



An Exploration of The Social Conditions of Communities Around Disposal Sites (Case Study of Ganet Landfill, Tanjungpinang City)

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ABSTRACT

This research uses a descriptive qualitative method to explain the social conditions of the people living around the Ganet Landfill. The focus of the discussion is mainly on the environmental, health and comfort aspects of the community affected by the presence of the landfill. The main objective of this research is to understand how the social life of the community is formed as a result of the landfill. The results show that the environmental conditions, especially groundwater, meet the physical requirements. On the public health aspect, especially related to ARI disease, is the most dominant. On the aspect of comfort, the community felt the odor that sometimes appeared, most of them did not feel the nuisance of flies. Although accustomed and adapted to the existence of the landfill, the community still expects improved waste management at the Ganet landfill. This hope aims to improve the quality of the environment, public health, and the comfort of living in the area. The conclusion of this study provides a holistic picture of the social impact of the landfill on the community, highlighting their challenges and expectations related to the conditions surrounding the Ganet landfill.

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ABSTRAK

Penelitian ini menggunakan metode deskriptif kualitatif untuk menjelaskan kondisi sosial masyarakat yang tinggal di sekitar TPA Ganet. Fokus pembahasan terutama terarah pada aspek lingkungan, kesehatan dan kenyamanan masyarakat yang terdampak oleh keberadaan TPA. Tujuan utama penelitian ini adalah untuk memahami bagaimana kehidupan sosial masyarakat terbentuk sebagai dampak dari TPA. Hasil penelitian menunjukkan bahwa kondisi lingkungan, khususnya air tanah, memenuhi persyaratan fisik. Pada aspek kesehatan masyarakat, terutama terkait dengan penyakit ISPA, menjadi yang paling dominan. Pada aspek kenyamanan masyarakat merasakan adanya bau yang kadang-kadang muncul, sebagian besar dari mereka tidak merasakan gangguan alat. Meskipun terbiasa dan beradaptasi dengan keberadaan TPA, masyarakat tetap berharap akan peningkatan pengelolaan sampah di TPA Ganet. Harapan ini bertujuan untuk meningkatkan kualitas lingkungan, kesehatan masyarakat, dan kenyamanan hidup di wilayah

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Kata kunci:
Kenyamanan; masyarakat;
kesehatan; TPA; sosial

tersebut. Kesimpulan penelitian ini memberikan gambaran holistik tentang dampak sosial TPA pada masyarakat, dengan menyoroti tantangan dan harapan mereka terkait dengan kondisi sekitar TPA Ganet.

INTRODUCTION

Human life is inseparable from the production of waste, a reality that has become an intrinsic part of daily activities (Alfian & Phelia, 2021). Waste management in Indonesia is still an actual problem in line with the increasing population growth, which contributes to the increase in waste production (Mahyudin, 2017). Along with population growth, development and economic improvement, the volume of waste generated by communities continues to increase, bringing significant impacts on the environment and public health (Taufik & Harningsih, 2021).

The waste generated will end up in landfill (Final Processing Site). Landfill is a place to process and return waste to the environment (Kementerian Pekerjaan Umum dan Perumahan Rakyat, 2013). Landfill is an integral part of the waste management system in every region in Indonesia, implemented as a national program to provide a sustainable concept. The government, as a landfill provider, carries out its responsibility towards service to the community with the expectation that the existence of a landfill that maintains cleanliness and safety will provide positive benefits to health and the environment (Priatna et al., 2019).

In determining the location of a waste landfill, of the course, it must meet the requirements set by the government. This is regulated in various regulations, including technical analysis based on the Indonesian National Standard (SNI) 03-3241 Year 1994 concerning Procedures for Selecting the Location of Waste Landfill (Badan Standarisasi Nasional, 1994). One of the crucial requirements that must be met is the distance between landfills and settlements. Based on the Regulation of the Minister of Public Works of the Republic of Indonesia Number 03/Prt/M/2013 concerning the Implementation of Waste Infrastructure and Facilities in Handling Household Waste and Waste Similar to Household Waste, the required distance from settlements is more than 1 km (one kilometer). This distance is taken into account, among others, by considering social aspects (Kementerian Pekerjaan Umum dan Perumahan Rakyat, 2013).

An assessment of the social aspects of communities living close to waste landfills is important because of its direct impact on the health and welfare of local communities (Fadhillah, 2022). Ineffective waste management can create an unpleasant environment for the community, with unpleasant odors and bad scenery as waste is scattered in various places. In addition, inadequate waste management can have a negative impact on public health. This can result in an increase in direct costs, such as medical expenses to address health problems arising from an unsanitary environment (Yusmiati & Maulida, 2017). Therefore, good waste management not only contributes to the cleanliness of the environment, but is also an investment in the overall well-being and health of the community.

