ALESINLOYE SOLID WASTE GENERATION AND MANAGEMENT IN IBADAN: POTENTIALS FOR PREVENTION OF EPIDEMICS IN WORK ENVIRONMENT

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ABSTRACT:
Waste generation, a possible source of epidemics in market or any other work environment could also be made a source of income generation if properly managed. Through an evaluative study in Alesinloye market, Ibadan, it was evident that intervention of Solid waste management in a market place could be effective and efficient, ranging from waste collection stage to the final disposal of waste. Alesinloye market environs was neater and cleaner after the waste management project introduced in 2009. Waste was also consciously disposed by traders daily, while waste recycling became a source of income to the management of the market. The commitment of the management and active involvement of members of the work environment were significant in the prevention of epidemics in the market area.

Keywords: Environmental sanitation, Solid waste, Work environment, Market place, Human resources, Disease prevention

INTRODUCTION

As the post-independent period in Nigeria witnessed a gradual growth in the nation's economy through industrialization, old and new cities grew to be State capitals in the country and also expanded in size and population with the attendant needs for similar expansion in infrastructural facilities to sustain the growing economy, infrastructure and social services. These changes, particularly in demographic expansion of the Nigerian cities; the urban centers; and also expansion in commercial and industrial activities, have brought phenomenal increase in the volume and diversity of solid wastes being generated daily in the country (Butu and Msbella, 2014). Waste generation and management is a global growing phenomenon and are directly connected to industrial development and population growth (World Bank 2014). Solid waste management remains one of the most daunting environmental sanitation challenges facing the most developing countries, while it has continually remained at its lowest ebb despite huge investments in the sector (Federal Ministry of Environment, 2005). Solid waste management has also caused myriads of environmental pollution especially in urban locations (Ikpeze, 2014). The term 'solid waste' refers to low liquid content waste materials. It includes municipal garbage, industrial and commercial waste, sewage sludge, waste of agricultural and animal husbandry, demolition waste and mining residues (Shankar, 2016). Waste is also seen as rubbish or materials that are not needed and are economically unusable without further processing. It may be liquid, gas, or solid form and originate from a wide range of human operations, such as industry, commerce, transport, agriculture, medicine, and domestic activities (Hamad and Shefield, 2014).

In Nigeria, concerted efforts have been made on environmental pollution/waste management to protect and improve the environment and safeguard the water, air and land, forest and wildlife in accordance with Section 20 of the Nigerian 1999 constitution which indicates that 'the State is responsible for the protection of the environment'. The same constitution specifically assigns the responsibility of environmental sanitation to the Local Government, the third tier of government. There are formation of agencies such as Federal Environmental Protection Agency (FEPA) with the responsibility of maintaining decent environment in Nigerian cities and towns. National Policy, on the environment and guidelines, standards and regulations, for environmental management including pollution control, natural resources, conservation, industrial, and municipal waste management, was produced by FEPA (Federal Ministry of Environment, 2014).

Despite the present concerns of individuals and the government about waste management in Nigeria, Ibadan is still faced with serious domestic and municipal solid waste management challenges (Oyeniyi, 2011). Domestic waste comes from activities such as cooking and from human excreta. Municipal wastes are the trash from commercial establishments, in small industries, households, and market places. These include motor parts, tyres, tins, paper, nylon, bottles, glass, plastic products, and polythene bags. These form the greater parts of the waste observed on the streets, in gutters, market places and the back of houses in Ibadan city. Solid wastes generated in Ibadan are most often disposed of in open dumps, gutters, and at the back of houses probably due to the inadequate Solid waste management equipment or the long distances to the sanitary sites (Omoleke, 2004). People also leave their wastes in piles for days before they finally get to the sanitary sites for disposal. Solid waste management is of serious concern to Environmental scientists on how to ensure the refuse collected and dumped in various locations be converted to some viable products that could be useful to humans, industries and its environs; as a source of income either to the community or the State government. It is also of high excitement to Environmental sociologists understanding people's attitude towards waste generation, and their practice of proper disposal of waste in order to ensure appropriate campaign geared toward proper disposal of waste. It is within this context that the study attempted to assess the extent to which Solid waste recycling project in Alesinloye market has been effective in promoting environmental sanitation and management of Solid waste.

