disease control was effectively predicted by the type of trading item. Cochran-Armitage tests of trend show that there is no statistically linear trend between the proportions of understanding the 3Rs and the rankings for methods of seeking health. Understanding the 3Rs was not determined by the health-seeking method, as most methods were motivated to manage waste discordantly. PCA on the incidence of waste-related disorders had a two-component structure with acute and chronic dimensions; vegetables and plastics were the most common waste streams, with plastics being

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the most reused waste type, whilst the government is primarily responsible for trash disposal. The report, according to the study of Ezedike (2020), offers a knowledge transfer method for establishing sustainable waste management techniques.

In order to solve this growing problem, an investigation was conducted to Swachha Bharat Abhiyan 3R philosophy, dry and wet trash, the necessity of separating biodegradable and non-biodegradable waste, the necessity of outlawing plastic, and the necessity of lowering the production of solid waste. The way the city's municipal corporation manages solid waste management has left many of the younger participants unhappy. They are also ready to help and overcome obstacles that will eventually damage the environment. To tackle the escalating solid waste issue, the Indian government has to employ a workforce that is so sensitive as emphasized by the study of Lad et.al. (2020).

According to the survey of Komba (2021), each person in freetown generates 0.45 kilogram of solid trash daily on average. It was also determined that the majority of recyclable materials include plastic bags, scrap metals, and various pieces of old furniture, with biodegradable and organic materials accounting for between 75 and 85 percent of the overall waste stream. Over the last ten years, the problems with Freetown's municipal solid waste management have been evident. Insufficient approved dumping locations for trash disposal, institutional incapacity, and the increase in urbanization following the 11-year, violent civil war that concluded in 2001 stand out among many other causes. The modern solid waste disposal strategy in Freetown was thoroughly examined in this project in an attempt to identify the most practical solid waste disposal options and praise methods for improving its operations. The study came to the conclusion that a coordinated approach is needed to address solid waste in the Freetown Municipality. That is, the government is working with private solid waste management players to improve urban economic development, sustainable environmental practices, public health, and a creative energy paradigm.

Paper and cardboard are among the recyclable items that make up the majority of municipal solid waste .MSW is produced in educational institutions, particularly universities, via a variety of facilities, including as cafeterias and offices. Solid waste can harm the environment if there is no efficient management scheme in place. The purpose of this essay is to evaluate the solid waste management procedures used at Imam Abdulrahman Bin Faisal University's main campus in Dammam, Saudi Arabia. According to data gathered by Dahlawi and El Sharkawy (2021), on the makeup of MSW samples, only 1% of the materials were non-recyclable, while 80% of the wastes were recyclable and 19% were compostable. Paper and plastic make up over 73% of recyclable materials, indicating the urgent need for an efficient solid waste management program. The breakfast meal had the highest recorded FPW value.

The study uses desktop research methodology, which is founded on a thorough examination of secondary data and literature, including published articles and government documents. The transportation infrastructure is frequently inadequate and unofficial, even if the majority of trash is stored in outdated or badly maintained facilities like storage tanks. Landfills, open-air incinerators, and uncontrolled dumping are the main ways of disposal. Climate change, methane emissions, toxic leachate, land degradation, and air and water pollution are all consequences of such practices. Residents of marginalized social groups are disproportionately affected by these repercussions, which have a substantial negative impact on the environment and public health. Recommendations for reducing the dangers to public and environmental health posed by the current SWM practices in the Global South are included in the Abubakar et.al. (2022) paper conclusion.

The findings of the study of Edullantes et.al show that the participants have had adequate knowledge of solid waste management as well as positive attitudes and behaviors about solid waste. Additionally, individuals noted the significance of rewards, civic engagement, and political will toward improved at-source waste segregation. These findings show a beneficial influence on the lives of the residents of the community as a consequence of a community-based push for environmental education. Although the findings offer significant hints on the influence of community-based programs, care needs to be taken while interpreting the results due to certain methodological restrictions.

Recycle

The purpose of this study of Moralesa and Ocob (2020) was to ascertain the students' level of solid waste management knowledge and attitude, their level of solid waste management implementation in terms of segmentation, waste reduction, recycling, reuse, and disposal, and the correlation between the students' capacities and solid waste management implementation level. The findings showed that students' solid waste management implementation and capacity are at a positive level. It has an important connection. Students' knowledge capacity and waste reduction during SWM implementation are at a high positive level. In order to encourage everyone to separate, recycle, and reuse, the school community, including stakeholders, is urged to keep using policies and providing suitable supplies.

Effective waste management techniques, like appropriate disposal and recycling, can lessen the amount of air pollutants released by incineration and landfills (Gupta et al., 2023). Green spaces and afforestation: establishing green areas and growing trees can help to purify the air by absorbing pollutants. Trees help to purify the air by acting as natural filters.

The UK is running out of landfill space, and it's no secret that landfills are harmful for the environment. Garbage disposal

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techniques are continuously reassessed as a result of these factors as well as the growing need to recycle garbage. Effective trash disposal benefits not only the environment but also people's health and well-being. Depending on the size or situation of trash production, there are various ways to manage garbage effectively; for example, people can dispose of their waste effectively by simply placing it in a container and refraining from littering. Large waste producers can ensure that their garbage is disposed of in an ethical or sustainable manner by practicing effective waste disposal (ETM, 2022).

The findings demonstrated that respondents' awareness of the policies of segregation, reduction, reuse, and recycling is strong. Nonetheless, issues with garbage disposal persist, indicating the need for enhancements in the program's overall execution and advocacy initiatives. Additionally, there was variation in the degree of stakeholder participation; the highest level of implementation was shown in the composting of biodegradable trash. While external stakeholders faced issues, including a shortage of time, internal stakeholders encountered excessive waste. Stakeholder representation, proper program information distribution, and the necessity of focused solutions to implementation issues are all emphasized in the conclusions. According to this study, developing a sustainable and healthful learning environment requires the use of comprehensive waste management techniques (Espiritu, 2024).

