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An Assessment of Scavenging for Livelihood and its Health Implication at Gosa Dumpsite, Abuja, Nigeria

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Abstract

This study investigated the activities and socio-economic drivers as well as health implications of solid waste on scavenging at the Gosa dumpsite, Abuja. Out of the total of 520 registered scavengers with the Abuja Environmental Protection Board, 487 consented and each was administered a structured questionnaire. The questionnaire elicited information such as demographic (gender, age, marital status, ethnicity, nationality and level of education), socio-economic variables (years spent scavenging and quantity and type of waste scavenge per day) and the health implication from waste scavenging. The study revealed that all the scavengers were male, young and adults and live within the vicinity of the Gosa dumpsite scavenging waste materials such as bottles, papers, cartons, irons, plastics, aluminium cans and electronic wastes. More than 50% of the waste pickers scavenged as much as 20 kg of solid wastes per day and over 90% of them sell the scavenged solid materials to recyclers. Most of the scavengers (93%) do not use protective gears as they claimed not to know the adverse effects of toxic materials on human health. Symptoms such as headache, sore throat and eye irritation were reported by these waste pickers. The study concluded that awareness and monitoring programmes on the risk related to scavenging activities should be organised for the scavengers at the dumpsite. It was recommended that poverty and unemployment were the two major drivers of waste scavenging in the Gosa dumpsite, Abuja.

Keywords: Dumpsite; human health; poverty; scavenging; socio-demographic characteristics; solid waste; toxic waste; unemployment.

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1.Introduction

Any object or substance that is discarded or desired to be discarded because it is no longer useful is considered waste [8]. Human beings, animals, other living things, and all production and consumption activities all generate waste. Although waste materials have always been a part of the natural ecosystem, factors such as the size and diversity, waste materials can be reused in many of its activities. Municipal solid waste (MSW) management is the most major challenge facing developing countries due to their cumbersome, effects on the environment (breeding space for bacterial and fungi), breeding of mosquitoes and animal such as rats that transmit Lassa fever, pollution of air (odour), soil and water through leachate, a large quantity of land occupied and other adverse effects on the lives of people living close to the dumpsite, and if left unaddressed, it will become a problem. Increased waste generation and less concern about waste reduction and management have resulted from unprecedented population growth, growing community living standards (changing lifestyle), and urbanization. This attracts waste pickers (scavengers) to scavenge on this waste materials without the knowledge of the havoc scavenging has on their health. Thousands of people in developing countries make a living off of recycled trash. One of the primary difficulties in solid waste management in poor nations is livelihood and working conditions with a focus on waste solutions to improve recycling rates for poverty reduction. Animal scavengers provide organic waste regulatory services by feeding on carcasses or decaying food matter [11] while human scavengers (waste pickers) reduce the accumulation of solid waste materials such as plastics, metals, and so on. Scavenging, according to the International Labour Organization [7], is the manual sorting and selection of recyclable and/or recoverable materials from mixed waste materials at legal and illegal landfills, dumpsites, open dumps on streets, transfer terminals, and waste collection stations.Several research projects have been carried out in different parts of the world in order to ascertain the degree of harm that these activities do to the environment. According to [3], malaria, skin conditions, injuries and cholera are the most prevalent health issues among the scavengers in Masvingo and they suggested that improper Municipal Solid Waste (MSW) disposal poses a significant risk to public health and safety. [14] discovered that waste dumping can result in significant cation loading in water near dumpsites that exceeds permissible limits and which can adversely affect the health of the people living in the environment. The health, social and environmental implications of scavenging activities have been scientifically studied in certain African countries; nevertheless, despite the fact that scavengers may be found in every major Nigerian cities, information on Nigeria scavenger is scarce. The reasons people in Nigeria resort to scavenging are generalizations based on observations from other parts of the world. Similarly, the available information on the mechanism of operation and the health, economical and physical consequences of this activity was based on assumption rather than scientifically proven facts. Nonetheless, there is a need to provide knowledge about this growingly popular pastime. As a result, it's critical to give scientific information on the many features of scavenging, its health implications and its operators so that comparison assessments may be made between countries. Such an evaluation could lead to the development of an internationally acceptable policy that incorporates scavenging and scavengers into the development of an effective and efficient municipal solid waste management system. Waste scavenging is an ongoing activity in Gosa dumpsite, Abuja with minimal monitoring. As a result, this study looks on the solid waste scavenging activities at the study area which is the largest government-designated open dump in Abuja metropolitan. This study then investigated the knowledge, practice and the socio-economic drivers as well as

health implications of waste scavenging of waste pickers at the Gosa dumpsite, Abuja.