The main objective of the study was to assess the solid waste recycling established in 2009 in Alesinloye market Ibadan. The functions of Alesinloye Solid waste recycling plan is the waste collection, sorting of component, waste reduction, recycling and also emptied rejects on dump site. The organization recycles wastes collected through different recycling means. The organic wastes are recycled through composting to generate and produce organic fertilizer. The inorganic (Nylon and plastic) are also recycled to produce nylon flakes and plastic chips which are then used to produce different plastics. The main objective of establishing Alesinloye solid waste recycling was to improve the market sanitation, and also the need to reduce wastes generated in the market, manage waste from the point of collection, transportation, storage and final disposal of waste and turning the wastes into viable products for additional income for the market using Alesinloye market as a model. The overall objective of the waste management project was to reduce the volume of waste in the market, manage and control the waste, and also to improve the market sanitation and cleanliness.

Solid waste generation and management in Nigeria
Waste refers to residual materials which, as a result of human activities, cannot be reused or recovered as a resource, recycled into material production processes or thermally/biologically utilized for energy production (Michael-Agwuoke, 2012). Solid waste is one of the sources and causes of environmental pollution. It includes any solid, semisolid liquid or contained gaseous materials discarded from industrial, commercial, mining or agricultural operations and or from community activities (Resource Conservation and Recovery Act (RCRA), 2000). Solid wastes also include garbage, construction debris, commercial refuse, sludge from water or waste treatment plants or air pollution, control facilities and other discarded materials. Solid waste management are activities related to storage, collection, transportation, treatment, utilization, processing and final disposal of solid waste or resource recovery and facilities necessary for such activities (Singh, Gupta, and Chaudhary, 2014). The uncontrolled manner in which solid waste is disposed of at most open dumpsites creates serious health problems to humans, animals, and environmental degradation (Yoada, Chirawurah, and Adongo, 2014). Improper disposal of solid waste pollutes all the vital components of the living environment such as air, land and water. In recognition of the importance, the seventh of the Millennium Development Goals (MDG) was on the need to ensure environmental protection and to minimize degradation. However, the problem

persists in developing nations including Nigeria (Olabode, Adeigbe, Hilary, and Owonibi, 2014). Solid waste management includes all administrative, financial, legal, planning and engineering functions (Hamad and Shefield, 2014). Improper waste handling and management pose great threats to the environment and public health.

In Nigeria, the commonly practiced waste management option, basically involves the collection of mixed waste materials and subsequent dumping at designated dumpsites. It is not a practice to separate waste materials at source or any point during its management (Adekunle, 2011). In Nigeria, waste stream generally consists of plastics, paper, textile, metal, and glass (Ayuba, Abd Manaf, Sabrina, and Azmin, 2013). It is generally reported that enormous quantities of Solid waste are generated daily in the major cities of Nigeria (Butu and Msbella, 2014). Waste generation and composition is greatly influenced by population, income, economic growth, season, climate and social behavior (Senzige, Makinde, Njau, and Yaw, 2014). Yoada, Chirawurah and Adongo (2014) observed that residential domestic waste forms the bulk of all sources of solid waste produced in urban areas. These household wastes are known to have high densities with high moisture content and the organic component of solid wastes, which properly accounts for about 70% to 90%, while tins, cans and paper are probably responsible for about 5% to 10% of the total waste produced. Yoada, Chirawurah and Adongo (2014) further argued that because the capacity to handle all household waste generated is still weak, about 83% of the population dump refuse in either authorized or unauthorized sites in their neighborhood which creates unsanitary conditions. Yoada, Chirawurah and Adongo (2014) also argued that insufficient communal facilities can lead to open defecation along beaches, drains, and open spaces and the tendency for faecal materials to become intermixed with household refuse. Omoleke (2004) observed that another environmental pollution in Ibadan city arose from waste products from factories, hotels, hospitals and commercial centers. Unlike in Europe and America where waste products from factories are subjects of recycling (World Bank, 2014), it is considered useless in Ibadan city, Nigeria. Sridhar and Hammed (2014) asserted that substantial part of the waste generated in Ibadan are recovered and recycled plastic, nylon, metal, bottle, and organic substance, which if recovered at sources can provide income as well as reduce the quantity that would pass to final disposal site. Agwuoke (2013) summarizes the benefits of recycling waste as a highly efficient way of reintroducing valuable materials into the economy. It addresses resource efficiency; lowers energy consumption and hence CO_2 emissions significantly reduce environmental impacts on water and air; decreases nation's dependency on raw material imports; helps move from waste management to material management; reduces the rate of exploitation of virgin materials; and creates and maintains jobs.

