Journal of Positive School Psychology http://journalppw.com
2022, Vol. 6, No. 2, 419 – 434

ENVIRONMENTAL HEALTH IMPLICATIONS ON SOLID WASTE MANAGEMENT IN SOMALIA

Ali Muse ABDI[1], Dr. Fidan ASLANOVA[2], Gözen ELKIRAN[3]

[1]Department of Environmental Sciences and Engineering, Faculty of Civil and Environmental Engineering, Near East University, Mersin 10 Turkey
[2]Department of Environmental Sciences and Engineering, Faculty of Civil and Environmental Engineering, Near East University, Mersin 10 Turkey
[3]Department of Civil Engineering, Faculty of Civil and Environmental Engineering, Near East University, Mersin 10 Turkey

Abstract

For more than three decades, Somalia has indeed been afflicted by violent conflicts and unrest, and its been without the need for an effective centralized administration since the early 1990s. Water shortages and over flow of seasonal rivers continue to harm the both livestock and agricultural farming land of the region, claiming lives and destroying livelihoods. And over a millions Somalis have been domestically dislocated, with another million migrating to neighboring nations in search of food, water, and shelter (UNHCR, 2012). In world politics, the global economy, and people's lives, the environment is extremely important. Environmental deterioration has now become a global problem that demands a global response - ecologically, economically, and politically. Waste management is a worldwide problem that most governments are working to resolve, Individuals' and the environment's health are at risk when garbage is inadequately managed. As a developing country, Somalia's communities have faced several issues in terms of trash management as a result of waste management initiatives.

Aims and objectives to ascertain the influence of environmental health on Somalia's solid waste management this was a descriptive research project. Self-administered Questionnaire (N=50) and interviews with persons living in Somalia. The questionnaire was written in English, but it was translated into Somali for those who could not speak English or were not educated. The data was collected using SPSS, which was then utilized to evaluate the findings using charts and graphs. The educational level of the respondents was about 30 (60 percent), while the master's degree was 15(30 percent), the PHD degrees were estimated 3 (6%), the secondary level and non-formal education were calculated 1(2 percent), 82 %, of respondents have excellent knowledge that waste has more hazards or risks that cause environmental problems, while 18 percent have poor knowledge that waste may cause environmental risks, and 70% of respondents have perfect experience that waste pollutes the environment, while 30% have less knowledge.

As a result, 80 percent of respondents stated that waste can be resourced, and 82 percent stated that waste can also be restored and recycled; however, the lowest percentages of respondents stated that waste cannot be stored or recycled, with 18 percent and 20 percent stating that waste cannot be resourced, respectively. 74 percent of respondents strongly agreed that chemical and poor water quality have a direct impact on the environment and can cause a variety of maladies that can be severe or moderate, 58 percent of respondents stated that inadequate sanitation and poor water quality can cause environmental issues such as diarrhea outbreaks, and around 50 percent of respondents stated that company's chemical radiation, such as UV radiation, has a high impact on cancer incidence.

Keywords: Environment, health, impacts, implications, management, solid waste.

INTRODUCTION

For more than three decades, Somalia has indeed been afflicted by violent conflicts

and unrest, and it's been without the need for an effective centralized administration since the early 1990s. Water shortages and over flow of seasonal rivers continue to harm the both livestock and agricultural farming land of the region, claiming lives and destroying livelihoods. And over a millions Somalis have been domestically dislocated, with another million migrating to neighboring nations in search of food, water, and shelter (UNHCR, 2012). In world politics, the global economy, and people's lives, the environment is extremely important. Environmental deterioration has now become a global problem that necessitates a global response - ecologically, economically, and politically. As a result, many academics define "environment" to include "all that surrounds the planet, both in nonliving things."

With which an organism interacts or impacts. "Biotic elements are living things that an organism interacts with, such as animals and plants; abiotic elements, on the other hand, are non-living substances such as air, water, and sunshine. As a result, examining the environment entails looking into the connections between these numerous elements. (Elliott and colleagues, 2010). Similarly, global climate change, which is producing climate change, is presently one of the world's largest most crucial environmental concerns. Contaminants, for example, relates to impacts on human health, degradation, biodiversity loss, depletion of the ozone layer, and a rise in industrial and urban debris, to list a few instances. Human activities and influence are generating unprecedented changes in the environment, threatening our positive goal. Sustainability difficulties, according to a few scientists, are the function of the combination of two dynamic structures: the hierarchal structure and the environmental consequences. Nevertheless, in order to ensure security, the entire human environment is considered (Graeber, 2015).

In poor nations, contamination of the natural environment is directly connected to a large percentage of people's illnesses. Improved public health as a result of a better environment is thus a key component of the fight and strategy to end poverty. In general, population expansion, economic development, and rising income disparity all place more strain on ecosystems. Poverty and political turmoil, which are common in most developing nations, inflict devastation on the natural universe Environmental degradation exacerbates deprivation from already people in poverty, specifically in areas where in people's lives and existence are heavily reliant on the natural habitat (Elliott, et al, 2010). Habitat destruction and unauthorized hazardous substances disposal, among several other human activities, are decreasing the natural environment of future generations all across the planet. In reality, waste management and city planning are deeply intertwined at the point wherein trash is obtained: People and the urban design are two sides of a coin. Municipal planners' participation in wastewater treatment, but at the other hand, has largely been constrained to environmental aspects, with just a focus on facility sitting (Farhan and Murray, 2006). To look at it another way, waste generation management is generally regarded as the "tail end" of socioeconomic activities. As a consequence, current waste management efforts have emphasized on eradicating waste from the surroundings instead of examining into to the origins of trash formation as well as the entire existence cycle of rubbish products and materials.

1.1. Somalia Geographical Position

Somalia is strategically placed in between Indian Ocean and the Red Sea, making it a very favorable location. It is found in the Horn of Africa, near the Arab Peninsula. The Larger Horn of Africa, which contains Ethiopia, Eritrea, and Djibouti and is formed like a rhino' horn on a map, encompasses Somalia, Africa's eastern edge country. Somalia's shoreline runs 3,025 kilometers from the Arabian sea in the north to the Indian Ocean in the south and east, with shores of 1,000 and 2,000 kilometers, respectively. Kenya, Ethiopia, and Djibouti surround it to the west. The country stretches over 1,550 kilometers north to south between latitudes 120 N and 10S, and 1,095 kilometers westward within longitudes 410 and 510 E. Moreover, Somalia's landscape is dominated by dry and semi-arid plateaus, plains, and hills. It is a generally flat country with a few 100 meters of altitude near the Ethiopian border in the southeast and center. The desert and Semi-Desert Lands (ASALs) of Somalia cover and over 80percent of overall of the country's land area and are vulnerable to outbursts weather

conditions like high mean surface warming, long droughts, highly variable rainfall, and strong winds (UNDP/ICPAC, 2013).

