Reducing the Environmental Health-Risks of Vulnerable Group in High-Density District of Akure, Nigeria

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Abstract

The environment is a composite of behavioural settings which greatly affects our health. Environmental factors that affect health are in turn linked to underlying pressures in the environment. In this study, some ecological factors were investigated and found responsible for ill health that sometimes results to loss of human lives. The paper seeks to determine how to reduce such health-risk factors among the vulnerable group of congested residential areas in Nigerian cities, particularly the city of Akure. To effectively carry out this task, however, data are obtained on environmental variables involving housing conditions, source of water supply, methods of sewage and refuse disposal as well as information on health condition of residents in the area. The primary data used were collected through questionnaire administration, direct observation, building demographic and facility survey. The research population was based on total number of existing building from which a sample of 20.0% was taken for interview. Findings from the study show that environmental variables are significantly related to health condition of people living in the area. Meanwhile, policy guidelines were suggested which include redevelopment, the use of Urban Basic Service scheme to upgrading and provide essential facilities for the resident of the area. Thorough sanitary inspection, public enlightenment and environmental education would equally be of benefit to sustain all efforts aimed to reduce the menace in such area.

Keywords: *Health-risk, vulnerable group, high-density, upgrading, public enlightenment.*

I. Introduction

The environment, being the totality of all external conditions to which an organism is subjected, remains a composite of behavioural settings which greatly affects our health. Up till recently, mankind has been solely interested in exploiting the natural resources in the environment without much consideration on the effects of such exploitation and uses. With the efforts of the environmentalists, it has now been realized that human

health stands a greater risk unless efforts to protect the environment receive serious attention.

A healthy environment is essential to the health and well-being of the planet and its inhabitants who depend on it for the air they breathe, the water they drink as well as the food they eat (WHO/UNEP, 1986). Conversely, an unhealthy population produces less and may be forced into practices that will damage the environment. Inadequate or lack of access to regular supply of food and uncontaminated water, indiscriminate sewage and refuse disposal, laissez-faire attitude of the people and lack of government funding bring about unhygienic environment that culminate in ill-health (Brundtland, 2003; Omole and Owoeye, 2006; Owoeye and Omole, 2012). Plants and animals of the natural ecosystem sometimes constitute health hazards that threaten the life and well-being of man in the environment. For instance, rats spread diseases along side with other animals like rodents which cause damage to vast quantities of cereal crops annually. Locusts too do a lot of havoc to crops while mosquitoes and tsetse-fly are carriers of diseases like malaria and sleeping sickness. Pollen and other plants emissions as well can cause uncomfortable or painful allergies (Oyeshola, 1995). The necessity for quality water supply complicates the issue in most of developing nations of the world, particularly, Nigeria. Drinking and using untreated water lead to the spread of diarrhea and other water-borne diseases (WHO, 1989). Osoko (2000), Oyesola (1995), Oriye and Owoeye (2009) affirmed that the health of children is most at risk from lack of clean drinking water while adults are most exposed to hazards of polluted water.

