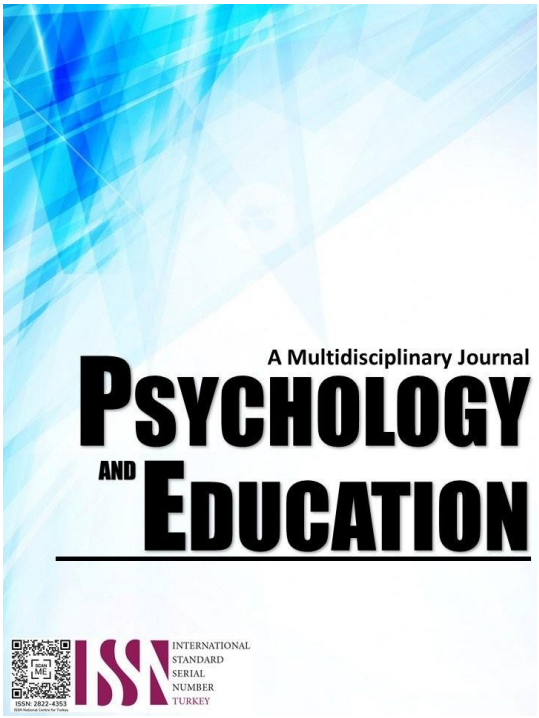
MIND THE WASTE: ASSESSING AWARENESS AND ATTITUDES TOWARDS SOLID WASTE MANAGEMENT AMONG UNIVERSITY STUDENTS



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Research Article

Mind the Waste: Assessing Awareness and Attitudes Towards Solid Waste Management among University Students

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Abstract

This study aimed to assess the awareness, attitudes, and practices of college students regarding solid waste management (SWM) at a private Catholic university in Bayombong, Nueva Vizcaya. The research sought to determine the relationship between students' awareness, attitudes, and practices toward SWM and to explore factors influencing their engagement in environmental sustainability efforts. A quantitative descriptive-correlational design was employed. Data were collected through a structured questionnaire administered to students from six academic units: the School of Health and Natural Sciences (SHaNS), School of Teacher Education and Humanities (STEH), School of Graduate Studies (SGS), School of Accountancy and Business (SAB), School of Engineering, Architecture, and Information Technology (SEAIT), and the College of Law (CoL). Descriptive statistics and Pearson's correlation analysis were used to interpret the data. The findings revealed that students demonstrated moderate to high awareness and very positive attitudes toward SWM. Notably, SHaNS students scored the highest across all domains. However, a gap was observed between awareness and self-reported practices, indicating that knowledge and attitudes do not consistently translate into sustainable behavior. Correlational analysis showed strong positive relationships between awareness and attitudes ($r = 0.60$), awareness and practices ($r = 0.45$), and a moderate correlation between attitudes and practices ($r = 0.35$). The study concludes that there is a need for stronger institutional support, including more accessible waste management infrastructure, regular awareness campaigns, and experiential learning opportunities to bridge the gap between knowledge and practice. Recommendations include integrating environmental education across all academic disciplines, fostering student-led sustainability initiatives, and refining teaching methods to ensure a comprehensive approach to SWM across the university.

Keywords: *environmental education, recycling, sustainability education, university green initiatives, waste segregation*

Introduction

From the earliest stages of civilization, waste has been an inevitable byproduct of human activity. In developing nations like the Philippines, rapid population growth, urbanization, and rising living standards have sharply increased waste generation.

Environmental degradation is a pressing global issue, with improper waste disposal as a major contributing factor. Addressing this requires effective waste management systems. Acknowledging this need, the 1987 Philippine Constitution, Article II, Section 16, declares the state's duty to "safeguard and enhance the people's right to a balanced and healthful ecology in accord with the rhythm and harmony of nature."

The government enacted Republic Act No. 9003 to confront these growing challenges or the Ecological Solid Waste Management Act. This law delegates key responsibilities to local government units (LGUs), including forming Solid Waste Management Boards, drafting ten-year waste management plans, and building Materials Recovery Facilities (MRFs) and final disposal sites. RA 9003 also bans new open dumpsites, mandating existing ones to be upgraded by 2004 and permanently closed by 2006. The Act promotes waste reduction through recycling, resource recovery, reuse, and composting (Atienza, 2011).