1.2. Statement of Problem

Based on environmental regulations and increased public engagement, critical elements of integrated solid waste management systems, including such waste resource conservation, recycling, improved storing, and collection of waste, never seen the light of day, developing nations spend 20 to 40% of their municipal income on garbage management, yet they can't keep up with the problem's extent. This is attributable to a variety of factors, including rising population growth, more urbanization, and increased economic growth. There is no distinction in Somalia between the types of trash; whether solid, liquid, or any other form, waste is treated as waste and discarded in dumping sites. All garbage and junk collected from major cities and towns is thrown in giant pits excavated several kilometers outside of town, with no mechanism for separating hazardous and nonhazardous material; instead, everything is dumped in one location, which is not environmentally friendly. Tankers collect and dispose of wastewater outside of the city.

Many industries in Somalia create hazardous waste that is detrimental to humans, but international corporations have been caught dumping hazardous garbage near the coast. Until the government is capable of dealing with these issues, friendly nations and international organizations have been aiding Somalia in monitoring and preventing solid wastes. A visual assessment of the cities of Hargeysa, Burao, Bossaso, Garowe, Berbera, Mogadishu, and Kismayo reveals that solid waste management is a rising concern that has engulfed all metropolitan centers across the country, owing to the country's volatile past, particularly in the previous quarter century. The Somali people were denied the opportunity to participate in international conferences focusing on environmental health and waste control due to the absence of the Somali administration. The goal of this study is to see how environmental health affects solid waste management in Somalia.

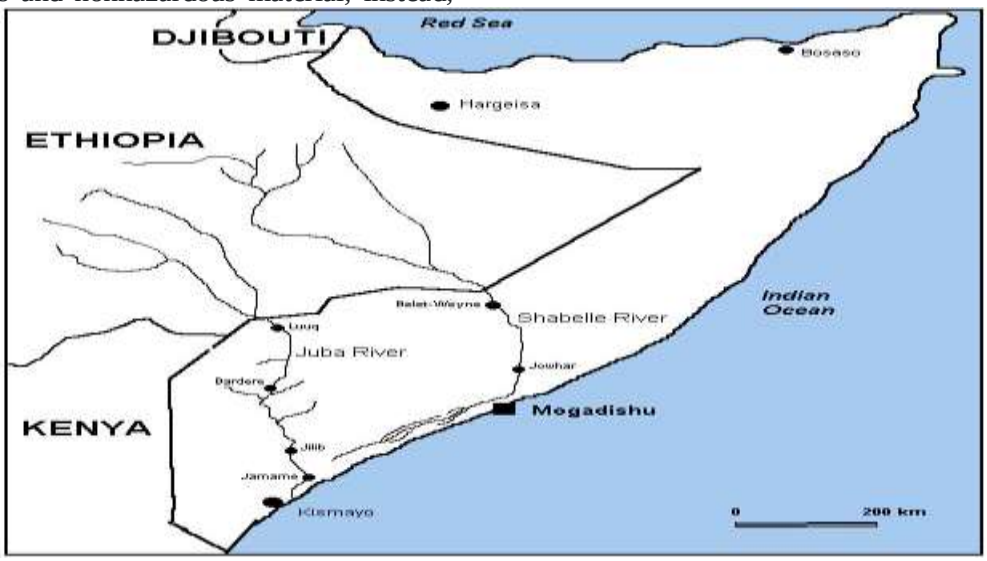


Figure 1. Geopolitical location of Somalia

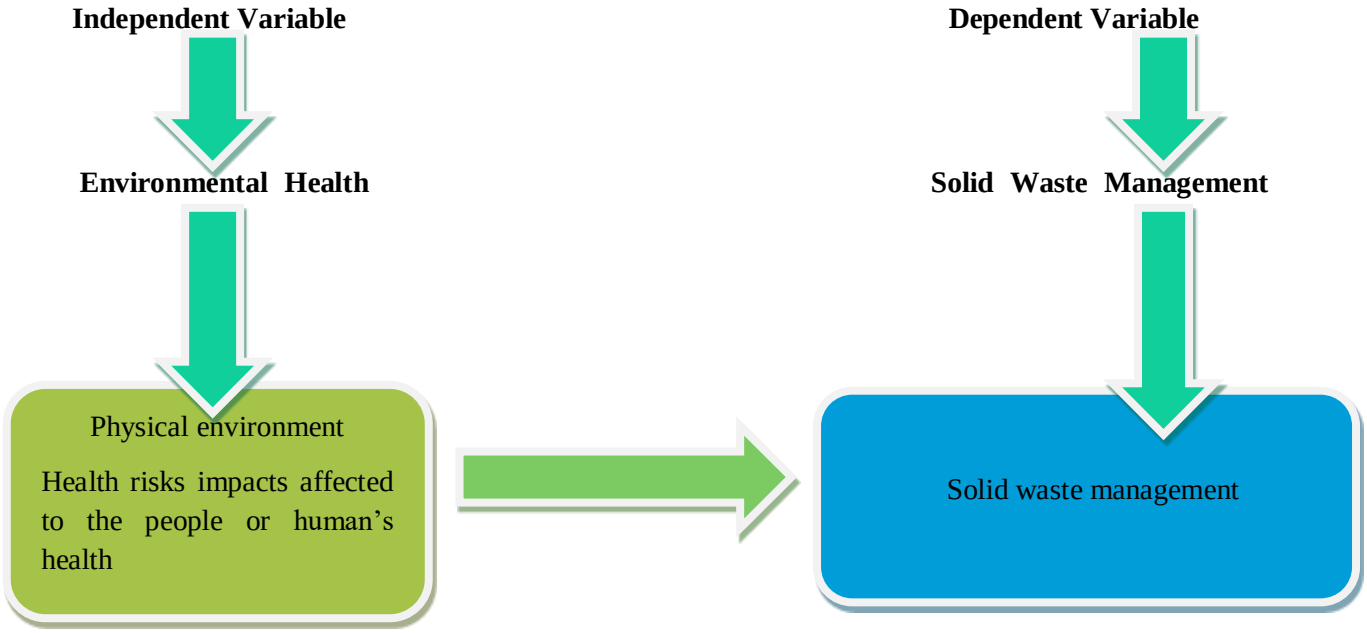
1.3. Objectives of The Study

To determine the influence of environmental health on Somalia's solid waste management

- To describe physical environment in Somalia
- To improve and prevent health risks in the environment health in Somalia

1.4 Specific Objectives

- To determine the impacts of the environmental health that affected population



1.5. Literature Review

➢ Waste is undesired remains, discarded residues, and materials or goods that are no longer required by the original user are all considered waste. These materials are by-products of human activities such as food preparation, manufacturing, packaging, repackaging, and unpacking, structural construction, remodeling, and mining. Almost everything that is thrown is labeled as trash, although it might be used as a resource. Almost everything else in the "trash stream" has some residual value for someone or some company in the neighborhood. Waste may be used as a ground cover to prevent erosion, fertilizer to feed crops, and a source of energy, among other things (UNICEF. 2009).

