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The Noise of Smell: Experiences of a Dumpsite Community in Digos City, Philippines

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ABSTRACT: Environmental degradation and climate change in the 20th century have emerged as critical issues, threatening ecosystems, biodiversity, and human well-being. The study "The Noise of Smell: Experiences of a Dumpsite Community in Digos City" focuses on the experiences of residents living near a dumpsite in Digos City, aiming to understand how they cope with the challenges posed by improper waste management. Data was collected from community members ensuring participants had direct experiences with the dumpsite conditions and were willing to share their insights. Ethical protocols were strictly followed, with permissions obtained from relevant local authorities and participants. The findings revealed that the persistent smell from the dumpsite significantly impacts the daily lives and health of the residents. Despite these challenges, the community has developed coping strategies, including informal waste segregation and collective clean-up efforts. Additionally, the study identified key factors for improving waste management practices, such as stronger community engagement, increased education on waste management programs can greatly enhance the living conditions of residents near dumpsites. It also emphasizes the need for a collaborative approach involving both the community and local authorities to address the underlying causes of improper waste management.

KEYWORDS: dumpsite community, solid waste management, environmental challenges, community initiatives, waste disposal practices

INTRODUCTION

Solid waste management challenges, fueled by global urbanization, industrialization, and population growth, have given rise to a spectrum of environmental problems, including greenhouse gas emissions, air and water pollution, and soil contamination (Fayomi et al., 2021). Particularly vulnerable are residents in urban slums bearing the brunt of improper waste disposal practices, leading to severe health hazards (Kubanza & Simatele, 2019). Globally, the intricate relationship between solid waste management and community health extends, and the challenges are evident in Kabul. According to Yosufi (2019), the city's solid waste management needs to be improved, with local concerns often overlooked. Neglect from the government and the public has given rise to health issues such as injuries from contaminated objects, water pollution from excreta, and the adverse effects of heavy metals in municipal waste. Thus, rain occlusion leads to flooding problems. Moreover, the Environmental Protection Agency has highlighted increased risks of adverse health effects, including respiratory problems, in communities near landfills (Zhang et al., 2023).

Economically, the unpleasant odor and environmental contamination from landfills significantly reduce property values in surrounding communities, discouraging investment and economic development. Studies have shown that this decline in property values and environmental contamination negatively impact economic opportunities (Vaverková, 2019). On the other hand, the proximity to a dumpsite deters tourists and businesses seeking a clean and pleasant environment, further limiting economic opportunities for residents. Gutberlet et al. (2021) and Mesquita et al. (2023) investigated the coping strategies a waste picker cooperative employs. Brazil is facing environmental injustice due to a nearby landfill. Their study found that staying indoors during peak odor emission times was common. Similarly, research by Pekdogan et al. (2024) also highlights the environmental impact of landfills and the potential health risks faced by nearby communities. By indirectly suggesting resident responses like mask-wearing and air purifier use, it emphasizes the need for interventions that improve waste management practices and empower residents to protect themselves from harmful pollutants. Some residents have also formed community health groups to educate others on best practices for minimizing health risks and to advocate for medical support and resources.

Also, locals have initiated small-scale entrepreneurial ventures, such as recycling programs and eco-friendly businesses, to generate income and improve their living conditions. Studies show community-driven recycling programs can significantly enhance economic stability in waste-affected areas (Yang et al., 2023). Community leaders have actively sought partnerships with non-governmental organizations and local government units to secure funding for environmental cleanup projects and to attract investment in sustainable development initiatives. Furthermore, residents have engaged in collective action, organizing community cleanup drives and lobbying for better waste management policies. Such grassroots efforts are crucial in addressing environmental health risks in landfill-adjacent communities (Kalra, 2019).

Meanwhile, the Philippines faces a critical challenge in solid waste management due to a combination of factors, including a continuous rise in waste generation, ineffective enforcement of existing regulations, limited proper disposal facilities, and a troubling gap between public awareness and responsible waste disposal practices. This is further exemplified by the case of Zamboanga City where residents, despite acknowledging the importance of proper management, continue to resort to harmful practices due to a lack of infrastructure, education, and enforcement mechanisms (Coracego et al., 2021; Atilano-Tang & Ledesma, 2023).

