Impact of Environmental Sanitation and Livability of People in Ibadan South-West Local Government.

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Abstract

In Nigeria adequate environmental sanitation has not been strictly adhered to. The inadequate supply of sanitation facilities such as: public toilets, drainage, sewage networks, and poor sanitation practices does not support livability. Thus, it has contributed to various social and health problems in the country. Therefore, the aim of the study is to examine the impact of environmental sanitation on livability in Ibadan South West Local Government. to achieve this aim, the basic objectives are to: identify the sources of water, investigate access to water, examine vector control and hygiene practices and to investigate how regular the residents of the study area participate in environmental sanitation to enhance their livability. Both primary and secondary data were used for the purpose of this study. For adequate representation, a total of 399 respondents were sampled through the use of structured questionnaire. Descriptive and inferential statistic were used to analyze the data generated. Analysis of variance (ANOVA), simple percentages, graphs and tables were used to examine the regularities of people's participation in environmental sanitation practices and to present other findings of this study. The findings of this study revealed that there is good accessibility to public water supply. Also, this study shows that respondents do not regularly participate in the environmental sanitation. These have constituted to the spread of mosquitoes and other disease vector species due to inadequacies in control method by some resident. Therefore, the study recommends that governments, and other stakeholders in the environmental sector should liaise with the ministry of health to educate the residents of the study area on public hygiene practices which is more important to promote the livability of the residents for sustainable development.

Keywords: Environment, Sanitation, Environmental Sanitation, Sanitation Related Diseases.

Introduction

Conclusions from the various sanitation studies have suggested that health problems result from lack of sanitation facilities (Muslem and Sudhir, 2005). Sanitation facilities include stand-pipes, toilet amenities like water-closet, solid-waste disposal amenities and infrastructural facilities. Poor environmental sanitation practices exhibited in the disposal of solid waste, wastewater and excreta, cleaning of drainage including personal, household and community hygiene significantly contribute to infant and child mortality (Mmon and Mmon, 2011; UNICEF,

2007; Amadi and Iwuala, 2005; WHO, 2005). Thus, environmental sanitation is a channel to improved quality of life of the individuals and a contributor to their social, economic and physical development (Olowoporoku, 2013). Numerous studies have shown that the incidence of many diseases is reduced when people have access to, and make regular use of adequate sanitary installations (Aremu, 2012). The transition to improved sanitation is accompanied by more than a 30% reduction in child mortality (e.g. Esrey et al, 2001) while sanitation reduces morbidity by almost 37% (Bartram et al., 2007). Musleh and Sudhir (2005) observed that safe sanitation promotes health; improves the quality of environment and the living standard of the community. While inadequate sanitation can cause several diseases, which are transmitted from different sources to human via contaminated hands, soils, water, animals and insects. According to the International Water and Sanitation Centre, the term ‘‘environmental sanitation’’ is used to cover the wide concept of controlling all the factors in the physical environment which may have an impact on human health and well-being (IRC, 2006, p.7). Poor environmental sanitation practices exhibited in the disposal of solid waste, wastewater and excreta, cleaning of drainage including personal, household and community hygiene significantly contribute to infant and child mortality (Mmon and Mmon, 2011; UNICEF, 2007; Amadi and Iwuala, 2005; WHO, 2005). This is contrary to the notion of environmental sanitation which aims at developing and maintaining a clean, safe and pleasant physical environment in all human settlements (IRC, 2006; FRN, 2005).

WHO and UNICEF (2000) and POSTnote (2002), noted that the following diseases can be largely presented with basic sanitation and hygiene. They also identified that their impact on human race as thus: Diarrhea- causes an estimated two million deaths per year, mostly among the children under the age of five. Cholera-as of September, there were 106,547 reported cases of cholera and a total of 3,155 reported deaths in 2002. Schistosomiasis (bilharza)-infects 200 million people, of which 20 million people suffer the consequences. Improved water and sanitation may reduce it by 77 percent (POSTnote, 2002). Trachoma-causes blindness in 6-9 million people. Access to sanitation may reduce it by 25percent (POSTnote, 2002). Intestinal worms-infects about a third of the population in developing countries; improved sanitation will control their transmission. Hook-worms cause malnutrition. Using concrete slabs to cover pit latrines can prevent them from being transmitted to humans. Other related diseases identified are: Hepatitis A and B, Dysentery, tropical diseases like malaria and skin infections

The need to combat waste generation and prevention of diseases as a means to promote environmental sanitation in Ibadan made the Oyo state government to establish three institutional bodies. World Bank, (2014) explained these bodies with their functions: The Oyo State Ministry of Environment and Habitat which has overall responsibility for the protection, maintenance and development of the environment in the State, including solid waste management. The Oyo State Solid Waste Management Authority (OYOWMA) which has the direct and operational responsibility for solid waste management in the Ibadan metropolitan area. The Authority oversees waste collection, street cleaning, transport, the management of dumpsites, and the granting of operating permits to private waste contractors. OYOWMA also monitors the activities of these private waste contractors. OYOWMA has the authority to charge fees for the registration and subsequent renewal of private refuse collection licenses. . It is apparent that there is an informal sector that collects waste in Ibadan either for a fee or by salvaging any recyclable materials in return

(Sunday, 2012) (Wahab, 2012). There were no proper orientation and training as to how to keep the environment clean and how best to dispose waste in order to prevent diseases and other health hazards that could result from poor environmental sanitation (Olorunda, 2006).