Ganet Landfill is a place where waste generated by the people of Tanjungpinang City, Riau Islands, ends. Currently, Ganet Landfill uses a controlled landfill system, which is disposal by flattening and compacting incoming waste every day (compacted into a cell) using heavy equipment. Every five to seven days the waste will be covered with soil. This closure aims to reduce odor, avoid fly habitat and release methane gas (Badan Standarisasi Nasional, 2002). The disadvantage of the controlled landfill method is that it does not use a geomembrane layer at the bottom of the pit, so leachate goes directly into the soil (Widyasari, 2013). COD examination at the leachate treatment outlet in December 2021 showed a value of 983 mg/l, which means that it is above the quality standard of the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia number 56 of 2016 of 300 mg/l (UPTD TPA Ganet, 2021). High levels of COD will have an impact on disruption of the surrounding ecosystem and have the potential to cause pollution (Setianto & Fahritsani, 2019).

The location of the Ganet Landfill is in RT.001 / RW.008 Pinang Kencana Village, East Tanjungpinang District, Tanjungpinang City, Riau Islands. Where, in the same location there are settlements that are ≤ 1 km away, so it is very possible that people feel the impact of landfill on their daily lives. Therefore, this article will discuss the current social conditions felt by people living in that location. The social conditions that will be examined in this article include two aspects, namely health and comfort. This article is expected to be an input for government consideration in making Ganet landfill waste management policies, especially on the social conditions of the community.

METHODS

Time and place

The research was conducted in January 2023 and is located in RT.001 / RW.008 Pinang Kencana Village, East Tanjungpinang District, Tanjungpinang City, Riau Islands. This settlement location was chosen because the Ganet landfill is located in the area so that the distance between the settlement and the Ganet landfill location is ≤ 1 km, which means that it does not comply with the distance requirements for settlements and landfills (Kementerian Pekerjaan Umum dan Perumahan Rakyat, 2013).

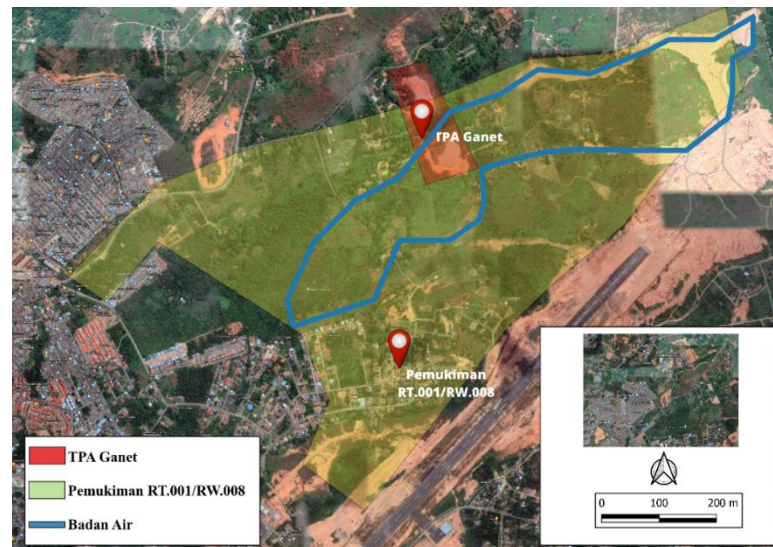


Figure 1. Map of the Research Location
Sources: Google Maps

Population and Sample

The population in this study were all people living in RT.001/RW.008 Pinang Kencana Village with a total of ± 300 families. The sample size was calculated using the Krejcie & Morgan (1970) formula as follows:

$$= \frac{\lambda^2 N P (1 - P)}{(N - 1) d^2 + \lambda^2 P (1 - P)}$$

Description:

S = Number of sample members

N = Number of population members

λ^2 = 10% degree of freedom = 2.706

P = Proportion in the population (0.05)

d = Accuracy / degree of fixity (0.1)

So that a sample of 56 families was obtained.

Data Collection

Data collection was carried out using a questionnaire. The completion of the questionnaire was done through direct interviews and the distribution of Google Forms. The questionnaire contained questions about the characteristics and conditions of the environment, health and comfort felt by people living in RT.001/RW.008 Pinang Kencana Village. Aspects of environment, health and comfort were selected based on Suratmo (2004).

Data Analysis

The data analysis used in this research is to use qualitative descriptive analysis, namely analyzing data by describing, describing until a description of the problem is obtained and linking it with theories that have a relationship with the problem in order to get a conclusion (Yusmiati & Maulida, 2017).