By adapting ecological theory, which focuses on the complex relations between people and their environment (Salzman and Attwood, 1996), it is fundamentally expressed that human populations have constant contact with and impact upon the land, climate, plants and animals in their environment; which have reciprocal impacts on humans. It investigates the way the population shapes its environment and subsequent manners in which these relations form the population's social, economic, and political life. Ecological theory attempts to provide a materialistic explanation of human society and culture as products of adaptation to given environmental conditions including degradation. Butu and Msbella (2014) also has a supporting view that uncontrolled spread of waste material often leads to health and environmental issues. To prevent these and other problems, infrastructure has to be developed and implemented for waste management that oversees collection, treatment and disposal of wastes.

MATERIALS AND METHODS
This was an evaluative study carried out on the potential of Solid waste management in the prevention of epidemics in work environment. The study location is Alesinloye market, located at

Ibadan North-west local government area (LGA), Ibadan, Oyo State, Nigeria. The population that participated in this study are; Waste generators: these are male and female traders in Alesinloye market; Waste-collector /Cart pushers: these are people assigned to collect and dispose of waste from the market. The Management of Nigeria Network for Awareness and Action for Environment Health (NINAAFEH) and the Alesinloye executive members: These are the people that conceive the idea, design the project, plan and implemented the Solid waste recycling in Alesinloye, as a model market.

The study utilized a combination of quantitative and qualitative research approaches and collected data with a standardized interviewer-administered questionnaire and in-depth interview guide respectively. Samples were drawn from all the categories of study population. Data for the study was collected from two main sources- primary sources and secondary sources. A primary source involves the use of structured questionnaire that was designed for the waste generators, staff and executive members of the market. The questionnaire comprised both open ended and close ended questions. The questionnaire was pre-tested to establish its utility, i.e. its validity and reliability. The other primary source was the interview guide for waste collectors and NINAAFEH staff and market executives, while the secondary data were sourced from NINAAFEH publications, data from published literature and documents such as journals.

Among the waste generators, 250 shops were visited and owners or heads of the shop were made to respond to a questionnaire. A random sampling technique was adapted to select owners of the shops that responded to the questionnaire. Also, four in-depth interviews (IDIs) were conducted among two Alesinloye executive members, and two staff from the NGO who are working in Solid waste recycling plants. Qualitative and quantitative techniques of data analysis were used to analyze the data. Quantitative data that emerged from the shop owner's survey for waste generators and waste collectors were analyzed using Statistical Package for Social Sciences (SPSS) to generate frequencies, percentages and contingency tables, while content analysis was used for the qualitative data. Qualitative data analysis was achieved through transcription, sorting and grouping of relevant information. Results from both quantitative and qualitative data are presented together.