Statement of the Problem

The beauty of any environment lies on its good sanitary condition, this is so because when an environment is clean the lives of citizenry are not threatened by illness or diseases. The problem of environmental sanitation in all nation is as a result of urbanization which is accompanied by industrialization and public development. The fact is that the discharge from public place is toxic in nature and a way of leading to underdevelopment in the country. Environmental sanitation shows a need for human environment to be sanitized which can help to limit and to control some environmental diseases induced by man or the natural environment. Despite the setting up of Oyo State Waste Management Authority (OYOWMA), the situation has remain largely characterized by indiscriminate dumping of wastes, such as food waste, paper, polythene, and scrap metals among others in most part of the city. Improving environmental sanitation is known to have a significant beneficial impact on health both in households and across communities. In most cases, drains are clogged or totally blocked and many compounds are hemmed in by solid waste, posing health threats to children who play and live around the area. Several efforts have been made by the Oyo State Government to ensure that the city is always clean. It has engaged the services of private waste management companies to ensure that streets are always cleaned and also to ensure that communal dumpsters are emptied regularly.

However, the behavior and attitude of the inhabitants towards sanitation do not augment this effort. People do not seem to care about good environmental sanitation practices and constantly litter indiscriminately without considering the future effects of these poor sanitation practices on their health. If appropriate efforts are not made to halt such practices, the city will continue to spend the greater part of her resources in an attempt to ensure good environmental sanitation without success. Poor environmental sanitation is a serious health risk and an affront to human livability. There is need for environmental awareness through the media, Schools, Hospitals etc. to educate people on the reason to have a clean environment. Therefore, this study seeks to assess the environmental sanitation on the livability of people in Ibadan South West Local Government area.

Study Area

Ibadan is the capital of Oyo State located in south-western Nigeria. It lies between latitude 7°23′47″N and 7.39639°N and longitude 3°55′0″E 3.91667°E. It is the third most populous city in Nigeria after Lagos and Kano and it is the country's largest city by geographical area. At the time of Nigeria's independence in 1960, Ibadan was the largest and most populous city in the country, and second most populous in Africa after Cairo. It has a land mass of about 3,080 km². In terms of the position, Ibadan shares a boundary with Kwara state (Ilorin) in the north, Republic of Benin in the west, Ondo state (Akure) in the east and Ogun state (Abeokuta) in the south (Frederick et al, 2010).

Ibadan is the fourth largest state economy in Nigeria, and the second non-oil state economy in Nigeria. Ibadan is a major center for trade in cassava, cocoa, cotton, timber, rubber and palm oil. It is a home to several to several industries such as Agro allied, Textile, Food processing, Health Care and Cosmetic, Tobacco processing and Cigarette manufacturing, Leatherworks and furniture making Etc. There are several cattle ranches, a

dairy farm as well as commercial banks. There are dozens of banks and insurance firms that service the city's millions of inhabitants. The main economic activities engaged in by the people of Ibadan include Agriculture, Trade, Public service employment, Factory work, Service sector/Tertiary production. It serves as the headquarter of the International Institute of Tropical Agriculture (IITA) that makes agricultural research which helps to boost the economy.

Ibadan has a tropical wet and dry climate with a lengthy wet season and relatively constant temperatures throughout the course of the year. Ibadan wet season runs from March through October and dry season runs from November to February during which Ibadan experience the typical West African harmattan. The mean total rainfall for Ibadan is about 1420.06 mm, falling in approximately 109 days. There are two peaks for rainfall, June and September. The mean maximum temperature is 26.46 °C, minimum 21.42 °C and relative humidity is 74.55%. It had a population estimate of about 4,000,000 as at 2016. The Ibadan people of Nigeria, are among the most amazing and intriguing sets of people you would ever meet. Ibadan people are known to be warriors in the time when war was a determiner of peaceful acquisition of kingdoms. They are also hardworking people who value trade and agriculture. Ibadan are ones who are easily recognized as their tribal marks of three or more vertical and horizontal lines gives them away. These marks are given at birth by local surgeon and it is for the sole reason of identification and in some rare cases, beautification. An Ibadan person can never go wrong with another of its own because they connect on everywhere and level of the world. They commonly refer to themselves as 'Omo iya' (Kinsmen) and are as an open to other tribe of rich Yoruba race (Aderonkemi, 2012).