➢ Pullin and Stewart are a couple (2006). According to the authors, environmental management is defined as "the management of the human activities' interaction and impact on the natural environment through into the diagnosis and assessment of variables that have a shareholding in conflicts that may arise between meeting economic and social needs while saving the environment. Environmental conservation, on the other hand, refers to the safeguarding, preservation, management, or restoration of natural ecosystems and the biological populations that live within them. On an individual, corporate, and governmental level, it refers to any behaviors that prepare the path for environmental and natural resource protection. Conservation is defined as the control of human use of natural resources for current public benefit and long-term social and economic viability.

➢ According to the report, solid waste is classified into distinct sorts according on its source; household debris is recognized as municipal solid waste, industrial waste is defined as hazardous materials, & organic wastes or medical waste is grouped as infectious waste (US Law-Solid Waste Act 2, 1999). Any garbage, reject, or raw sewage from a waste water treatment plant, a water Wastes are defined as solid, water, semi - solids, or semisolid result of industrial, commercial, mining, and agricultural sources, as well as some other discarded substances such as solid, water, semisolid, or contained gaseous material originating from these processes (Mark J., 2006).

➢ The populations in regions where there is no proper waste disposal procedure, equipment to facilitate children; rubbish workers; and personnel in businesses that generate toxic and contagious materials have been recognized as persons at risk from incorrect solid waste disposal. Individuals who reside near a dump are also at danger, as are those their water supply

has been contaminated by junk dumping or landfill leaks. Furthermore, uncollected solid waste increases the risk of injury and sickness.

- According to other investigations, waste management variables include essential properties of the wastes, such as source origins, types that wastes formed, production levels, and makeup. Accurate numbers in these areas is established to evaluate and regulate present waste management systems, as well as make regulatory, financial, and organizational decisions. It did, however, identify numerous kinds of solid waste, based on their source, such as Industrial, Educational, Construction and Demolition, and City Services. (Moeller, 2005).

2. Impacts of Solid Waste On Environment

- The degradation of debris into its component molecules is a widely used source of environment pollution. It is a particularly important concern in developing nations. There aren't too many dumps filed on the planet. The problem that comes with rapid population aggravate the situation. Decomposing waste generates a substantial quantity of gas, which is a big environmental hazard. Hydrogen is a byproduct of anaerobic metabolism by microorganisms, which flourishes in landfill with higher humidity levels. Methane concentration can exceed 50% of the composition of landfill gas during decomposition processes (Goorah et al, 2009).

- According to certain investigations, the biggest worry with all these gases is their involvement in boosting greenhouse emissions and environmental degradation. Regulating liquid leachate at landfill in underdeveloped countries varies widely. Soil and groundwater systems in the region are both worried about leachate. Employing strong clay formations at the bottoms of disposal pits, along with plastic roof sheathing liners to minimize leaking into the surrounding soil, is the most effective method for storing extra fluids. In this method, waste is urged to evaporate rather than enter (CDC 2009).

2.1. Preventive Measures for Reduction of Adverse Impact On Environment and Human

- Proper garbage management must still be done to ensure that management of solid waste does not damage the ecosystem or provide a medical problem to the people who are living there. At the neighborhood level, garbage must be segregated thoroughly, and all organic materials must be set aside for decomposition, which that's without a doubt the most excellent method of eliminating toxins of this garbage. Indeed, the biological treatment of the waste generated decomposition faster, invites insects, and cause infections. Organic waste which has been composted is used as manure.
- To improve the nation's quality of life and the well-being of its residents, numerous activities may be done to lessen the impact of solid waste on the environment. The following are some of the actions that may be taken to lessen the environmental impact of solid waste: Trash generation, as well as the manufacturing of items that create less trash after use, should be decreased. Material recycling and recovery should be enhanced, as well as the use of plastic recycling identification codes and labels pushed, to make sorting and recycling of plastic packaging easier. Besides that, counties and cities could potentially improve their level of service to the public in terms of waste sorting, and manufacturers, the general population, and waste workers should be better educated, as well as promoting the use of less hazardous alternatives to hazardous chemicals during the manufacturing of goods. Trash regulation should also be updated, and hazardous waste collection should be safe, secure, and secure at collection points.

2.3. Methodology

The investigation was carried out in the form of a specific research. Interviews with Somalia residents and a self-administered survey (N=50). The questionnaire was written in English, but it was translated into Somali for people who could not speak English or did not have a good education. SPSS has been used to gather the data, which was then used to examine the findings via graphs and charts.

2.4. Result and discussion

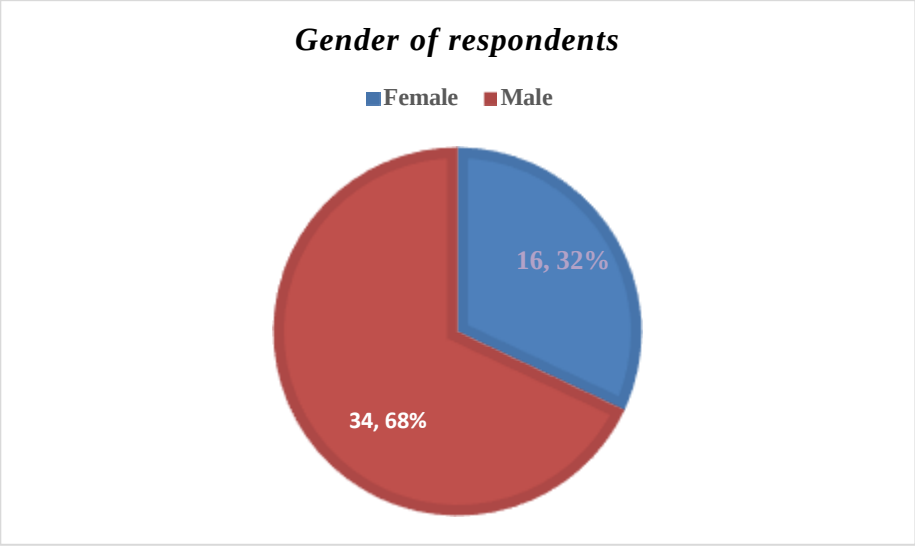


Figure 2. Gender of Respondents

Figure 2, indicates that most respondents were males 68% which is corresponding 34 respondents while 16 respondents were females, which is matching 32%.