Despite its passage over sixteen years ago, progress in implementing RA 9003 has been limited. Many Filipinos remain unaware of the law's provisions and the consequences of improper waste disposal. Masood, Barlow, and Wilson (2014) observed that solid waste management is often neglected. Key challenges include poor waste disposal habits, inefficient collection systems, and a lack of proper facilities (Senate Economic Planning Office, 2017; Matunog & Awa, 2013). As a result, the Philippines has become one of the world's top contributors to plastic pollution (WWF-Philippines, 2018). Ineffective waste management also leads to health issues, water and soil contamination, air pollution, increased flooding, and broader socioeconomic impacts (Senate Economic Planning Office, 2017; Sharholy et al., 2008; Abu Qdais, 2007).

To foster public awareness, Section 55 of RA 9003 requires the Department of Education (DepEd), Commission on Higher Education (CHED), and other agencies to lead ongoing public education programs on waste management. These efforts aim to (a) increase public understanding of solid waste impacts and promote community-based solutions; (b) offer practical steps to address the issue and (c) encourage the use of eco-friendly products.

Further strengthening this initiative, Republic Act No. 9512, or the Environmental Awareness and Education Act of 2008, mandates integrating environmental education at all levels of public and private schools. It also encourages colleges and universities to implement environmental initiatives through the National Service Training Program. These include activities such as tree planting, waste reduction,

recycling, composting, and conservation efforts, all geared toward supporting environmental laws.

Recognizing education's vital role in shaping responsible waste management behavior, numerous studies have examined students' awareness, attitudes, and practices. However, most of this research focuses on tertiary education. To fill this gap, the study investigated the awareness, attitudes, and practices of students at a private Catholic university regarding solid waste management. The study aimed to identify specific challenges and opportunities that can inform targeted policies and interventions to promote more responsible waste practices among students.

Importance of Understanding Different Waste Streams

The generation and management of waste are critical societal issues due to their significant environmental, economic, and health impacts. To develop effective waste management strategies and promote sustainability, a deeper understanding of waste streams is essential for mitigating their adverse effects. Different waste streams have varying environmental consequences depending on their source and composition. For instance, electronic waste (e-waste) poses a particular hazard due to the presence of lead, mercury, and cadmium, which can leach into soil and water, severely compromising the environment and human health (Kahhat & Williams, 2012). Recognizing these negative impacts is crucial for environmental initiatives to develop appropriate disposal and recycling methods that minimize environmental damage.

Furthermore, understanding each waste stream's composition offers resource recovery opportunities. For example, industrial waste often contains valuable metals that can be reused (Nemerow, 2007). Similarly, plastic waste can be recycled into new products, reducing the demand for virgin resources (Letcher, 2020).

Effective waste management offers significant economic advantages beyond resource conservation and reduced environmental impact. For instance, composting agricultural waste yields biofertilizers that can improve soil fertility and decrease the reliance on chemical fertilizers (Devi & Seshu Babu, 2020). Similarly, recycling construction and demolition waste can save costs by providing materials for new building projects (Sun, 2019). Conversely, improper waste management poses serious health risks. Inadequately managed municipal solid waste can increase disease vectors such as rodents and insects (Christensen, Wiley, and Sons, 2005). Comprehending the health risks associated with various waste streams is crucial for developing safe and effective waste disposal and treatment methods. A thorough understanding of waste streams is fundamental for formulating effective policies and regulations. Many countries, for example, have implemented stringent regulations on e-waste management to ensure its safe disposal and recycling (Hieronymi et al., 2012). Policies tailored to different waste streams' specific challenges and opportunities are essential for driving sustainable waste management practices.

Waste Management and the Sustainable Development Goals (SDGs)

Waste management is critical to sustainable development, significantly influencing environmental health, economic growth, and social well-being. The Sustainable Development Goals (SDGs), adopted by the United Nations in 2015, offer a comprehensive framework to address global challenges, with several goals and targets directly and indirectly related to effective waste management practices.