2. Research Method

2.1.sStudy Area

The study was carried out at Gosa dumpsite in the Federal Capital Territory (FCT), Abuja, the capital city of Nigeria between 2020 through 2022. Abuja was formed in 1976 from parts of the states of Nasarawa, Niger, and Kogi State. The city lies approximately between Latitudes 08^0 25′N and 09^0 20′N and between Longitudes 006^0 45′E and 007^0 39′E Greenwich Meridian. The FCT has a landmass of approximately 8,000 square kilometres and as at the 2006 census, the city of Abuja had a population of 776,298 making it one of the ten most populous cities in Nigeria [5]. The Gosa dumpsite is located at Idu in Abuja Municipal Area Council, one of the geopolitical zone subdivision of Abuja territory along Nnamdi Azikiwe International Airport Road, FCT (Fig. 1). The dumpsite has an area of approximately 90.8 hectares (222 acres, 0.908 km²) land with a rough topography and few elevated areas. The Gosa dumpsite is reported to be the largest and newest dumpsite where most of the municipal solid wastes (MSW) from the FCT are disposed off [1]. The dumpsite was opened in 1976 and closed in 1989 due to its long distance to human settlement. Nevertheless, it was reopened in 2005 when development to the city was extending towards it and it is still accepting solid wastes to date. At the time of the study, the facility had two official gates. Vehicles transporting waste materials from different parts of Abuja metropolis could enter through only one gate. Registered private sector participants and few vehicles owned by Abuja Environmental Protection Board (AEPB) were allowed access to the site from 10am through 4pm

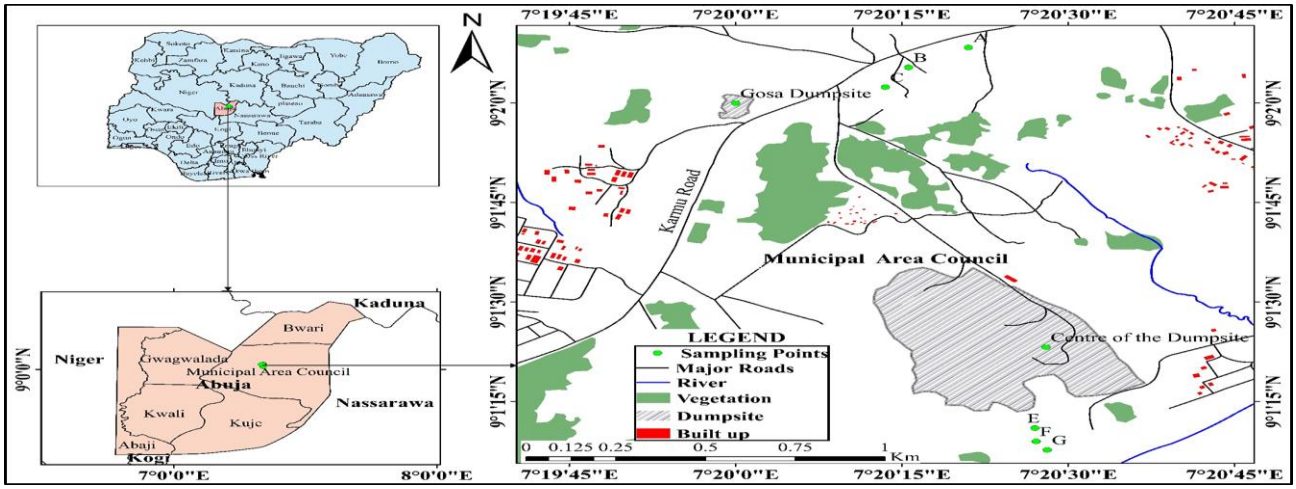

Figure 1: Map of Nigeria showing Abuja Municipal Area Council, and the Study Area Source: Abuja Master Plan

