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Rapid Rate of Urbanization and Urban Environmental Health Hazards in Nigeria

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Abstract

In Nigeria, urbanization which is supposed to be a major force for modernization and rapid economic growth has rather resulted in massive unemployment, slum development and environmental degradation. The paper examines the effects of rapid rate of urbanization on environmental health risks in Nigerian cities. Overcrowding, dense transport systems and poor sanitation have all combine with high poverty levels in Nigerian cities to create many forms of environmental health hazards. The situation is aggravated by inability of waste management systems to cope with rate of waste generation which has contributed to contamination of drinking water, further degradation of the environment and spread of communicable diseases in Nigerian cities. It is suggested that emphasis should be placed on proper sanitation, provision of proper waste management, embarking on urban renewal programmes and measures to reduce traffic congestion and urban air pollution.

Introduction

The world has witnessed rapid expansion of urban population in recent years. For instance, by 2008 about 3.3 billion people constituting about 50% of the world's population were residing in urban areas (UN-HABITAT, 2008a). In most cities of the developing world and especially in Africa, urbanization has not really acted as a major force for modernization and rapid economic growth; but has resulted in massive unemployment, slum development, environmental degradation and high poverty levels (United UN-HABITAT, 2006 and 2008b). This is because various social and environmental changes associated with rapid urbanization have great implications for human health in cities of the developing world (Lim *et al*, 2009). For example, almost 24% of the disease burden and about 23% of all deaths in the world result from environmental factors. The situation is even worse for children below the

age of 5 years for whom 36% mortality are attributable to the environment (Pruss-Ustun and Corvalan, 2006). In developing countries greater exposure to adverse environmental conditions and poor access to adequate health care result in greater mortality rate from environmental causes. According to Pruss-Ustan and Corvalan (2006) while about 25% of deaths are caused by environmental factors in developing countries, the figure for the advanced countries is about 17%. It is also estimated that about 50% of the urban dwellers in developing countries are suffering from infectious diseases spread through contaminated water and poor sanitation (Kjellstrom *et al*, 2007).

Urban environment is therefore diverse with many of its sectors acting in an integrated manner to produce the typical health status for the residents. In other words, urban population is as healthy as the quality of the urban environment. The urban environmental factors are also complicated by the impacts of climate and global environmental change. It must be noted that the impact is in coincidence and a consequence of high level vulnerability of a typical urbanites in developing countries. This gives a localized disaster, the adaptive capacity of especially the urban poor is easily overwhelmed and health status can be worsened within a short period of time.

Urban life pre-dated colonial rule in various parts of the area making up present day Nigeria. Various centres like Sokoto, Kano, Zaria, Ife, Oyo, Ibadan, Abeokuta and Benin City existed as traditional cities of various sizes before the colonial era. For example, before 1870 the population of Sokoto was estimated to be above 120,000, Ibadan about 100, 000 and Abeokuta also about 100, 000 (Onyemelukwe, 1982a). While the fortunes of those pre-colonial cities favoured by the colonial economy flourished some new urban centres also emerged during the period. Among the new (colonial) cities of that period are Aba, Enugu, Kaduna, Calabar and Jos that emerged as colonial administrative centres, transport nodes or mining towns in mineral rich areas. Those that could be classified as post-colonial cities emerged mostly as a result of conscious government efforts to further urbanize the country and reorganize the spatial economy (Onyemelukwe, 1982). Thus, various smaller settlements have been upgraded in status as new state capitals and local government headquarters.

From the colonial era to the present times urban centres in Nigeria have been favoured in terms of location of infrastructural facilities, industries, educational and other social facilities. Also, as centres of commerce and employment they have continued to attract large populations from surrounding areas.

