ENVIRONMENTAL SCIENCES

ISSN (Print): 24490954
ISSN (Online): 26364972

ENVIRONMENTAL DISEASES AND THEIR EFFECTS ON THE RESIDENTS OF BWARI AREA COUNCIL

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Manuscript received : 01/10/2016 Accepted: 20/02/2017 Published: March 2017

ABSTRACT

The study focuses on environmental diseases and their effects on the residents of Bwari Area Council of the Federal Capital Territory. The study area is located within latitudes 9°01' and 9°28'N and longitudes 6°23' and 7°19'E. The basic data sources include questionnaires, oral interviews, literature from past works and photographs taken during field work. Attention was focused on those cultural and environmental risk factors like source of drinking water, source of cooking energy, poor waste management and number of people living per room amongst many. Result show that these risk factors aid the breeding of causative organisms and fuel their spread to homes thus causing diseases like diarrhea, malaria, flu, typhoid and gastro infections. Results further revealed that the number of health care centers in the area are few and situated far from residents causing them stress, financial drain and reduction in the number of working hours. Several recommendations were made to combat these risk factors and reduce their effects, amongst which are that veterinary regulations, care and control of animals kept by residents should be enforced and that environmental policies centered on new constructions of buildings should be enforced especially obtaining building approval from appropriate quarters.

INTRODUCTION

Environment refers to all the external factors affecting an organism (Yardon, 2003). These factors may be biotic or abiotic.Changes in any one factor in an ecosystem can influence whether or not a particular plant or animal species will be successful in its environment (Encarta Microsoft Encyclopaedia, 2008).

Organisms and their environment regularlyrelate, and both are changed by this interaction. Some human-induced changes have led to altered environmental forms, which in turn have changed the way animals and plants are distributed and affected in different ecosystems.

According to Davis (1989), the environment, in the medical sense includes the surroundings, conditions or influences that affect an organism. Along this line, Last (2001) defined the environment as all that which are external to human host. They can be divided into physical, biological, social, and cultural environments, any or all which can influence the health status of populations. Sequel to this, environmental diseases are illnesses caused by exposure to disease-causing agents in the environment, as opposed to illnesses related primarily to an individual's genetic makeup, or to immunological malfunctions (Yoshimura, 2004).

The environmentally induced health problems in Nigeria can be divided into two categories: a. primary environmental health problems and b. Secondary environmental health problems.

Results have shown that a lot of people in the study area suffer from malaria, asthma, filarial, diarrhea, because of environmental factors (Uzokwe, 2007). There is no doubt that drains are provided by road sides to drain water from roadways, but these gutters are allowed to clog with all sorts of biodegradable and non-biodegradable debris. They have become functionally worthless with associated health risks to the citizenry (Uzokwe, 2007).

Diseases associated with lack of access to safe drinking water and inadequate sanitation, result in millions of death (Checkley, 2004). It is true that the Federal Capital Territory (FCT) Water Board Treatment Plant is located in the study area, but then some residents in the interiors are not connected to their pipes and thus continue to use water harvested from streams, ponds and rivers that are probably contaminated. According to Williams (1988), the study area does not have easy access to safe and adequate drinking water supply. Despite major investments by the government, the supply has not kept pace with the demand.

Use of cooking fuels, especially wood fuel is used by about 40% of the population in the study area. 10% of this 40%, further cook inside the house resulting to pollution that could lead to respiratory related diseases (Williams, 1988).

Towns in the study area are fast growing in population and this serious clustering of people might have link to communicable diseases such as tuberculosis and flu. This increase in population creates slums characterized by stagnant water in gutters, poor waste management, and poor ventilation. One of the major difficulties that the Abuja Environmental Protection Board (AEPB), is facing is the mismanagement of liquid waste while solid waste management is only concentrated in phase one of the FCT, of which the study area is not inclusive (NIBC, 1998). Without effective monitoring and disposal arrangements, several parts of the study area are now turning into eyesores.