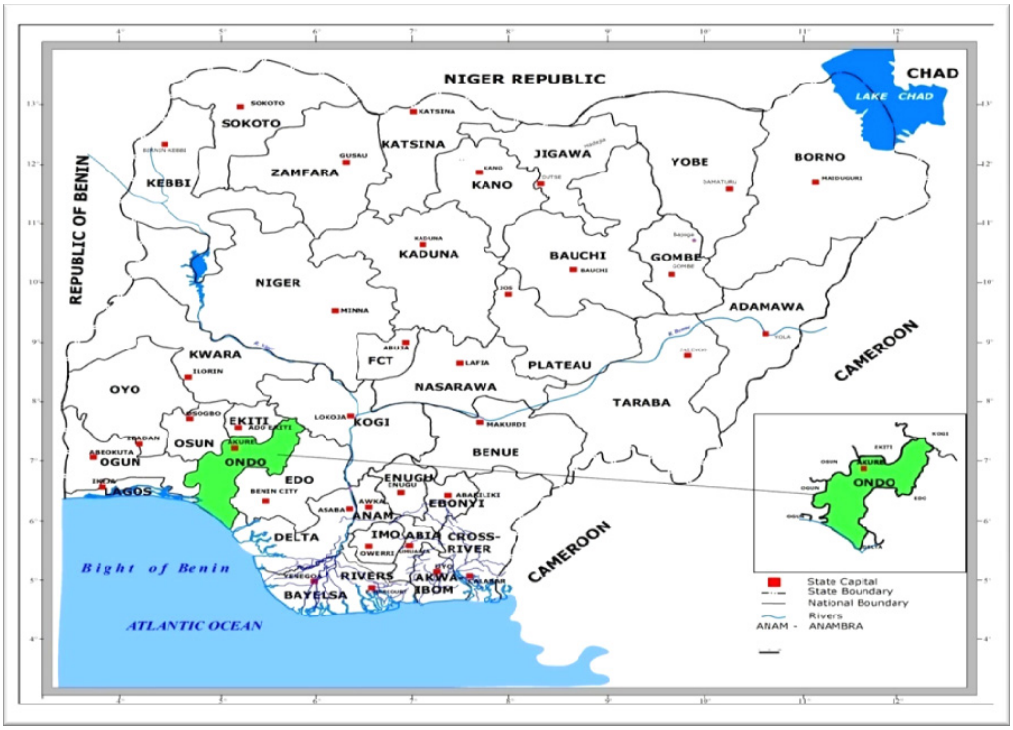
Protecting and improving the quality of the environment is fast becoming a necessity rather than a luxury. Rapid urbanization in the developing world is threatening health, the environment and urban productivity (Barton, 1994). Owoeye (2003, 2006 and 2010) asserted that problems of environmental deterioration emanate from poor environmental sanitation. Thus, practicing good and efficient management of the environment can best provide a permanent solution. This paper therefore aims to research into how to reduce such factors that constitute health problems in our physical environment with particular reference to the city of Akure, Nigeria.

2. The Study Area

Akure is one of the famous cities in the south-western Nigeria. It is currently the headquarters of the Akure South Local Government and as well the capital of the Ondo State, Nigeria. Its estimated population of 353,211 by the 2006 population census places the city in the category of a metropolitan urban centre. The study concentrates on a congested part of the city, which Olanrewaju (2004) simply referred

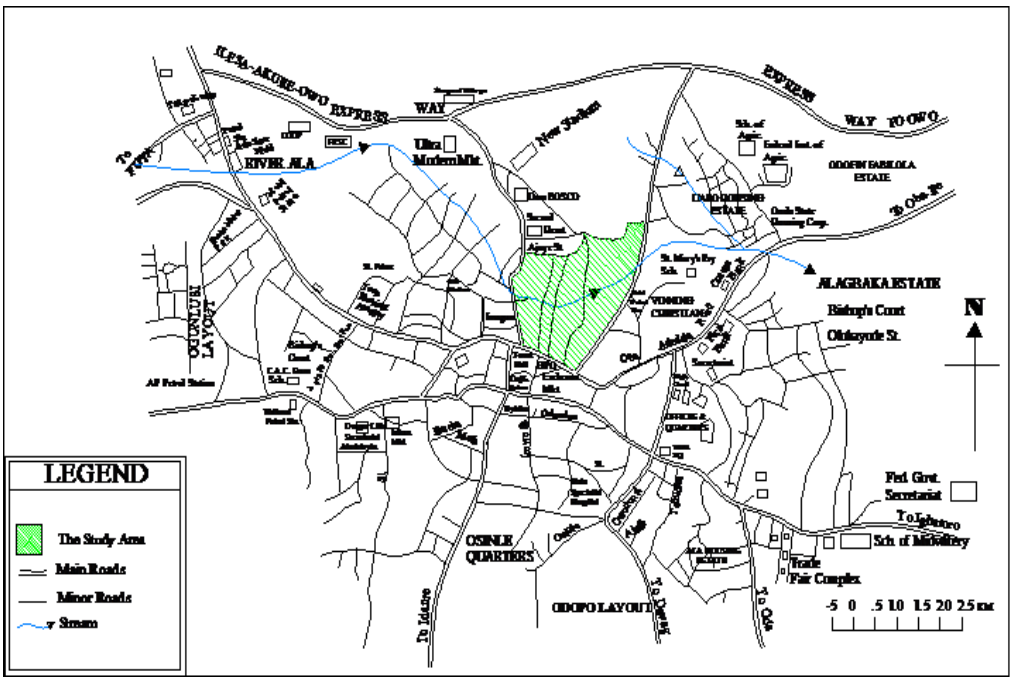
to as inner core of Akure. It includes Araromi, Oja Oshodi, Odokoyi, Isolo and Ijomu districts as shown in Figures 1a and b. The land expanse of this area is about 3.6 square km with population figures of 43,191 inhabitants. From the work of Olanrewaju (1990, 2004), Olanrewaju and Akinbamijo (2002), and Owoeye (2006) the area is identified as typical slum community having physical evidences of deplorable conditions as well as the greatest concentration of the poor and the illiterates with inadequate means of livelihood.