The first Sustainable Development Goal, aiming to end poverty in all forms, is directly relevant to the ongoing challenges of waste management and environmental degradation. Proper waste management can catalyze job creation and economic opportunities, particularly within the recycling and waste treatment sectors. For instance, formalizing the work of informal waste pickers in developing countries can provide them with more stable income and improved working conditions (Wilson et al., 2006). Furthermore, the third SDG, which ensures healthy lives and promotes well-being for all ages, is supported by proper waste management practices. As the World Health Organization (2018) highlighted, effective waste management promotes sanitary conditions, reduces pollution, and minimizes health risks, contributing significantly to overall public health. Similarly, the sixth SDG, focused on ensuring the availability and sustainable management of water and sanitation for all, is intrinsically linked to waste management. UN-Water (2015) emphasizes that sound waste management practices prevent water bodies' contamination, safeguard water quality and sanitation, and maintain ecosystem health. The seventh SDG, aiming for affordable and clean energy, also supports waste management through waste-to-energy technologies. IRENA (2016) noted that these technologies can convert waste materials into renewable energy sources, reducing reliance on fossil fuels and lowering greenhouse gas emissions, thus facilitating the transition to sustainable energy systems. Moreover, a robust waste management sector can advance the eighth SDG, promoting sustained, inclusive, and sustainable economic growth. The ILO (2018) suggests that this sector can drive economic growth by creating green jobs and fostering innovation in recycling technologies and sustainable practices, contributing to economic resilience and development. Finally, the eleventh SDG, concerning creating inclusive, safe, resilient, and sustainable cities and human settlements, is also supported by effective waste management. UN-Habitat (2016) underscores that urban areas, as significant waste generators, require sustainable waste management to reduce urban pollution, enhance the quality of life, and support overall sustainable urban development.

According to UNEP (2015), sustainable waste management promotes the efficient use of resources, recycling, and reducing waste generation. This aligns with the principles of a circular economy, where materials are reused and recycled, reducing the environmental footprint. Consequently, this also aligns with the twelfth goal of sustainable development: to ensure sustainable consumption and production patterns. Moreover, waste management practices such as recycling, composting, and waste-to-energy can significantly reduce greenhouse gas emissions. Therefore, the thirteenth goal of Sustainable Development, to take urgent action to combat climate

change and its impacts, is directly supported. Properly managed waste systems help mitigate climate change by diverting waste from landfills and reducing methane emissions (IPCC, 2014).

Furthermore, as highlighted in a study by Jambeck et al. (2015), marine pollution, particularly plastic waste, poses a significant threat to ocean health. Effective waste management prevents marine litter and protects marine ecosystems, perfectly aligning with the fourteenth goal of Sustainable Development, which is to conserve and sustainably use oceans, seas, and marine resources. Finally, land-based waste management practices can impact terrestrial ecosystems. Thus, the fifteenth goal of Sustainable Development, which is about protecting terrestrial ecosystems and biodiversity, is also relevant. Preventing land pollution through effective waste management practices helps preserve biodiversity and protect natural habitats (CBD, 2010).

Effective waste management is not merely a supporting element but an integral pillar for achieving the Sustainable Development Goals. Proactively addressing waste-related challenges can significantly enhance environmental protection, foster economic growth, and substantially improve public health. Therefore, the adoption of integrative approaches encompassing robust policy development, impactful technological innovation, and widespread public education is beneficial and essential for realizing waste management's full potential in contributing to a truly sustainable future.

Understanding the interplay between awareness, attitudes, and practices toward solid waste management (SWM) is fundamental to designing effective and sustainable strategies. The present study is primarily grounded in the Knowledge-Attitude-Practice (KAP) Model (Barloa, Lapie & de la Cruz, 2016), which posits a linear but dynamic relationship among these three components: enhanced knowledge leads to the development of positive attitudes, which in turn foster appropriate and sustainable practices. This model provides a valuable framework for exploring how individuals internalize and act upon environmental information, particularly within educational institutions where shaping sustainable behaviors is critical.

Applied to the current study, the KAP model offers a baseline theory to investigate how students' knowledge and awareness of SWM influence their attitudes and, ultimately, their waste-related practices within a private Catholic university. Supporting this theoretical foundation, Owojori et al, (2022) utilized the KAP framework to assess students' engagement with SWM in a rural-based higher education institution in South Africa. By anchoring the study in the KAP model, this research acknowledged the nuanced and reciprocal relationships between what individuals know, how they feel, and what they do regarding waste management. It also highlighted the potential of educational interventions to drive behavioral change, which is essential for advancing sustainability goals in higher education institutions.