In all, the environment of the study area seems to be harbouring chemical and biological pollutants that could lead to chronic health complaints in addition to cultural practices. Understanding this environment and the factors that could lead to environmental diseases in man formed the baseline for this study.

MATERIALS AND METHODS

The study adopted the use of Non-probability sampling technique known as Accidental/ convenience sampling. This process made use of available sample at hand to investigate people's opinion. Bwari Area Council has a population of 435,620 (projected) as at 2016. Of this population, males are 225,346 whiles females are 210,274. A total of 500 copies of questionnaire were administered to the public, and 450 were retrieved, another 50 to hospitals and health centers. Before the questionnaire administration, a reconnaissance survey was carried out to the wards. This was aimed at letting them into the reason for the research and soliciting for their unalloyed assistance during the research. It was also necessary in order to track and acquaint the researcher with the itinery of the gate-keepers and notary publics. This helped to facilitate the 13 Key Informant Interviews (KII) and the 9 Focus group Discussions (FGD).

The sampling frame for this research was a list of the enumeration areas developed by the National Population Commission (NPC) before the 1991 population census. These eight Enumeration Areas in Bwari Area Council are DutseAlhaji, DutseMakaranta, Mpape, Ushafa, Bwari, Kubwa, Dei-Dei and Kagini. Households in these areas have been numbered by NPC. Thus through a random selection, copies of the

questionnaire were distributed religiously.Statistical tools like the use of charts (bar, pie and histogram), simple percentages and tables were employed using SPSS to analyse and illustrate while content analysis was employed to analyse the Focus Group Discussion and Key Informant Interviews.

RESULTS AND DISCUSSION

NUMBER OF PEOPLE LIVING PER HOUSEHOLD

Table 1: Number of people living per room in Bwari Area Council

Number of persons per room	Number of respondents	% frequency
1	80	17.78
2	90	20.0
3	176	39.11
4 and above	104	23.11
Total	450	100.0

Source: Fieldwork, 2016

Table 1 shows the distribution of people living per room in the study area. The most commonly used indicators for in-house crowding are person/room and room area/person. It is seen that only 17.78% of the respondents live one person per room, 20% live two people per room, 39.11% live three people per room, while 23.11% live four people and above per room. This shows that there is overcrowding in the study area as most people (62.22%) living per room exceeds the United Nations standard of the number of people (2.5%) living per room. From field observation during data collection, households with three or more persons per room do not look as healthy as those living one person per room. Gove and Hughes (1983) conclude that the number of rooms available per person plays a critical role in determining the nature of interactions in the household and is related to poor mental and physical health. Overcrowding results in insufficient ventilation in homes, causing or exacerbating respiratory illness.

SOURCES OF DRINKING WATER

The various sources of drinking water identified in the study area are shown in Table 2.

It is obvious that most of the residents of Bwari Area Council drink from Water Vendors with a frequency of 36.22%, followed by Well water, 30.0%. Other sources include that from pipe borne water, streams, and packaged water, with frequencies of 19.56%, 10.89%, and 3.33% respectively.

Table 2:Sources of Drinking Water in Bwari Area Council

Source of water	Number of respondents	Frequency (%)
Pipe borne water	88	19.56
Streams/ rivers	49	10.89
Wells (home dug)	135	30.0
Water vendors	163	36.22
Packaged water	15	3.33
Total	450	100

Source, Fieldwork, 2016

Despite the fact that the Water Board Treatment Plant is sited in this Area Council, few residents have access to pipe borne water, making most residents to depend on water vendors whose source of water cannot be ascertained. This means that they buy from even wells that their chemical composition is not known. Briscoe (2007), put it that major potential contaminants of wells are nitrate (NO_3^-), pathogenic microorganisms, pesticides and petroleum derivatives, and that the organisms of typhoid, dysentery and diarrhea, plus a host of other ailments are got through drinking such unclean water.

TYPES OF TOILET USED

Table3: Types of Toilet Used in Bwari Area Council.

