Sapientia Foundation Journal of Education, Sciences and Gender Studies (SFJESGS), Vol.6 No.2 June, 2024; pg.145 – 153
ISSN: 2734-2522 (Print); ISSN: 2734-2514 (Online)

ASSESSMENT OF THE IMPACTS OF OPEN DUMP SITES IN GANYE TOWN, GANYE LOCAL GOVERNMENT AREA, ADAMAWA STATE

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ABSTRACT

Assessment of the impacts of open dump sites in Ganye town, Ganye Local Government Area is a research work bent on buttressing the environmental and public health impacts of improper solid waste disposal within Ganye town. This study identified two research objectives and two research questions respectively to guide the study. The study adopted descriptive research design. The sample population of the study was 200 respondents and the data collection instrument was a self- structured questionnaire titled 'Open Dumpsites Impacts Questionnaire (ODIQ)'. The research questions were answered using chi square statistical formula. The study found that there were numerous problems faced by the people of Ganye in the effective management of traditional landfills which is due to lack of enlightenment of 82.5% of the people towards waste disposal and management. More so, the study found that 75% of the people in Ganye town suffer various health and environmental challenges as a result of the impacts of traditional landfills. Based on the statistical analysis from the findings of the study; the chi square value indicates (x^2) 9.270 with p-value of 0.010 which shows that there are numerous traditional landfills management problems. (x^2) value of 9.432 with p-value of 0.009 indicates that there are health impacts of traditional landfills on the people of Ganye town more so, (x^2) value of 10.260 with p-value of 0.006 shows that there are various environmental impacts of traditional landfills in Ganye town. Therefore the study recommended enlightenment of the people on the proper means of solid waste disposal and enforcement of regulations guiding proper waste disposal systems by the local authorities.

Keywords: Assessment, Impacts, Open Dump Sites, Wastes, Environmental Health.

Introduction

The daily generation of wastes has become a significant challenge particularly on the environment and public health in many cities in Nigeria, particularly in certain parts of Ganye town. The increase in waste generation and improper disposal seems to come about as a result

of population growth, lack of awareness on proper waste disposal and refusal to adhere to instructions by a seemingly stubborn population. According to Awosusi (2010), wastes refer to substances and materials that are either disposed of or required to be disposed of in accordance with national laws. Many urban areas in Nigeria lack effective waste management systems, leading to haphazard dumping, burning, or burying of solid wastes. The current global challenge is to develop an environmentally friendly waste disposal system, as highlighted by Olanrewaju and Ilemobade (2009) and Amadi, Olasehinde, Okosun, Okoye, Okunlola, Alkali, & Dan-Hassan, 2012a).

The global waste generation rate is increasing, with cities worldwide generating 2.01 billion tonnes of solid waste in 2016, equating to 0.74 kg per person per day. Due to rapid population growth and urbanization, it is projected that annual waste generation will rise by 70% from 2016 levels to reach 3.40 billion tonnes by 2020 (World Bank, 2019). Residents in developing countries, particularly the urban poor, suffer more from the impacts of poorly managed waste, which is often disposed of in unregulated dumps or openly burned. These practices lead to serious health, safety, and environmental issues, including the spread of diseases, contribution to climate change through methane emissions, and potential promotion of urban violence.

Open dumpsites are often established in uncompleted buildings, undeveloped lands, borrow-pits or erosion sites (Adewole, 2009). These open dumpsites can create a number of adverse environmental impacts such as generation of leachat, odour problems, eroding of surface vegetation and attraction of rodents (Amadi, Yisa, Okoye, & Okunlola, 2010). There has been an increasing rise in environmental pollution globally as a result of man's activities (domestic, industrial and agricultural), which includes: institutional wastes, street sweepings, commercial wastes, abandoned vehicles, as well as construction and demolition debris. The majority of substances composing municipal solid waste include paper, vegetable matter, plastics, metals, textiles, rubber and glass (Amadi, Nwankwoala, Dan-Hassan, Eze, Okunlola, Okoye, Alkali, Ako, Alabi, & Waziri, 2013). Proper waste management and efficient system of solid and fluid disposal techniques are lacking in most developing countries. Waste disposal techniques have created subtle and yet serious environmental pollution and ecological deterioration in many developing countries such as Nigeria. The manner in which municipal and industrial wastes generated are disposed in most urban areas in Nigeria is worrisome. The use of inadequate disposal system and lack of consideration of the topography, geology and hydrogeology are the causes of pollution arising from waste disposal in many developing countries (Amadi *et. al.,* 2010; Amadi *et. al.,* 2012a).