In the local context, waste management struggles extend to Davao City and Digos City. Davao's current infrastructure cannot handle the waste it generates (Olalo et al., 2022), and Digos faces similar challenges (Melendrez et al., 2019). These local examples highlight the need for city-specific solutions to manage the Philippines' escalating waste crisis. Furthermore, while research has been done on the health effects of improper solid waste management in larger regions, locals' perceptions of improper disposal in Barangay Lungag have yet to be examined. Barangay Lungag, out of the 26 barangays, is the smallest and has the least population. Despite its size, the barangay is home to the local dumpsite, which has led to numerous complaints about improper waste management. In Barangay Lungag, residents have initiated community cleanup drives and waste segregation programs to combat improper waste disposal. Education campaigns raise awareness about the importance of proper waste management while composting initiatives and community recycling centers offer sustainable solutions.

This study examines the link between residents' perceptions of improperly managed landfills in Barangay Lungag and their overall health. Applying the Health Belief Model (Orbell et al., 2013) suggests that individuals' health behaviors are influenced by their beliefs about health threats, their severity, susceptibility, and the effectiveness of preventive measures. The investigation explores how perceptions of decaying garbage as a health hazard might impact residents' health in Barangay Lungag. Understanding this relationship can provide valuable insights into the intricate connection between environmental factors and individual health outcomes.

The significance of this research is to explore the perception of Barangay Lungag residents regarding solid waste management practices and their implications for community health. The gathered data are beneficial primarily to the students, offering them a meaningful learning experience that helps them become fully aware of the potential health risks when improper waste disposal is practiced. Also, this helps the community understand the complex relationship between waste management and public health and guides community people to become informed and responsible citizens of the community. Moreover, this study is a rewarding opportunity for researchers to fill the knowledge gaps and understand how the community views waste disposal practices and their health implications. The research is helpful to the readers considering the prevalence of improper management of solid waste; it helps them gain insights into the possible health risks to public health. This paper serves future researchers as reference material for future studies by identifying key research gaps, leading future researchers to quickly build upon existing findings and delve deeper into specific aspects.

METHODS PARTICIPANTS

This study was conducted in Barangay Lungag, Digos City. Barangay Lungag is reportedly the only open dump site in the city, where all Digoseños dispose of their waste materials. The researchers chose Barangay Lungag, Digos City, to explore and gain a deeper understanding of residents' perception of solid waste management and its various implications for community health. The inclusion criteria were the residents between the ages of 28 and 50 currently residing within Barangay Lungag. This age range captures a good balance of individuals who may have witnessed and experienced the impact of waste mismanagement over time and have a vested interest in the community's health. Individuals who do not currently reside within Barangay Lungag and are below the age of 28 or above the age of 50 were excluded to maintain focus on the targeted age group.

Furthermore, participants of this study have the right to withdraw their consent to participate at any time during the interview process. Fifteen participants were selected to provide thoughts on solid waste management practices and their experiences as locals of a dumpsite community since this study aligns with Creswell's (1998) recommendation of 5-25 participants for phenomenological studies. This ensures that the study focuses on collecting the most relevant and insightful data, making the most of the resources available. The purposive sampling technique was utilized in this study since it is intended to focus on a population's identification, classification, and characteristics (Crossman, 2020).

Instruments

Semi-structured interviews with the participants were used to gather the data. A semi-structured interview is a qualitative data collection strategy in which the researcher asks participants a series of predetermined but open- ended questions. Researchers using semi-structured interviews develop a written guide in advance (Madhuri et al., 2022). We also used focus group discussion (FGD) as it's a good way to gather people together from similar backgrounds or experiences to discuss a specific topic of interest (Mishra, 2016). In addition, the participants' responses were recorded through a mobile recorder which will be transcribed and evaluated.

With this, we can ensure the validity and reliability of this study. Our study's credibility involved the participants' results of such perspectives. This study aimed to examine the sentiments of locals in Barangay Lungag, Digos City. From these perspectives, we linked the research study's findings to reality to demonstrate the truth.

Design and Procedure

The researchers used a qualitative research method, particularly descriptive- phenomenological research design. Thus, the lived experiences of the participants are crucial in this study. Phenomenology research is a qualitative approach that focuses on the shared experiences within a particular group (Srivastava, 2023). This allows us to assess the residents' experiences in Barangay Lungag, Digos City.

The data were gathered using a face-to-face interview together with a questionnaire as our instrument. The researchers explained the research process to the participants; an audio recorder and notes were used to support the participants' responses. A permission letter was sent to the barangay, and a letter of consent and assent were given also to the participants. Interview guide questions that the researchers formulated and verified by experts were employed to support the detailed data in understanding participants' experiences.

This study includes a qualitative analysis of the participant's responses to the interview questions. The thematic analysis was used to analyze the transcribed interview data. Thematic analysis is a qualitative research method for analyzing data derived from interviews, focus groups, and other types of qualitative data. The primary objective of thematic analysis is to find patterns, themes, and categories in data and then interpret and comprehend their meaning (Naeem et al., 2023).