Type of toilet used	Number of respondents	Frequency (%)
Water closet	102	22.67
Pit toilet	182	40.44
Bush	166	36.89
Total	450	100.00

Source, Fieldwork, 2016

The types of toilet used in the study area range from water closet through pit toilet to defecation in the bush as shown in Table 3.Pit toilet takes 40.44%, water closet accounts for 22.67%, while the use of bush accounts for 36.89%. Internationally, the use of water closet and pit toilet systems, are acceptable and hygienic if they are well constructed and maintained. Thus concern goes to defecating in the bushes and open areas. Millenium Development Goals (MDG 7(A), hopes to achieve a safe management and disposal of feaces and other household wastes. Most of the feaces defecated in the bush are washed down to streams and atimes to household premises by rainwater, thus contaminating the water and any other thing it comes in contact with.

PROXIMITY OF HOMES TO REFUSE DUMP SITES

Table 4:Proximity of Homes to Refuse Sites in Bwari Area Council

Distance (m)	Number of respondents	Frequency (%)
5 – 10	15	3.35
11 – 20	21	4.66
21 – 30	99	22.00
31 – 40	240	53.33
41 – 50	28	6.22
51 and above	47	10.44
Total	450	100.00

Source, Fieldwork, 2016

The proximity of refuse sites to homes in the study area are as shown in Table 4 below. Nearly 90% of the households are located within 50meters of refuse dumps and some are as close as 5metres (3.5%). It is to be noted that more than half (53.33%) locate

Plate I: Communual Garbage Site at Biaji, Kubwa.
Source, Fieldwork, 2016

TYPES OF ENERGY FOR COOKING

FromTable 5, wood and kerosene take the lead with 33.34% and 34% respectively, followed by saw dust at 10.00%, gas and electricity follow with 8.00% each, and coal comes last with 6.66%. Nigeria's growth is partially anchored on the issue of sustainable household energy demands against current supplies. Cecelski (1987) agrees that apart from sluggish economic growth, fuel scarcities make household fuel choice a complex economic and social function. For many households, the decision over which fuel to use or how much of the fuel to use, requires a consideration of several important factors which may include the number of household characteristics and social class. Misana (1988), opines that cooking fuel choices are affected by a set of householddemographic and infrastructure exogenous variables such as sex, age, education and occupation of the household head and spouse.

Table5: Types of Energy for Cooking in Bwari Area Council

Type of energy	Number of respondents	Frequency (%)
Gas	36	8.00
Kerosene	150	33.34
Coal	30	6.66
Saw dust	45	10.00
Wood	153	34.00
Electricity	36	8.00
Total	450	100.00

Source, Fieldwork, 2016

Figure 1 shows that, 62.5% of the people that use wood as fuel cook inside the house while 37.5% cook outside. The consequence of this is that those that cook inside are exposed to serious pllution and inhalation of horrible gases more especially during partial combustion. The choice of the use of wood is however determineed by the opportunity cost of household and differs from one household to the other. According to Fraser (2003), the choice of using wood fuel to cook in the house depends on age, level of education and occupation of the husband and wife, also the type of food commonly cooked. Reddy, (1994) claims that a majority of the world's population still relies principally on wood as fuel. Indoor usage creates pollutants both indoors and outdoors because they generate particles and gases that can cause asthma and bronchitis. These and other diseases as observed by Reddy (1994) are prevalent in the study area.