Building upon the KAP model, the Theory of Planned Behavior (TPB) (Ajzen, 1991) further emphasizes that an individual's actions are driven by their intention, which is shaped by their attitude towards the behavior, subjective norms (perceived social support), and perceived behavioral control.

In waste management, awareness plays a crucial role in shaping attitudes by providing the necessary information to form informed opinions and beliefs. Increased awareness of improper waste disposal's environmental and health impacts can lead to more positive attitudes towards sustainable practices. As Schultz (1999) noted, higher levels of awareness often correlate with better waste management practices. When individuals understand the significance of recycling, composting, and proper waste disposal, their intention to adopt these behaviors strengthens.

Conversely, actively engaging in waste management practices can also increase awareness. For instance, participating in a community recycling program can educate individuals about recycling and the importance of waste reduction (Bolaane, 2006), potentially influencing their perceived behavioral control by demonstrating feasibility. Positive experiences with these practices can enhance attitudes, reinforcing the belief that these behaviors are beneficial and worthwhile (Fishbein & Ajzen, 1975).

Furthermore, positive attitudes toward waste management can motivate individuals to seek more information, increasing their awareness (Barr, 2007). Ultimately, as Smith (2020) found, attitudes significantly influence waste management practices, with individuals holding positive views towards recycling and composting being more likely to engage in these behaviors consistently.

Understanding the complex and interdependent relationship between awareness, practices, and attitudes toward solid waste management is crucial for designing effective interventions. Awareness informs attitudes, which drive practices, and these practices can, in turn, reinforce or reshape both awareness and attitudes, highlighting key leverage points for promoting sustainable behaviors.

While several studies, such as those by Barloa et al. (2016) and Owojori et al. (2022), have applied the KAP model to explore solid waste management in different educational contexts, there remains a notable gap in understanding how this framework operates within faith-based private institutions, particularly in the Philippine setting.

Few studies have specifically examined the extent to which students' knowledge, attitudes, and practices in such environments align with the principles of sustainable waste management or contribute to the broader goals of environmental stewardship promoted by Catholic social teaching. Therefore, this study sought to fill this gap by applying the KAP model to assess students' engagement with solid waste management in a private Catholic university, offering context-specific insights that could inform more effective, values-driven sustainability initiatives.

Research Objectives

This study aimed to determine the level of awareness, practices, and attitudes of students within a private Catholic university concerning solid waste management, particularly waste streams. Specifically, this research aimed to:

1. Determine the student's level of awareness regarding solid waste management across different waste streams.
2. Identify the student's current solid waste management practices in terms of segregation, reduction, reuse, recycling, and proper disposal.
3. Determine the student's attitudes toward solid waste management.
4. Assess the relationship between students' awareness, practices, and attitudes concerning solid waste management and these various waste streams.

Methodology

Research Design

This study employed a quantitative descriptive-correlational research design to investigate the associations between students' awareness, practices, and attitudes toward solid waste management concerning various waste streams. The descriptive component of the design focused on assessing the respondents' awareness, attitudes, and self-reported practices of the respondents about solid waste management. Subsequently, the correlational component analyzed the significant relationships between these identified levels of awareness, attitudes, and practices. This design is widely used in environmental education and behavioral studies to explore naturally occurring relationships and provide data-driven insights that inform policy and intervention strategies (Creswell & Creswell, 2018; Fraenkel, Wallen, & Hyun, 2012). It is particularly suitable for this study because it allows for the identification of patterns and connections in students' SWM-related behaviors without requiring experimental control, making it ideal for real-world educational settings.

Respondents

This research was conducted among students of a private Catholic university in Bayombong, Nueva Vizcaya, known for its dynamic academic environment and innovative programs like the Clean, Healthy, Safe, and Friendly (CHSF) Program. The CHSF Program aims to cultivate ecological awareness and inspire responsible action, resource stewardship, and environmental sustainability within the Marian community, its partner communities, and broader society.