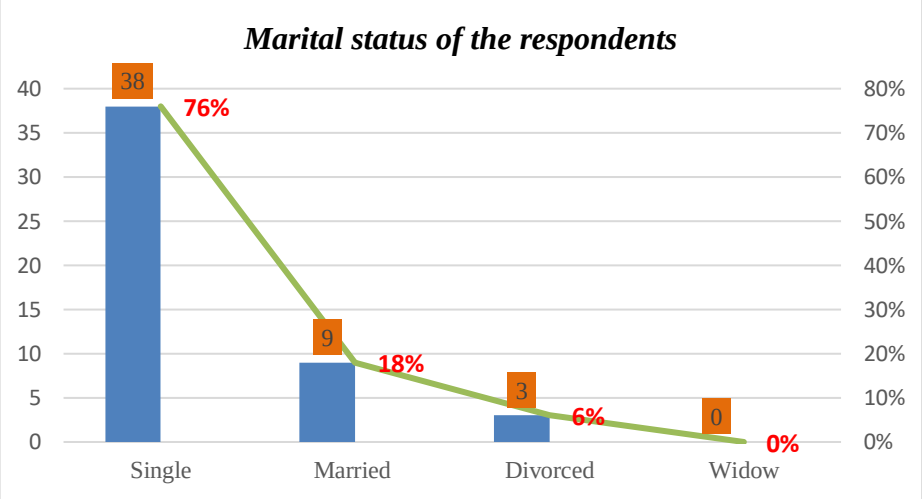


Figure 3. Marital Status of the Respondents

Figure 3 identified that the marital status of the respondents 76% were singles and it was the highest values of the respondents while the lowest value was widow and it was about 0%, while the value of the divorced respondent was 3(6%) while the respondent of married value 9 (18%).

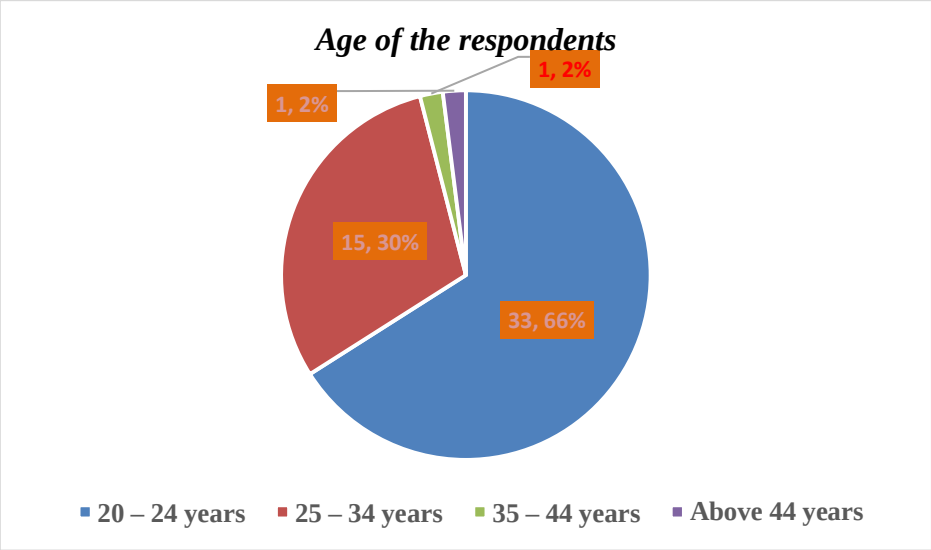


Figure 4. Age of The Respondents

Figure 4, indicates that 66% (33) were the ages of 20 to 24 years of the respondents and it was the higher value, in contrast to those were ages are 25to 34 years and it was about 15 respondents which is correspondent 30%, while other remaining of ages such 35 to 44 years and above 44 years and it was calculated 1(2%) and 1(2%).

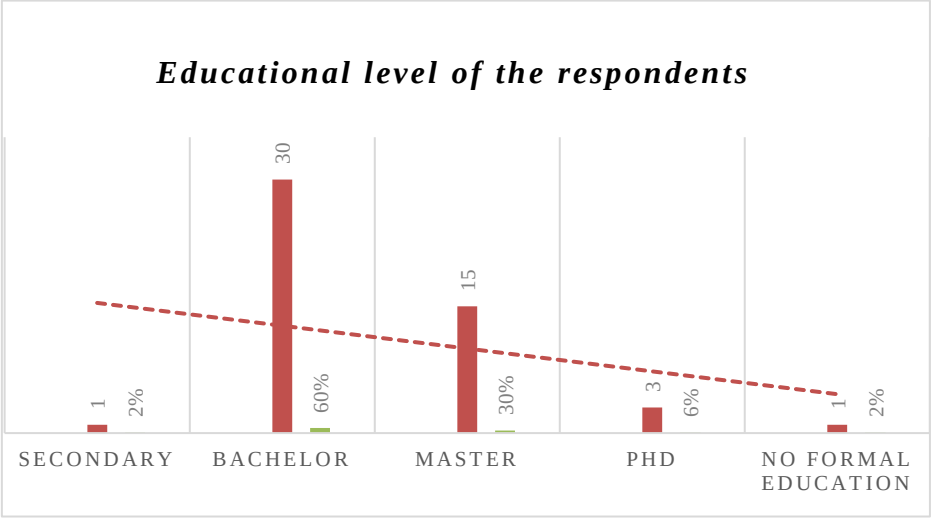


Figure 5. Educational Level of the Respondents

Fig 5, demonstrated that educational level of the respondents were bachelor degrees and it was about 30 (60%) while the master degree of the respondents was estimated 15(30%), the PHD degrees of the respondents were estimated 3(6%), other remaining percentage of the respondents were secondary level and non-formal education and it was calculated 1(2%), 1(2%).

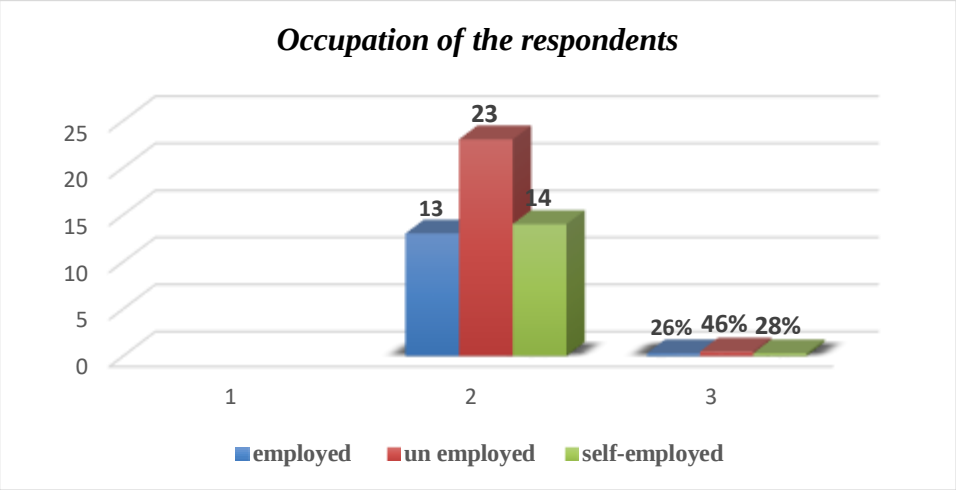


Figure 6. Occupation of the Respondents

Figure 6, identified that most of the occupation of the respondents were un employed and it estimated 23(46%), while employed people of the respondents were about 13(26%) and 14 respondents were self-employed and the percentage of 28%.