Disposal

The growing global waste generation, the negative effects improper disposal has on the environment and human health, the financial advantages of recycling and waste reduction, and the necessity of legislative actions to support sustainable waste management practices are some of the topics covered in studies from 2020 to 2025 that emphasize the significance of solid waste management. According to projections, the amount of municipal solid trash generated will increase from 2.1 billion tons in 2023 to 3.8 billion tons by 2050. An estimated USD 252 billion was spent on trash management directly worldwide in 2020. The cost increases to USD 361 billion when the hidden costs of pollution, bad health, and climate change due to improper waste disposal methods are taken into account. If waste management is not addressed immediately, this yearly global cost might nearly triple to an astounding USD 640.3 billion by 2050 (UNEP, 2024).

According to the report of the World Bank in 2024, it was found that the MRFs and MRSs are actually not unknown and cannot be accurately assessed. These systems and facilities, which are assumed to recover the majority of recyclables from the solid waste management systems, are unable to handle all of the garbage, as demonstrated by recyclables' recovery during rubbish collection automobiles as well as the disposal sites. The quantity of recovered recyclables is known as the recycling gap. Should there be adequate and well-run MRFs and MRS, then there would be a substantial decrease in the Municipal Solid Waste generation has significantly increased as a result of the fast urbanization that is occurring in developing nations in Asia and Africa.

However, inefficient policy implementation and monitoring have been caused by the accompanying disposal schemes, financial and land resource limits, and unstructured public behavior. Blind mapping and a lack of focused and methodical direction have resulted in ineffective progress in numerous domains. Cultural issues, infrastructure constraints, and socioeconomic variables all function as roadblocks to management system optimization. The evaluation highlights how crucial it is to incorporate the study region into the framework of the circular economy, with an emphasis on encouraging recycling efforts and increasing citizen involvement in the reduction of solid waste, as well as requesting financial support from international organizations (Zhang et.al, 2024).

THEORETICAL FRAMEWORK

The theory of planned and sustainable waste management behavior, which was developed from the idea of reasoned action, was used in this study because it can explain how barangay officials' attitudes, perceived norms, and perceived behavioral control influence their intention and subsequent actions towards implementing effective waste management practices within their communities.

The Theory of Planned Behavior (TPB) is highly applicable to assessing and understanding barangay officials' awareness and behavior regarding solid waste management. Icek Ajzen was the one who first proposed the Theory of Planned Behavior. By incorporating the idea of perceived behavioral control, he expanded on the Theory of Reasoned Action. The work of Ajzen, which was first published in 1985, offers a framework for comprehending and forecasting human behavior. Thus, is also applicable to the present study because it focuses on comprehending the attitudes, beliefs, and perceived behavioral control that influence people's waste management behaviors all of which are directly related to the decisions and actions made by barangay officials when putting waste management policies into practice within their communities this theory is highly applicable to the solid waste management practices of barangay officials.

Further, the TPB is also relevant to the profile of barangay officials in solid waste management, as it can help explain and predict their attitudes, subjective norms, and perceived behavioral control towards implementing sustainable waste management practices within their communities, influencing their actions and decisions regarding waste policies and programs. By taking into

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account elements like people's attitudes, subjective norms, and perceived behavioral control towards these actions, TPB is widely regarded as applicable to solid waste management strategies because it successfully helps understand and predict people's intentions and behaviors regarding waste management practices like recycling, waste reduction, and proper disposal. This makes it a useful tool for creating waste management interventions that work.

STATEMENT OF THE PROBLEM

The study intended to determine the Adherence and Practices on Solid Waste Management among stakeholders in the Legislative District of Cagayan de Oro City for the School Year 2024-2025.

Specifically, it sought to answer the following questions:

1. How are the respondents distributed in terms of their designations?
2. What is the respondent's level of adherence on Solid Waste Management Act of 2000, considering reduce, reuse and recycle?
3. What is the respondent's level on Solid Waste Management practices with regard to segregating, reducing, reusing, recycling, and disposing?
4. Is there a significant relationship between the respondent's level of adherence on Solid Waste Management Act of 2000 and their practices?
5. Is there a significant difference in the respondents' level on Solid Waste Management Practices when grouped according to their designation?

SCOPE AND LIMITATIONS

This study focused on the level of adherence and practices on solid waste management in Cagayan de Oro Legislative District, for the School Year 2024-2025. The independent variables were limited only to the respondents' adherence on Solid Waste Management Act 2000, such as reduce, reuse and recycle. Moreover, the dependent variables are also limited only to respondents' solid waste management practices in terms of segregating, reducing, reusing, recycling, and disposing. Indeed, the respondents were the two hundred (200) stakeholders, including the school heads, teachers, parents, barangay in charge, and barangay health center in charge in the larger barangays of Cagayan de Oro City.

METHODOLOGY

Research Design

The study employed a descriptive-correlation research design to investigate the stakeholders' designation and practices on solid waste management based at the school, barangay, home, and health center. This also explored the adherence to Solid Waste Management Act of 2000, particularly in waste reduction, reuse, and recycle. This also examined the level of its practices, considering the segregating, reducing, reusing, recycling and disposing. The descriptive research is ideal in gathering detailed, factual information; the research aims to provide a comprehensive understanding of the intent of investigating the adherence and practices on the Solid Waste Management Act 2000.

Research Setting

This study on the stakeholders' adherence and practices on Solid Waste Management was conducted in selected barangays of Cagayan de Oro legislative district, namely: Agusan, Balulang, Bayabas, Bonbon, Bugo, Bulua, Camaman-an, Consolacion, Canitoan, Carmen, Consolacion Cugman, Gusa, Indahag, Iponan, Kauswagan, Lapasan, Lumbia, Macabalan, Macasandig, Nazareth, Patag, Pagatpat, Puerto, Puntod, and Tablon in Cagayan de Oro City.

Cagayan de Oro City was located in Northern Mindanao, close to the head of Macajalar Bay, along the Cagayan River. It is the ninth most populous city in the country. Since obtaining its city charter in 1950, Cagayan de Oro has developed into northern Mindanao's commercial and transportation center. The city's international airport, which serves as the northern terminus of the trans-Mindanao Sayre Highway, is a significant stopover for aircraft heading south. Bugo is a nearby pineapple cannery, while Carmen is a satellite town on the left bank of the river. The city is home to St. Augustine's Cathedral, the Plaza Divisoria, Gaston Park, and Xavier University.