The World Bank (1993) estimated the annual growth rate of urban population in Nigeria for the period 1970-1975 to be 7%, with rural- urban migration accounting for about 84% of this increase. World Bank indicators for Nigeria in 2010 show that while rural population growth rate was 1.1% per annum, urban population was growing at 4% per year. The report further shows that with urbanization level of 48.4%, about 15% of the country's population now resides in cities of 1 million people and above (World Bank, 2011). It is estimated that the country will be 75.4% urbanized by the year 2050 (Table 1).

Table 1: Projection of proportion of urban population in Nigeria (1950 - 2050)

Year	Total population (,000)	Percentage urban	Urban population (,000)
1950	33, 960	10.2	3, 468
1960	42, 356	16.2	6, 845
1970	53, 764	22.7	12, 208
1980	71, 065	28.6	20, 311
1990	94, 454	35.3	33, 325
2000	124, 773	42.8	53, 048
2010	158, 313	49.8	78, 845
2020	193, 099	56.8	109, 772
2030	226, 855	63.6	144, 246
2040	259, 233	69.8	181, 022
2050	288, 696	75.4	217, 726

Source: Gbadegesin et al, 2010

Human Health and the Urban Environment

Congestion, inadequate sanitation, lack of adequate drainage and poor waste disposal systems create serious environmental problems with

adverse health implications in cities of the developing world. About 24% disease burden (healthy life years lost) and 23% of deaths (premature mortality) have been attributed to environmental factors (Pruss-Ustun and Corvalan, 2006). People most at risk include women, children and the elderly who spend most of their time around their homes (Mcgranahan, Leitmann and Surjadi, 1997). The two major causes of mortality among children are diarrheal diseases and respiratory infections. Furthermore, four health problems with the highest absolute burden result from modified environmental factors. These are diarrhea, lower respiratory infections, unintentional environmental injuries and malaria (Mcgranahan, Leitmann and Surjadi, 1997). According to Pruss-Ustun and Corvalan (2006) about 94% of diarrheal burden and 42% of lower respiratory infections are caused by environmental factors in developing countries. Furthermore, 44% of workplace injuries and 42% of malaria incidence can be attributed to environmental factors. On the other hand, other environmental factors like poor pedestrian infrastructure are responsible for 40% of road traffic accidents.

Kjelltrom *et al* (2007) observed that by 2002 about 51% of the people in developing countries lacked adequate sanitation and 21% had no access to safe drinking water. They further noted that conditions in the urban areas are worse, with many people exposed to disease vectors due to poor waste management. Furthermore, high dependence on solid fuel like wood, dung and coal for domestic purposes result in high exposure to smoke thereby increasing the risk of child pneumonia and other respiratory infections. About 42% of chronic obstructive pulmonary diseases (COPD) are also attributable to exposure to dust, chemicals and use of solid fuel (Kjellstrom *et al*, 2006 and Pruss-Ustun and Corvalan, 2006). The problem of mix of workplace and residence associated with cottage industries and location of factories within residential areas further increase heath risks because of the disastrous consequences of industrial accidents experienced (Kjellstom *et al*, 2007).

McMichael (2000) observed that the urban environment affects human health in three main ways. First, through the social changes associated with urbanism and the way in which these affect behaviour to risks and health. Secondly, the physical urban environment itself poses a lot of microbiological and toxic risks. Thirdly, the effects of disruption of

the natural environment by the urban population create large-scale and long term risks to health. But the greatest threat to urban health is coming from this third component because changes in normal climatic and environmental circumstances often reverberate in the other two pathways.

Changes in human behaviour linked with high disease risks have been associated with urbanism. For example, urban areas are characterized by higher levels of adult obesity, tobacco smoking and traffic injuries and fatalities. On the other hand, urban dwellers in developing countries are greatly exposed to diseases and injuries related to poor sanitation, contaminated water, dangerous roads, air pollution and hazardous wastes (McMichael, 2000).