2.2 .Study Design

The study utilized primary data obtained from scavengers through questionnaire administration. Permission from the authorities to carry out the research work in the study area was obtained by the Abuja Environmental

Protection Board (AEPB). The study showed that a total number of 520 tents exist at the scavengers' camp and which is monitored by the AEPB authority. Women and minors are not allowed in the scavenger's camp.

figure1: Scavenging activities at Gosa dumpsite

2.3. Methology

About 520 Structured questionnaire was prepared which targeted all registered scavengers who live within the dumpsite. In the administration of the questionnaire, the convenience or accidental sampling method was used. This method entails taking a population sample from a nearby scavenger [2]. The total number (2194) of scavengers working at the Gosa dumpsite was determined by the scavengers' registered association, Bola Bola, while the total number (520) of legally tent residents was determined by the Abuja Environmental Protection Board (AEPB). The convenience sample method was used for the study because scavengers were usually more interested in recovering a large quantity of materials in the early hours of the day; in the afternoon, the main focus was on getting scavenged materials sold. As a result, scavengers were appeased for time to complete the questionnaire. The study revealed that it was better to conduct it before 10:00 a.m., when daily operations began. As a result, only a few who arrived early enough and were prepared to help us were sampled during each visit to the dumpsite with incentives. However, records were preserved to ensure that no one was questioned more than once. The 487 scavengers agreed on survey accounted for 93.7 % of the 520 scavengers registered with AEPB and occupying the tents. Descriptive statistics were used to analyzed the socio-demographic information of the respondents, health-related problems, and disease prevalence.

2.4. Results and Discussion

The study instruments had sections on socio-demographic information and knowledge of respondents towards obtaining information on solid waste recovery and management. The questionnaire was close ended and administered to the scavengers (waste pickers) at Gosa dumpsite. Out of the 520 registered scavengers, 498 were available while only 487 (93.65%) agreed to participate in questionnaire administration. The scavengers start daily operation at 10am and closes at 6pm even though individual have monopoly over their time. Table 1, showed the socio-demographic characteristics of scavengers living within the premises of Gosa dumpsite. All the respondents were male and Nigerians, about 41.1% of the respondents were within the age of 30 - 39 years.

About 91.2% of the respondents were married, 92.4% were Muslims and 90.8% were of the Hausa ethnic group. In terms of education, 94.3% of respondents had primary school education.

Table 1: Socio-demographic characteristics and impact of solid waste materials of respondents

Variable	Frequency	Percentage
Age range of respondents (in years)		
20 – 29	193	39.6
30 – 39	200	41.1
40 – 49	86	17.7
50 – 59	8	1.6
Total	487	100
Marital status of respondents		
Single	39	8.0
Married	444	91.2
Divorced	2	0.4
Widower	2	0.4
Total	487	100
Nationality of the respondents		
Nigerian	485	99.6
Other	2	0.4
Ethnicity of respondents		
Yoruba	11	2.2
Igbo	12	2.5
Hausa	442	90.8
Others	22	4.5
Total	487	100
Religion of respondents		
Christianity	35	7.2
Islam	450	92.4
Traditional	1	0.2
Agonist	1	0.2
Total	487	100
Highest education attained by respondents		
Informal education	258	53.0
Primary education	201	41.3
Secondary education	28	5.7
Total	487	100

All the scavengers live within the vicinity of Gosa dumpsite. The houses were made out of leftover materials like wood, furniture, and tarpaulin as shown in plate 2 and socio-demographic characteristics of the scavengers

revealed that waste scavenging in Gosa dumpsite was dominated by males (100%) and within the age of 20 and 55 years. Larger percentage of them are married, muslims and from Hausa ethnic group of Nigeria. The location of the study must have caused this and it was also observed that more than half of the waste pickers (53%) do not have basic education and as a result of low level of formal education and skills possessed by scavengers, opportunities for decent professions were limited. The findings was in agreement with [9] where the majority of waste pickers were males and secondary school dropouts. [15] observed a high percentage of male waste pickers which could be linked to religious practices and variation in the roles of female in different communities. Waste scavenging is labour intensive and requires some level of energy to drag the scavenged materials out of the dumpsite. This may be another reason why waste scavenging is male dominated. Table 2 showed the involvement in waste recovering and management, over 80% had spent more than 5 years at the dumpsite, 50.3% of scavengers recovered between 11-20 kg of waste per day while 94.9% sold the waste materials to the recyclers. Also, 90.8% of respondents were not aware that some waste component contain toxic material and that majority of them (93.0%) do not use protective and safety wares