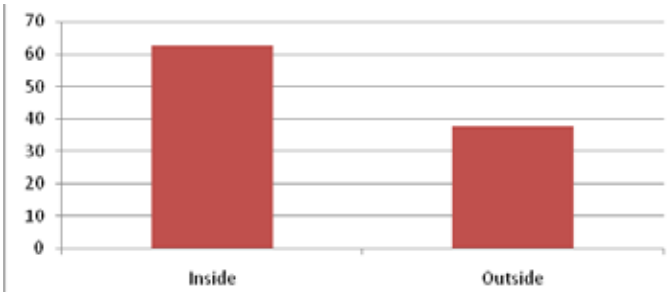

Figure 1: Those that Cook Inside The House Using Wood in Bwari Area Council
Source, Fieldwork, 2016

DOMESTICATION OF ANIMALS

From figure 2, a total of 62.5% of the respondents keep domestic animals, either as pets or as livestock for economic reasons, while 37.5% do not keep animals for any reason. Others are kept to improve the economic status of the household when they are sold or exchanged for a valuable. Those that argued that they keep animals do so for several reasons. Some

of the reasons include for protection, finance, and as pets. Some of the animals kept include sheep, goats, cats, poultry, dogs, turkey, cattle and rabbits.

Figure 3 shows that 60% of the people that keep animals keep them in the same compounds they live in, while 40% keep them in separate accommodation. 60% is quite a high proportion which definitely would increase the number of zoonotic diseases like Avian Flu, rabbies and lasa Fever.

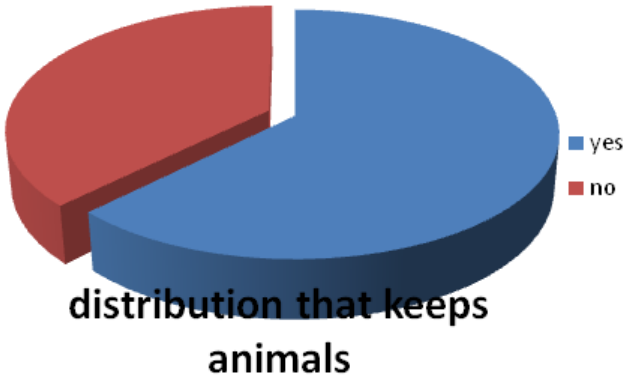

Figure 2: Respondents that keep Domestic Animals in Bwari Area Council
Source, Fieldwork

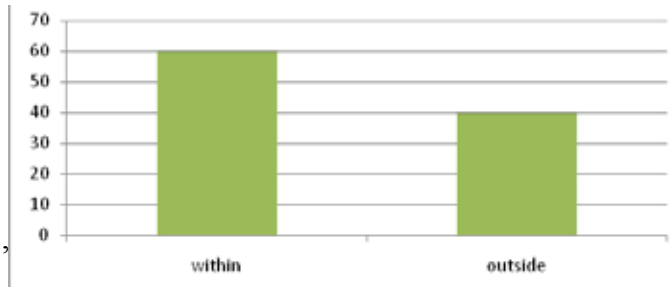

Figure3:Those that That Keep Animalswithin Their Compound in Bwari Area Council
Source; Fieldwork, 2016

MAJOR DISEASE CAUSING FACTORS IN THE STUDY AREA

Some of the major factors that have been identified to be fuelling the spread of diseases in the study area include bushy surroundings, blocked drains, dump sites and clustered buildings as shown in Table 6. Diseases in the study area are encouraged by the environment and cultural habits.

Table6:Major Factors Causing Diseases in Bwari Area Council

Factors	Number of respondents	Frequency (%)
Blocked drains	**161**	**35.77**
Bushy environment	**57**	**12.66**
Dump sites/ waste mgt	**112**	**24.88**
Clustered buildings	**120**	**26.69**
Total	**450**	**100.00**

Source: Fieldwork, 2016

Environmental changes in the study area is fingered to be the lead to increased disease burden; for example when the season is changing from dry to rainy, there is increased incidence of diseases because the environment becomes so conducive for the breeding of causative organisms. The run-off of rain water carrying with it remains of excreta and carcass cause a lot of pollution to water bodies which are sources of water for inhabitants in the study area. This is a major source of infection to those using such water bodies for domestic purpose or the other. The habit is related to the dogged nature of indigenes with respect to tradition that makes them prefer water from the stream to pump water supply and would rather use the bush for toilet than pit.