Launched on November 20, 1998, the program was the university's institutional response to the growing global call for environmental protection and sustainable development during the late 1990s. At the time, clean and green initiatives were gaining traction worldwide, prompting government and private sectors to pursue cleaner and healthier environments. In 2023, the CHSF Program celebrated its 25th anniversary, marking a milestone in the university's commitment to environmental advocacy.

The study's respondents were selected from various departments within the university's College Department, which includes the School of Teacher Education and Humanities (STEH), School of Health and Natural Sciences (SHaNS), School of Graduate Studies (SGS), College of Law, School of Accountancy and Business (SAB), and School of Engineering, Architecture, and Information Technology (SEAIT). This diversity in academic programs ensures a broad representation of student perspectives. To reduce potential bias due to differing academic backgrounds, the study employed stratified random sampling in selecting participants.

Instrument

Data were collected using a structured questionnaire developed to assess college students' awareness, attitudes, and practices related to solid waste management (SWM). The instrument was primarily adapted from validated tools used in previous studies, with modifications to align it with the current study's objectives and local context. The questionnaire was composed of four sections.

The first section of the questionnaire collected demographic information, including age, gender, and field of study. These details provided context for analyzing how different student groups perceive and engage in solid waste management (SWM). The second section was adapted from the Level of Solid Waste Management Awareness Questionnaire developed by Abolucion et al. (2012) which included 20 items assessing students' knowledge of SWM rated on a 4-point Likert Scale. The original questionnaire was modified to align with the study's objectives, focusing on students' understanding of waste segregation, recycling, and relevant legislation such as Republic Act 9003.

The third section, adapted from Cahoy (2013) as cited in Paghasian (2017), used a checklist to assess SWM practices, covering segregation, reduction, reuse, recycling, and disposal. This format enabled participants to report specific behaviors and habits, offering insights into their adherence to proper waste management practices. The final section of the questionnaire measured students' attitudes toward SWM. This component examined their willingness to adopt sustainable practices, personal responsibility, and perceptions of the university's waste management policies. Understanding these attitudes is essential in determining whether knowledge leads to behavioral change.

The instrument underwent content validation by three experts in environmental science and educational research. Feedback was

incorporated to refine item clarity, alignment with constructs, and cultural appropriateness. A pilot test was conducted with 30 non-participating students to ensure reliability and coherence. Based on the results of the pilot testing, the overall Cronbach's alpha of the questionnaire was 0.87, indicating high internal consistency (Field, 2018). Individual subscales for awareness, practices, and attitudes yielded alpha values of 0.81, 0.79, and 0.85, respectively.

Procedure

Data collection for this study followed a systematic process aimed at assessing 100 college students' awareness, attitudes, practices, and knowledge related to solid waste management (SWM) and exploring potential correlations among these factors.

The process began with securing approval from the respective academic deans. Once granted, the researchers coordinated with faculty members to facilitate the distribution of questionnaires through an online platform. After obtaining faculty support, students were informed about the study's purpose, the voluntary nature of participation, and the confidentiality of their responses, ensuring informed consent. A brief orientation was also provided to address any initial questions or concerns.

To accommodate varying preferences, the questionnaire was made available in both printed and digital formats. Hard copies were distributed during in-person sessions, while a digital version was shared via an online link. Students were given sufficient time to complete the questionnaire, promoting thoughtful and accurate responses.

Upon completion, responses were compiled and organized for statistical analysis. The data were categorized to identify patterns, trends, and relationships among students' levels of awareness, attitudes, and practices related to SWM.

Data Analysis

Following data collection, the responses were tallied and tabulated. The mean score and standard deviations were calculated and interpreted for each item in the questionnaire using a predetermined interpretation scale. In this study, awareness of solid waste management (SWM) refers to the extent of knowledge students possess regarding waste segregation practices, relevant environmental policies, and the significance of proper waste disposal. This also encompasses their understanding of the various waste streams associated with different types of waste.

In this research, solid waste management (SWM) practices are defined as the self-reported frequency with which students adopt appropriate waste disposal behaviors, such as waste segregation, recycling initiatives, and waste reduction efforts. Students' attitudes toward solid waste management (SWM), as assessed in this research, indicate their inclination for voluntary engagement in environmentally sustainable waste practices and their understanding of the significance of proper waste management.