Table 2. Involvement in waste recovering and management

Variable	Frequency	Percentage
Years spent in the community by respondents		
Less than one year	3	0.6
1-2 years	13	2.7
3-4 years	80	16.4
greater than or equal to 5 years	391	80.3
Total	487	100
Trade association the respondents belong		
Yes	487	100
No	0	0
Total	487	100
Quantity/weight in kg of waste recovered per day		
1 – 10	165	33.9
11– 20	245	50.3
21 – 30	77	15.8
Total	487	100
What respondents do with wastes recovered		
Reuse	0	0
Sell to recycler	462	94.9
Sell to recycler and repairer	25	5.1
Total	487	100
Concern of the respondents about their environment		
Very concern	6	1.3
Concern	42	8.6

Not Concern	439	90.1
Total	487	100
Respondents knowledge about the adverse effect of waste materials		
Aware	13	2.7
Not aware	474	97.3
Total	487	100
Awareness of the respondents about toxic/hazardous waste materials		
Aware	13	2.7
Not aware	474	97.3
Total	487	100
Respondents opinion on the disposal method		
Good	439	90.1
Bad	1	0.2
Not sure	47	9.7
Total	487	100

Figure2: Gosa scavenger's tents

The involvement in waste recovering and management revealed that waste pickers plays important roles in waste reduction as larger percentage of waste pickers recovered between 11 – 20 kg of waste per day over 90% of them sell the waste scavenged to waste recyclers. Different types of waste materials such as aluminium, bottles, papers, cartons, irons, plastics and metals were scavenged and sold to waste recyclers, but the majority target mainly metals especially aluminium cans and electronic waste because they have high economic value, which is sold to recycling companies at a relatively high price compared to other items. These waste pickers had even formed themselves into Abuja Environmental Protection Board recognised organisation called BolaBola. The organization was managed by elected executive members. The chairman, financial secretary, and treasurer positions were reserved for the longest-serving scavengers, but vice-chairmanship and secretary general positions were open to any registered member. These officers were paid an undisclosed monthly honoraria while every member pay #50 per week (Fridays) to the organisation purse. The organization operated without a formal

constitution, instead relying on oral conventions. The unwritten laws and the executive members were held in high regard and respect. This recognised organisation is a platform where the NGOs or government intervention programmes were used to reach out to them in terms of incentives supports, pass across any information and also to settle any disputes among the scavengers. Over 90% of the scavengers were not concerned about the odour and hygiene in their environment. In addition, over 97% were not aware of the toxic and adverse effect solid waste materials could have on their health. It is therefore not out of place to conclude that poverty and means of livelihood were major driver of waste scavenging in Gosa dumpsite, Abuja. Lack of protective equipment and awareness on how to handle potentially risky wastes such as batteries, paints, insecticides, bulb, cartridge and so on from the waste expose waste scavengers to multiple health hazards including diseases [6, 16, 9]. [9] also observed poverty and unemployment as major drivers of waste scavenging in Namibia. Waste scavenging is a risky profession that can lead to occupational health hazards and disease as a result of poor working conditions. The effect and health implications of lack of awareness and risk exposure on scavengers are presented in Table 3.

Table 3: Respondents Perception on Health Implication of Scavenging Activities

Variable	Frequency	Percentage
The use of safety materials by respondents		
Use	34	7.0
Not use	453	93.0
Total	487	100
Respondents' opinion on the negative impact of waste materials on health		
Yes	2	0.4
No	485	99.6
Total	487	100
If yes, how severe		
Highly severe	0	0
Severe	0	0
Not severe	2	100
Total	2	100
The hazards and risks exposures to scavengers.		
Insect sting	176	36.1
Cut from a sharp object	149	30.6
Skin reaction	147	30.2
Snake bite	15	3.1
Total	487	100
Respondents' opinion on how often they get sick since they started the job		
Daily	37	7.6