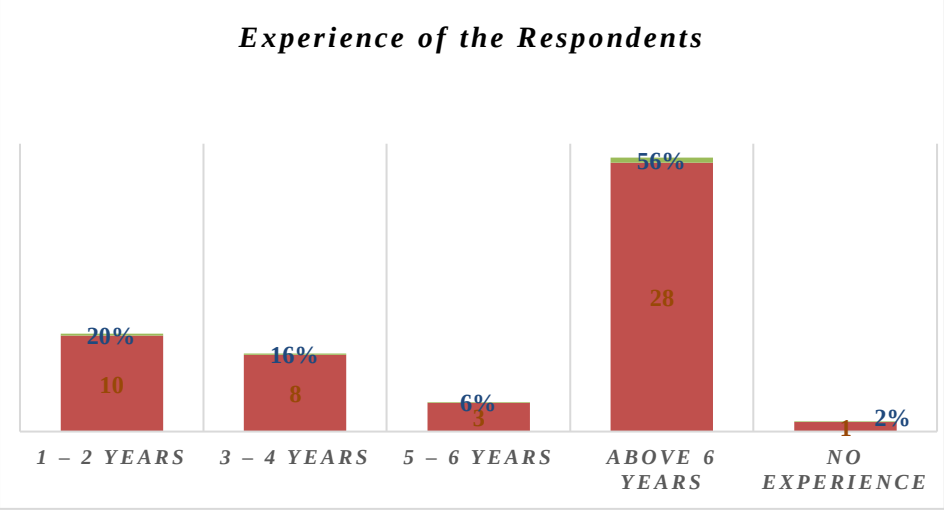


Figure 7. Experience of the Respondents

Figure 7, identified that most of the people of the respondents have more than 6 years of work experienced and it was estimated (28) 56% and those were having 1 to 2 years of work experienced and it was about (10,20% and 16% were those having 3 to 4 years of work experience, while those were had 5 to 6 years of experience of work was 6%, and 2% were no experience and it is the lowest level of the experience.

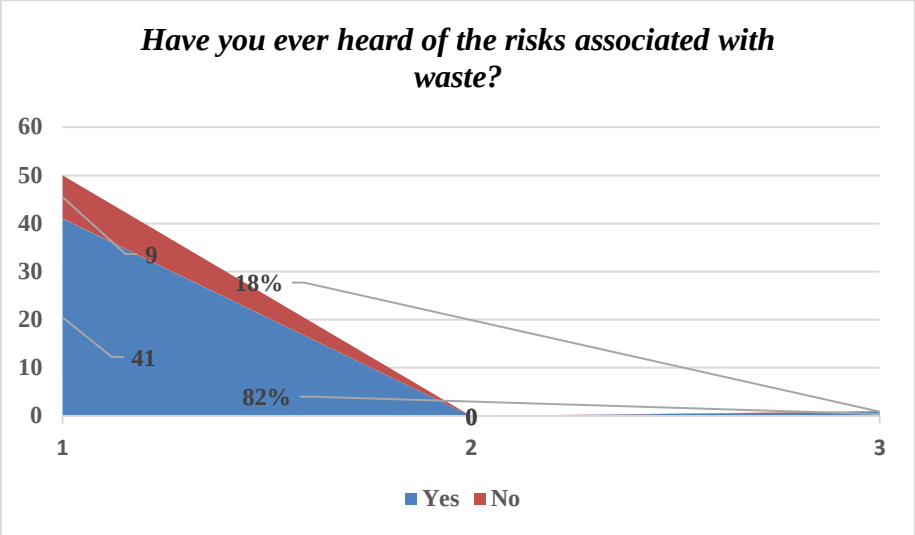


Figure 8. Awareness of the Risks Associated with Waste

Figure 8, indicates that many of the respondents they know the risks that associated with waste, and they said yes, and it estimated 82% and 18% remaining were don't have Idea and they said No.

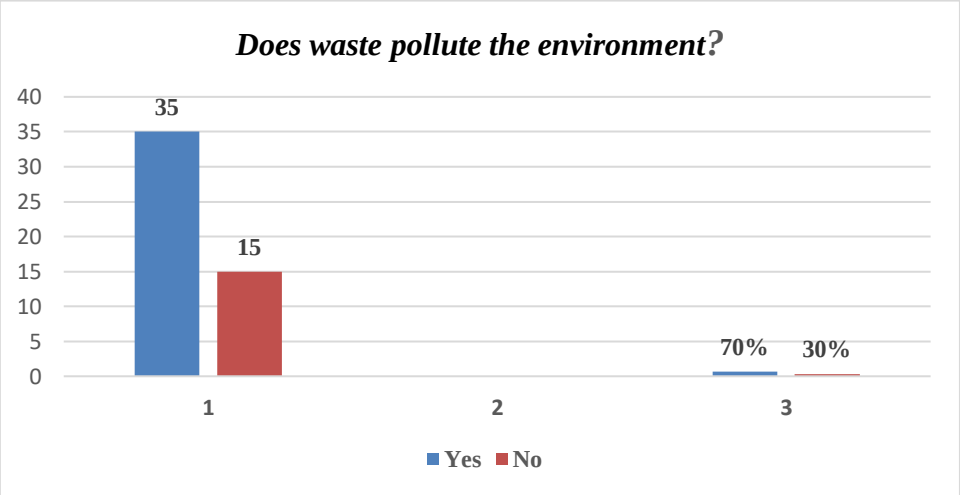


Figure 9. Environmental Pollutant's

Figure 9, indicates that many of the respondent's waste pollute the environment and it was estimated 70% (30) and they said yes, while 30 percent (15) remaining were answered No. therefore, the majority of people know that waste polluted may affect the environment and it can cause numerous problems to the populations.