The interpretation of these findings yielded valuable insights into the solid waste management (SWM) behaviors of college students. These insights were used to develop recommendations aimed at strengthening environmental education initiatives within the university.

Results and Discussion

The findings and their corresponding discussion of college students' awareness, practices, and attitudes toward Solid Waste Management (SWM) are presented in this section.

Section 1: Students' Awareness of Solid Waste Management

Table 1. *Awareness of solid waste management among students*

Course	*Mean Score*	*SD*	*Interpretation*
College of Law	3.50	0.55	Highly Aware
SAB	3.40	0.60	Moderately Aware
SEAIT	3.35	0.58	Moderately Aware
SGS	3.55	0.52	Highly Aware
SHaNS	3.60	0.48	Highly Aware
STEH	3.45	0.50	Moderately Aware

Legend: *3.51-4.00 (Highly Aware); 2.51-3.50 (Moderately Aware); 1.51-2.50 (Slightly Aware); 1.00-1.50 (Not Aware)*

Table 1 presents data on students' awareness of solid waste management (SWM). Across all academic groups, students exhibited moderate to high awareness levels, with mean scores ranging from 3.35 to 3.60. Notably, students from the School of Health and Natural Sciences (SHaNS) recorded the highest mean score (3.60), indicating a particularly strong understanding of SWM concepts, especially regarding identifying and classifying waste streams.

The relatively low standard deviations (0.48 to 0.60) suggest consistent awareness levels within each academic group. This consistency may reflect the effectiveness of institutional initiatives such as the CHSF Program and the Marian Green Steps program, which include orientations and environmental campaigns promoting recycling, proper waste segregation, and awareness of waste-related hazards.

The high awareness among SHaNS students also points to greater curriculum integration of environmental topics in their academic programs. These findings are consistent with those of Molina and Catan (2021), who observed similarly high awareness among students in Zamboanga City. However, they noted gaps in their knowledge of specific waste-related policies.

Section 2: Students' Practices of Solid Waste Management

Table 2. *Practices of solid waste management of students*

Course	*Mean Score*	*SD*	*Interpretation*
College of Law	3.15	0.70	Often
SAB	3.10	0.75	Often
SEAIT	3.05	0.72	Often
SGS	3.30	0.68	Often
SHaNS	3.50	0.60	Often
STEH	3.20	0.65	Often

Legend: *3.51-4.00 (Always); 2.51-3.50 (Often); 1.51-2.50 (Seldom); 1.00-1.50 (Never)*

Table 2 presents descriptive statistics on students' self-reported solid waste management (SWM) practices. Mean scores across all academic programs ranged from 3.05 to 3.50, indicating that students generally "often" engage in SWM practices. Consistent with the awareness results, students from the School of Health and Natural Sciences (SHaNS) reported the highest mean score (3.50), reflecting strong engagement in proper waste management activities.

However, standard deviations ranging from 0.60 to 0.75 suggest notable variability in SWM practices within each academic group. This inconsistency implies that while many students regularly follow proper waste management procedures, others do so less frequently. Contributing factors may include differences in curricular emphasis on environmental issues, accessibility of waste disposal facilities, or the level of policy enforcement in specific departments or buildings.

The presence of students who only occasionally practice SWM highlights the need for stronger reinforcement and more comprehensive implementation of institutional policies. These findings align with Gantang (2022) and Herrera and Herrera (2024), who observed that awareness does not always lead to consistent action—particularly in waste segregation and disposal—unless supported by effective reinforcement mechanisms.

Section 3: Attitudes Toward Solid Waste Management

Table 3. *Attitudes toward solid waste management of students*

Course	*Mean Score*	*SD*	*Interpretation*
College of Law	3.65	0.50	Very Positive Attitude
SAB	3.60	0.55	Very Positive Attitude
SEAIT	3.55	0.58	Very Positive Attitude
SGS	3.75	0.42	Very Positive Attitude
SHaNS	3.80	0.40	Very Positive Attitude
STEH	3.70	0.45	Very Positive Attitude

Legend: *3.51-4.00 (Very Positive Attitude); 2.51-3.50 (Positive Attitude); 1.51-2.50 (Negative Attitude); 1.00-1.50 (Very Negative Attitude)*

Table 3 presents the descriptive data on students' attitudes toward solid waste management (SWM). Mean scores across academic programs ranged from 3.55 to 3.80, reflecting a generally very positive attitude toward SWM. As with previous findings on awareness and practices, students from the School of Health and Natural Sciences (SHaNS) recorded the highest mean score (3.80), indicating a particularly strong commitment to SWM principles.