Overcrowding, dense transport systems, poorly managed waste and industrial activities all combine with high poverty levels in these cities to create many forms of environmental hazards. Road transport congestion is a common feature of most large cities of the world today. More than 750,000 deaths worldwide result from road traffic accidents. About 130,000 deaths and over 50 million cases of respiratory infections annually also result from air pollution in cities of the developing world (McMichael, 1996). Furthermore, exposure to environmental lead constitutes a serious health issue in the urban environment today. Large concentrations of lead in peoples' blood have been documented in some cities in developing countries. High concentration of blood lead has been associated with deficit in children's intelligence (Tong, 1998).

The Urban Environment and Health Hazards in Nigeria

In Nigeria, urbanization which is supposed to be a major force for modernization and rapid economic growth has rather resulted in massive unemployment, slum development, environmental degradation and high poverty levels (UN-Habitat, 2008b and Gbadegesin and Aluko, 2010). Experiences of many cities in Nigeria especially Lagos, Ibadan, Port Harcourt Aba and Benin among others indicate serious planning and management crisis (Ahianba *et al*, 2008). Problems associated with uncontrolled urbanization in Nigeria seem to have overwhelmed official capacity to handle them thus; many cities in the country face serious environmental health problems because they are grossly deficient in housing and municipal services (Gbadegesin *et al*, 2010). Ahianba *et al*

(2008) summarized the problems of Nigerian urban built environment to include inadequate basic amenities, substandard housing, over crowing, poor ventilation, poor sanitation and non compliance with building regulations. Mortality from environmental health problems have been on the increase in the country. For instance, reported deaths from diarrhea increased from 1,613 in 1991 to 2,056 in 1995. Reported mortality from malaria rose from 1,947 to 3,268 while reported deaths from pneumonia increased from 855 to 1,594 within the same period (Oyebanji, 2013).

Health Risks Associated with Inadequate Housing

Qualitative and quantitative housing deficiencies in Nigerian cities have been attributed to rapid and uncontrolled urban growth (Ahianba *et al*, 2008). Nigerian cities face a myriad of housing problems manifested in the form of housing shortages, poor housing quality, high rental charges and poor environmental quality. The wide margin between effective demand for and supply of housing ensures that many urban residents in the country continue to live in sub-standard structures, unsuitable for human habitation (Onyemelukwe, 1982b and Eke, 2004). Housing deficit in Nigeria has been estimated at between 12 – 14 million housing units (Adeniyi, 2008). For instance, in a recent study of Ibadan metropolis none of the houses surveyed in the high density areas of the city satisfied the condition for good housing. Also about 48% of the houses surveyed in city are either sub-standard or unfit for human habitation and with some houses accommodating as high as 8 people per room (Cocker *et al*, 2007). By 1981 over 40 slum communities were found to be present in Lagos metropolitan area alone. Within the next three decades the number of slum areas in the city had increased to over 100 (Gbadegesin and Aluko, 2010). Meanwhile, living in disadvantaged urban neighborhoods has been found to significantly increase the risk of under-5 mortality in Nigeria (Antai and Moradi, 2010).

Health Risks associated with Poor Hygiene

Residents of Nigeria cities as in other least developed countries are commonly at risk from a combination of the traditional heath problems associated with poverty, low quality housing and poorly managed industrialization. Overcrowding and unhygienic conditions especially in

traditional parts of these cities and in the slums ensure that people constantly face serious microbiological risks. Urban environment and health problems are further aggravated by the poor waste management systems in urban centres in the country. Rapid population growth has continued to place great pressure on waste management systems especially in major cities in the country. Thus, solid wastes are often dumped in open spaces and into stream channels. For example, indiscriminate dumping of waste into stream channels is found to be responsible for aggravating the incessant flooding of Ogunpa stream in Ibadan city (Cocker *et al*, 2007). Inability of waste management systems to cope with rate of waste generation contributes to contamination of drinking water, degradation of the environment and spread of communicable diseases in Nigerian cities (Gbadegesin and Aluko, 2010). Uncontrolled urbanization has also been linked to the increasing vulnerability of Nigerian cities to disasters. Construction of buildings on wetlands, steep slopes, flood plains and other marginal lands aggravates environmental degradation and increases vulnerability to environmental hazards in urban areas (Gbaegesin *et al*, 2010 and Usman and Tunde, 2010).