RESULTS AND DISCUSSION

Community Characteristics

Age Distribution

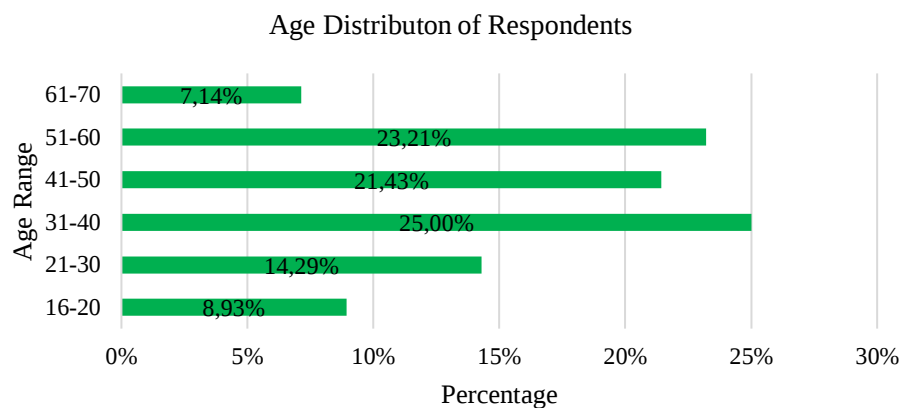


Figure 2. Age Distribution of Respondents

Assessment of the social conditions of people living in the vicinity of a waste landfill is important because of its direct impact on the health and well-being of the local community. Different age groups may have different levels of sensitivity and range of impacts to the presence of a landfill. Children, for example, may be more vulnerable to health impacts due to their still-developing immune systems. Adults may feel the economic and social impacts, while the elderly may be more vulnerable to health problems associated with the environment (Fitria, 2023). By understanding the age distribution of respondents, researchers can detail the impact of landfill on different age groups and design more targeted solutions according to their specific needs. Age data can also provide valuable information for authorities and relevant agencies in designing policies that are more inclusive and responsive to the varying needs of different communities.

Respondents were predominantly aged 31-40 years as much as 25%, while the least aged 61-70 years as much as 7.14%. Ages 31-40 usually include the young adult to middle-aged age group. Although not considered vulnerable groups such as children or the elderly, this age group can still experience health, environmental and social impacts from landfill sites. Young adults may experience more long-term economic and environmental impacts, while the middle-aged may experience health impacts related to air and water quality around the landfill.

Education

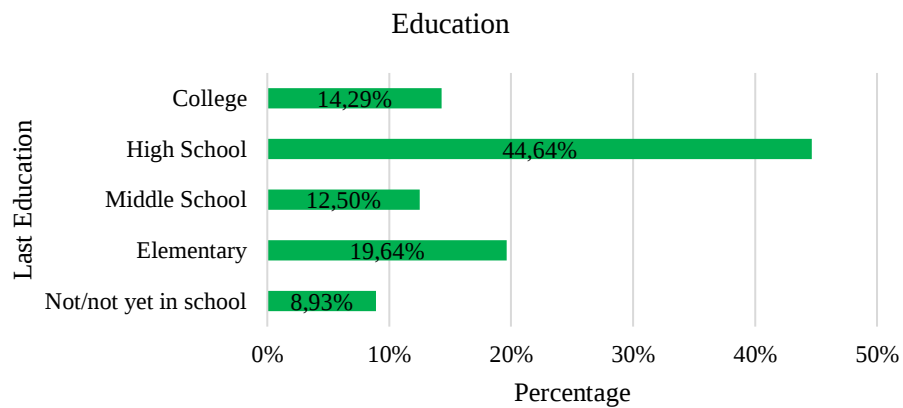


Figure 3. Educations

The last education of respondents was dominated by High School as much as 44.64%, this figure can still be said to be quite low for the community, considering that the research location is the Provincial Capital. Education level can play an important role in understanding and implementing ways to mitigate pollution caused by landfill. Higher education tends to give people a better understanding of environmental impacts, including pollution that can be caused by landfills. The relationship between education level and the form of waste management is strong (Jayanti et al., 2017), so there is a relationship between education level and knowledge of waste management (Putri, 2023).

By increasing the level of education, people can be more aware of the importance of environmentally friendly waste management practices. Education also provides the necessary skills and knowledge to develop initiatives and creative solutions in mitigation or active participation in recycling programs. Education is an important factor in waste management (Hidayah et al., 2021).

Therefore, improving education levels can strengthen the capacity of communities to manage the impacts of landfill pollution in a sustainable way. In addition, by improving the quality of human resources through education, communities can more effectively participate in decision-making and implementation of development programs (Khodijah Ismail et al., 2023), including waste management programs, thus creating a cleaner and more sustainable environment.