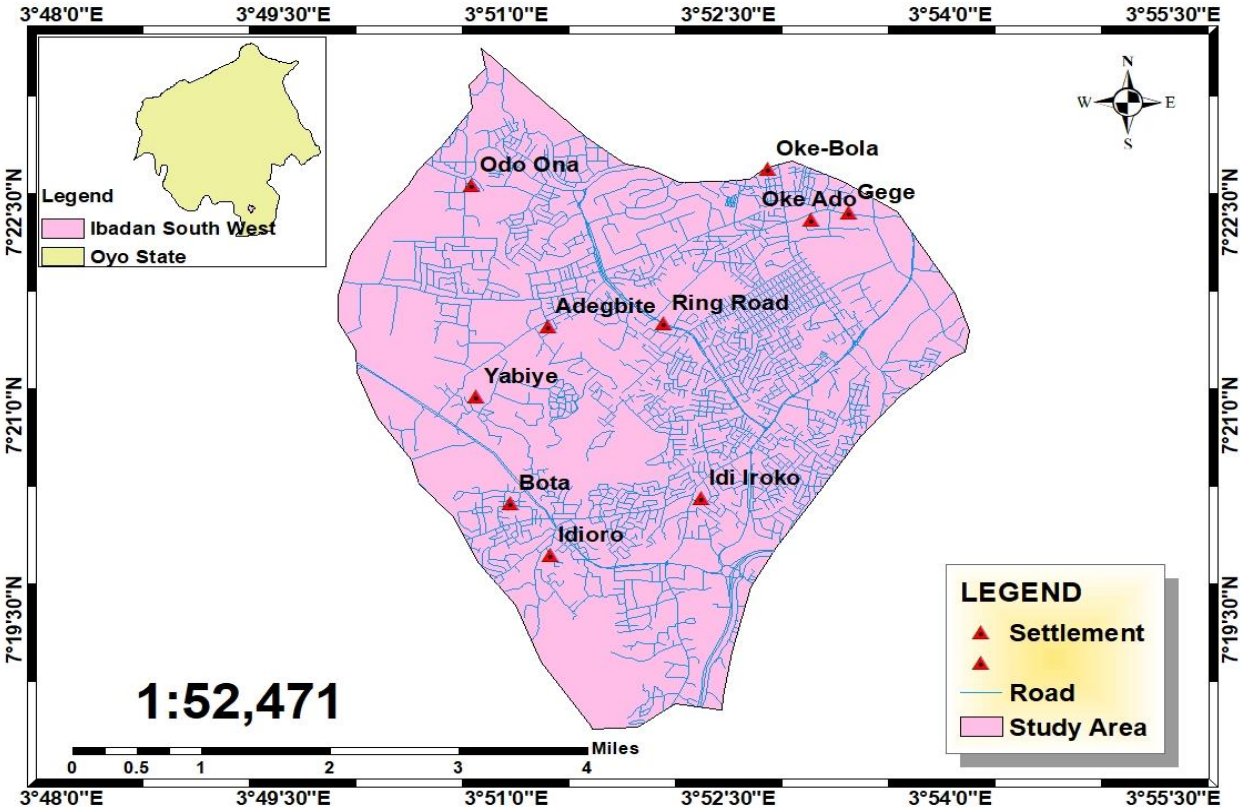

Figure 1. Settlements and Road Network in Ibadan South West Local Government, Oyo State.

General access to environmental sanitation facilities and services by citizens remains very poor (Akpabio, 2012). Nigerian cities are characterized by rapid population growth which is not accompanied by a corresponding increase in the delivery of environmental sanitation facilities and services capable of enhancing environmental sanitation practices. The resultant effects of these are unsanitary and unhealthy environmental conditions that are prevalent in Nigerian urban centres (Daramola, 2012). The facilities are provided by Oyo state Rural and Water Supply and Sanitation (RUWASSA). There is a prevailing belief that the facilities should be provided by the Government to access good sanitation facilities, the poor and the low-income earners have decaying sanitation facilities or none. Sanitation facilities are mostly shared by more than one family especially in the low-strata areas. Household Sanitation facilities in Ibadan like pit latrine, flush toilet and VIP latrine are either open or closed facilities in the study area.

The aim of this research is to examine the impact of environmental sanitation on livability in Ibadan South West Local Government. To achieve this aim, the specific objectives are to; Identify the sources of water in Ibadan south west local government. Investigate access to water in the study area, examine disease vector control and hygiene practices in Ibadan south west local government and investigate how regular the residents of Ibadan south west local government area participate in environmental sanitation to enhance their livability.

Materials and Methods

Both the primary and secondary source of data were used for this study**.** The source of primary data include: socio-demographic characteristics, sources of water, water accessibility, disease vector control and hygiene practices, and the regularity of residential participation in environmental sanitation while the secondary data source include: population figure from National Population Commission and map of the study area collected from the ministry of Land Housing and Survey Ibadan.

Graphics of Data Analysis

Table 1: Method of Data Analysis

Objectives	Data type	Data analysis technique
Objective one: Identify the sources of water	Sources of water, water sources location, kind of water the resident drink	Frequency and Percentage distribution
Objective two: Investigate access to water	Network supply of water, duration of household running water from the network, Liters of water used in a household per day.	Frequency and Percentage distribution
Objective three: Examine Vector Control and Hygiene Practices	Common vector disease in the household, control measures, method of waste disposal, availability of toilet, kind of toilet used in the house, hand washing after toilet use, duration of bathing, drainage type	Frequency and Percentage distribution and Bar Graph
Objective four: Investigate how regular the resident participates in environmental sanitation	Period of participation in environmental sanitation, active participation in environmental sanitation, enquiry on violation of environmental, enquiry on movement of vehicles during sanitation.	Analysis of Variance (ANOVA)

Source: Author Field Survey, 2018.

Results and Discussion

Sources of Water in the Study Area

Sources of Water

As presented in Table 2, only 2 (0.5%) of the respondents sourced water for domestic uses from rain, while 76 (19%) and 136 (34.1%) sourced water from pipe borne water and well respectively. Majority that is 170 (42.6%) of the respondents sourced for water from borehole.

It can be deduced from the above that most of the respondents sourced water relatively safe sources. This is in line with the study of Munir (2015) which revealed that major sources of water in Nigeria included wells, public pipe water which is epileptic, bottled and sachet water, and rainfall. This means that most of the respondents have to travel a reasonable distance before getting to their sources of water. These findings corroborate the position of Adeleye, et al., (2014), the study revealed that due to unavailability of regular water supply and the long distances covered by the inhabitants of Kpakungu to obtain water and that 50% of the inhabitants travelled between 201-400 meters to obtain water for their daily use. The study revealed that the distance to water supply is less than 100 meters for those with home built wells, taps, and bore holes, more than 100 meters for those going to neighbours or streams to fetch water for their daily use, and more than 300 meters for those that cross the streets to fetch water from boreholes. In the light of this, mothers are prevented from domestic work and most children are kept away from school.

Source of Drinking Water

Drinking water supplies is required to meet guidelines for microbial and chemical contamination (Mohammed, 2016). Figure 3 shows major sources of drinking in the study area, as revealed on the figure, most of the respondents 216 (54.1%) sourced drinking water from borehole, while 93.4 (23.4%) and 79 (19.8%) sourced drinking water from bottle/sachet water and well respectively. Only 4.0 (1.0%) sourced drinking water from rain. It can be observed from the findings that more than half of the respondents sourced drinking water from relatively safe sources. This is in line with the study of study of Obeta (2016) on pattern and problems of domestic water supply in rural communities in Enugu. The study revealed that 32% of the respondents rely on private boreholes for their water needs; 26.5% depend on water vendors, while the rest depend on contamination-prone streams, rivers, unlined and unprotected wells, harvested and stored rain water. Thus, the proliferation of private bole-holes and wells, including commercial water tankers, sachet water sellers, among many others (Ali, 2009).