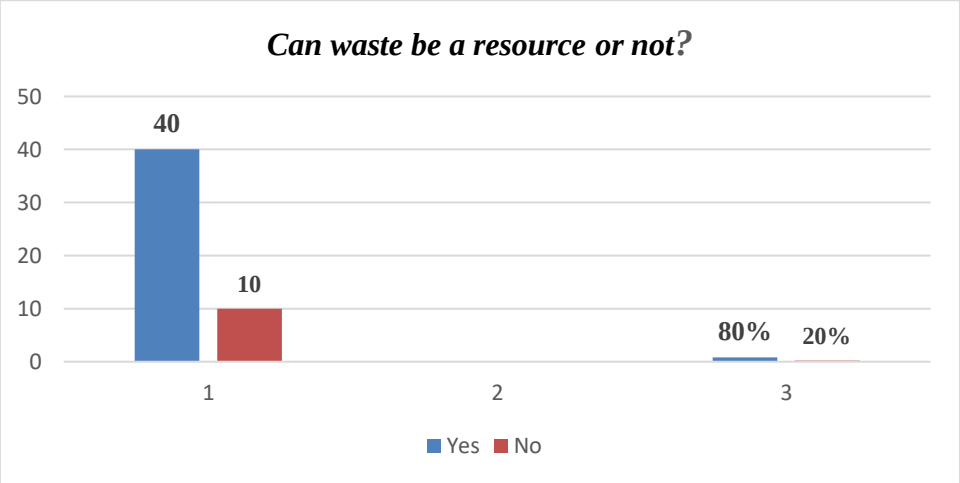


Figure 10. Waste Pollutants Not Be a Resource

Figure 10, identified that can waste be resources or not and the findings indicates that 40 respondents of (80%) were said Yes, waste can be resource while other 10 (20) percent for the respondents remaining said waste cannot be resourced.

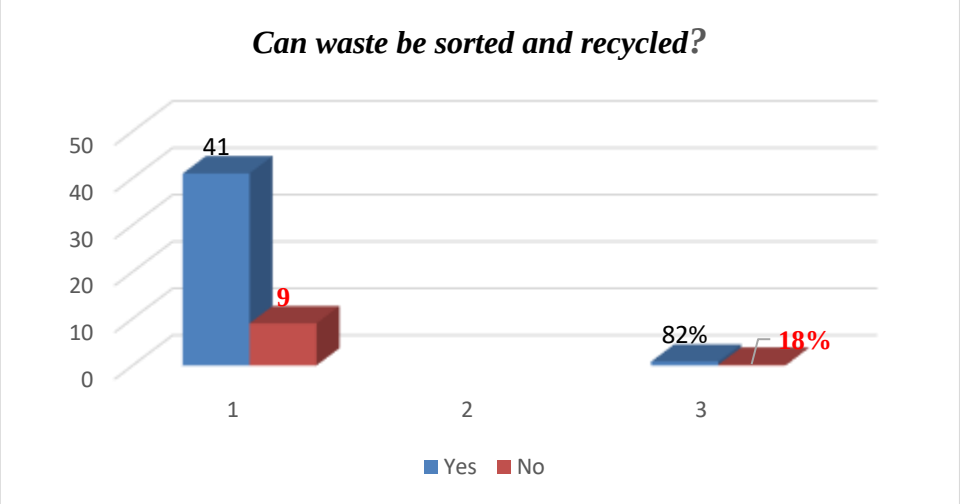


Figure 11. Sorted Waste and Recycled Resources

Figure 11, demonstrated that waste can be stored and recycled, so that the majority of the respondents said waste can be stored and recycled as well and the estimation of their answer were 82% for the 41 of respondents while 18 percent of the 9 respondents said that waste cannot be recycled as well as not be stored.

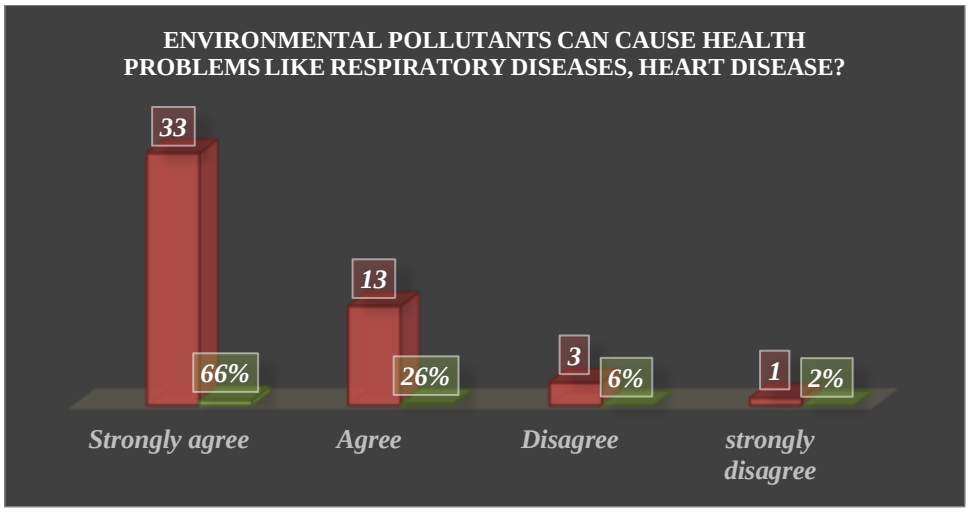


Figure 12. Health Problems and Disease

Figure 12, indicates that environmental pollution may cause health issues such as respiratory and heart maladies, thus, the findings indicates that 33(66%) were strongly agree that environmental problems can cause respiratory problems like asthma and heart diseases and we considered this value is higher value and 13(26%) of respondents were agree that respiratory and heart issues were more associated environmental pollutions, while other remaining of the respondents were disagreed and strongly disagree and the estimation were 3(6%) and 1(2%).

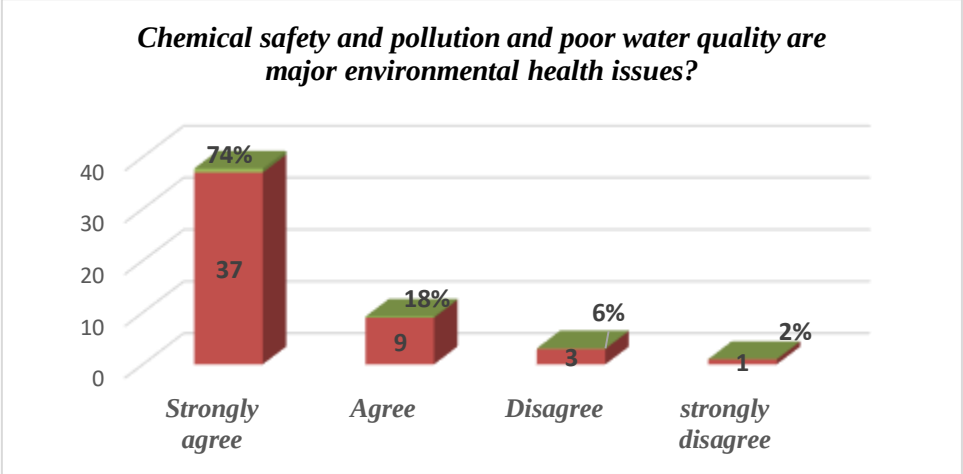


Figure 13. Environmental Health Issues

Figure 13, shows that 37(74%) respondents were strongly agreed that chemicals and pollutions as well as the poor water quality are considered the major issue of the environment, in contrast, 1(2%) were more disagreed that pollution and poor or low of water quality and chemical safety may contribute environmental issue and it may effect to the population and it may cause several health issues includes diarrhea it can be outbreak and cancer due to UV radiation, therefore, 9(18%) of the respondents were agreed that low quality of water and contamination and chemical safety may cause environmental problems as compared to those were disagreed and it was approximately 3(6%).