The Philippines' Population (2024) projects that the city's current population would grow to 820,297. The urban agglomeration of this city, which normally consists of the city's population as well as that of nearby suburban districts, is represented by these estimations. There are two districts inside it.

The district contains the southern barangays of the city that border the Talakag and Iligan mountains, as well as all barangays west of the Cagayan River. Padayon Pilipino and Lordan Suan of the Lakas-CMD currently represent it in the 19th Congress. The district encompasses the city's main business sector and port area and is made up of the barangays east of the Cagayan River.

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Research Respondents and Sampling Technique

The respondents were the two hundred (200) stakeholders, particularly the school heads, teachers, parents, barangay officials in charge, and barangay health centers in charge, who were from twenty-five (25) barangays in the Legislative District in Cagayan de Oro City. Table A shows the distribution of respondents. This study used purposive sampling in selecting and identifying the respondents. Purposive sampling, as defined by Nikolopoulou (2023), is a collection of non-probability sampling strategies in which units are chosen based on the qualities you require in your sample. Put differently, purposive sampling involves the selection of units with a specific purpose. This sampling technique, also known as judgmental sampling, depends on the researcher's judgment in determining and choosing the subjects, situations, or occurrences that can yield the most information to meet the goals of the study. Finding information and making the most of a few resources are two applications for which it is especially helpful. However, it is highly susceptible to research biases while attempting to select the cases, people, or communities that are most appropriate for this sampling process, such as stakeholders' adherence and practices on the Solid Waste Management Act 2000.

Research Instrument

The instrument used in gathering the necessary data comprised three parts. Part I dealt with the respondent's designation. The school heads, teachers, parents, the barangay in charge, and the barangay health center in charge. Part II elicited the respondent's adherence to the Solid Waste Management Act of 2000 or (RA 9003), considering reduce, reuse, and recycle. This was adapted from Republic Act (R.A) 9003. Part III inquired about Solid Waste Management (SWM) practices with regard to segregating, reducing, reusing, recycling, and disposing. This was patterned and modified from the study of Verzosa et al. (2024) entitled Solid Waste Management Awareness and Practices in Coastal Communities. However, the indicators are also patterned and modified from the source mentioned above.

Statistical Treatment of Data

Having collected and recorded the data gathered in the study, the researcher used the following statistical tools:

Descriptive statistics such as frequency and percentage were used in respondents' designation. The mean and standard deviation were used to describe the respondents' level of adherence on the Solid Waste Management Act 2000, considering the reduce, reuse, recycle and respondents' level on solid waste management practices in terms of segregating, reducing, reusing, recycling and disposing.

Pearson Product-Moment Correlation (r) was employed to determine the significant relationship between the respondents' adherence to the Solid Waste Management Act 2000 and their practices. Moreover, the T-test and F-test were employed to test the significant difference in the respondents' level of Solid Waste Management practices when grouped according to their designation.

Ethical Considerations

Ensuring the privacy and anonymity of the school heads, teachers, parents, barangay health center and the barangay in charge of solid waste management who was taken part in this study is essential. If stakeholders are given the assurance that their identities and personal data are kept private, they could be more willing to engage honestly and candidly. The following ethical concerns were addressed.

Informed consent was obtained from all participating stakeholders, and they were clearly informed about the purpose of the study, the data collection process, and how their information was used. This is to ensure that they have the option to withdraw from the study at any time without facing consequences.

On the data DE-identification, the stakeholders were asked to remove or replace any personally identifiable information, such as names, school names, or contact details, from the data during analysis and reporting. Pseudonym assignments were done to protect their identities. Further, the data were stored securely, using encryption where necessary, and access was limited to authorized personnel only. To ensure that data was not accidentally disclosed to unauthorized parties. Ethical approval was sought from an Institutional Review Board (IRB) or ethics committee to ensure that the research design and handling procedures meet ethical standards and guidelines.

RESULTS AND DISCUSSION

Problem 1. How are the respondents distributed in terms of their designations?

Table 1. Distribution of Respondents in terms of their Designation

Category	Frequency	Percentage
School Head	9	4.50
Teacher	57	28.50

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Parent	56	28.00
Barangay In-Charge	50	25.00
Barangay Health Center In-Charge	28	14.00
Total	200	100.00

Table 1 shows the distribution of respondents in terms of their **designation**. The highest frequency and percentage were observed among teachers with **57 (28.50%)**, indicating that they constituted the largest group of respondents. This means that the high number of teachers participating in the study is due to their direct involvement in educating students and leading school activities. Teachers are usually more accessible and willing to participate because they are aware of their role in promoting solid waste management. They often have daily interactions with students, which makes it easier for them to influence proper waste practices. This shows that teachers are key stakeholders in spreading awareness and practicing solid waste management in schools. Their engagement ensures that students understand the importance of proper waste disposal and environmental care.

These results indicate that teachers play a central role in implementing solid waste management practices. Continuous training and workshops could further improve their ability to teach and practice proper waste management. Schools could also provide teachers with resources, such as teaching materials and recycling tools, to make solid waste management activities more effective. Additionally, schools could create programs where teachers lead recycling and waste reduction activities, reinforcing a culture of environmental responsibility among students and staff. Encouraging teamwork among teachers in solid waste management projects can also strengthen overall school participation and commitment.

As observed, teachers demonstrate a proactive attitude toward environmental responsibility, reflecting their awareness of the importance of solid waste management. Their frequent interactions with students create a pattern of influence that extends beyond the classroom, promoting environmentally conscious behaviors among the school community. This trend suggests that leveraging teachers as key agents can significantly enhance the adoption of proper waste management practices in schools. Additionally, their willingness to participate indicates a positive culture of engagement in environmental initiatives.

According to Hanedar et al. (2021), teaching children about environmentally friendly waste management helps them adopt sustainable practices and influence their families. Saleh et al. (2020) emphasized that effective waste reduction plans in schools preserve environmental quality and create economic opportunities. Furthermore, Pardini et al. (2020) highlighted the importance of understanding waste types and resources for a successful SWM system. Sharma et al. (2023) also noted that schools can use innovative strategies to minimize waste and engage staff and students in sustainable practices.