Moreover, solid waste disposal practices in Nigeria in the past have not been environmentally friendly (Amadi, *et al*., 2013). The recent edition of the United Nations' Human Development Report for Nigeria indicated that both solid and liquid waste disposal have been a source of concern as they contribute to a great deal of unsanitary conditions in cities in Nigeria. Nationally, about 58 percent of households dispose of their refuse at public dump sites. About a quarter of households dispose of their solid waste elsewhere into valleys, pits, bushes, streams or river side's, open gutters or on undeveloped plots of land. About 8 percent burn, 4 percent bury, while only about 5 percent of households have their solid waste collected in an organized way (United Nations' Human Development Report, 2012). The statistics seem to suggest that our waste management system as a nation leaves very much to be desired and

hence there is an urgent need to find pragmatic measures to ensure impassive management of the landfill sites (Environmental Protection Agency, 2003). The problem of solid waste disposal is one of the most serious environmental problems facing many cities in Nigeria. Waste management plays an integral role in human activities. Various ways of managing solid waste includes disposal by either burying or burning, reduce or reusing, recycling and energy generation. Solid waste management differs in developing countries like Nigeria, and in industrialized countries of the world like Germany.

Despite increasing awareness, there exists a notable gap in implementing effective waste management systems, especially in developing regions. Limited empirical research directly addresses the unique challenges faced by urban areas regarding waste disposal, associated health hazards, and broader societal implications. Addressing this gap necessitates targeted empirical studies and policy measures focused on sustainable waste management strategies, public health initiatives, and community engagement. These efforts are crucial to mitigating the adverse impacts of escalating waste generation on both local communities and the global environment. Therefore, this research work focuses on the impacts of traditional landfills and associated problems in Ganye Local Government Area, Adamawa State, Nigeria.

In most cities in developing countries, it is common to see huge heaps of domestic and allied wastes such as garbage, plant leaves, damaged agricultural produce, spoiled food materials, pieces of paper, polythene bags, old cloths, wood, abandoned metals, vehicle scraps, used tires, plastics, glass, dust, damaged electronics, industrial wastes, animal wastes, hospital wastes, sanitary pads, pampers, construction materials and demolition debris resulting from over-population, urbanization and industrialization (Amadi, *et al*., 2013). When these wastes are improperly disposed, which is usually the case in major cities in Nigeria; they constitute threats to air, land, water and man. During decomposition, it produces bad smell and serves as feeding ground for pests that spread diseases, blockage to drainage channels and creating a myriad of health-related and environmental problems. Leachates from the decomposition of these wastes at dumpsites are potential sources of soil and water pollution (Amadi, 2010). Therefore, the need for an efficient and cost-effective waste management technique that will guarantee protection to the soil, surface and groundwater systems cannot be ignored. Proper waste management and effective waste disposal system are required in Ganye town.

It is in the wake of the mounting challenges of improper waste disposal and the inability of the local authorities to deal efficiently with the menace that this study is necessitated. The guideline for landfill is also not followed. Thus dump sites should be at certain distance away from water bodies, airport, residence etc (EPA, 2003). The closeness of the Luggere dumpsite to the Ganye River, there is the need for research to continue to investigate the problems caused by the dump site in this town. Despite continuous efforts by local authorities and the government in general to deal with this crisis, little seem to have been achieved perhaps due to the inability of leadership to quantify the magnitude of the problem on the environment and public health in particular. This study assesses the impact of open dumpsites in Ganye town. In order to address this problem, the following research questions are set to guide the study.

Objectives of the study

The main objective of this study was to examine the impacts of traditional landfills and associated problems in Ganye Local Government area of Adamawa State, Nigeria.

Specific objectives are as follows;

i To examine the health impacts of traditional landfills on the people of Ganye town.
ii To identify the environmental impacts of traditional landfills in Ganye town.

Research Questions

i What are the health impacts of traditional landfills on the people of Ganye town?
ii What are the environmental impacts of traditional landfill in Ganye town?

Methodology

Descriptive survey research design was used to collect data to answer the research questions formulated for the study. Surveys are also appropriate methods when researcher has a high control over situation and high participation, in situation through pre-determined questions (Kimani, Thomas & Arasa, 2017). Consequently, the survey research method was used in this study since the research has strong conviction of high participation from the respondents, hence will be able to predict causal relationship between the independent and dependent variables to be studied.