The relatively low standard deviations (0.40 to 0.58) suggest a high level of agreement among students in their positive attitudes. This trend points to a widespread openness to sustainable behavior across the university community. The consistent lead of SHaNS students may reflect greater exposure to environmental education or stronger integration of sustainability in their curriculum.

These results align with the findings of Corporal et al, (2024), who reported a strong correlation between high awareness, positive attitudes, and effective waste management practices—particularly waste segregation and reduction—among junior high school students.

Section 4: Relationship of awareness, practices, and attitudes on solid waste management

This study also utilized Pearson's correlation coefficient to examine the relationships among college students' awareness, attitudes, and practices related to solid waste management (SWM)—the analysis aimed to determine the strength and direction of these interrelationships. As shown in Table 4, the data highlight the degree to which students' awareness and attitudes are associated with their actual SWM practices.

Table 4. *Correlation among awareness, practices, and attitudes in SWM*

Variables	*r*	*P-value*	*Interpretation*
Awareness and Practices	0.45	< 0.01	Moderate Positive Correlation
Awareness and Attitudes	0.60	< 0.001	Strong Positive Correlation
Attitudes and Practices	0.35	< 0.05	Moderate Positive Correlation

The analysis revealed a moderate positive correlation (r = 0.45) between students' awareness and solid waste management (SWM) practices, indicating that higher awareness is generally associated with better waste management behaviors. This finding supports

Bautista (2019), who emphasized the influence of awareness on practices such as segregation and recycling. Similarly, Reyes and Madrigal (2020) reported a significant positive relationship between awareness and practice, reinforcing that increased awareness can lead to improved SWM behavior.

A strong positive correlation (r = 0.60) was also found between awareness and attitudes toward SWM, suggesting that greater awareness is linked to more favorable attitudes. Additionally, a moderate correlation (r = 0.35) between attitudes and practices indicates that students with more positive attitudes tend to engage more consistently in SWM practices.

Overall, the findings demonstrate that awareness significantly influences both attitudes and practices. This supports the conclusions of Barloa et al. (2016) and Bation and Pudan (2024), who emphasized the critical role of environmental knowledge in shaping behavior—though noted that sustained reinforcement is often necessary. The moderate attitude-practice correlation also echoes Sultana et al. (2021), who found that structured training and education programs enhance proper waste management behaviors.

Conclusions

The study reveals that college students at a private Catholic university generally exhibit moderate to high awareness of solid waste management (SWM), frequently engage in SWM practices, and maintain very positive attitudes toward environmental sustainability. Students from the School of Health and Natural Sciences (SHaNS) demonstrated the highest scores across all three domains—awareness, attitude, and practice—indicating the positive impact of curriculum integration of environmental topics. Despite the shared understanding of SWM's importance, variability in SWM practices points to a gap between knowledge and actual behavior. Pearson's correlation analysis supports the notion that awareness is positively correlated with both attitudes and practices, and attitudes, in turn, influence SWM behaviors. These results align with the Knowledge-Attitude-Practice (KAP) Model, which highlights that awareness alone does not guarantee behavioral change. Factors such as the accessibility of disposal facilities and personal habits may play significant roles in shaping behavior, underscoring the need for consistent reinforcement of SWM practices.

The study recommends that policy implementation on SWM in the CHSF Program be strengthened, a clear and accessible waste management infrastructure be provided, and compliance across departments be ensured to enhance the university's solid waste management (SWM). Environmental education should be integrated into the general curriculum for all students, supplemented by experiential activities like clean-up drives and recycling projects. Regular awareness campaigns, training on segregation, recycling, Republic Act 9003, and the mobilization of student organizations will reinforce these efforts. The university should also conduct regular assessments of students' SWM knowledge, attitudes, and practices and support student-led sustainability initiatives to bridge the gap between knowledge and practice. Finally, environmental education should be tailored to specific academic programs, and faculty should integrate sustainability concepts into their teaching methods to foster a more sustainable campus culture.

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