Occupation

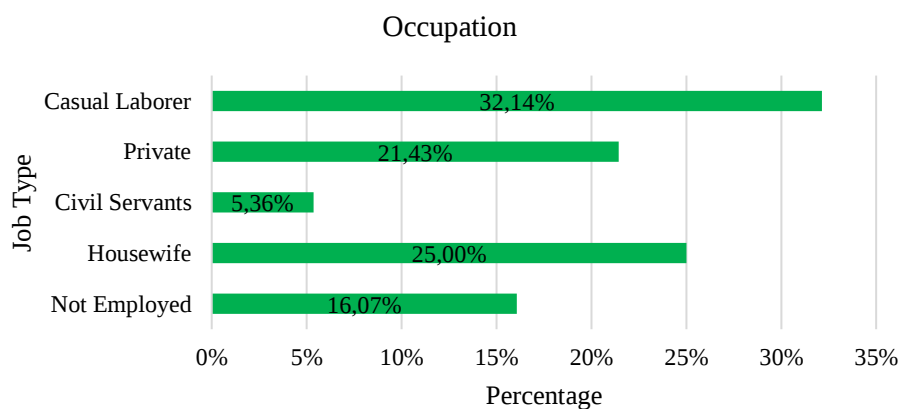


Figure 4. Occupations

The dominant occupation of respondents is casual laborer as much as 32.14%, some respondents also work as scavengers in the landfill. Scavenger jobs can have a direct relationship with the impact of pollution in landfills. Scavengers are often involved in collecting recyclable materials around the landfill, which may include solid and potentially hazardous waste. Their exposure to waste and conditions at the landfill may increase their risk of health impacts. The most common risk of health problems experienced by waste pickers is itchy skin (Seppina et al., 2017). Itchy skin disease can occur due to piles of garbage which is a good place for mold growth. This can arise partly due to the personal hygiene of the scavengers themselves (Harahap, 1990). On the other hand, the work of waste pickers can also help in reducing the amount of waste that eventually reaches the landfill by recycling reusable materials.

Number of Family Members

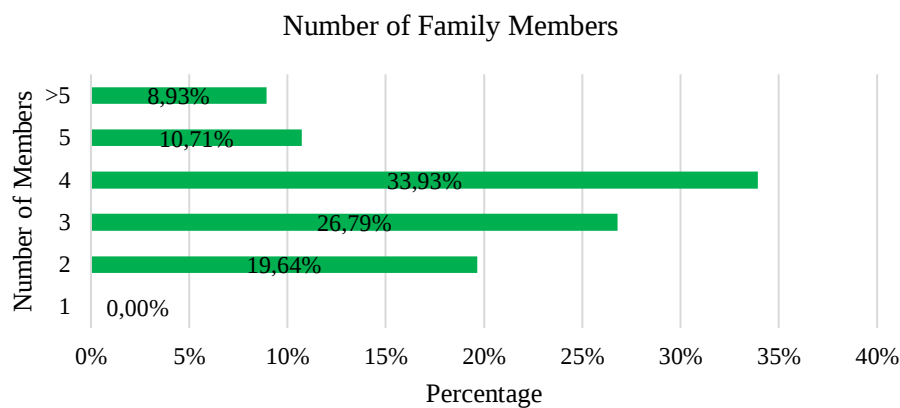


Figure 5. Number of Family Members

Generally, it can be said that the more family members there are, the greater the number of people or population that may be directly affected by the landfill. This is related to the fact that each family member is an individual potentially exposed to health, environmental and social impacts that may arise from the presence of a landfill. In this context, family size may be a factor that increases the number of individuals vulnerable to negative impacts. Further research is needed to determine the extent of the landfill's impact on family size.

Length of Stay

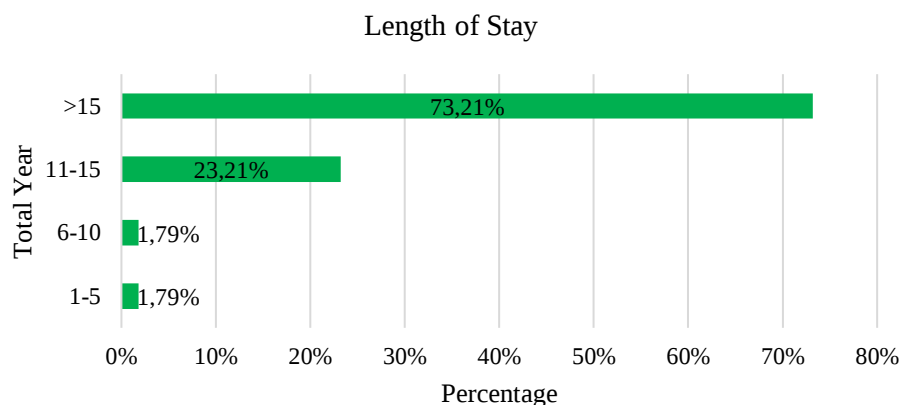


Figure 6. Length of Stay

The relationship between length of residence and frequency of exposure to impacts from landfills can be complex. While it is generally accepted that longer residence around a landfill can