RESULTS AND DISCUSSION

Challenges faced by Barangay due to Improper Waste Disposal

The discussion below revealed the challenges faced by the residents of Barangay Lungag because of improper waste management disposal.

Health Hazards. A person may be harmed or experience an adverse effect if exposed to a hazard. Potentially, it will hurt an individual's health and safety. Landfill disposal of municipal solid waste (MSW) presents a significant environmental risk due to its potential to contaminate groundwater, air, and marine environments. The leaching of organic, inorganic, and hazardous substances from the waste can lead to groundwater pollution, while particulate matter released into the air and the emission of unpleasant odors contribute to air pollution (Siddiqui et al., 2022). Limoli et al. (2019) say people close to illegal landfills can experience health problems. Children are particularly at risk because their immune systems are still developing, and they often play outside their homes. These landfills can pollute the air and water, harming their health. Moreover, improperly managed municipal solid waste can significantly threaten public health. People living near landfills may face an increased risk of mortality, respiratory problems, and adverse mental health outcomes (Vinti et al., 2021).

Waste Handling. Proper waste management is one of the significant responsibilities of city administrators to have effective good governance. However, Unsustainable solid waste management practices, aggravated by rapid urbanization and inadequate resources, are detrimental to public health and the environment (Abubakar et al., 2022). Consequently, uncollected waste risks safety, health, and the environment. It can contribute to urban violence, create breeding grounds for disease-carrying insects and animals, and negatively impact the health of nearby communities (Raphela et al., 2024). Inadequate facilities, ineffective policy implementation, and unsustainable lifestyle practices contribute to the poor state of solid waste management (Coracero et al., 2021). Waste disposal habits and practices of the people and inadequate equipment are the major factors influencing the mismanagement of solid waste.

Proximity Issues. Solid waste dumped in a landfill seriously affects the surrounding environment and families closer to landfill sites. Results from the study of Njoku et al. (2019) found that 78% of participants residing near the landfill reported significant air quality issues, primarily unpleasant odors. Individuals living closer to the landfill were more likely to experience health problems like flu, eye irritation, and general weakness than those living farther away. Composing waste materials can release harmful odors into the surrounding air, making breathing unhealthy. Individuals who are undernourished, young, elderly, or have pre-existing respiratory or other health conditions are particularly vulnerable to the health effects of air pollution, especially if they live near a landfill (Abiola et al., 2021). The study of Roy et al. (2023) innovatively employs geographic information system (GIS) methodologies to analyze the physical impacts of the landfill, including odor nuisance, respiratory

problems, insect infestations, water contamination, issues related to illegal burning, and associated health problems. The findings reveal that most residents within 600 m are more receptive to various health risks due to unscientific landfills.

In general, improper waste disposal challenged the barangay based on participants' perspectives. This was revealed in the three (3) emerging subthemes in the study shown in Figure 1 above: Health Hazards, Waste Handling, and Proximity Issues. Moreover, these findings support the theory of the Health Belief Model from which the study was anchored. The theory recognizes that perceived susceptibility, severity, barriers, and cues to actions influence individual health behaviors. These factors interact in the context of environmental health risks, particularly about the proximity of communities to hazardous waste disposal sites. This was manifested in the results showing the challenges faced by the barangay due to improper waste disposal.

Perceptions on solid waste management

The discussion below revealed the insights of selected barangay Lungag residents on solid waste management.

Segregation issues. Mismanagement of waste segregation remains a major problem that happens specifically in urban poor communities and informal settler families, who are typically characterized as polluters. The primary causes for the inefficient municipal solid waste management systems include unplanned urban growth, extreme weather, limited public awareness and involvement, inadequate equipment, and insufficient resources due to lack of proper planning and funding, which has led to a deteriorating solid waste management situation (Zhang et al., 2024). Research shows that environmental research ecological approaches and intermittent interventions are essential to use over time to keep, nurture, and continue waste separation behavior (Moeini et al., 2023).

Community Compliance. Organized garbage disposal site strongly promotes proper waste disposal, often leading to compliance rates exceeding 80%. Implicating those structural factors is crucial for effective solid waste management, and multiple collection points should be encouraged in all areas (Wang et al., 2019). The study by Camarillo and Bellotindos (2021) revealed low compliance rates in almost all the Solid Waste Management (SWM) policies, including segregation, composting, recycling, incentives, and public information. While collection, transport, and enforcement of penalties show moderate compliance, there is no compliance regarding final disposal facilities. However, Republic Act 9003 has legal consequences with non-compliance; waste segregation is encouraged primarily for environmental reasons. As the foundation of effective waste management, it helps protect human health and the environment (Dolipas et al., 2020b).