Weekly	66	13.6
Monthly	184	37.8
Yearly	193	39.6
Not at all	7	1.4
Total	487	100
List three major sicknesses you suffer in the last year		
Headache, Cough, Eye Irritation	91	18.69
Headache, Sore throat, Eye Irritation	249	51.13
Headache, Catarrh, Cough	30	6.16
Headache, sore throat, Injuries,	43	8.83
Headache, Injuries, Catarrh	74	15.20
Total	487	100
Ares there been NGOs and/or Government intervention		
Yes	371	76.2
No	116	23.8
Total	487	100
The NGO/Government intervention is in what form		
Cash	0	0
Kind	487	100
Total	487	100

According to the result shown In Table 3, Over 90% of them (scavengers) do not wear protective materials such as safety boot, hand cloves and nose mask despites of interventions from the Abuja Environmental Protection Board and some NGOs. Some of the scavengers believe that the safety boot is too heavy and will retard the scavenging activity. One may deduce from here that the waste pickers may equally lack the knowledge of havoc of picking waste from dumpsites. The most significant (36.1%) environmental danger faced by scavengers was insect sting. A variety of insects may easily breed from waste materials that decomposes quickly. The fact that Gosa dumpsite is being fed with over 51% of perishable organic waste materials [1], explains why waste transported to Gosa dumpsite decomposes quickly. On the dumpsite, flies, termites, snakes and scorpions among other dangerous animals are common. These insects' stings and bites could induce skin reaction and sickness. This helps to explain why skin reaction had over 30% of hazards and risk scavengers are exposure to, with cut from sharp object having 30.6%. Sharp object wounds are also a major hazard. Scavengers can sustain wounds from sharp objects such needles and syringes, broken bottles and glasses surgical blades, and metals. Hepatitis, AIDS, tetanus, and other life-threatening infections can be transmitted through wounds caused by these materials. Wounds can be easily obtained through scavengers' manual sorting of recovered materials while recovering materials from the dumpsite. All of this is in addition to the hazardous gases released into the environment as a result of chemical reactions between waste components. The preceding statements show that scavengers all across the world face environmental and health concerns, and that scavengers in Nigeria's dump site are no exception. This is an agreement with [12] who concluded that Scavengers, waste workers, and residents of communities within a 50 meter radius of dumpsites are all at risk of health problems. About 40% of

waste pickers at Gosa dumpsite claimed that they usually fall ill annually and over 50% of them suffered from headache, sore throat and eye Irritation in the last one year. [4] and [9], reported that 85% and 42% of waste pickers working directly at dumpsites became ill annually. This claim is in agreement with [10] who reported that there were substantial links between solid waste dumpsite and sore throat, eye irritations, diabetes mellitus, and hypertension. The diseases and illnesses that are experienced by waste scavengers can be attributed to the harsh conditions waste scavenging expose them to. In conclusion, those who collect recyclable waste for a living are 3% more likely to suffer ill health than those who do not [13].

3. Conclusion and Recommendation

The scavengers living within the dumpsite do not know the value of the use of personal protective equipment and do not have the knowledge of scavenging havoc. Scavengers help reducing the solid waste materials on the dumpsite to nearly perishable organic materials. This minimizes the amount of organic materials to be buried as well as the sort of materials that must be buried. As a result, the organic waste that remains can be easily converted into compost or organic fertilizer. Scavengers have essentially aided waste management authorities in lowering their financial and technological commitments. It is therefore recommended that scavenging should be controlled in order to ensure that operations are environmentally friendly, posing less risks to both operators and the general public. Monitoring programmes on proper ways to dispose solid wastes should be formulated and implemented both at national and state levels. Awareness programmes on the risks related to scavenging activities should be organised for the waste pickers that settle at the vicinity of Gosa dumpsite.

4. Constraints and Limitations of the Study

The work study is the result of extensive labour by researchers at the Institute of Ecology and Environment Studies, Obafemi Awolowo University, Nigeria.

Several obstacles were encountered during the field work, including but not limited to:

i) Respondent illiteracy;
ii) Language barrier, the need for an interpreter who could speak hausa local dialect
iii) Respondent reluctance to complete questionnaires, despite the close ended style and incentives.

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5. Competing interests

The authors have no competing interests

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