increase the likelihood of exposure, factors such as distance of residence from the landfill, wind patterns, type of waste, landfill management practices, and level of community awareness also play a role. The length of residence around a landfill can also possibly increase the risk of exposure. However, even if a person has lived for a long time, exposure depends on the unique dynamics that influence the distribution and environmental impacts of landfills in a given area.

Groundwater Condition

Based on field observations, it is known that all respondents use dug well water for their daily toilet needs. However, for consumption needs, 26.78% of respondents chose to use marketed refillable gallon water. From the interviews conducted, some respondents argued that the purchase of water for consumption was not due to contaminated water, but rather due to necessity and lack of time to process water into drinking water. Field observations also found that the condition of the dug well water used by the community for their daily needs was physically good, namely colorless, odorless and tasteless.

The relationship between landfills and groundwater conditions is significant. Landfills can impact groundwater quality through leachate seepage that contaminates groundwater, potentially reducing physical, chemical and microbiological water quality (Wahyuni et al., 2017). In addition, landfills can also lead to increased levels of harmful contaminants such as heavy metals in groundwater, which can be detrimental to health if consumed (Mariadi & Kurniawan, 2020). Therefore, a complete examination including physical, chemical and biological parameters of the water consumed by people living around the landfill is required.

Drinking Water Replacement Cost

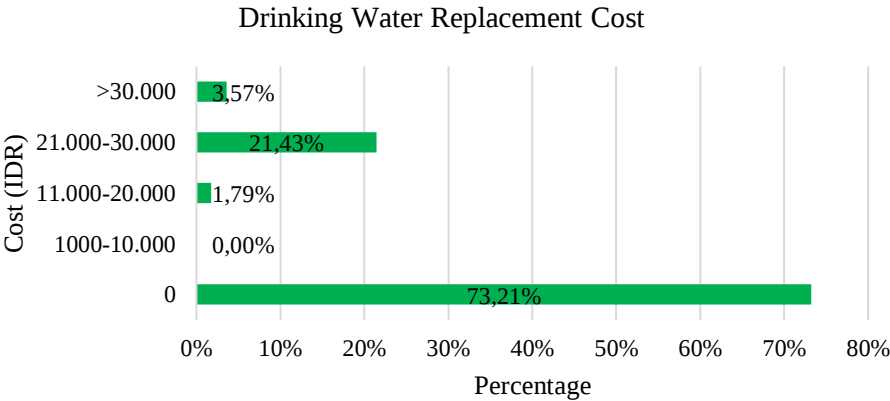


Figure 7. Drinking Water Replacement Cost

Around 73.21% of respondents did not spend any money on water for consumption, while the rest chose to use gallon water for consumption. The range of costs most respondents spend in one purchase of water is IDR 21,000-30,000 as much as 21.43%. In one month, they can spend 5-8 times purchasing gallon water. It should be recalled that, based on the results of the interviews conducted, some respondents argue that the purchase of water for consumption is not due to physically polluted water (smell, taste, color), but because of the need and lack of time to process water into drinking water.