Figure 1a: Map of Ondo State in the National Setting



Source: Ondo State Ministry of Lands and Housing, Akure; 2010

Figure 1b: Map of Akure showing the Study Area



Source: Ondo State Ministry of Lands and Housing, Akure; 2010

3. Theoretical Underpinning

This study adopts the concept of Sustainable Development as an operational framework that embodies the principles, ideals and values of the environment. It is seen as desirable and necessary if the world is to deal effectively with the current global problems of the environment and development process. The concept express environment as the aggregate of the physical and biological entities outside of man that support the existence of human whether on land, in water or air (Osoko, 2000; Oriye and Owoeye, 2009). It is undoubtedly the very basis of human existence which has profound influence on the health, welfare and productivity of individuals thereby becoming a viable stimulant to national growth and economic development (WHO, 1987; Osoko, 2000; BrundHand, 2003). As a result, health and environment should be seen as essential inseparable part of human development which cannot be upheld as though they operate in a vacuum.

Generally, there are two principal groups of environmental problems that are peculiar to high-density residential zone of a city. The first is the presence in the

human environment of pathogens because of lack of basic infrastructure and services like sewers, drains or services to collect solid and liquid wastes and safely dispose of them. The second is crowded, congested and cramped living conditions in which the people live (UN-Habitat, 1989). It was further submitted that lack of infrastructure, readily available drinking water, sewerage connection (or other system to dispose human wastes hygienically), garbage collection and basic measure to prevent diseases and provide primary health care ensure many deliberating and endemic conditions among poorer households. Diseases include diarrhea, dysentery, typhoid fever; intestinal parasites and food poisoning are very common in such environment. Most cities in Africa and Asia have no sewers at all. Human excrement and waste water are disposed in rivers, streams, canals, gullies and ditches. Such constitute great danger to human environment. In a similar study Brundtland (2003) identified six major classes of environmental risks to include inadequate access to safe drinking water, poor hygiene and sanitation, inadequate water resource management, air pollution (indoor and outdoor), chemical hazards and unintentional injuries. He reported that in 2000, an estimated 1.1 billion people lacked access to an improved water source. As at the 2003 when the study was carried out, about 2.4 billion people around the world do not have access to any type of improved sanitation facilities. Equally, air pollution was identified as a serious risk-factor for respiratory disease and a major contributor to ill-health among children around the world. Studies reported in WHO (2004) shows that about 2 million children die each year from acute respiratory infections alone with indoor air pollution from cooking and heating. Diarrhea, a disease related to inadequate water and sanitation was identified the second biggest child killer, claiming about 1.3 million children each year.

It is clearly observed that most developing nations of the world are located in the tropics where communicable diseases are very rife. In view of this, various strategies are being adopted to improve the health of majority of the third world's population with the realization of the effect of various unseen factors. The mass eradication approach of small pox and malaria of 1950s had little effect on many killer diseases like measles, tuberculosis and diarrhea. Further researches in the 60s and early 70s show some links between such factors as poverty, nutrition, environment, housing and health (Akinsola, 1993). However, increasing number of health studies in the third world cities show the degree to which the lives of lower-income groups are dominated by ill-health, disablement or premature death. A review of nutrition and health by the World Health Organization stresses the extent to which poor urban groups suffer from very poor health. Infants in many illegal settlements are 40 to 50 times more likely to die before the age of 5 than infants born in a western country. For example the slums of port an prince, 200 infants are found dying per 1000 live births with another 100 dying before their second birthday (WHO, 1988; UN-Habitat, 1989).