The target population was 2,000 households in Ganye town of Adamawa State. The town was zoned into three. These are; nearest to the dumpsites, Zone A (Luggere), far from the dumpsites, Zone B (Sangassumi) and far off from the dumpsites, Zone C (Tudun Wada). Therefore, a representative sample of 200 respondents was selected for the study using purposive sampling technique. The research instrument used for the study was a self structured Open Dumpsites Impacts Questionnaire (ODIQ).

This study made use of descriptive statistics such as frequency counts and percentage for the analyses of the demographical data of the respondents while Statistical Package for Social Science (SPSS) version 22 (Chi-square) was used for the analysis of the research questions because it is more convenient, accurate and comfortable. This is possible since the study is intended to finding out the impacts of the landfills on the people of Ganye town.

Presentation of Results

Table 1: Health impacts of Traditional Landfills in Ganye town

Health impacts	Frequency	Percentage (%)
Frequently fall sick		
Yes	167	83.5
No	33	16.5
Total	**200**	**100**
Suffer typhoid due to contaminated water		
Yes	184	92
No	16	8.0
Total	**200**	**100**
Suffer malaria due to mosquito bite		
Yes	179	89.5
No	21	10.5

Total	**200**	**100**
Suffer cholera due to contaminated water		
Yes	164	82
No	36	18
Total	**200**	**100**
Suffer catarrh due to air pollution		
Yes	152	76
No	48	24
Total	**200**	**100**

The table 1 shows the health impacts of traditional landfills in Ganye town. People that frequently fall sick constitutes 167 (83.5%) of the respondents while 33 (16.5%) disagreed. Those that suffer from typhoid fever due to contaminated water were 184 (92%) while 16 (8%) disagreed, for suffer malaria due to mosquito bite 179 (89.5%) agreed while 21 (10.5%) disagreed, for cholera due to contaminated water 164 (82%) agreed while 36 (18%) disagreed and for catarrh due to air pollution 152 (76%) of the respondents agreed while 48 (24%) of the respondents disagreed. This shows that there are numerous health impacts of traditional landfills in Ganye town base on the responses of the respondents.

Table 2: Chi-square analysis on the health impacts of traditional landfills on the people of Ganye town

Location	Chi-square value (x^2)	Df	p-value	Remark
Nearest to landfills (Luggere)	9.432	2	0.009*	Highly affected
Far from the landfills (Sangassumi)	3.503	2	0.174	Less affected
Far-off from the landfills (Tudun Wada)	2.280	2	0.320	Not affected

Table 2 shows the chi-square analysis on the perceived health impacts on the people living in Ganye town. In the areas nearest to the landfills, the $\chi^2 = 9.432$ with p-value of 0.009< 0.05. It can therefore be stated that there are various health impacts and the people living in that area of Ganye town suffer various severe ailments such as typhoid, malaria fever, cholera, catarrh, dysentery and breeding grounds for mosquitoes. In the areas far from the landfills the $\chi^2 =$ 3.503 with p-value of 0.174> 0.05. This shows that there are no much health impacts of the landfills on the people living in the area. Furthermore, in the areas far-off from the landfills, the $\chi^2 = 2.280$ with p-value of 0.320> 0.05. This indicates that there are little health problems on the people living in the area thereby making the people not to suffer much ailments due to the impacts of the landfills.

Table 3: Environmental impacts of Traditional Landfills in Ganye town

Impacts on Environment	Frequency	Percentage (%)
Blockage of drainages		
Yes	171	85.5
No	29	14.5
Total	**200**	**100**
flooding		
Yes	130	65
No	70	35
Total	**200**	**100**
Reduce the aesthetic nature of the environment		
Yes	141	70.5
No	59	29.5
Total	**200**	**100**
Damage of local roads		
Yes	187	93.5
No	13	6.5
Total	**200**	**100**
Numerous littered round traditional landfills		
Yes	182	91
No	18	9.0
Total	**200**	**100**

The table 3 shows the environmental impacts of traditional landfills. For blockage of drainages 171 (85.5%) of the respondents agreed while 29 (14.5%) disagreed, for flooding 130 (65%) agreed while 70 (35%) disagreed, for reduction of aesthetic nature of the environment 141 (70.5%) agreed while 59 (29.5%) disagreed, damage of local roads 187 (93.5%) agreed while 13 (6.5%) disagreed and numerous littered round traditional landfills 182 (91%) of the respondents agreed while 18 (9%) of the respondents disagreed. This shows that there are numerous environmental impacts of traditional landfills in Ganye town base on the responses of the respondents.