FINDINGS

Table 1 shows that the age of the respondents ranged between 15years, the lowest and 65years, the highest, while more than half of the respondents were within the active age range of 25years and 44years engaging in economic activities like buying and selling. Slightly above half (59.6%) of the respondents are female. Majority (80.4%) of the respondents reportedly were married. Majority of the respondents also had a long history of trading in the market. For instance, fairly more than a third (39.6%) of the respondents has being in the market for over a decade, while 70.4% shops had two or three persons residing in same shop. Table 1 also shows that educational level of the respondents ranged between primary and tertiary education. A large majority (73.2%) had secondary education, while eight (3.2%) respondents reportedly had none. Ten (4.0%) respondents reportedly had secondary occupation apart from trading.

Table 1: Respondents' Sociodemographic Characteristics

Variable	Frequency	Percentage
Age		
15-24years	18	7.2
25-34years	67	26.8
35-44years	92	36.8
45-54years	43	17.2
55-64years	25	10
65years	5	2
Total	250	100
Gender		
Male	101	40.4
Female	149	59.6
Total	250	100
Marital status		
Single	42	16.8
Married	201	80.4
Separated	1	0.4
Divorced	1	0.4
Widowed	5	2.0
Total	250	100
Educational qualification		
Primary school	26	10.4
Secondary school	183	73.2
OND/Diploma	24	9.6
University degree/HND	8	3.2
Postgraduate	1	0.4
None	8	3.2
Total	250	100
Occupation		
Trading	249	99.6
Teaching	1	0.4
Total	250	100
Secondary occupation		
Yes	10	4.0
No	240	96
Total	250	100
Secondary occupation type		
Engineer	1	10
Apprenticeship	1	10
Civil servant	1	10
Civil Engineer	1	10
Event manager	1	10
Nursing	1	10
Student	1	10
Civil servant	1	10
Teaching	2	20
Total	10	100
Duration in the market		
Less than 2 years	6	2.4
2-5 years	51	20.4
6-10years	94	37.6
Above 10 years	99	39.6
Total	250	100
Number of people in a shop		
1 Person	176	70.4
2-3 Persons	73	29.2
4-5 Persons	1	0.4
Total	250	100

Solid waste management process prior Alesinloye waste recycling
Prior the year 2009, majority (80.8%) of the respondents disposed their waste by themselves. Others disposed through government services (2.8%), cart pushers (16%) or private waste management company (0.4%). These patterns of disposal were also highlighted from the narrative of the interview of an executive of the market. The participant regarded the current way of disposal as not only a significant change but also a source of generating fund for management of the market:

> Prior to year 2009, traders used to dispose waste by themselves. There are lots of changes over the years. The daily collection of wastes is a significant change that has happened in Alesinloye market. Secondly, is recycling of the wastes as a source of income to the market and also the reduction of wastes in the market (IDI/Male/Alesinloye market/Executive)

Table 2 shows that before year 2009, about half (51.6%) of the traders in the market disposed waste in public refuse dump. The data also revealed that after year 2009, 78.8% of the respondents disposed their waste in waste bin provided freely by Alesinloye recycling plant, 0.8% of the respondents burnt their waste, 2.4% of the respondents reported that government truck comes to collect their waste, while the remaining 18% reported that private waste collectors come to collect their waste.

Table 2: Patterns/locations of disposal of waste

Year	2009		After 2009	
Variables	Frequency	Percentages	Frequency	Percentages
Public refuse dump	123	51.6	-	-
Waste burning	24	10.1	2	0.8
River	65	27.6	-	-
Pay money to cart pushers to dispose waste	14	5.8	-	-
Government waste truck comes to collect waste	10	4.1	6	2.4
Private waste collectors come to collect waste	2	0.8	45	18
Waste bin provided by Alesinloye Recycling plant	-	-	197	78.8
Total	228	100	250	100