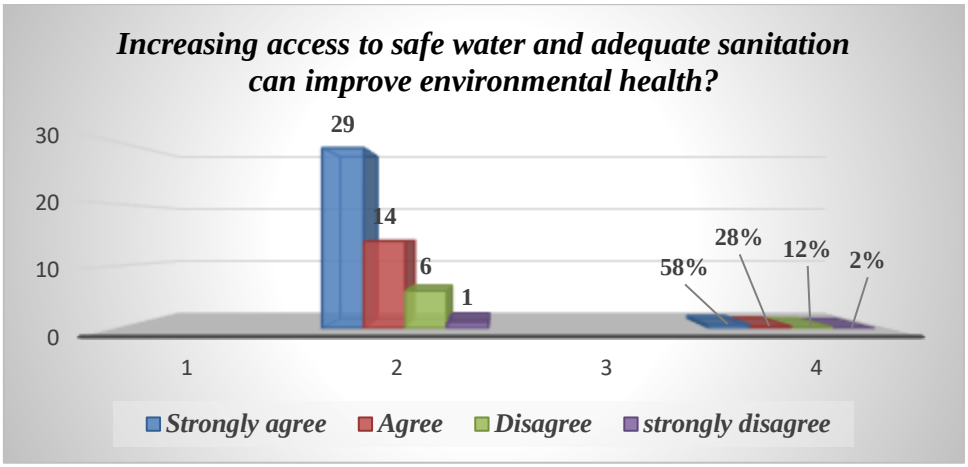


Figure 14. Increasing Access to The Water And Adequate Sanitation

Figure 14, demonstrated that 58% for the respondents of 29 were strongly agreed that enhancement of access to safe water and enough sanitation may improve environmental health, as compared to the disagreed people and it 1(2%) this finding we considered the minimum value, whereas 14 respondents of 28% were agreed that improving environmental health may contribute getting safe water and adequate sanitation, in contrast, those were dis agreed and it was about 6(12%).

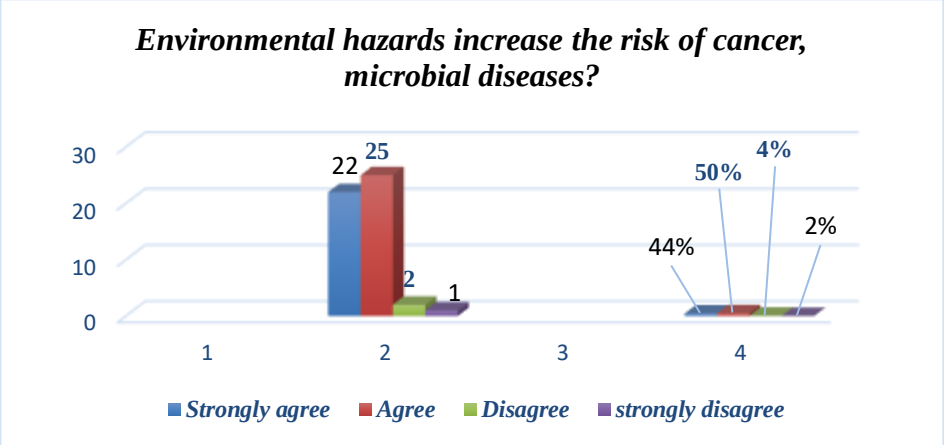


Figure 15. Environmental Hazards

Figure 15, indicates that 25(50%) respondents were agreed that environmental hazards enhance the risk of cancer incidence and also microbial diseases, as compared to those were strong disagree and it was calculated 22(44%), therefore, certain respondents were disagreed that environmental hazards may enhance risk of cancer and microbial diseases and it is about 2(4%) while the 2% remaining for the one respondents said strongly disagree.

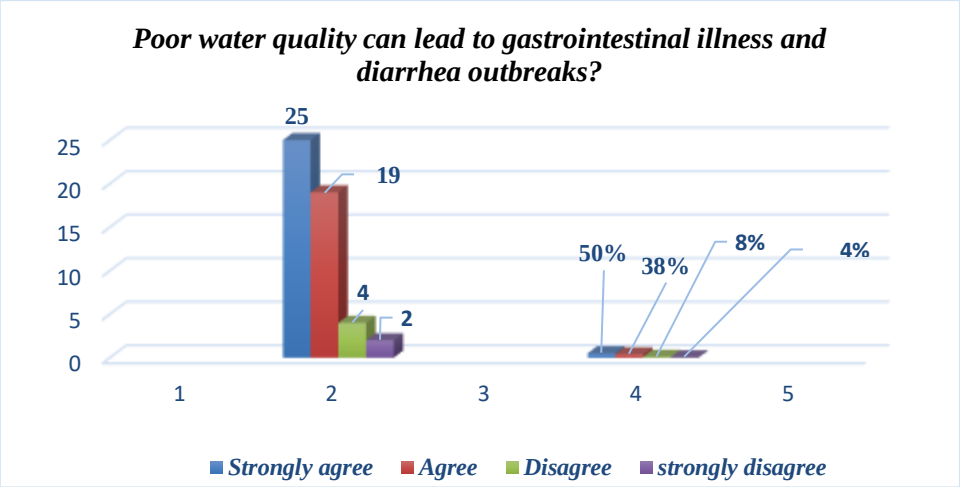


Figure 16. Water Quality and Gastrointestinal Illnesses

Figure 16, indicates that poor water quality can lead to gastrointestinal illness and diarrhea outbreaks, 25(50%) of the respondents were strongly agree as compared to those were strongly disagree and it was about 2(4%), therefore, 19(38%) of the respondents were agree that diarrhea and gastrointestinal diseases may associated poor quality of water, while 4(8%) remaining were ide disagreed that unsafe water may cause GIT illness and enhance diarrhea incidence.