Community Health Condition

Past Illnesses

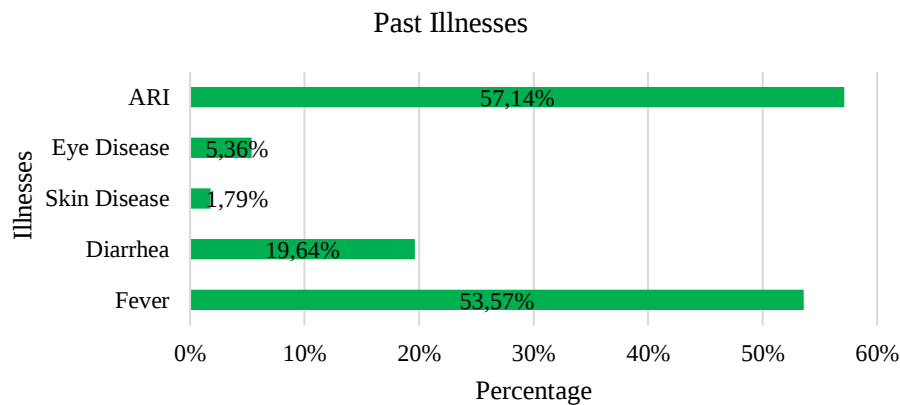


Figure 8. Past Illnesses

Waste that is not managed properly can cause various types of diseases. Disease identification is carried out based on environmentally-based diseases that can result from environmental pollution due to waste, such as fever, diarrhea, skin diseases, eye diseases, and Acute Respiratory Tract Infection (ARI) (Tambunan et al., 2023). This is related to the fact that waste can be a breeding ground for various types of pathogenic microorganisms that can cause disease. In addition, landfills can also impact groundwater quality through leachate seepage that contaminates groundwater, potentially degrading water quality physically, chemically and microbiologically (Mariadi & Kurniawan, 2020).

Based on field observations, the most common disease suffered by respondents was ARI, 57.14%. The observation also shows that most (50%) of the respondents seek treatment at the Puskesmas (Figure 9). However, data from the nearest Puskesmas shows that ARI disease has decreased from 2022 to 2023 by 6%.

Place of Treatment

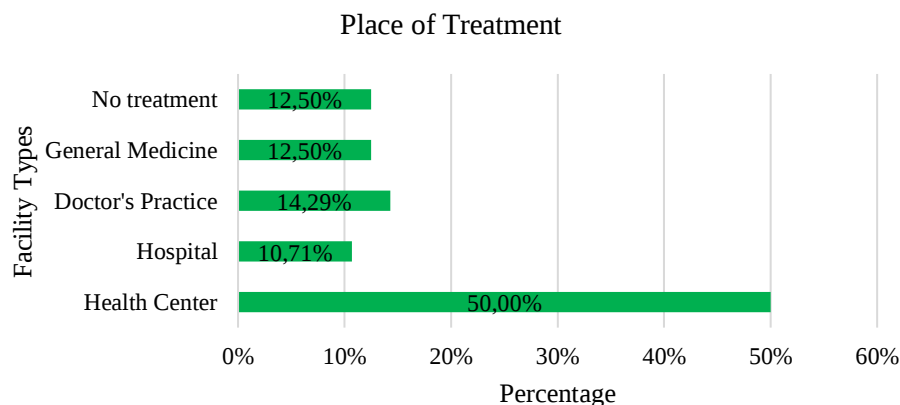


Figure 9. Place of Treatment

People's decision to choose a Community Health Center (Puskesmas) as a place of treatment can be influenced by a number of factors, especially accessibility and cost. Puskesmas is often considered a practical choice because it is close to the location of residence, facilitating accessibility for the community. The existence of Puskesmas in close proximity to the community makes it the first choice for obtaining basic health services.

In addition, more affordable costs at Puskesmas are also a major consideration for the community. The existence of government-funded health service programs, as well as lower fee policies at Puskesmas, provide economic incentives for the community to access health services at these facilities. This practicality and cost efficiency are the main drivers in choosing Puskesmas as a place to seek treatment.

Frequency of Illness

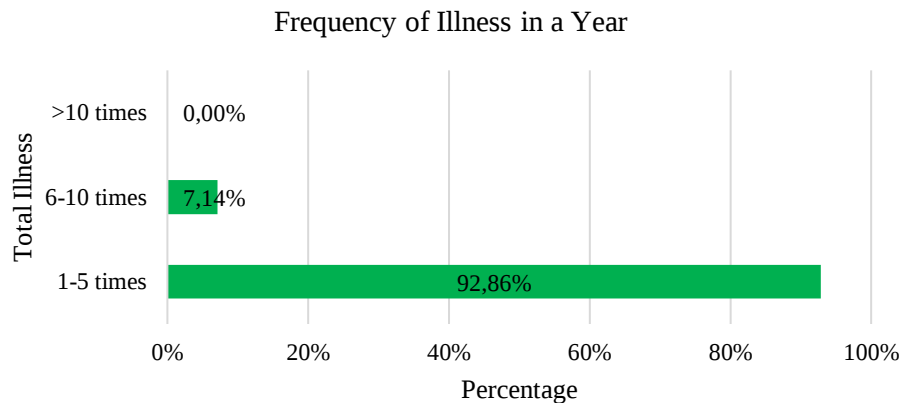


Figure 10. Frequency of Illness in a Year

The highest percentage of people suffering from illnesses in a year was 1-5 times, 92.86%. Repeated exposure to air, water or soil pollutants from landfill sites may increase the risk of respiratory diseases, skin diseases or other health problems (Allianz Indonesia, 2019; Jauhari, 2023). Pollution due to waste decomposition can occur in the air, water and soil, caused by leachate seepage. The leachate is easily dispersed through rainwater runoff and seeps, contaminating groundwater, and can cause physical, chemical and microbiological degradation of water quality (Wahyuni et al., 2017).