Conversely, the lowest frequency and percentage were recorded for school heads with **9 (4.50%)**, representing the smallest proportion of the sample. The low participation of school heads is because they have many administrative responsibilities and less direct contact with daily school activities. Their involvement in solid waste management is limited due to time constraints or delegation to other staff members. Many school heads focus on overall management, leaving waste management tasks to teachers or other personnel. This shows that school heads are less involved in hands-on solid waste management practices in schools. However, their support is critical in creating policies and ensuring that solid waste management is prioritized across the school. Further, the findings imply that school heads need more active engagement in solid waste management initiatives. Providing leadership training and encouraging school heads to monitor and support solid waste management activities could strengthen their role. Schools can develop policies that involve school heads in planning, supervising, and evaluating waste management programs. Their active participation can motivate teachers and students to follow proper practices more consistently. Additionally, school heads can collaborate with local government and community stakeholders to improve the school's overall system.

As observed, the low involvement of school heads in daily solid waste management highlights a pattern where administrative priorities often overshadow environmental responsibilities. This suggests that while policies may exist, their effective implementation relies heavily on leadership engagement. Furthermore, the delegation of waste management tasks to teachers or other staff indicates a reliance on middle-level personnel to enforce practices, which may affect consistency and thoroughness. Engaging school heads more actively could create a top-down influence that strengthens adherence and fosters a culture of environmental responsibility across the school.

Haniva et al. (2023) stated that school heads are essential in creating awareness and establishing norms for sustainable development in schools. Valladolid and Blasé (2023) found that local government and school leaders significantly influence SWM implementation. Moreover, the United Nations Environment Program (2022) emphasized that stakeholder involvement is critical to reducing environmental risks from growing waste volumes. Reyes and Madrigal (2020) also noted that awareness and leadership at the school level are significant determinants of effective solid waste management practices among students and staff.

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Problem 2. What is the respondent's level of adherence on the Solid Waste Management Act 2000, considering reduce, reuse, recycle?

Table 2. Summary of the Respondents on the Level of Adherence on the Solid Waste Management Act 2000

Variables	Mean	SD	Interpretation
Reduce	3.25	0.74	High
Reuse	3.19	0.75	High
Recycle	3.22	0.77	High
Overall	3.22	0.75	High
Legend:			
3:26 - 4:00		At All Times / Very High	1:76 - 2:50
2:51 - 3:25		Most of the Time / High	1:00 - 1:75
			Sometimes / Low
			Never / Very Low

Table 2 shows the summary of respondents' level of adherence on Solid Waste Management Act of 2000 across the three Rs, reduce, reuse, and recycle with an overall mean of **3.22 (SD = 0.75)**, interpreted as **High**. This means that the stakeholders consistently observe proper solid waste management practices in their community. This is due to growing public awareness campaigns and local government efforts promoting the importance of sustainable practices. It also reflects the accessibility of waste collection services and the presence of guidelines or ordinances that encourage responsible waste handling. Stakeholders are motivated by their sense of responsibility to the environment and the visible improvements in cleanliness when these practices are followed.

These results indicate that stakeholders generally follow the Solid Waste Management Act of 2000, particularly in reducing, reusing, and recycling waste. Continuous training and community education could further enhance their ability to practice proper waste management. Additionally, implementing more local programs, such as household waste segregation campaigns and regular clean-up drives, would reinforce proper environmental practices. Strengthening monitoring and support from local authorities can also sustain high adherence among the community.

As observed, stakeholders in Cagayan de Oro demonstrate a proactive attitude toward solid waste management, consistently practicing the three Rs in their daily routines. This reflects a community trend of valuing environmental responsibility and responsiveness to local initiatives.

Coracero (2021) noted that the Philippines still faces difficulties in enforcement and proper disposal, which can affect compliance. Similarly, growing public awareness and accessibility to waste management services have been shown to increase community participation in proper waste handling (Lacson et al., 2020; Reyes & Santos, 2019).

The variable **reduce** obtained the highest mean of **3.25 (SD = 0.74)**, interpreted as **High**. This means that stakeholders prioritize minimizing waste generation at its source. This behavior could be influenced by practical habits such as buying only what is needed, using eco-friendly products, or avoiding single-use plastics. Public reminders, environmental education, and the rising cost of waste disposal may also contribute to their efforts in reducing waste. These practices indicate an understanding that preventing waste is more effective than managing it after it's created. This implies that stakeholders have a strong practice of reducing waste. Continuous training and practice could further enhance their ability to minimize waste at the source. Additionally, regular public campaigns, workshops, or incentive programs would reinforce environmentally responsible behaviors and encourage more consistent waste reduction. Emphasizing practical habits such as proper purchasing decisions, the use of reusable materials, and avoiding single-use plastics could strengthen these efforts even further.

As seen, stakeholders demonstrate a consistent commitment to proper waste management, reflecting a community-wide culture of environmental responsibility. Their high adherence to awareness campaigns and local government initiatives is effectively influencing behaviors.

The Ecological Solid Waste Management Act of 2000 (RA 9003) highlights that reducing waste at the source is essential for lowering landfill emissions and promoting sustainability (Coracero, 2021). Public engagement and community participation have also been found to improve waste reduction behaviors (Orbe, 2022). Research by Edullantes et al. (2024) demonstrated that environmental education and community-based programs positively influence individuals' knowledge, attitudes, and practices regarding solid waste reduction. Similarly, studies in other countries emphasize that proper segregation and recycling are critical in reducing environmental and health risks associated with municipal solid waste (Abubakar et al., 2022; Dahlawi & El Sharkawy, 2021). These observations reveal that structured guidance, public awareness, and consistent practice can significantly enhance stakeholders' waste reduction efforts.