Clogged gutters and blocked drains constitute a major health issue in the area as they house many micro-organisms that cause ill-health to man. They also serve as a comfortable abode for disease vector organisms. Plate II shows a blocked drain in the study area and 35.77% of the respondents are of the view that blocked drains have effects on human health.

Disease causing organisms are known to incubate in bushy and unhealthy environments, especially the humid ones. Thus 12.66% of the respondents are of the view that bushy environment could encourage environmental diseases. Garbage dump sites in the study area are in heaps and close to areas of residence. These sites are also breeding places for such disease causing organisms like sand fly and rodents. Some pets like dogs kept by residents also feast on some wastes at these sites. Above all, some chemicals produced from putrefaction activities pollute ground water. Plate I shows a communal garbage dump site close to residential area, a haven for disease carrying organisms. No wonder 24.88% of the respondents agreed that unkept dump site is a factor leading to environmental diseases.

Plate II: Blocked Drain in Kubwa
Source: Fieldwork, 2016

Plate IIIshows clustered housing units in the study area, so clustered that buildings are poorly ventilated; a factor that can lead to environmental diseases. Results show that buildings are tightly close so much so that more than half of the buildings are separated by about 2meters on the average. According to Krieger (2004), poor housing conditions are associated with a wide range ofhealth conditions, including respiratory infections, asthma,lead poisoning, communicable diseases, injuries, and mental health. Today, public health officers employmultiple strategies to improve housingto encourage indoor environmental quality.

Plate III: Clustered Buildings Within Bwari Area Council. Source, fieldwork, 2016

PREVALENT DISEASES IN THE STUDY AREA

Some diseases were identified in the course of this study. Their prevalence in the study area is illustrated in Figure4.

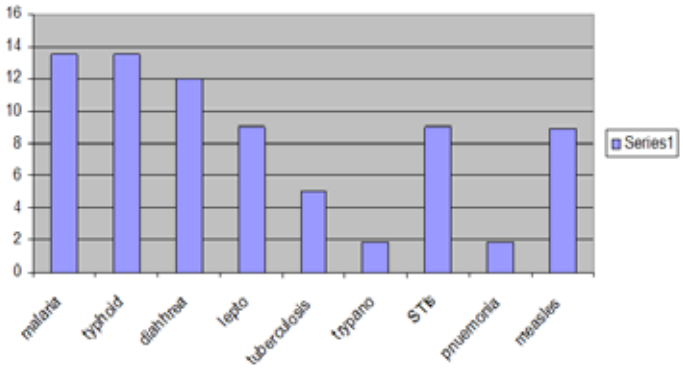

Figure 4: Prevalent Diseases in Bwari Area Council. Source: fieldwork, 2016.STIs – Sexually Transmitted Infections.

The respondents believe that malaria and typhoid take the lead with 13.56%, followed by diarrhea with 12%, leptospirosis, measles and STIs with 9% each. Tuberculosis follows these with 5.08%. Others include trypanosomiasis and pneumonia with 1.99% respectively. A breakdown of the prevalence of diseases shows that it varies by the seasons. The prevalent diseases in the rainy season in the study area include malaria, typhoid, pneumonia and diarrhea. Prevalent diseases in the dry season are more; it includes malaria, typhoid, diarrhea, tuberculosis, asthma and cataract with asthma and cataract taking the lead.

EFFECTS OF DISEASES ON HUMAN RESOURCES

Figure 5 shows that 37% of the respondents agree that some of these diseases tell very much on their finances. This includes the money spent buying drugs, foods, and transportation to and from health facilities. Part of the problem with diseases in developing nations is that poor people cannot meet the expense of and time it takes to access treatment for them and their children, many of whom are already weakened by an inadequate diet (Encarta, 2008). This is supported by some of the residents in the study area who claim they spend N4, 000.00/month on the average for treatment. Also 32% agree that the disease burden tells on their output in their workplaces. Either they are sick or their wards are, but whoever is, excuses are made from offices to take care of the sick.