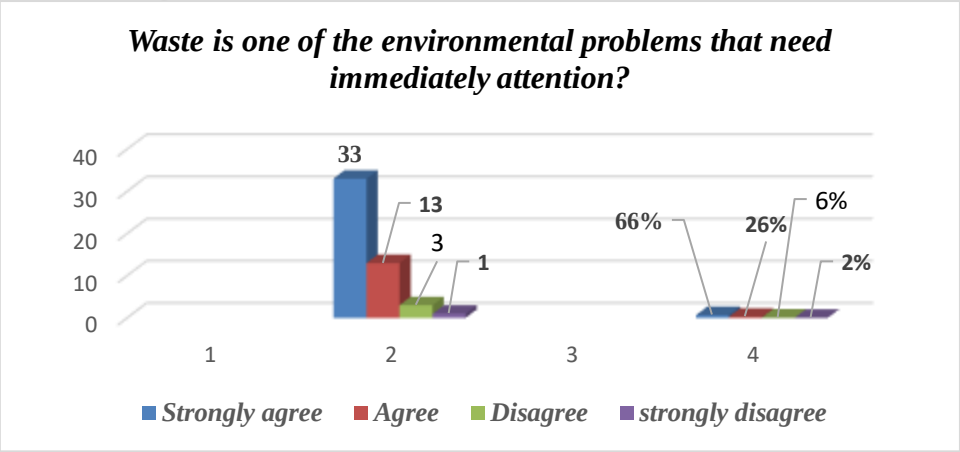


Figure 17. Environmental Problems

Figure 17, demonstrated that waste is one of the environmental issues that need immediately attention, 33(66%) of the respondent were strongly agree that waste is the one of the most environmental issues that need instantly attention, while 26% for the 13 respondents were agreed that waste need more attention to reduce environmental problems that effected to the population and causes numerous diseases, thus, other remaining respondents and their percentages were answered disagree and strongly disagreed that waste not need immediately attention to prevent environmental risks to the population and the findings were estimated 3(6%) and 1(2%).

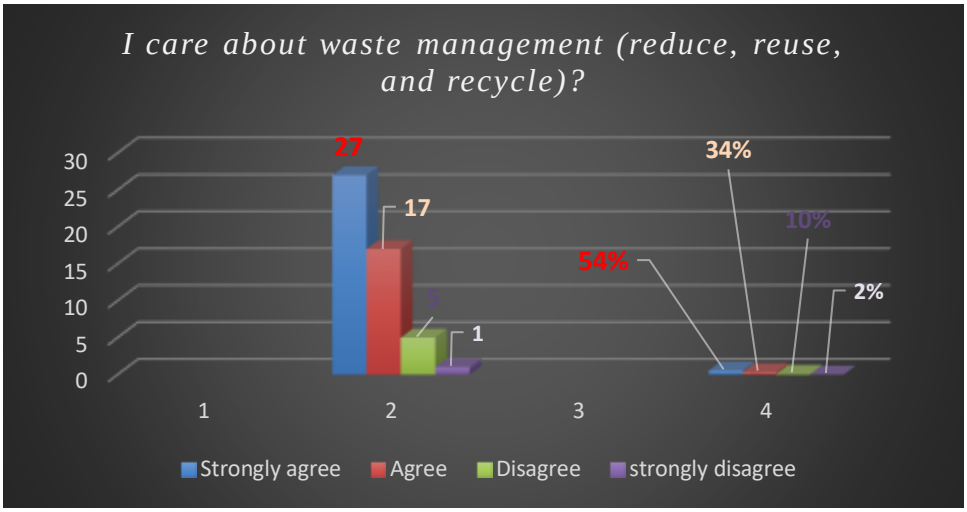


Figure 18. Care of Waste Management

Figure 18, demonstrated that 27(54%) of the respondents they strongly care about waste management while 17(34%) respondents were agreed, therefore, certain remaining of the percentages and their respondents as well they don't care waste management to reduce or reuse and recycled as well and the findings shows as 5(10%) as well as 1(2%). However, the large proportion of the respondents they care waste management to improve and eradicate the environmental issue in the country.

2.5. Discussion

In our study, approximately 68 percent of respondents were males and 32 percent were females; respondents' educational levels ranged from bachelor's degrees (30 percent) to master's degrees (15 percent), PHD degrees (3 percent), secondary level and non-formal education (1 percent); secondary level and non-formal education (1 percent); secondary level and non-formal education (1 percent); secondary level and non-formal education (1 percent); secondary level and non-formal education (1 percent); secondary level and non-formal education (1 percent (2 percent). In a similar study conducted by Abdikadir et al (2019), it was discovered that 41.7 percent of respondents were university level, with 61 respondents, while 13.3 percent of respondents were from secondary schools. The amount of respondents' knowledge on solid waste management was classified into two tiers in a recent study: Excellent knowledge and poor knowledge signify that some respondents replied yes to the questions, indicating that they have more ideas or knowledge about solid waste management, while others said no, indicating that they do not have adequate information about solid waste management. As a result, 82 percent of respondents have excellent knowledge that waste has more hazards or risks that cause environmental problems, while 18 percent have poor knowledge that waste may cause environmental risks, and 70 percent of respondents have perfect experience that waste pollutes the environment, while 30 percent have less knowledge. As a result, 80 percent of respondents stated that waste can be resourced, and 82 percent stated that waste can also be restored and recycled, whereas the lowest percentages of respondents stated that waste cannot be stored or recycled, estimated at 18 percent, and 20 percent stated that waste cannot be resourced. Furthermore, this finding is similar to that of Bofarraj M, who conducted a study in Al-Beida, Libya, to determine the knowledge attitude and practices of respondents toward solid waste management. His findings revealed that respondents had a positive attitude or had more knowledge about solid waste management. He defined it as a positive attitude toward solid waste management since 80.5 percent of the respondents had a good attitude toward it, compared to the remaining 19.5 percent who had never had a pleasant attitude toward it. In the current study, 74 percent of respondents strongly agreed that chemical and poor water quality can directly affect the environment and cause a variety of maladies that

can be severe or moderate, 58 percent of respondents stated that inadequate sanitation and low water quality can cause environmental issues such as diarrhea outbreaks, and around 50 percent of respondents stated that inadequate sanitation and low water quality can cause environmental issues such as diarrhea outbreaks, and around 50 percent of respondents stated that inadequate sanitation and low water quality can cause environmental issues such as diarrhea outbreaks.

Furthermore, 66 percent of respondents identified waste as requiring more attention in order to prevent environmental problems that pose a greater risk to the population, and 54 percent of respondent's care about waste management in terms of reducing, reusing, and recycling, implying that some respondents are unconcerned about the environment.

2.6. Conclusion

The environment is becoming a more crucial concern in world politics, the global economy, and people's lives. Environmental degradation is now a worldwide issue requiring a global solution - environmentally, economically, and politically. Solid waste management, in reality, interacts with city planning primarily at the source of waste generation: people and the built environment. Involvement of city planners in garbage management the data indicated that the Somali population had a high level of literacy. Because the majority of the population in Somalia now has more knowledge about the environmental health implications of solid waste management, the Somalia community has embarked on improving their environmental health to eliminate or reduce the maladies associated with environmental hazards. Furthermore, the findings show that the majority of the people is concerned about the environment and wants to eliminate trash that is harmful to the ecosystem's health. As a result of the investigation, it was discovered that waste management in Somalia's villages is a problem that requires immediate attention.

2.7. Recommendation

- Members of the community should be involved in waste management decision-making.
- Communities should be educated about trash management and given the chance to do so on their own.
- Communities should work to promote environmental health and remove or decrease environmental risks.

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