Furthermore, the variable **reuse** got the lowest mean of **3.19 (SD = 0.75)**, interpreted as **High**. This means that although stakeholders reuse items, they do so slightly less often compared to other practices. This is because reusing requires more effort, creativity, or storage space, which some households may find difficult. Another reason could be limited access to reusable

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materials or a lack of awareness of how certain items can be reused. This suggests that while the intent is present, the actual reuse behavior is less consistent or prioritized.

These results indicate that although stakeholders show a high level of adherence to solid waste management practices. This also suggests that this behavior is less frequent compared to other practices. Continuous training and awareness programs could further enhance the habit of reusing materials. Additionally, providing accessible reusable items, clear guidelines on how to repurpose waste, and incentives for households to practice reuse would reinforce consistent behavior. Encouraging creativity and practical strategies for reuse could also help make this practice easier and more sustainable.

As seen, stakeholders prioritize minimizing waste at its source, reflecting practical habits and an awareness of environmental impact. Their prevention-focused behaviors are more readily adopted than reactive measures. Moreover, their exposure to education and campaigns effectively shapes daily practices and decision-making related to waste reduction.

The findings align with studies emphasizing the challenges of implementing solid waste management despite existing regulations. Coracero (2021) highlighted that gaps in compliance and enforcement of the Ecological Solid Waste Management Act (RA 9003) continue to hinder proper waste handling in the Philippines.

Similarly, Molina and Catan (2021) found that while students are aware of waste reduction and reuse strategies, actual implementation may be inconsistent due to limited resources or knowledge gaps. On the same line, Ezedike (2020) suggested that effective knowledge transfer and community engagement are critical in promoting sustainable reuse practices. Moralesa and Ocob (2020) also emphasized that stakeholders, including schools, play a key role in reinforcing the consistent application of the 3Rs through ongoing support and provision of appropriate materials. These observations reveal that both awareness and practical facilitation are essential to strengthen reuse behavior among households and communities.

Problem 3. What is the respondents' level of solid waste management practices in terms of segregating, reducing, reusing, recycling, and disposing?

Table 3. Summary of the Respondents' Level of Practices on Solid Waste Management

Variable	Mean	SD	Interpretation
Segregating	3.37	0.70	Very High
Reducing	3.37	0.71	Very High
Reusing	3.32	0.71	Very High
Recycling	3.36	0.68	Very High
Disposing	3.47	0.69	Very High
Overall	3.38	0.70	Very High
Legend: 3:26 - 4:00 Strongly Agree / Very High 1:76 - 2:50 Disagree / Low			
2:51 - 3:25 Agree / High 1:00 - 1:75 Strongly Disagree / Very Low			

Table 3 shows the summary table on the level of practices on solid waste management practices across the five areas: **segregating, reducing, reusing, recycling, and disposing**, with an overall mean of **3.38 (SD = 0.70)**, interpreted as **Very High**. This means that stakeholders are generally consistent in following solid waste management practices. This situation is likely due to the continuous implementation of city ordinances, awareness campaigns, and the increasing visibility of environmental concerns in the community. Stakeholders may also be complying due to regular monitoring by local authorities and the availability of basic waste management facilities such as segregated bins. Because these practices are reinforced by policies and accessible services, people are more inclined to adopt them as part of their routine. The cooperation of various sectors, including households and businesses, also plays a role in maintaining these practices.

These results indicate that while stakeholders already show very high practices in solid waste management, continuous training and reinforcement are still necessary to maintain and further improve these habits. Ongoing education programs could enhance awareness of the 3Rs and proper disposal, especially in schools and communities. Additionally, stricter monitoring and providing incentives for compliance would strengthen consistent practices. By encouraging collaboration between local government, the private sector, and households, the long-term sustainability of waste management practices can be ensured.

As observed, stakeholders demonstrate a strong commitment to solid waste management, indicating that environmental awareness and policy enforcement have positively influenced their behaviors. There was consistent monitoring, accessible facilities, and community involvement that effectively shaped attitudes and habits toward sustainable practices. Furthermore, the high level of adherence shows a growing pattern of routine compliance and proactive engagement across schools and local communities.

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This is consistent with the findings of Ezedike (2020), who explained that sustainable waste management can be achieved through knowledge transfer and community awareness. This corresponds to the framework of Lad et al. (2020), which emphasized the importance of separating biodegradable and non-biodegradable waste and reducing plastic use to address environmental issues. According to Komba (2021), effective waste management also requires coordinated action between the government and the private sectors to improve disposal systems and public health outcomes.

Moreover, the variable **disposing**, obtained the highest mean of **3.47 (SD = 0.69)**, interpreted as **Very High**. This means that stakeholders are most committed when it comes to the proper disposal of waste. This may be due to the regular schedule of garbage collection and the presence of designated disposal areas in their communities. These services provide convenience and structure, making it easier for people to dispose of their waste correctly. The visible role of barangay and city garbage collectors also encourages regular participation from the public. Most stakeholders are already used to disposing of waste at the right time and place, reinforcing this habit.

The findings imply that the very high commitment of stakeholders toward proper disposal highlights a strong community habit shaped by accessible waste services. Continuous training on waste segregation and recycling could further enhance their ability to manage waste more effectively. Additionally, barangay-led campaigns and incentives for households could reinforce responsible practices, ensuring that disposal is not just convenient but also environmentally sustainable. Strengthening monitoring and providing more disposal bins in public areas would also help reduce improper waste practices.

As seen, stakeholders demonstrate a strong sense of responsibility and routine in managing their waste, reflecting a well-established community habit. There was visible support from barangay services and structured collection schedules that reinforced consistent compliance.

This is in agreement with the study of Ezedike (2020), who emphasized that sustainable waste practices improve when communities are guided and provided with proper systems for disposal. This supports the argument presented by Lad et al. (2020), who highlighted that citizen readiness and participation play a vital role in addressing solid waste issues. According to Komba (2021), coordinated strategies involving both government and local stakeholders are essential for better waste disposal and environmental protection, which reflects the importance of shared responsibility seen in this study.

On the other hand, the variable **reusing** got the lowest mean of **3.32 (SD = 0.71)**, interpreted as **Very High**. This means that although the practice of reuse is still considered very high, it is less commonly observed compared to other areas. This may be due to a lack of awareness about how to creatively or effectively reuse materials in daily life. Many people may find it easier to throw items away rather than find new uses for them. Additionally, there might be limited access to programs or workshops that promote reusing techniques, especially in urban areas. As a result, the habit of reusing is not as deeply ingrained as other practices like disposal.