Sources of cooking water

Similarly, to Figure 3, Figure 4 shows major sources of water for cooking. More than half i.e. 242 (60.7%) of the respondents sourced water for cooking from boreholes, while 129 (32.3%) sourced water from well. Only 20 (5.0%) and 8 (2.0%) of the respondents sourced water for cooking from river and rain respectively. It can be observed from the above table that borehole is the major source of water for domestic activities in the study area. This may be linked to advancement in borehole drilling technology in Nigeria.

This finding corroborates the results of Ajibade, Adewunmi, Ojo, Babatola and Oguntuase (2015) in their study on issues, challenges and management of water supply and sanitation in Nigeria, the study revealed that the principal domestic uses of water include drinking, washing, and bathing. Their study further revealed that 28.27% (39.3 million) on hand dug well sources, 24.38% (33.9 million) on pipe borne water, 11.83%

(16.4 million) on borehole water sources, and 1.7% (2.4 million) on water vendors.

Availability of Public Water Supply

It was revealed in table 3 that more than half 254 (63.7%) of the respondents used government water supply in their area, while 145 (36.3%) of the respondents indicated that there is no public water supply facilities in their locality. This result is similar with the findings of Adeleye, Medayese and Okelola (2014) in their study on water demand and sanitation problems in Minna. The researchers found that 60% of the respondents have access to pipe borne water (but this does not mean they have regular supply of potable drinking water). Similarly, the study of Ezenwaji, Eduputa and Okoye (2016) revealed that water supply from the government was delivered to residents of Enugu in a most intermittent manner..They added that , the intermittent service is not as a result of the fact that the construction of the water scheme was originally deficient, but rather it was due to ..

lack of proper maintenance of the equipment at the head works, silting of water sources and channels as well as heavy water losses form the water transmission and distribution lines. In line with this, Obeta (2017) stressed that water schemes developed by governments and NGOs in the southern parts of Nigeria are largely non-functional. The quantities of water demanded and supplied vary widely

Frequency of Public Water Supply

With regards to frequency of public water supply, as seen in Table 4, most of the respondents 90 (22.6%) indicated that public water supply in their areas is available for more than 12 hours per day, while 46 (11.5%) of the respondents indicated that although there are public water supply facilities in their area, yet they are not connected to the facilities. Only 26 (6.5%) indicated that public water supply is available just once per week. Also, 62 (15.5%) of the respondents have 24-hours access to water supply in the supply

Table 2: Sources of Household Water

Sources	Frequency	Percentage (%)
Pipe borne water	76	19.0
Well	136	34.1
Bore-hole	170	42.6
Stream/river	15	3.8
Rain	2	0.5
Total	399	100.0

Table 3: Availability of Public Water Supply

Availability	Frequency	Percentage (%)
Yes	254	63.7
No	145	36.3
Total	399	100.0

Source: Author's fieldwork, 2018

Table 4: Frequency of Public Water Supply

Frequency of Public Water Supply	Frequency	Percentage (%)
Not connected	46	11.5
Less than 4hours per day	30	7.5
24 hours	62	15.5
More than 12 hours per day	90	22.6
Once a week	26	6.5
No public water supply	145	36.3
Total	399	100.0

Source: Author's fieldwork, 2018

From the table (4), it can be observed that almost half of the respondents have no access to public water supply. This finding corroborates that of Mohammed (2016), that 69 million Nigerians do not have access to improved source of water. Furthermore, his study revealed that majority of the respondents having access to pipe-borne water receive poor quality of the service. He added that almost all those provided from public utilities in Taraba State receives water on an intermittent basis

Daily Water Usage

As shown in Figure 5, more than 30.0% of the respondents used between 30 and 50 litres of water for domestic household activities per day, while more than 20.0% used between 10 liters and above 50 liters for domestic activities. Only 7.0% of the respondents used below 10 liter per day. This shows majority of the respondents used less than the WHO 120 liters of water per person daily to meet domestic water utilization and function effectively.

The implication of this is that most of the respondents may engage in poor sanitation practices such as not washing hand after using the toilet and open space defecation. According to Samson (1999) factors such as under-funding, corruption, industrial and urban pollution, infrastructural decay and inadequate power supply contributed to poor access to water supply in Nigeria

Disease Vector Control and Hygiene Practices in the Study Area

Common Household Vector Species

As revealed in Table 5, 249 (62.4%) of the respondents indicated mosquito as the most common disease vector in the study area, while 92 (23.1%) and 44 (11.0%) indicated rat and cockroach respectively. Only 8 (2.0%) indicated bedbug, while 6 (1.5%) indicated a combination of mosquito, rat and cockroach. These may be linked to poor environmental condition. The implication of this is that the respondents are susceptible to poor environmental condition induced diseases such as malaria, cholera and diarrhea.

Table 5: Common Household Vector Species

Household Vector Species	Frequency	Percentage (%)
Mosquito	249	62.4
Rat	92	23.1
Cockroach	44	11.0
Bedbug	8	2.0
Mosquito, rat and cockroach	6	1.5
Total	399	100.0

Source: Author's fieldwork, 2018

This is in line with Ekong (2015) who stressed that vector-borne diseases constitute major health problems in Nigeria. According to him, malaria, a highly endemic vector borne disease, remains one of the five leading causes of morbidity and mortality among children below the age of five years and pregnant women Malaria along with other important endemic vector-borne diseases such as Onchocerciasis (River Blindness) and other Filariasis, Schistosomiasis, Yellow Fever and Trypanosomiasis.

Disease Vector Control Practices

Figure 6 shows common vector control methods adopted by the respondents. Most of the respondents 246 (62%) use insecticide, while 4 (1.0%) used local method. Also, 82 (21%) and 55 (14%) used trap and mosquito net in controlling disease vectors in the study area. Only 6 (1.5%) of the respondents do not adopt any method. This corroborate the findings of Olowoporoku, (2017) that adequate environmental sanitation has not been strictly adhered to in Nigeria. Table 5 shows that the most common household disease vector is mosquito which is as a result of not adopting any means of control.