Waste Management Attitudes. Given the escalating volume and complexity of waste generated by contemporary economic activities, ecosystems and human health face significant threats. However, the Debrah et al. (2021) study revealed that respondents prioritize cleanliness and disease prevention in their waste management practices. While there is a need to foster positive attitudes and willingness to address waste management issues, respondents also acknowledge the shared responsibility of the government and community in achieving sustainable waste management. Furthermore, most people expressed positive attitudes towards proper waste disposal and embraced the 3R principles as essential for creating a healthy environment (Eshete et al., 2023).

Management Difficulties. Municipalities are responsible for the management of waste in the cities. However, challenges are faced in implementing efficient systems due to limited financial resources, organizational issues, and complex and multifaceted waste management (Victoire et al., 2020). Moreover, Yadav et al. (2021) identified the most significant barriers to IoT-enabled solid waste management implementation as a lack of strict government regulations, inadequate financial planning, and the absence of benchmarking processes. These factors hinder realizing an efficient and effective waste management system.

In summary, the perspectives shared by the participants about solid waste management were reflected in the four (4) emerging subthemes of the study: Community Compliance, Waste Management Attitudes, and Management Difficulties.

This proves that these factors influence individual's perceptions of health risks and their subsequent behaviors regarding waste management. Further, by examining the various components of the Health Belief Model Theory, it is possible to contribute to or hinder community compliance with waste segregation practices and to develop effective interventions to improve waste management outcomes.

Actions to mitigate the negative impacts of improper waste disposal.

The discussion below revealed the residents' perspectives and actions to mitigate the negative impacts of improper waste disposal.

Waste Management Initiatives. Various waste management initiatives have been implemented across communities to address these challenges, focusing on practices such as waste segregation, recycling, composting, and the establishment of Material Recovery Facilities (MRFs). As stated by Hajam and Kumar (2023), communities that have effectively adopted these practices have seen significant improvements in their local environments, with reductions in pollution, enhanced cleanliness, and better public health outcomes. These initiatives are not only essential for managing waste but also for fostering sustainable practices within communities.

Community Engagement. Community participation in waste management fosters a stronger sense of responsibility and ownership, leading to more effective outcomes. Salvia et al. (2021) added that community-driven initiatives such as clean-up drives, educational workshops, and public consultations are crucial in encouraging collective action and ensuring that waste

management practices are adopted at the grassroots level. Participants in this study shared their perspectives on the importance of community involvement in waste management.

Effectiveness of Efforts. The effectiveness of waste management efforts is often reflected in noticeable improvements in community cleanliness, decreased waste-related health issues, and the sustainability of the practices put in place. Camarillo and Bellotindos (2021) stated that the consistent enforcement of waste management policies, combined with active community participation, leads to marked enhancements in environmental quality.

Challenges and Non-Compliance. Despite the progress made through various waste management initiatives, challenges such as non-compliance and resource limitations persist, impeding the complete achievement of waste management goals. Non-compliance often stems from insufficient awareness, resistance to change, or a lack of stringent enforcement. Deborah, Vidal, and Dinis (2021) stated that without regular monitoring and the application of penalties, even the most well-conceived waste management programs may fall short.

In general, the actions to mitigate the negative impacts of improper waste disposal are multifaceted and have been explored from various perspectives by the participants. This is evident in the study's four (4) emerging subthemes: Waste Management Initiatives, Community Engagement, Effectiveness of Efforts, and Challenges and Non-Compliance. Furthermore, these findings align with the principles of the Health Belief Model from which the study was anchored, which emphasizes the responsibility of individuals and communities to manage waste effectively and sustainably. The study highlights the significance of these actions in reducing the negative effects of improper waste disposal on both local environments and public health.

CONCLUSION

This study sought to explore how people of barangay Lungag, Digos City, faced the challenges due to improper waste disposal, how the perceptions shaped their behavior about solid waste management, and the actions to mitigate the negative impacts of improper waste disposal. This research employs a qualitative approach, specifically focusing on phenomenological research to gain insight into individual's perspective. Participants were chosen using a purposive sampling technique. The collection of data was carried out through interview guide questions. Findings revealed that health hazards, waste handling, and proximity issues were the major challenges due to waste mismanagement. In addition, participants perspectives about solid waste management were reflected in segregation issues, community compliance, waste management attitudes, and management difficulties. Finally, the study participants revealed that the key factors influencing and mitigating the negative impacts of improper waste disposal focused on waste management, community engagement, effectiveness of efforts, and challenges and non-compliance.

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