These outcomes suggest that while people are aware of the value of reuse, they still need more guidance and encouragement to practice it consistently. Continuous training on creative reuse techniques could further enhance their ability to turn waste into useful items. Additionally, schools, communities, and local governments could organize workshops and campaigns that demonstrate practical ways of reusing everyday materials. This would reinforce sustainable habits and help reduce overall waste generation.

As perceived, while stakeholders recognize the importance of reusing materials, actual implementation is less frequent. There was a gap between awareness and habitual practice. This highlights the need for targeted interventions, such as educational workshops and community campaigns, to foster consistent reuse behaviors.

This is consistent with the findings of Ezedike (2020), who emphasized that effective waste management practices can be strengthened by spreading knowledge on how to reuse materials like plastics and other common waste. This corresponds to the framework of Lad et al. (2020), who stressed the importance of community participation and awareness in reducing waste and supporting the 3R philosophy. As articulated by Komba (2021), coordinated efforts between the government and the community are essential in promoting sustainable solid waste practices, especially when addressing the growing challenges of urbanization and waste disposal.

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Problem 4. Is there a significant relationship between the respondents' adherence on Solid Waste Management Act of 2000 and their practices?

Table 4. Result of the Test on the Relationship between the Respondents of Adherence on Solid Waste Management Act 2000 and their Practices

Adherence of Solid Waste Management	Solid Waste Management Practices					Overall
	Segregating	Reducing	Reusing	Recycling	Disposing	
	Pearson <i>r</i>	Pearson <i>r</i>	Pearson <i>r</i>	Pearson <i>r</i>	Pearson <i>r</i>	Pearson <i>r</i>
	p-value	p-value	p-value	p-value	p-value	p-value
	interpretation	Interpretation	interpretation	interpretation	interpretation	interpretation
Reduce	0.590	0.650	0.630	0.600	0.600	0.614
	0.001	0.001	0.001	0.001	0.001	0.001
	<i>s</i>	<i>S</i>	<i>s</i>	<i>s</i>	<i>s</i>	<i>s</i>
Reuse	0.630	0.600	0.610	0.600	0.540	0.596
	0.001	0.001	0.001	0.001	0.001	0.001
	<i>s</i>	<i>S</i>	<i>s</i>	<i>s</i>	<i>s</i>	<i>s</i>
Recycle	0.620	0.600	0.620	0.620	0.580	0.608
	0.001	0.001	0.001	0.001	0.001	0.001
	<i>s</i>	<i>S</i>	<i>s</i>	<i>s</i>	<i>s</i>	<i>s</i>
Legend:						
	significant at $p < 0.05$ alpha level		S – significant	NS – not significant		

Table 4 presents the results of the test on the relationship between the respondents' adherence to the **Solid Waste Management (SWM) Act of 2000 and their actual Solid Waste Management practices**. The overall findings reveal that all aspects of reduce, reuse, and recycle have significant positive correlations with all five SWM practices, as all p-values are less than 0.001, indicating statistical significance at the 0.05 level. **Thus, the null hypothesis stating that there is no significant relationship between adherence to the Solid Waste Management Act and the level of solid waste management practices is rejected.** This means that the stakeholders' commitment to the principles of reduce, reuse, and recycle contributes greatly to the consistency of their solid waste management practices. This happens because adherence to these core principles influences their behavior in everyday waste handling, from separating materials to minimizing waste generation. These actions are likely driven by awareness campaigns, local enforcement, or personal environmental concern. As they internalize the importance of waste management, their practices become more habitual and aligned with the Solid Waste Management Act.

The findings imply that strong adherence to the principles of reduce, reuse, and recycle can further strengthen the actual solid waste management practices of stakeholders. Continuous training and awareness activities could improve their consistency in applying these practices in daily routines. Additionally, establishing monitoring systems and incentives would reinforce compliance and ensure that positive habits are sustained. Local government units and schools may also intensify campaigns that highlight the long-term environmental benefits of proper waste management.

This is in agreement with the study of Coracero (2021), who emphasized that despite the framework provided by RA 9003, effective waste reduction still depends on compliance and enforcement. This aligns with the findings of Ezedike (2020), who noted that knowledge transfer and motivation are essential for building sustainable waste practices. Likewise, the study of Lad et al. (2020) reflects the principles of community participation and awareness, stressing that younger generations are willing to take part if proper systems and encouragement are provided.

Specifically, adherence to **reduce** showed the strongest relationship with all five SWM practices ($r = 0.614$, $p = 0.001$). This means that among the three Rs, reducing waste has the biggest influence on overall SWM behavior. This may be because reducing waste at the source by avoiding unnecessary consumption or minimizing single-use materials requires a more conscious and proactive mindset. Stakeholders who prioritize reduction are likely to be more aware of their environmental impact and more engaged in all aspects of waste management. Their efforts to limit waste production naturally encourage them to practice segregation, reuse, recycling, and responsible disposal as well.

These results indicate that strengthening awareness and practice of reducing waste can lead to a broader improvement in solid waste management. Continuous training could further enhance the stakeholders' ability to consciously minimize waste production and integrate reduction into daily routines. Additionally, providing incentives, educational campaigns, and consistent monitoring would reinforce sustainable habits and encourage wider participation in other waste management practices such as segregation and recycling.

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This is consistent with the findings of Coracero (2021), who emphasized that reduction is at the core of the Ecological Solid Waste Management Act of 2000, yet challenges remain due to poor compliance. This supports the argument presented by Ezedike (2020), who noted that proper knowledge transfer and motivation are needed to strengthen waste management practices. As emphasized by Edullantes et al. (2024), community-based initiatives and civic engagement play a vital role in promoting reduction behaviors and ensuring long-term positive environmental outcomes.