It was observed that some of the respondent were not lettered and ready to learn. Their attitude towards vector control practices can lead to the spread of different diseases such as malaria, typhoid cholera, diarrhea and other endemic diseases. However, It is safe to say that insecticide is the major vector control method in the study area. This is not without health implication; over exposure to insecticide has been linked to respiratory problem, irritation, skin reaction and catarrh to mention a few.

Method of Waste Disposal

More than one-quarter 170 (42.6%) of the respondents disposed their solid waste through government agency, while 139 (34.8%) disposed their waste through private waste collector. Also, 70 (17.5%), and 18 (4.5%) of the respondents disposed their waste in rivers/streams and on communal dump sites respectively (figure 7). Only 2 (0.5%) of the respondents disposed their waste along roadside. However, It was observed that most of the wastes generated are indiscriminately disposed. The implication of this is that the stench smell may attract diseases such as malaria, cholera, diarrhea and typhoid. Also, due to attraction of flies and mosquitoes from the polluted areas, it may lead to contamination of air and water sources. Essentially, the common disease vector among the respondent is Mosquito (table 5). Unsanitary condition provides conducive environment for the growth and survival of disease vectors in the study area.

In line with this, the study of Adeleye et al., (2014) revealed that solid wastes generated in

the study area are disposed indiscriminately, as most of the inhabitants either dispose their waste in drainages, open fields and at the side of the road. This is due to the inadequacy of the waste collection points. In the same vein, Okecha (2000) stressed that in most Nigeria societies, both domestic and industrial waste are indiscriminately disposed, urban residents dump solid wastes carelessly or haphazardly – anywhere they deem fit. Similarly, Ekong, (2015) was of the opinion that position of faecal matter near homes, contamination of sources of drinking water (sometimes caused by poorly designed or maintained sewage system), dumping of refuse and sweeping into the gutters, defecating and disposing of faeces by the street corners and waterways are all unwholesome practices that pose potential risk to the development of diseases. Water quantity is as important as water quality). In line with Ajibade et al., (2015) pointed that when rain falls; all the waste disposed on land could also get washed down with the runoff into the surface water bodies as non-point source pollution. The implication of this according to them is that people are potentially at the risk of an epidemic outbreak.

Availability of Toilet Facility

Table 6 shows the availability of toilet facilities in the study area. More than half that is 379 (95%) of the respondents have toilet facilities, while only 20 (5%) of the respondents do not have toilet facilities. This explains why there are pockets of indiscriminate disposal of faecal waste in the study area. Ekong (2015) revealed that most of the study population have access to toilet facilities.

Type of Toilet Facility

As seen in Figure 8, more than half that is 149 (71.7%) of the respondents have water closet toilet facilities, while 63 (11.1%) use Ventilated Improved Pit (VIP). Also, 14.0 % use bucket latrine, while 3.3% use pit latrine with slab. The implication of this is that, where water is not available, respondents have no option than to practice unwholesome sanitation habit such as 'short-putting'', while m

This corroborates the study of Ajibade et al., (2015) which revealed that 54.6% (75.9 million) Nigerians use pit latrines, exclusively, 13.71% (1.91 million) use water closet, exclusively, 0.58% (806, 200) use the bucket system, and 31.16% (43.3 million)

Hygiene Practices

Washing of hands after defecation and before preparing food is of particular importance in reducing disease transmission, this has been adopted by Nigeria's in the control and spread of Ebola Viral Disease (Ekong, 2015). Table 7 shows that 311 (77.9%) of the respondents washed their hands after a visit to the toilet, while only 84 (21.1%) do not wash their hands. Also, most 142 (35.6%) of the respondents bath daily, while 117 (29.3%) and 24 (6%) of the respondents bath once per day and twice per day respectively. Only 24 (6%) of the respondents bath twice per week. It can be observed from these findings that majority of the respondents practice good hygiene practices.

Location of Sources of Water

As indicated in Figure 2, majority that is 224 (56.1%) of the sources of water are located within the compound of the respondents, while 159 (39.8%) of the sources are located outside the neighbourhood of the respondents. Also, 16 (4%) of the sources are located outside the compound.