Urban Pollution Risks

Apart from diseases associated with poor sanitation and polluted water there are risks from indoor and outdoor air pollution and toxic waste from urban manufacturing and transportation. For instance, congestion has been identified as the most serious urban transportation problem in Nigeria (Ogunsanya, 1993; Aderamo, 1998 and Aderamo, 2012). Other important urban road transport problems identified are parking problems, frequent road accidents and environmental and noise pollution (Ogunbodede, 2004 and Aderamo, 2012). For instance, about 75% of road accidents in the country occur within urban areas (Aderamo, 2002). Traffic congestion has continued to get worse due to the inability of roadway capacity improvement to cope with rate of traffic growth in Nigerian cities. For example, within the period 1990 – 2002, while traffic on the major streets in Ilorin metropolis grew at the rate of 6.0 - 9.2%, the rate of improvement in geometry to increase capacity of roads within the same period was 0% (Jimoh and Adeleke, 2005). Meanwhile, traffic clogged areas are found to have higher concentration of ambient air particulate matter (PM_{10}) than

other areas within Nigerian cities. Also, urban areas in the country generally have higher PM_{10} than their surrounding rural areas (Efe, 2006). As shown in Table 2, levels of ambient air particulate matter in Nigerian cities are far higher than the WHO recommended level.

Table 2: Ambient particulate matter (PM_{10}) levels in Nigerian cities

Cities	PM_{10} (μgm^3)	WHO 2005 (μgm^3)
Sokoto	130.1	20
Maiduguri	132.0	"
Bauchi	128.8	"
Kaduna	125.3	"
Jos	123.9	"
Minna	123.9	"
Ilorin	124.3	"
Abuja	119.0	"
Lokoja	119.7	"
Benin city	119.2	"
Enugu	121.8	"
Ibadan	119.7	"
Warri	122.2	"
Port Harcourt	118.3	"
Lagos	122.3	"
Mean	**123.6**	

Source: Efe, 2006

Conclusion

Uncontrolled urbanization in Nigeria has resulted in serious economic, social and environmental problems that appear to have overwhelmed official capacity to handle. Thus; today many cities in the country face serious environmental health problems associated with poverty, overcrowding, unhygienic living environment and environmental pollution.

First, there is the urgent need to place great emphasis on proper sanitation and provision of proper waste management in Nigerian cities. This should include both the construction of drains for waste water and effective solid waste management facilities.

Appropriate efforts should also be directed towards the provision of low cost housing for low income people who form the significant proportion of urban dwellers in the country. This could be more effectively

achieved through public/private partnership and by mainly utilizing the abundant local building materials in the country. Appropriate policies should also be developed to extend the existing housing credit/mortgage facilities to larger strata of the populace. However, this should go together with the development of appropriate institutional framework for formulating and implementing urban renewal policies in our cities. Formulating appropriate land laws and administrative procedures related to acquisition and compensation will make it possible to embark on massive urban renewal programmes in the country.

In addition, provision and reactivation of urban roads must be combined with sound traffic management measures for urban roads congestion to be adequately addressed in the country. Off-street parking facilities should be provided to reduce obstruction of traffic flow. Apart from adopting wider use of traffic signalization, other Intelligent Transportation System (ITS) protocol like pre-trip travel information, route guidance and travel service information should be introduced. Furthermore, greater efforts should be directed towards developing existing intra-urban mass transit systems in the country. Encouraging the use of high capacity mass transit vehicles for urban travel will reduce dependence on personal vehicles thereby, reducing congestion on the roads. This will go a long way in reducing air pollution in Nigerian cities.

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