Similarly, adherence to **reuse** shows the lowest significant correlation to all five SWM practices ($r = 0.596$, $p = 0.001$). This means that although reuse still plays a role, it is the least practiced or least prioritized among the three components. This may happen because reusing materials requires extra effort, such as cleaning, repurposing, or creatively extending product life, which not all stakeholders find practical or convenient. Some may lack the tools, time, or ideas on how to effectively reuse materials, so they skip this step even if they are practicing other methods. Still, its contribution to overall practice remains important.

These results imply that stakeholders may benefit from stronger guidance and encouragement on how to practice reuse effectively. Continuous training could further enhance their creativity and resourcefulness in repurposing materials. Additionally, providing tools, incentives, and community-based activities would reinforce the value of reuse, making it a more convenient and practical habit for many. This could lead to a stronger culture of sustainability within schools, households, and local communities.

This is consistent with the findings of Coracero (2021), who emphasized that despite the existence of RA 9003, poor compliance remains a barrier to proper waste management. This supports the argument presented by Ezedike (2020), who stressed that sustainable practices require knowledge transfer and consistent motivation. This is in agreement with the study of Moralesa and Ocob (2020), which showed that continuous policies and proper support encourage individuals to adopt reuse and other waste management strategies more effectively.

Meanwhile, adherence to **recycle** also shows a significant correlation to all five SWM practices ($r = 0.608$, $p = 0.001$). This means that those who follow recycling protocols tend to also engage in other SWM practices. Recycling is one of the most visible and commonly promoted aspects of waste management, which may explain its strong influence. People are often guided by community programs, barangay initiatives, or school reminders to separate recyclables, which helps reinforce good habits. These structured systems make it easier for individuals to participate in broader SWM efforts.

These outcomes suggest that recycling plays a key role in shaping broader solid waste management behaviors. Continuous training in proper waste segregation could further enhance the community's ability to recycle effectively. Additionally, providing consistent reminders through schools, barangays, and local organizations would reinforce long-term compliance with SWM practices. Establishing more accessible recycling facilities and reward systems may also encourage wider participation and improve overall waste reduction.

This is consistent with the findings of Coracero (2021), who emphasized that despite the Ecological Solid Waste Management Act of 2000, enforcement gaps remain, and stronger recycling efforts are essential to address growing waste problems. This supports the argument presented by Ezedike (2020), who noted that effective waste management practices are strengthened when knowledge transfer methods highlight the 3Rs, especially recycling. According to Dahlawi and El Sharkawy (2021), recyclable materials such as paper and plastic make up a significant portion of waste, reinforcing the urgent need to establish efficient recycling systems within communities and institutions.

Problem 5. Is there a significant difference in the respondents' level on Solid Waste Management practice when grouped according to their designation?

Table 5. Difference in the Respondents' Level on Solid Waste Management Practice when Grouped according to their Designation

Stakeholders' Designation	Solid Waste Management Practices				
	Segregating	Reducing	Reusing	Recycling	Disposing
	F-value	F-value	F-value	F-value	F-value
	p-value	p-value	p-value	p-value	p-value
	Interpretation	Interpretation	interpretation	interpretation	interpretation
School Head	1.230	1.150	1.160	1.930	1.860
	0.30	0.340	0.330	0.090	0.100
	<i>Ns</i>	<i>Ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
Teacher	2.080	1.180	1.150	1.390	0.900
	0.070	0.320	0.340	0.230	0.490

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	<i>Ns</i>	<i>Ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
Parent	1.900	1.060	1.850	1.370	1.740
	0.110	0.380	0.120	0.250	0.140
Barangay in charge	<i>Ns</i>	<i>Ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
	2.730	2.240	1.030	2.880	2.720
Barangay Health Center in charge	0.020	0.050	0.400	0.020	0.020
	<i>S</i>	<i>S</i>	<i>ns</i>	<i>s</i>	<i>s</i>
Overall	1.140	0.830	0.690	0.260	0.780
	0.340	0.480	0.560	0.850	0.510
	<i>Ns</i>	<i>Ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>
	1.816	1.292	1.176	1.534	1.632
	0.168	0.314	0.350	0.288	0.252
	<i>Ns</i>	<i>Ns</i>	<i>ns</i>	<i>ns</i>	<i>ns</i>

Legend: significant at $p < 0.05$ alpha level *S* – significant *NS* – not significant

Table 5 presents the differences in respondents' Solid Waste Management practices when grouped according to **stakeholders' designation**. Overall, the analysis revealed no statistically significant difference in solid waste management practices across all stakeholder groups when examined collectively, as indicated by the overall F-values and p-values, all of which exceeded the 0.05 alpha level. Thus, the **null hypothesis is accepted**. This suggests that, in general, stakeholders' designations do not lead to significant variation in how solid waste is managed across the five categories: segregating, reducing, reusing, recycling, and disposing.

This means that all stakeholder groups, regardless of their designation, generally carry out solid waste management practices at a similar level. The uniformity in solid waste management behavior may be due to shared exposure to local government programs, school policies, and community awareness campaigns that emphasize responsible waste practices. Since all stakeholders, school heads, teachers, parents, and barangay health workers are likely subject to the same local ordinances and training efforts, they are expected to comply similarly.

Further, there may also be common expectations for participation in waste segregating, reducing, reusing, recycling, and proper disposing across various settings, such as schools, households, and barangay health units. Because these practices are part of standard operating procedures and community norms, significant differences in implementation among roles are minimized. The wide dissemination of the Ecological Solid Waste Management Act may have also played a role in promoting consistent practices. Another contributing factor could be regular community or school monitoring, ensuring accountability among all stakeholders. Overall, this indicates a shared responsibility and understanding of solid waste management obligations.

The results highlight that stakeholders, regardless of their designation, are consistent in practicing solid waste management. This uniformity indicates that community-wide programs and policies have been effective in instilling shared responsibility. Continuous training could further enhance stakeholders' awareness and skills in maintaining proper waste management. Additionally, strengthening monitoring systems and providing incentives for best practices would reinforce long-term compliance and sustainability.

This is consistent with the findings of Valladolid and Blasé (2023), who revealed that schools, parents, and local government stakeholders show no significant variation in implementing practices. As emphasized by the United Nations Environment Program (2022), global waste concerns require joint participation of all sectors, making equal involvement crucial in addressing environmental challenges. This supports the argument presented by Sharma et al. (2023), who explained that educational institutions and communities can reduce global waste problems when stakeholders work collectively with consistent practices and innovative approaches.