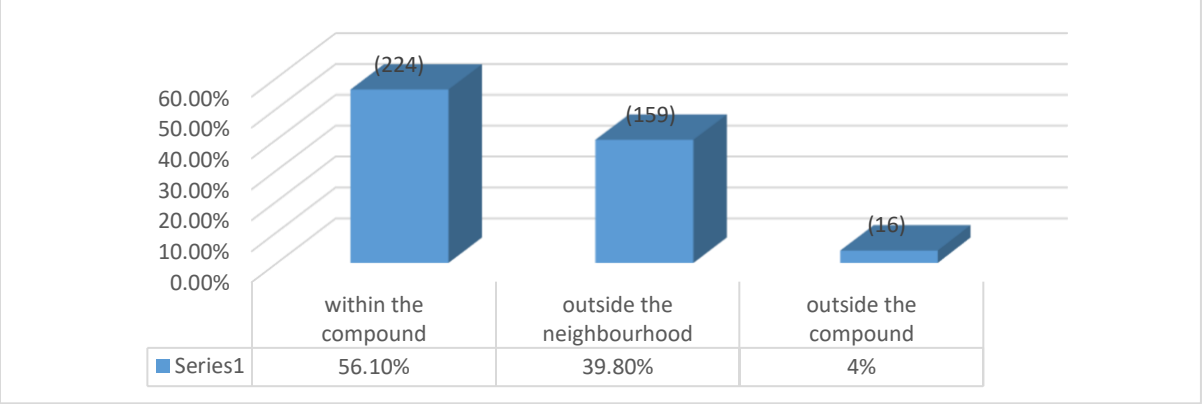

Figure 2: Location of Water Sources
Source: Author's fieldwork, 2018

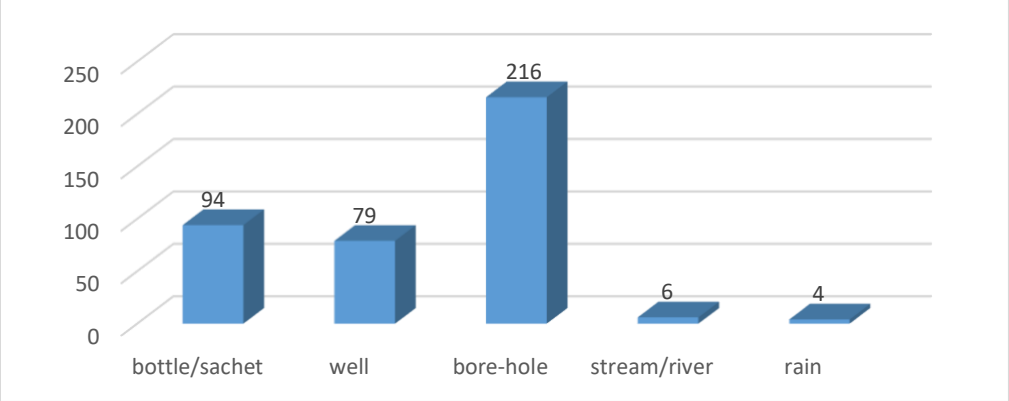

Figure 3: Source of Drinking Water
Source: Author's fieldwork, 2018

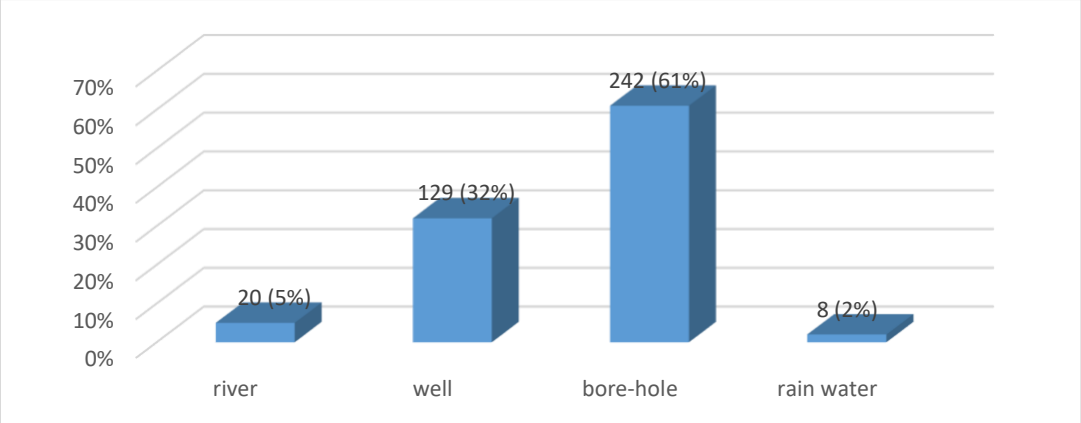

Figure 4: Sources of Cooking Water
Source: Author's field survey, 2013

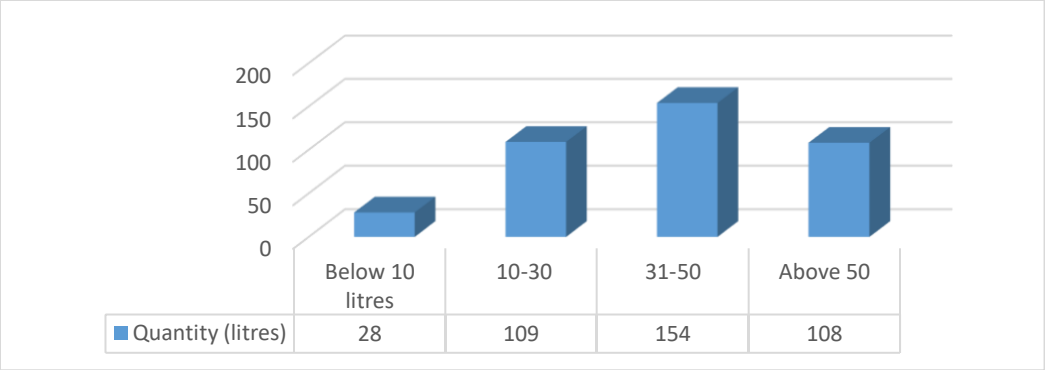

Figure 5: Quantity of Water Consumed Daily

Source: Author's fieldwork, 2018.