System of storage of waste before disposal was also documented. Majority (74.8%) of the respondents stored waste in polythene bag before disposing it. Others stored in bucket (24.8%) and drum (0.4%). The qualitative narrative noted that the waste is collected by the cart pushers who take it to recycle site in the market. This was confirmed in an interview with a market executive:

> As I said earlier, we used to dispose our waste in public waste disposal before the inception of Alesinloye solid waste disposal. But now Alesinloye solid waste recycling collects the market wastes through the cart pushers that go to different locations within the market on daily basis to collect the wastes and take them to the site for process (IDI/Male/Alesinloye market executive)

Clearly, bagging waste in a polythene bag was the prevalent method of storing waste before disposal prior to 2009 in Alesinloye market. This finding may be due to the availability and

affordability of polythene bags of many sizes, colours and quality not only in the market but almost in every shop, stores and grocery stores in the street. Also, access to polythene bag promote bagging the waste before disposal. Evidence from the narratives of interviews further validates the quantitative data. A respondent emphasized easy access as motivation to use polythene bag:

> Everybody in Alesinloye market used to bag, store and package
> their wastes in polythene bag before disposing it prior to year 2009.
> This is because polythene bag was very easy for us to get anywhere
> and anytime, and it was very cheap for us to buy
> (IDI/Female/Alesinloye market executive).

Techniques of waste disposal in the Alesinloye Solid waste recycling project

Sorting and storage of wastes at the primary source are major activities that can enhance disposal. These are implicated by the types of wastes generated by individuals. Nylon/plastics wastes are the major (45.2%) waste generated by the respondents in Alesinloye market. This was followed by food waste (35.2%), leaves (12.8%), and paper waste (6.8%). Consequently, nylons/plastics were mostly generated than any other type of waste as confirmed in an interview with a male NINAAFEH staff:

> There are lots of wastes generated in Alesinloye market, but the
> major wastes we generate in this market are Nylons/plastics. These
> particular wastes are more than any other waste generated in the
> market (IDI/Male/Alesinloye NINAAFEH STAFF)

Quantitative data on sorting the waste by the respondents before disposal show that only three (2%) respondents reportedly sorted their waste before disposal, contrary to majority (92.8%) others who did not sort their waste before disposal. The qualitative data further corroborate the noncommittal to sorting as pointed out by a female staff of NINAAFEH: *This is one of our challenges, the traders don't sort their waste before disposing it. We are the ones who sort the waste before recycling it*.

More than half (58%) of the respondents stored waste in bucket/bin before disposal. Also 102 (40.8%) stored in polythene bag, while only three (1.2%) reportedly stored in drums. The use of bucket bin and polythene bag was also reported in a narrative from a female executive member of the market council: *We now store our waste in buckets and bins provided by the government and Alesinloye solid waste recycling unlike before when we stored it in polythene bag*. Results also show how often respondents dispose waste in the market. The data indicated that 87.6% of the respondents disposed their waste daily, 10% disposed weekly, while only six (2.4%) reportedly disposed monthly. Data also revealed that, majority (98%) of the respondents opined that Alesinloye market is very clean as at time of survey than 2% of the respondents whose opinion was contrary. The qualitative data affirms that the market environment was neater and cleaner:

> The market environ is neater and cleaner. Trader are conscious of
> disposing their wastes every day and also wastes recycling serves
> as source of income to the market (IDI/Male/Alesinloye market
> executive)

Consultative forum and community participation in Solid waste recycling project

When the respondents were asked about their awareness of the existence of regulation guiding solid waste in the market, large majority (91.9%), were reportedly aware of recycling of solid waste in the market than few (8.1%) respondents, who claimed unaware of any solid waste recycling in the market. Further analysis shows that more than half (64.1%) of the 91.9% had actual knowledge that Alesinloye solid waste recycling was a separate entity in the market space than

62 (27.8%) respondents who opined that it was rather the government recycling that was visiting the market for recycling purposes. Evidence in support of the quantitative data on awareness of the project emerged from the narrative of market executives that: *Yes of course, we are much aware of the solid waste recycling in Alesinloye market and their activities. Yes, we are much aware* (IDI/Male/Alesinloye market executive).