In Manila, the infant mortality rate in squatter communities is about three times the average of the rest of the city. The proportion of people with tuberculosis was nine times higher while diarrhea was twice as common (Basta, 1977). Due to this increasing trend, there have been tremendous efforts over the years by various administrations in Nigeria to improve the quality of sanitary conditions in our urban centres. These actions resulted in the formation of various political legislations and edicts meant to control the indiscriminate and laizzez-faire attitude of the people in abusing the environment (Owoeye and Sogbon, 2012). Prominent ones among these include environmental protection decrease, both at Federal (FEPA) and state (SEPA) levels to perform such function as ensuring proper waste disposal, provision of safe portable water, demolition of illegal structures and provision of adequate good shelter, and so on. All these are meant to improve the quality of life of the people through a clean environment. However, there are few studies which have tried to combine the traditional and modern environmental hazards as they affect the health of the poor in Nigeria. This paper therefore attempts to fill this hiatus in knowledge.

4. Methodology

Collection of data for this research involved direct observation, questionnaire administration, housing demographic and facility survey. Secondary data on health records especially on the cases of prevalent diseases in the study area sourced from the few available health institutions. This supplement the information given by the residents on the perception of their environment and various environmental related problems experienced in the area. To have an unbiased representation of the study area, the existing buildings in the area were counted, which amount to 1306 on a land expanse of about 3.6 km^2. Out of these, 1258 are residential which from the target population. From this, a sample size of 20%, amounting to 250 was selected through a systematic random sampling technique. In selecting the respondents, every 5th house in the five streets involved was taken for interview. Meanwhile, only one household was interviewed in each of the buildings sampled. The questionnaire was administered mainly to the head of the selected households. The hypothesis tested to validate the expected relationship between health and environmental variables examined as stated thus:

H_o: There is no significant relationship between environmental factors and health condition of individuals.
H_i: There is relationship between them.

5. Research Findings

The research findings are discussed under two broad sections, which help to show the association of environmental condition and its influence on health of residents in the study area. Meanwhile, only 230 questionnaires were possibly retrieved out of the 250 distributed. This represents 92% of the expected responses. This is perceived reasonable when taking into consideration that neighbourhood of high-density residential zone of urban centres possess homogenous characteristics.

5.1 Environmental Conditions.

The environmental variables considered centres on housing characteristics measured by the condition and age of buildings, water quality measured by the sources of water supply, sanitary conditions measured by the types of toilet and methods of refuse disposal. The condition of bathroom and kitchen services as-well as the condition of drainage and household facilities were equally investigated. The quality of housing in the study area, as shown in Table 1, is generally low due to poor quality materials used for construction, the inadequate technology and poor housing standard of handling the building components. About 79% of the buildings are constructed with mud materials while only 21% are made of cement blocks. About 97.8% of the sampled building has zinc materials while only 2.2/% is made of asbestos materials. This shows that the level of technology of building construction in the area is rudimentary. The assessment of the level of maintenance also reveals that over 80% need repairs, which could be either minor or major repairs out of which 18.3% are completely old and dilapidated. Only about 15.2% exhibit evidence of physical soundness. Following the submission of Fadamiro (2002) and Owoeye (2012) who established the average lifespan of traditional mud buildings to be 50years, over 80% of the buildings in the study area are to be considered old and aged. Only 10.5% of the total housing stocks in the area are buildings of recent construction, which are just below 20 years.

Table 1: Building Characteristics

Materials used for construction	Frequency	Percentage
(a) Walling – Mud/mud blocks	182	79.1
- Cement/sand-crete blocks	48	20.9
Total	230	100.0
(a) Roofing – Zinc/corrugated iron sheet	225	97.8
- Asbestos materials	05	2.2
Total	230	100.0
Structural Condition – Physically sound	35	15.2

Need minor repair	80	34.8
Need major repair	73	31.7
Old & dilapidated	42	18.3
Total	230	100.0
Age of Building – Below 10 years	11	4.8
10 -19 years	13	5.7
20 –29 years	18	7.8
30 –39 years	55	23.9
40 years and above	133	57.8
Total	230	100.0