Medical Expenses

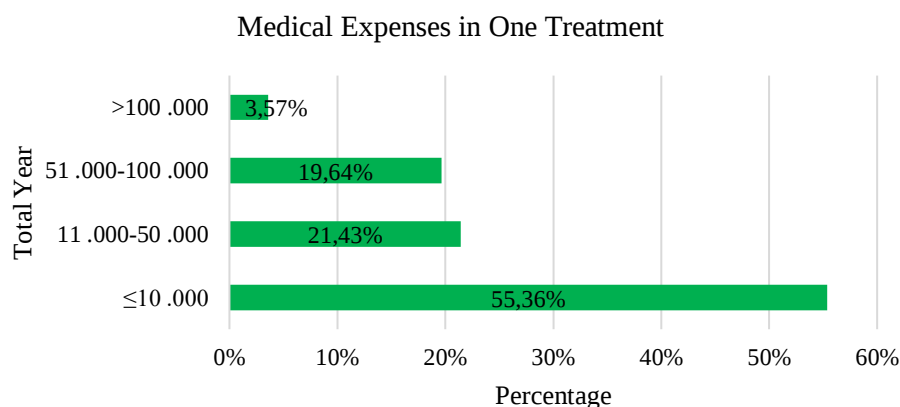


Figure 11. Medical Expenses in One Treatment

The impact of exposure to pollution sources from landfills can contribute to the burden of public health and require additional costs for treatment. Most respondents (as many as 55.36%) did not spend money on medical treatment because they were covered by the health insurance provided by the government. Others had to spend around IDR 11,000 to above IDR 100,000.

Improving the environment around landfills can be a key step to minimize the risk of developing diseases and, ultimately, reduce the burden of health costs borne by society. Efforts to improve waste management, implement better treatment technologies, and implement pollution mitigation measures can be a long-term investment in public health. By creating a cleaner and safer environment, communities can reduce the risk of developing diseases and effectively reduce the need for medical expenses. Therefore, investment in landfill environmental improvement and management is not only a preventive measure against health risks, but also a long-term economic measure that can save health costs for the community.

Comfortable Living Air Pollution

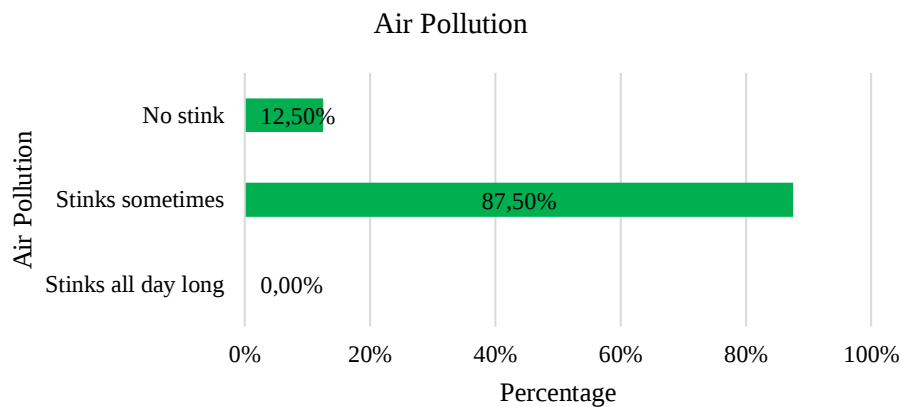


Figure 12. Air Pollution

Landfill can cause unpleasant odors and disturb the comfort of the surrounding community (Fadhillah, 2022). The odor is caused by the decomposition of waste that produces toxic gases such as methane (CH_4) and carbon dioxide (CO_2). (Bogner et al., 2008; Ge et al., 2016). A total of 87.5% of respondents perceived odor, but the odor came and went and the remaining 12.5% perceived no odor. Odors from the landfill can be occasional and inconsistent due to a number of different factors. One of the main factors is weather conditions and wind direction. Changes in wind direction and wind speed can affect the extent to which landfill odors are carried into surrounding areas. In addition, seasonal factors and air temperature also play an important role. Under certain conditions, landfill odors tend to be more pungent during the rainy season than the dry season. During the rainy season, the odor of waste from the landfill may become more pungent (Rahayu, 2023). This may be due to increased air humidity and more active waste decomposition processes during the rainy season. Other factors include the type and amount of waste disposed of in the landfill, as well as the waste management and processing methods used. If the landfill implements effective management practices, such as daily closure and good waste handling, odours can be minimized.