Consultative forum with traders was considered an aspect of awareness creation, and a way of promoting participation. This study probed for whether consultative forum was organized with the traders prior the establishment of solid waste recycling in Alesinloye market. In response, majority (72%) of the respondents indicated that no consultative forum/awareness was held with traders before establishment of the waste recycling in the market. Such response may not be scary rather a typical of most of Nigerian projects, where the people concerned are not duly consulted or fully involved before and or in the process of implementing projects. Contrarily, the executive members of the market management were consulted, and involved in the initial planning:

> We were carried along from the start of the project. We were involved in the planning, designing and implementation of the project and moreover, the project is a Cooperate social responsibility, a community based and it was properly handed over to the Central market executives. One of the evidences to show that we were carried along is that the recycling plant is still in operations till now; and we are following the plan of operation, and it has been successful (IDI/Female/Alesinloye market executive)

Knowledge of activities of the company in charge of the waste recycling project in the market was documented among the respondents. In all, 53.2% respondents reported that the solid waste recycling company engages in collection of waste. Respondents also reported disposal of waste (4.8%), and recycling of waste (2.0%) as the main activities of the waste recycling company. Other respondents indicated either 'all the activities put together' (30%) or none of the activities (10%). Narratives that emerged from the interviews of NINAAFEH staff described the activities of Solid waste recycling company. According to the staff, the organization is principally involved in the collection of Solid waste generated in the market ranging from organic, plastic, nylon and inorganic wastes. Also, there was a system in place in which the shop owners were given waste bins to store their wastes; this was then collected from shop owners daily for processing. The organization also employed staff that deal with sorting of the wastes into different categories- the plastic and the nylon wastes were sorted separately, while the organic waste was also sorted separately; and any inorganic present is removed before processing. The volume of wastes collected is reduced through the recycling process. The organization possesses machines that perform this function, and finally, the organization recycles wastes collected through different recycling means. The organic wastes are recycled through composting to generate and produce organic fertilizer. The inorganic (Nylon and plastic) are also recycled to produce nylon flakes and plastic chips which are then used to produce different plastics. In the word of a staff: *We carry out the following activities: waste collection, sorting of components, waste reduction, and recycling* (IDI/Male/Alesinloye NINAAFEH STAFF). The Management of Nigeria Network for Awareness and Action for Environment Health (NINAAFEH) is coordinated along business oriented and as separate entity.

When the respondents were probed on what they did to support solid waste recycling project in Alesinloye, results indicated that 69.2% disposed waste in the bin provided to the market to promote the recycling. This was followed by 62 (24.8%) respondents who sorted out waste and put in the appropriate waste bin. Seven (2.8%) advocated for the support of other traders, while eight (3.2%) reportedly participated in all the activities highlighted. The opinion of the respondents

was sought on whether the environment has become neater since the inception of operation of solid waste recycling in Alesinloye market. The data show that 96.8% of the respondents affirmed that the hygienic condition of the environment has improved since the inception of solid waste recycling in the market. Also, people's attitude has changed positively toward environmental sanitation since the establishment of solid waste recycling in Alesinloye market; this was expressed by 96% of the respondents. An executive member of the market also expressed how effective management of the project along with its viability promote good hygiene and serve as a source of income to the market:

> The present intervention of solid waste management, in Alesinloye market, is effective and efficient ranging from the collection to the final disposal of wastes. The impact is that it has made the market environ neater and cleaner. Traders are conscious of disposing their wastes every day and also wastes recycling serves as a source of income to the market (IDI/Female/Alesinloye market executive)