Source: Field Survey, 2010

From his investigation on the correlation between relative habitability of housing and their age, he observed that buildings erected in more recent times tend to be more habitable than buildings built much earlier. Thus, a large proportion of the housing stocks in the study area for this research are seen of having low relative habitability which has direct effect on the state of health, socio-economic well-being and emotional stability of the residents. The main source of water supply in the area is through hand-dug well. This accounts for 85.7% of sampled buildings, some of which are not ringed and the water are not treated before used. Just about 14.3% get theirs through tap, which is as not being regular. With this prevailing situation of water supply in the area, quality water supply cannot be guaranteed. This expose the people to a greater risk of contacting serious water borne and other health related diseases. Findings reveal that pit latrine is rampant in the area which accounts for about 62.2% as shown in Table 2. Only 10.9% used modern day water closet while a whole 23.9% do not have provision for the facility at all. Such people make use of mobile pail (4.8%), bush or dunghills (11.3%), stream and drainage channels (7.8%) or squatting in the neighbouring buildings. Without any doubt, this condition has innumerable attendant problems it contributes to the deplorable condition of the area and, consequently, the ill-health of individuals. It makes the area look ugly, stinking and unattractive as well as making the possibility of epidemics becoming rife.

Table 2: Methods of Sewage and Refuse Disposals

Variables	Frequency	Percentage
Sewage Disposal (Toilet)		
Pit latrine	150	`65.2
Water closet	25	10.9
Bucket latrine	11	4.8

Bush / dunghills	26	11.3
Streams and Drainage	18	7.8
Total	**230**	**100.0**
Bathroom facilities		
Indoor – Self contained	10	4.3
-- Shared	124	53.9
Out-door – open court yard	73	31.7
None (Not available)	23	10.0
Total	**230**	**10.0**
Kitchen facilities		
Indoor-- Self contained	12	5.2
-- Shared	145	63.0
Outdoor –open courtyard	65	28.3
None (Not available)	8	3.5
Total	**230**	**100.0**
Waste Disposal Facilities		
Free Range @Road sides	4	1.7
@Open space	49	21.3
Controlled Tipping	150	65.3
Incinerating / Burning	27	11.7
Total	**230**	**100.0**

Source: Field survey, 2010

The condition of refuse disposal is generally absurd in spite of government efforts to control indiscriminate refuse disposal. Over 30.0% dispose their refuse indiscriminately; out of which 11.7% burnt theirs within the residential environment thereby generates air pollution to the surroundings. Some dispose theirs at road sides and gutters where nobody cares for them. Such hamper the free flow of run-off and constitute comfortable breeding grounds for flies, mosquitoes, rodents and other health infected animals that could contribute to the spread of diseases.

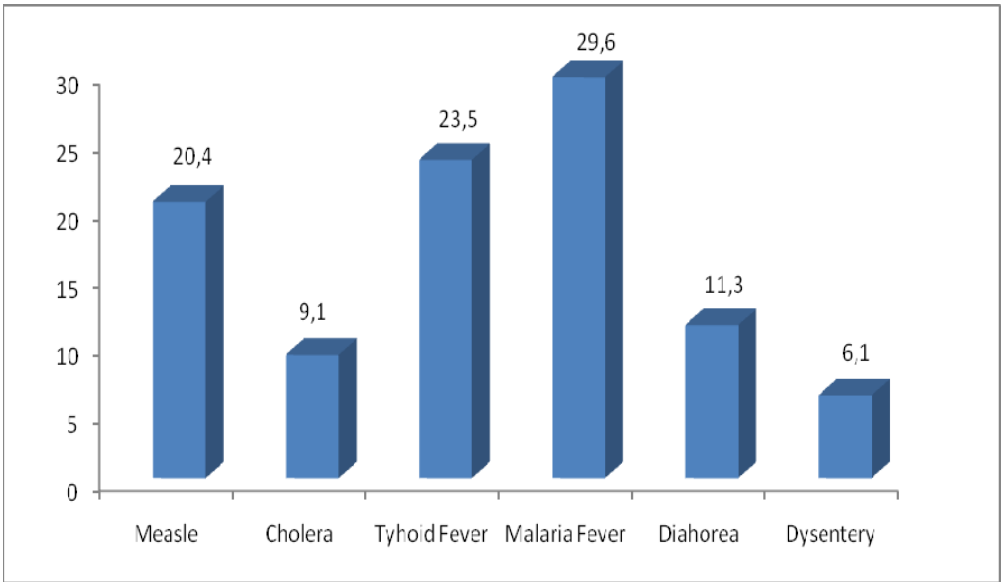
Liquid wastes too are poorly managed as waste water from bathrooms, kitchens and laundries are not properly directed into drainages. They constitute standing water all over the places the affords breeding ground for mosquito and flies as well as foul smelling water that creates swimming ponds for pigs and ducks. A good number of houses interviewed have bathroom facilities, only that majority is either substandard or inconveniently located. Such are located outside the main buildings without drainage. About 10% have no provision for this facility at all. They only share with the nearest buildings. Drainage facility is lacking in some parts of the area. Where they are provided, they are being misused with human defecation and constantly blocked by garbage and household wastes which increase the rate of flooding into premises of