Table 4: Chi-square analysis on the environmental impacts of traditional landfills in Ganye town

Location	Chi-square value (x^2)	Df	p-value	Remark
Nearest to landfills (Wuro Dole)	10.260	2	0.006*	Highly affected
Far from the landfills (Kobactuna)	0.063	2	0.969	Less affected
Far-off from the landfills (Thabu)	0.657	2	0.720	Not affected

Table 4 shows the chi-square test on the perceived environmental impacts of landfills site. In areas nearest to the landfills, the $\chi^2 = 10.260$ with p-value 0.006< 0.05.This analysis reveals that the area is highly affected by the impacts of the landfills. In areas far from the landfills, the $\chi^2 = 0.063$ with p-value of 0.964> 0.05.The analysis shows that this area is less affected by the impacts of landfills. Furthermore, areas far-off from the landfills, the $\chi^2 = 0.657$ with p-value of 0.720> 0.05.The analysis indicates that the areas are the least affected by the environmental impacts of landfills.

Discussion

The health impacts of traditional landfills as reported by the respondents; frequently fall sick 167 (83.5%) of the respondents agreed while 33 (16.5%) disagreed, for suffer typhoid due to contaminated water 184 (92%) agreed while 16 (8%) disagreed, for suffer malaria due to mosquito bite 179 (89.5%) agreed while 21 (10.5%) disagreed, for cholera due to contaminated water 164 (82%) agreed while 36 (18%) disagreed and for catarrh due to air pollution 152 (76%) of the respondents agreed while 48 (24%) of the respondents disagreed. Various health impacts of landfills sites abound on the residents of Ganye as it relates to the distance of the households from the landfills. The study found out that constant exposure of the people to the landfill sites result into various diseases and ailments of family and friends as health impacts of the landfills. Some of the ailments suffered by the people due to the landfills include water borne diseases such as cholera, typhoid and dysentery which are caused by drinking polluted and contaminated water. The water bodies get contaminated as a result of infiltration of water from the landfills that are around the houses. Various health challenges abound from landfills as reported by Adeleke (2000) and McMichael (2000) who both expounded the health challenges such as typhoid fever and cholera as a resultant effect of landfills. This study is in consonance with the findings of Amadi et. al., (2013) and Adekunle et. al., (2011) who revealed that respiratory disturbance in persons is due to exposure to waste sites. Similarly, Babayemi and Dauda, (2009) reported heat related ailments such as typhoid and malaria fever.

The environmental impacts of traditional landfills, revealed from this study include blockage of drainages, flooding, reduction of aesthetic nature of the environment and damaged roads. These are linked up as blocked drainage results to flooding and dirty environment and spoilt roads. This study is in consonance with the studies conducted by Geoffrey (2005) and Sam (2002) who all similarly reported that flooding is a major problem faced by residents whom localities are filled up with wastes in the gutters. More so, they revealed that the beauty of the environment is serious altered by the ugly sights of littered dumpsites. The findings of this study is in consonance with the report of Letcher and Vallero (2019) who reported that landfills cause damage to local roads and water courses. More so, Gana and Ngoro, (2014) reported that solid wastes in major towns and cities in Nigeria are dumped in drainages thereby blocking the free flow of water and hence causing its contamination.

Conclusion

This study had discovered that traditional landfills are littered all over Ganye town which seriously posses threats on the people. The people suffer various ailments not knowing that they are caused by the traditional landfills they have created. Hence, Ganye town is suffering the impacts and other associated problems of traditional landfills.

Recommendations

Based on the findings of the study, the following recommendations are put forward:

i. Since landfills cause various health challenges (which include typhoid, malaria, cholera and dysentery) on the people living in Ganye especially those who settle close to the landfills, it is recommended that there should be routine evacuation of the dumpsites to farms to serve as manure for crops. More so, there should be routine immunization and provision of treated mosquito nets to curtail rampant ailments in the communities.

ii. This study further recommends formation of environmental friendly clubs and societies in secondary schools which can be used to educate the younger generation on the impacts of the landfills and there resultant effects. More so, compulsory weekly environmental sanitations should be enforced by the local authorities

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