Fly Nuisance

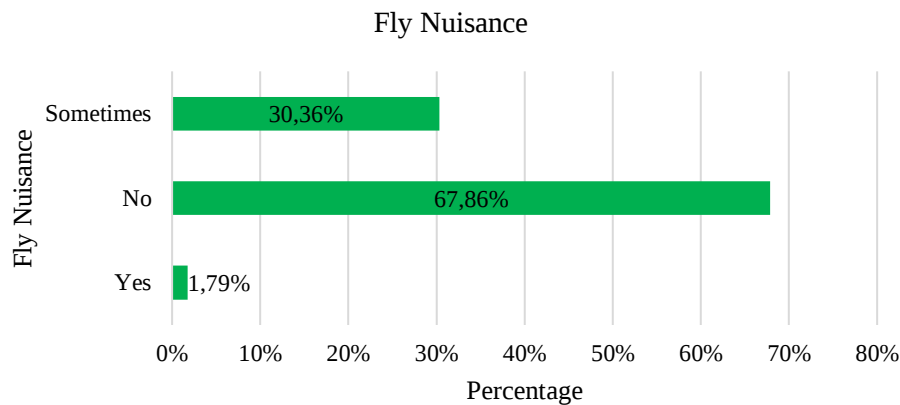


Figure 13. Fly Nuisance

Most respondents (67.86%) do not experience fly nuisance in their settlements, the rest sometimes do. Landfill odors can cause fly nuisance in settlements, especially during the rainy season. During the rainy season, the smell of waste from the landfill tends to be more pungent, which can trigger the development of flies (Nindia et al., 2019). Houseflies are a common species found around settlements because at the larval stage, flies are very fond of decaying garbage. In addition, flies can also act as disease vectors, and garbage is a very suitable place to become a nest and breeding ground for disease vectors (Hastutiek & Fitri, 2007). Another factor for flies in settlements is the presence of organic waste around the settlement, such as food scraps or kitchen waste. Places that are less hygienic and have poor sanitary conditions can also be a breeding ground for flies. Stagnant water, damp places, and decaying plants can also be an environment that supports the survival of flies.

Comfortable Living

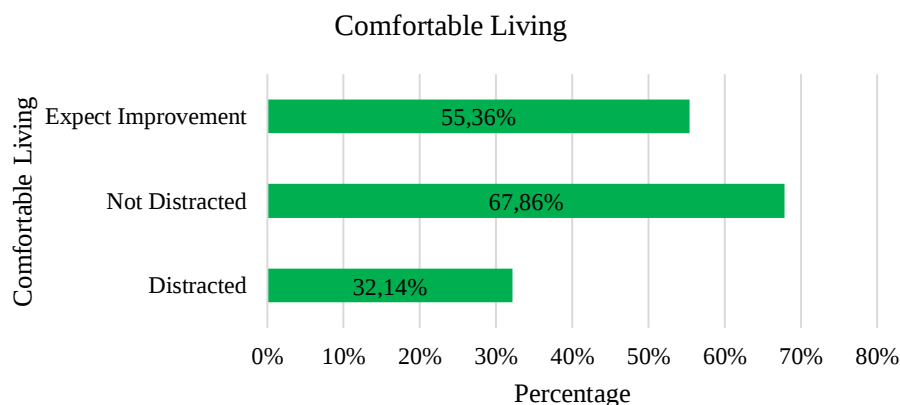


Figure 14. Comfortable Living

The majority (67.86%) of the community felt undisturbed by the presence of the landfill around their settlement. Although sometimes they feel the smell, but the community considers it is normal and the community has adapted, so the community considers it not a nuisance. Likewise with fly nuisance, although some respondents (as many as 30.36%) sometimes feel the presence of flies, but the community considers the landfill is not the only factor causing the presence of flies. However, of the total respondents, 55.36% expected an improvement in waste management at

the Ganet landfill, so that environmental quality, public health and residential comfort would also improve.

CONCLUSION

Based on the findings of the research, it can be concluded that COD levels that exceed quality standards have the potential to pollute the environment, especially groundwater. The condition of groundwater physical parameters such as odor, color, and taste still meet the requirements, so many people rely on well water for drinking consumption. The high prevalence of Acute Respiratory Tract Infection (ARI) indicates a public health risk that needs attention. Although most respondents felt the odor around the landfill and a small percentage felt the presence of flies, the majority of the community is used to and adapted to these conditions. However, the expectation for improved waste management at the Ganet landfill reflects the community's awareness of the importance of remedial measures to improve environmental quality, public health, and the comfort of living around the area. This conclusion illustrates the complexity of the relationship between environmental conditions, public health, and community perceptions of the landfill, and highlights the need for further attention to waste management and community well-being.

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