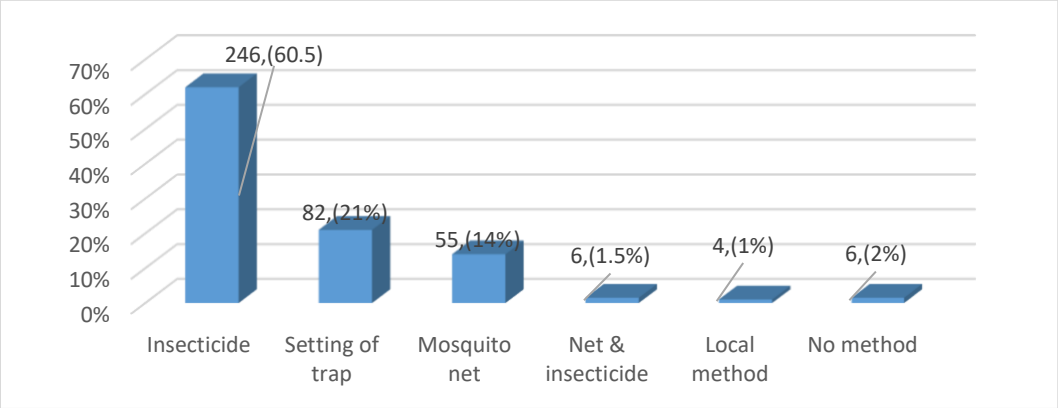

Figure 6: Vector Control Practices

Source: Author's fieldwork, 2018

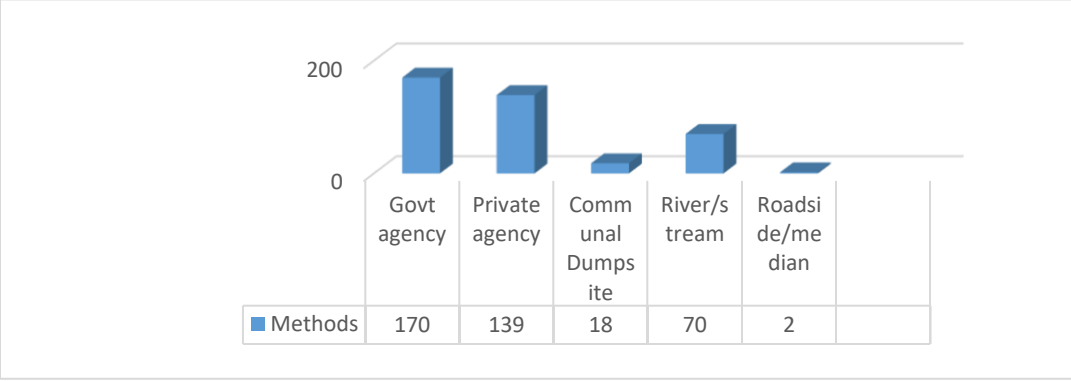

Figure 7: Method of Waste Disposal

Source: Author's fieldwork, 2018

any may keep toilet un-flushed and faeces undisposed.

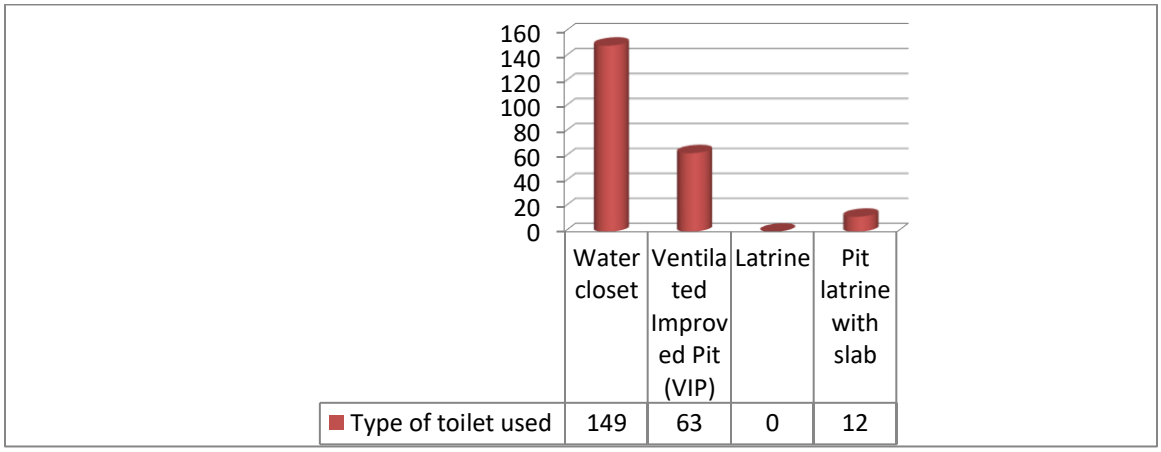

Figure 8: Types of Toilet Facility

Source: Author's fieldwork, 2018

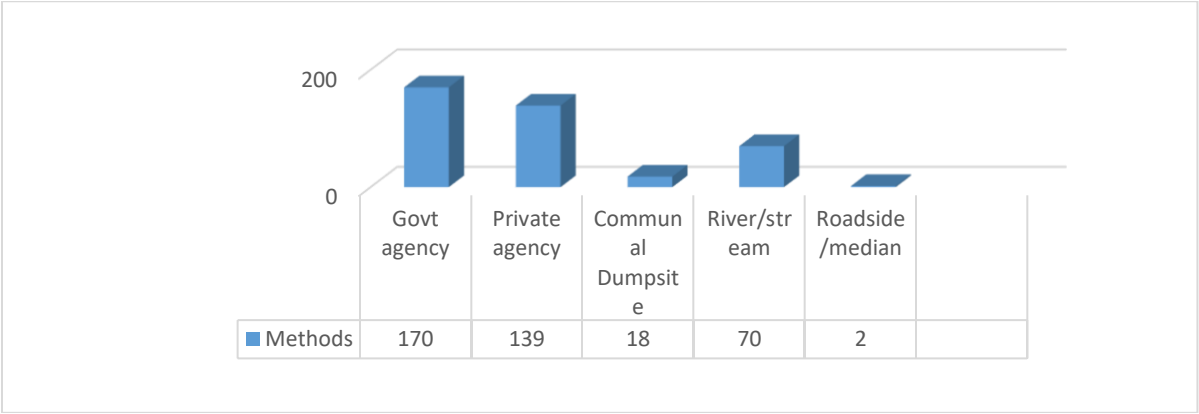

Figure 9: Type of Drainage.

Source: Author's fieldwork, 2018

Table 6: Availability of Toilet Facility

Availability	Frequency	Percentage (%)
Yes	**379**	**95.0**
No	**20**	**5.0**
Total	399	100.0

Source: Author's fieldwork, 2018.

Table 7: Hygiene Practices

Hand Washing Practice	Frequency	Percentage (%)
Yes	311	77.9
No	84	21.1
Total	399	100.0
Bathing		
Daily	142	35.6
Twice a week	24	6
Once per day	117	29.3
Twice per day	200	89.3
Total	224	100.0

Source: Author's fieldwork, 2018

This may be linked to increased public education on the importance of good hygiene practices on human health.

Type of Drainage

As shown in Figure 9, most of the liquid waste in the study area is disposed through 215 (54%) opened drained, while 76 (19.0%) are disposed through covered drains and pipes respectively. Only 32 (8.0%) of the respondents have no drains in their areas. The implication of this is that if not properly managed, most of the drains may be blocked by sand or waste. This provides breeding ground for disease vectors such as mosquito and cockroach.