Potentials for prevention of Epidemics

The management of solid waste generated in Alesinloye market and collected, sorted and eventual disposed for processing, has potential for preventions of epidemics in the market. Human and non-human activities emerged as promotive factors for prevention of occurrence and or spread of diseases in the market. Solid waste storage system has the potential to protect waste dispersal before taking to final location for processing into other products. Participants recalled how wastes splashed on ground in the market with little or no care in the periods before the solid waste project was initiated. Participated reported invasion of rodents in the market and how rodents often gained access to most waste bin kept around the shops prior the project. A male member of the market executive perceived old system of waste storage as having anthropogenic potential to attracting rodents both near and in the shop hence, making rodent-man contact possible:

> The truth is that our people are too careless to take care of their waste and disposed before they leave for the day. Some people would keep their waste for days or a whole week. Sometimes you see dust bins scattered around and waste flown over the ground. Rats, lizards and ants would come around the waste. In fact, many traders chased and killed rats in their shops. I believed those rats gained their entrance to look for remnants of food items kept in their waste. Easily, rodents could be seen around the shops. This is risky in the era of Lasa virus (IDI/Male/Alesinloye market executive)

The storage reported for respondents who stored waste in polythene bag (74.8%), bucket (24.8%) and drum (0.4%) were done with adequate care based on the training and awareness created for traders on disease prevention during the Solid waste project in the market. This enabled easy collection by the cart pushers who took it to recycle site in the market. This was confirmed in an interview with a market executive:

> Nobody is worried again about getting time to go for disposing or waiting for the disposal van to come. The cart pushers patronize the market on daily basis – quite easy for them to come because the recycle project rely on the wastes; and even the site is just right in the market. Today there is regular waste disposing by the traders (IDI/Female/Alesinloye market executive)

Quantitative data indicated that majority (87.6%) of the respondents disposed their waste daily, 10% disposed weekly, while only six (2.4%) reportedly disposed monthly. In a narrative, the

weekly disposal was attributed to non-availability of some shop owners in the market. For instance, a female market executive observed that:

> Some traders who have their main business elsewhere but use this market for second business don't come to market every day. We advised them to hire a shop assistant but they said assistants are not often reliable; they may take away their money. So they only dispose when they are around. What we do is to make them engage their neighbours to help them dispose (IDI/Female/Alesinloye market executive)

The confidence in the cleanliness status of the market was expressed by majority (98%) of the respondents who opined that Alesinloye market was very clean as at time of survey. This was supported by narratives of a member of the executive that the market environment was neater and cleaner: *The market environ is neater and cleaner. Traders are conscious of disposing their wastes every day* (IDI/Male/Alesinloye market executive).

The market executive also discouraged overcrowding in shops. "We discourage overcrowding in shops. It is when the occupants are many that they generate too much waste. If it is not disposed, it causes odour" says a male executive member in an interview narrative. Another male member, also noted that "In the era of disease outbreak when health workers advised not to make too much body contact, overcrowding can lead people to contract such diseases. With the solid waste project, we are exposed to such awareness and we encouraged our people to avoid overcrowding." Clearly, all stages of waste management in the Alesinloye solid waste management create opportunity to prevent outbreak of disease and epidemics.

DISCUSSION OF FINDINGS

This study documented that more than one-third (39.6%) of the respondents have spent above 10 years in the market as a trader. Also, more than a quarter of the shops in the market accommodate more than one trader. The size of traders per shop has health implications and can influence disease outbreak. As such, it calls for profiling the socio-demographic characteristics (including movement/migration patterns) of the traders occupying shops in a market environment. It is not the number of shops that determines the volume of waste generated but the number of the people occupying shops and the types of waste generated. This also increases the potential for transmission of communicable diseases (Suleiman, Darko and Williams, 2015).