buildings. The use of firewood and charcoal energy for cooking is prevalent. This account for over 80% of the household interviewed. Only about 5.2% make use of kerosene stoves as supplement. About 60% confessed that their household facilities are not adequate, 37% fairly adequate while only 3% can cope satisfactorily with the level of household facilities provided in their dwellings.

5.2 Health Conditions

Figure 2 describe the situation of various diseases and health problems experienced in the study area. The most prevailing disease in the area is malaria, closely followed by typhoid fever. The causative factors identified include inadequate sanitary facilities (57.4%), poor water supply (14.8%), dirty environment (14.8%), overcrowding and congestion (12.2%) as well as poor drainage system (0.9%). Meanwhile, the condition of health facility in the area is far below satisfaction. About 73.9% of the residents indicated non-availability of health institution within their reach. They are either located farther away from their dwellings or completely absent. Only 26.1% can be sure of having at least a chemist store or mini health clinic within their neighbourhood.

Figure 2: Environmental Related Problems & Diseases



The correlation analysis computed to investigate the relationship between environmental variables and health condition of residents show a negative but

significant association. This confirms that residents of high-density residential areas such as slum and squatter communities suffer from environmental hazards occasioned by such factors examined in the study. It implies therefore that as these factors increase in number and intensity so the condition of health of residents degenerates. Hence, the alternative hypothesis (H_i) is accepted at 0.05 alpha levels. Table 3 shows the correlation matrix.

Table 3: Correlation Matrix

		Environmental Variables	Health Variables
Environmental Variables	Pearson Correlation	1.000	-.158*
	Sig. (2-tailed)		. 016
	N	230	230
Health Variables	Pearson Correlation	-.158*	1.000
	Sig. (2-tailed)	.016	
	N	230	230

Source: Computer printout, 2010 {Correlation is significant at the 0.05 level (2-tailed)}.

6. Conclusion, Summary and Policy Implications

This study has identified environmental health-risk factors experienced by the residents of high-density communities in Nigeria as epitomized in a residential core area of Akure. However, the followings are some of the policy implications of this paper. The first to be considered is the need for quality housing and hygienic environment. To achieve this, extensive redevelopment and upgrading programmes through the provision of urban basic services are essential in the area priority should be given to provision of portable water disposal facilities, and proper maintenance of drainages. Sanitary inspections showed are regularly carried out on provision of household facilities with the enforcement of environmental sanitary laws. Adequate funding should be given to Waste Management Authority for effective service as well as improved health facilities in the Area.

Generally, poverty tends to breed poor environmental and unhygienic conditions that have great impact on human health. This is because the poor are incapable of paying for the required amenities for a healthy living, most especially, quality housing thus they become vulnerable to health hazards. To avert this situation and ensure good environmental standard, the ongoing national policy of sustainable minimum wage

should be extended to all and sundry. Besides, public enlightenment and environmental education would be necessary to keep the people well informed about the importance of healthy and hygienic environment.

There is only one choice to make and that is preservation and proper management of our environment in such a way that it can be useful for the future generation. It is often said that health is wealth. The most promising area where the greatest impact can be made in combating the disease burden in our environments and ensure a stable healthier and longer lifespan for people surely lies on investment in environmental sanitation, good housing condition and sound health. Adequate plans should be made therefore to involve stakeholders, individuals and government to redeeming the image of deplorable parts of our cities and rescue the lives of the poor residents.

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