When individual stakeholder groups were considered, however, the **barangay in-charge** group showed notable variations in specific solid waste management practices. Significant differences were observed in segregating, reducing, recycling, and disposing, with **recycling** having the highest F-value (**F = 2.880, p = 0.020**), indicating the most significant variation among stakeholders in this category. The notable variation in recycling practices among the Barangay In-Charge group is primarily due to the differences in roles, responsibilities, and priorities of the members. Chairpersons often focus on policy enforcement and overall program oversight, kagawads are typically responsible for supervising community compliance, SK chairpersons engage youth in environmental initiatives, while Secretaries and Treasurers manage administrative and resource-related tasks. These role distinctions influence how each member participates in recycling activities, such as converting waste into new products, selling recyclables, or ensuring proper cleaning before recycling to prevent contamination (**F = 2.880, p = 0.020**). Consequently, some

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members may be more actively involved in recycling initiatives, whereas others focus on administrative or oversight tasks, creating measurable variation in recycling practices. Moreover, variations in personal motivation, access to resources, and prior knowledge about recycling contribute further to these differences.

This implies that targeted interventions could strengthen weaker areas among the Barangay In-Charge members. Continuous training on recycling techniques, workshops on waste-to-income strategies, and structured monitoring systems could improve engagement and consistency. Encouraging collaboration between members to share strategies and best practices would also reinforce proper recycling habits across all positions. Additionally, providing incentives or recognition for active participation could motivate stakeholders to improve their recycling practices further.

This is consistent with the findings of Moralesa and Ocob (2020), who reported that students' knowledge and attitudes toward solid waste management directly influenced their ability to practice segregation, reduction, recycling, reuse, and proper disposal. When stakeholders are provided with guidance, clear policies, and necessary resources, they are more likely to participate actively and consistently in waste management activities. This supports the observation that differences in roles, responsibilities, and motivation among Barangay In-Charge members lead to variations in recycling practices. This is also consistent with the study of Edullantes et al. (2024), which showed that community-based environmental education, incentives, and collaborative programs improved stakeholders' engagement and behaviors in managing solid waste.

Similarly, Ezedike (2020) emphasized that knowledge transfer and practical training are crucial for promoting sustainable waste management practices, especially in contexts where recycling and reuse are key. These studies suggest that targeted interventions, training, and shared best practices can strengthen participation and reduce variations in solid waste management among stakeholders.

In contrast, **reducing practices** showed the lowest significant difference among the barangay in-charge group ($F = 2.240$, $p = 0.050$). This occurs because reduction behaviors such as using reusable containers, avoiding single-use items, and minimizing food waste are simple actions that can be adopted similarly by all members regardless of position. Unlike recycling, which may require specialized knowledge, tools, or effort to transform waste into usable products, reducing practices depend mostly on individual habit, awareness, and discipline, which tend to be more uniform across stakeholders. Minor differences may still exist due to personal commitment, awareness of environmental policies, or availability of resources like reusable containers or bags. The finding implies that while general awareness of reduction is present, reinforcing these practices through practical demonstrations, continuous advocacy, and structured follow-up can encourage more effective and measurable reductions. Continuous practice of reduction strategies, combined with community education campaigns and engagement, would strengthen a culture of minimizing waste and resource consumption among the stakeholders.

This is consistent with previous studies that emphasize the importance of solid waste management knowledge and community engagement in promoting reduction practices. Moralesa and Ocob (2020) found that individuals with higher awareness of waste management were more likely to practice waste reduction, segregation, and recycling effectively. Similarly, Edullantes et al. reported that community-based environmental education programs positively influenced stakeholders' attitudes and behaviors toward waste management, showing that continuous education and active participation reinforce reduction habits.

Research in urban settings also highlights the need for practical support and stakeholder collaboration. Abubakar et al. (2022) noted that unsustainable disposal methods, such as open dumping and burning, disproportionately affect marginalized communities, while studies in Owerri, Nigeria (Ezedike, 2020) and Freetown, Sierra Leone (Komba, 2021) demonstrated that partnerships between local governments and communities, supported by proper resources and guidance, improve waste management outcomes. These findings suggest that reinforcing simple reduction behaviors like using reusable containers and minimizing food waste through campaigns, incentives, and consistent follow-up can create measurable improvements in solid waste reduction.

CONCLUSION

Stakeholders in the Cagayan de Oro Legislative District generally follow the Solid Waste Management Act of 2000 (RA 9003) and show good waste management practices, especially in reducing, disposing and sorting waste, while reusing is done less. There is a clear link between following the solid waste management rules and actually doing proper waste management, meaning that those who follow the rules more manage waste better. Also, a stakeholder's role or position affects how they carry out waste management tasks.

RECOMMENDATIONS

From the findings of the study, the following are recommended:

1. School Heads should hold teacher workshops every three months to teach proper waste sorting, reducing, recycling, and disposal. Create a small solid waste management committee of 3–5 teachers to check school practices, keep a record of activities, and report progress each semester. Include monthly “waste-free” challenges or recycling drives for students.
2. Local Government Units (LGUs) and agencies should hold community training twice a year on handling and reusing waste safely, such as putting labeled trash bins in schools and public places, giving small rewards for households or offices that manage waste properly and using a simple checklist to track compliance and share results every six months.
3. Schools and community groups should run paper recycling programs, such as setting up a small station for used paper at schools or barangay halls, teaching people how to make crafts or notebooks from recycled paper, and holding monthly contests with small prizes for the most paper collected. Include this in school lessons and barangay activities.
4. LGUs, schools, and community groups should check solid waste management practices twice a year to find gaps, give short training sessions with easy instructions and real examples of good waste management, share results clearly, and make a plan for improvement within one month.
5. Barangay Captains should give a 1-day solid waste management orientation to all officials and staff, give a written guide and checklist so everyone knows their role, and hold follow-up sessions every six months to solve problems and keep practices consistent across all barangays.

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