The study revealed that prior to 2009, traders in Alesinloye market disposed waste by themselves (95.2%) with most (51.1%) traders in the market disposed their waste in public refuse dump. In their own study, Yoada, Chirawurah and Adongo (2014) observed that about 83% of the population dumped refuse in either authorized or unauthorized sites in their neighborhood which creates unsanitary conditions. The finding that majority (74.8%) of the traders in Alesinloye market stored waste in polythene bag prior to 2009 is justifiable for the affordability, accessibility and availability of polythene bag against bucket/bin, and drum, which may not be affordable and available. Bucket/bin also has potential of occupying more space in an overcrowded shop than polythene bag. Adaptability, accessibility, availability and occupancy of little or no space is important for consideration while introducing any technology meant for promoting preventive behavior (Suleiman, Darko, and Williams, 2015), hence, any attractive technology followed with high cost may not attract high patronage and use (Singh, Gupta and Chaudhary, 2014) unless it is well subsidized.

The sorting process adopted in the recycling revealed nylon/plastics as the most type of waste generated in Alesinloye market, as indicated by majority (45.2%) of the respondents. This is in tandem with the assertions of Adekunle (2011), where he stated that in Nigeria, waste stream generally consists of putrescible/rotting/decaying materials, plastics, nylon, paper, textile, metal

and glass. Also, Sridhar and Hammed (2014) observed that substantial part of the waste generated in Nigeria is recovered, and recycled plastic, nylon, metal, bottle, and organic substance, which if recovered at sources can provide income as well as reduce the quantity that would pass to final disposal site. Plastics, bottle and nylon provide conducive breading environment for mosquitoes (CDC, 2012), while decaying materials could provide anthropogenic opportunities for rodents (Bryda, 2014). As rodents, such as rats, are agents of Lassa virus (Suleiman, Darko, and Williams, 2015), clearly market place could provide opportunities for rodents to exact rodent-rodent and rodent-man interactions. During Lassa virus transmission, easy transmission and epidemics is possible in market place (CDC, 2012).

High patronage of majority (78.8%) of the traders in Alesinloye market who dispose waste in waste bin provided by Alesinloye recycling plant could be as a result of free delivery and at the same time could be connected to closeness and accessibility of the waste bin provided by Alesinloye recycling plant. The current study brought to light that majority (74%) of the traders in Alesinloye market as at time of study did not pay to dispose their waste. This confirms the effectiveness of programme as shown in a previous study (Federal Ministry of Environment, Nigeria, 2014) which utilised free delivery and financial motivation/ incentive to drive best practice in environmental sanitation and utilization of waste bin in sorting and disposal of waste. A training need on sorting of waste is necessary for traders. Findings in this study indicate that 92.8% of traders did not sort their wastes. This could be for lack of clear instruction from the management or lack of knowledge from traders/users. This calls for a training for those people in the market environment where recycling is in process.

The traders in the market stored waste in bucket/bin before disposal as against polythene bag that was trendy in the market prior to year 2009. This can be justified by the inception of solid waste recycling in Alesinloye market, when the recycling plant provided buckets and bin for waste storage. It was also revealed that majority of the traders in the market still maintain daily disposal of waste since year 2009 when the project took off. This can be alluded to the cheapness of disposing waste, and the awareness of health benefits of disposing waste before it decomposes. The study shows that Alesinloye market now maintain a very clean environment compare to years before 2009. The improvement in the hygiene and cleanliness of the market environment has a strong connection to the establishment of Solid waste recycling in the market. A change in attitude geared toward clean, hygienic, and environmental sanitation practices, since the establishment of the Solid waste recycling in the market, was confirmed by large majority (96%) of the respondents.

CONCLUSION
Alesinloye Solid waste management has mostly promoted proper waste disposal by the traders and has engaged environmental workers in collection of waste for recycling. Attitude of People towards waste disposal and waste management has equally changed positively. The activities of the Solid waste recycling management have improved the sanitation and neatness of the market and its environs, hence, potential for a positive effect on people's health in the market. Clearly, this study indicates the effectiveness of Solid wastes recycling project in a market environment.

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