Environmental Sanitation Practices in the Study Area

Frequency of Participation in Environmental Sanitation

The concept of environmental sanitation entails the control of water supplies, excreta disposal, waste water disposal, refuse disposal, vectors of disease, housing conditions, food supplies and the safety of the working environment. The quality of environment is essential for health of both adults and children. WHO (2011) affirmed that more than 2.4 billion people in the world currently lack access to adequate environmental sanitation and are forced to dispose their excreta in unimproved and unsanitary condition as revealed in Table 8, 259 (65%) of the respondents indicated that they do participate in environmental sanitation once, per week, while 56 (14%) of the respondents do not participate in environmental sanitation. Also, 56 (14%) of the respondents indicated that they do sanitize their environment twice per week. Only 28 (7%) indicated that they always participate in environmental sanitation in their community. This shows that majority of the respondents are aware of the importance of environmental sanitation on quality environment and human health. In addition, more than half that is 250 (62.7%) of the respondents indicated that people do participate in environmental sanitation of their community, while 149 (37.3%) indicated contrary to this view.

In line with this, Olawale and Olatunji (2014) studied knowledge and attitudes of people on monthly environmental sanitation programme in Osun State, Nigeria and posited that people did not derive any health benefits from monthly environmental sanitation programme because most of the waste disposal left at the road junction and at times people defecated at the uncompleted building as a result of lack of

public toilets in areas such as market place and motor parks which resulted to cholera and dysentery in the community. Similarly, Olowoporoku, (2017) stressed that adequate environmental sanitation has not been strictly adhered to in Nigeria. He added that the main strategy geared towards achieving environmental sanitation in Nigeria has been a recipe for disaster (monthly or bi-monthly environmental sanitation exercise).

Violation and Punishment for Environmental Sanitation Regulation

Table 9 shows respondents' responses on violation of environmental sanitation regulation. As revealed in Table 9, most 273 (68.4%) of the respondents have never violated environmental sanitation regulation, while 126 (31.6%) have been arrested for violating environmental sanitation regulations. Similarly, more than half that is 215 (53.9%) of the respondents indicated that most offenders are not punished for violating environmental regulation by the government, while 184 (46.1%) indicated that offender are punished. It can be observed from this finding that environmental sanitation regulations are not strictly observed in the study area and environmental sanitation officers are encourage violation of the regulation, since most offender are pardon and not punished for violating the regulations. In response to this, 184 (46.1%) of the respondents indicated that in order to ensure strict adherence to environmental sanitation regulations in the study area, offenders should be penalized and punished as appropriate.

Regularity of Environmental Sanitation

In other to examine the effect of respondents' attitude to environmental sanitation and arrest for violating environmental sanitation regulation on respondents' regularity in participation in environmental sanitation in the study area, an Anova Analysis was carried out. As seen in Table 10, the mean value for respondents' active participation in environmental sanitation is 2.14, with a standard deviation value of 0.73. Also, penalty for violating environmental sanitation has standard deviation values of 0.74 and a mean value of 2.14. The table further shows that there were statistically significant differences in mean regularity in respondents' participation in environmental sanitation based on number of time participated in environmental sanitation $F(1,395) = 47.07$, $p<.05$, but there were no significantly differences based on penalty for violating environmental sanitation $F(1, 395) = 47.1$, $p= .149$.

Table 8: Frequency of Participation in Environmental Sanitation

Frequency of Participation	Frequency	Percentage (%)
None	56	14.0
Once	259	65.0
Twice	56	14.0
Always	28	7.0
Total	399	100.0
Active Participation of People		
Yes	250	62.7
No	149	37.3
Total	399	100.0

Source: Author's fieldwork, 2018.

Table 9: Violation and Punishment for Environmental Sanitation Regulation

Arrest for Violation	Frequency	Percentage (%)
Yes	126	31.6
No	273	68.4
Total	399	100.0
Punished/Fined for none Participation in Sanitation Exercise		
Yes	184	46.1
No	215	53.9
Total	399	100.0
Need for punishment for Environmental Sanitation Regulation Violation		
Yes	308	77.2
No	91	22.8
Total	399	100.0

Source: Author's fieldwork, 2018.

Table 10: Regularity of Environmental Sanitation

Variables	$\bar{x}$	SD	F.	P.	df	Unstandardized coefficient B
Participation in Environmental sanitation	2.14	0.73	44.09	.000	1	-.208
Penalized for violating Environmental sanitation regulation participation* and Penalized for violating environmental sanitation	1.68	0.74	43.18	.000	1	.129
	1.53	0.49	31.34	.000	1	.273
Error					395	

Source: Author's fieldwork, 2018.

Similarly, Table 10 further revealed that there was no statistically significant interaction on effects of participation in environmental sanitation and penalty for violating environmental sanitation on regularity of participation in environmental sanitation by the respondents. This means that the period of time, activeness of the respondents and being penalized for violating environmental sanitation regulations do not affect regular participation in environmental sanitation by the respondents F (1, 395) = 3.406, p= -.066.

Conclusion and Recommendation

The findings of this study reveal that borehole water was the major source of water in the study area. Most of the residents of the study area have moderate access to water supply. Also, most of the residents of the study area do not regularly participate in the environmental sanitation of their surroundings and this constitute to the spread of mosquitoes due to little or no control method by some of the residents in the study area. The accessibility to public water supply and sanitary conditions in this community is moderate although there were still some negative environmental practices like dumping of refuse along open space and road sides. Furthermore, the effectiveness of environmental sanitation practices boosts the livability of the resident, making the environment healthy through the control of diseases, access to water supply and improved personal hygiene. It is therefore recommended the government and non-governmental organizations should intensify efforts moral-suasion awareness and ensuring the availability of adequate sanitation facilities and regular sanitation practices as this has been identified as a measure that encourages livability and improves health outcomes.

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