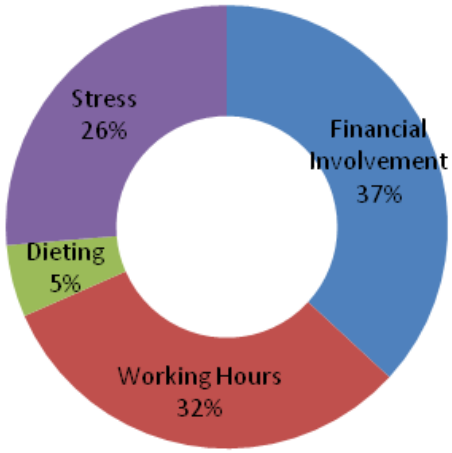

Figure 5: Effects of Diseases on Human Resources in Bwari Area Council
Source: Fieldwork, 2016

Eight men and twelve women say they lose about 10 to 12 hours on the cumulative as a result. This leads to a low output in production, thus reducing profit maximization of these work places, which in turn will affect the GDP of the country. Furthermore 25.5% agree that the disease burden contributes serious stress on them. Stress influences mental health as well as physical health. People who experience a high

level of stress for a long time—and who cope poorly with this stress—may become irritable, socially withdrawn, and emotionally unstable.

Finally, 5.5% agree that household diseases tell on them so much that huge resources are spent dieting. Eating the right foods can help one avoid certain diseases or recover faster when illness occurs. These and other important functions are fueled by chemical substances in our food called nutrients. They spend on the average about N6, 000.00/month from a meager income. Thus the implication of the environmental risk factors identified in this study is directly proportional to the health conditions of the residents.

CONCLUSION

This study investigated the effects of environmental diseases on the residents of Bwari Area Council in Abuja. Understanding this environment and the factors that could lead to environmental diseases in man formed the baseline for this study.

The conceptual framework of this study was based on some environmental risk factors, which include poor water management and supply, inadequate sanitation, improper personal and household hygiene, indoor air pollution, inadequate waste management, which invariably lead to diseases. These diseases on the other hand impact negatively on human resource by reducing output and causing stress on the people and their finances, thus affecting the general economy negatively.

The health of the urban poor is further compromised by unsatisfactory man-made conditions of the living environment in high density urban areas – poor housing, overcrowding, pollution and increased exposure to infectious diseases which are reinforced by social and psychological problem.

This study has shown that cultural factors that aid diseases like the number of people living per room; source of drinking water; types of toilet used by respondents; proximity of dump sites to their homes; source of cooking fuel and domestication of animals could adversely affect human health and wellbeing. Also there are cases of overcrowding, residents sourcing drinking water from unhealthy sources, defecating in unhygienic places, existence of blocked drains and bushy environment, use of sawdust and wood to cook in and around their premises and keeping animals which could compound the vulnerability of humans to diseases.

It was discovered that these factors all encourage the multiplication of vectors by affording them a conducive habitat. It has also been demonstrated that the diseases are varied according to the seasons and that they have four major effects on human resources in the study area which are stress, erosion of finance and resources, forced dieting and reduction in the number of working hours.

It could be concluded also that the result of this study would be applicable in other areas of the country with similar environmental conditions.

RECOMMENDATIONS

Many measures can indeed be taken with proper management to reduce the environmental disease burden in the area. Some of the recommended measures are stated below.

There is a need for the promotion of safe household water and better hygiene measures.

The promotion of safe food for human consumption is to be pursued. To this end, the government should regulate what people eat and where they are sited.

The number of health facilities has to be increased especially the dispensaries, with enough medical personnel.

A proper cultural waste management system should be introduced.

There is the need for veterinary regulation for the care and control of animals kept by residents.

Development of sustainable conservation methods that protect the environment and meet the basic needs of citizens is key.

Environmental policies centered on new construction of buildings should be enforced, especially obtaining building approval from appropriate quarters.

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