

Effects of Deforestation on Human Health in Yelwa Forest of Doma Local Government Area of Nasarawa State, Nigeria

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Abstracts: - The increase in demand for timber, fuel wood, charcoal, agricultural land and urbanization has placed pressure on forest resources in Nasarawa State. The study examined effects of deforestation on human health in Nasarawa State of Nigeria. The study adopted purposive sampling technique to choose the study area (Yelwa forest) in Doma LGA of Nasarawa state, and systematic sample was used to administer the questionnaires. The study revealed that majority (46.5%) of the respondents point out that logging activity is the main factor responsible for deforestation in the study area. More so, 69% of the respondents reported that malaria is the frequent disease in the study area. Also 59.6% of the respondents asserted that malaria is the most common disease their family members have been experiencing. In line with the findings the study recommends that there should be proper management and intensification of existing agriculture rather than expanding it on virgin lands.

Key Words: Deforestation, Health, Effects and Forest

I. INTRODUCTION

The world's most challenging environmental problem currently is the destruction of its forest cover. The world forests are under tremendous pressure and many concern people are of the belief that something needs to be done if the forests need protection. The importance of the natural resources to humanity cannot be over emphasised. The livelihood of mankind is dependent on these resources with no exception of the forest cover. Human beings have always used the forests for habitation, protection against enemies, food security, source of medication and above all as their environment (Asare, 2005).

Many forests around the world, especially the rainforest contain medicinal plants that provides important component of health care delivery across the world (FAO, 2010). According to Food and Agriculture Organisation (FAO, 2010) more than two-thirds of all medicines found to have cancer fighting properties have their sources from rainforest plants, the rapid destruction of the forests subjects the formal and informal pharmaceutical industries to lack of potential new drugs due to loss of forest resource.

Globally the rate of deforestation annually is around 13 million hectares, most of which occurs in the developing world (FAO, 2010; CIFOR, 2005). The annual rate of

deforestation in Nigeria is 3.5% approximately 350,000-400,000 hectares per year. The FAO list the requirement of sustainable forest management as: extent of forest resources, biological diversity, forest health and vitality, productive function of forest resources, socio-economic functions and a legal, policy and institutional framework. Many aspects of the outline are currently not being met and will continue to have detrimental effects if not quickly addressed.

(FAO, 2005), noted that Nigeria has the highest rate of deforestation in the world, between 2000 and 2005 and the country lost 55.7% of the primary forest, which contribute to the rate of the forest change increase by 31.2% to 3.12% per annum. Forest has been cleared for logging, timber export, subsistence agriculture, mining, urbanization, industrialisation, and notably the collection of wood for fuel which remains problematic in West Africa; from 1990 to 2010 Nigeria nearly lost half their amount of forest cover, moving from 17,234 to 90,414 hectares. The combination of extremely high deforestation rates increased temperatures and decreasing rainfall are all contributing to the desertification of the country. (Alao, 2009) stated that forestry development in Nasarawa State faces a very bleak future. In the same view, (Franciset al. 2011) found out that there is deficit of wood in North and middle belt of Nigeria.

(Wilson, 1995) conducted a study in 70 communities in Mexico, median temperature during the rainy season was the strongest predictor of dengue fever with vector being mosquitoes, higher temperatures increased vector efficiency. Causes of climate change such as deforestation influence higher temperatures. That is why mosquitoes are very common in Africa, Asia and Latin America due to higher temperatures.

(Corey et al, 2007) conducted a study using data collected from 1990 to 2000 from 56 developing countries, using generalized linear and mixed effects models contrasted with information theoretic measures of parsimony that flood frequency is negatively correlated with the amount of remaining natural forest and positively correlated with natural forest area loss (after controlling for rainfall, slope and degraded landscape area). During the decade nearly 100 000 people were killed and 320 million people were displaced by floods, with total reported economic damages exceeding

US\$1151 billion. These associations are very significant as far as the dynamics of flood is concern.

Moussa, 2015 studied the impact of land use and climate change on vegetation dynamics of Doma forest reserve in Nasarawa state, using Remote Sensing, GIS techniques and field data measurement, and the result of the forest reserve normalized difference vegetation index (NDVI) analysis revealed that high positive NDVI value of + 0.57 was recorded in 1999 while the lowest of -0.035 occurred in 1984 and followed by + 0.05 of 2015. Also there was much reduction in Doma forest reserve greenness in 2015. As for Doma forest reserve woody flora description, the analysis showed that 36 woody species were recorded belonging to 16 botanical families and 36 genera within 10 plots but Fabaceae had the highest number of woody species (seven species) distributed in seven genera. The study also revealed that there was unsuitable land use practice such as the use of fire, cutting down the trees for land clearance, the collection for timber.

Forests cover almost one third of the earth's land surface providing many environmental benefits including a major role in the hydrologic cycle, soil conservation and prevention of climate change and preservation of biodiversity (Sheram, 1993). Forest resources can provide long term national economic benefits. For example, at least 145 countries of the world are currently involved in wood production. Sufficient evidence is available that the whole world is facing an environmental crisis on account of heavy deforestation. However, it is obvious that the area of tropical rainforest is diminishing and the rate of tropical rain forest destruction is escalating worldwide, despite increased environmental activism and awareness (Anon, 1994).

A basic definition of a forest is that, it's an ecosystem or assemblage of ecosystems dominated by trees and other woody vegetation. According to FAO (2010), a forest is a land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds situated naturally and uninterrupted.

Deforestation is the conversion of forest to an alternative permanent non-forested land use such as agriculture, grazing or urban development (van Kooten and Bulte, 2000). Roseann (1990) also defined deforestation as the process by which land is cleared of forests or trees. Deforestation, which is sometimes euphemistically called "timber extraction", occurs throughout the developed and developing world and can be seen as a by-product of industrialization and development process.

Health is a state of complete physical, mental and social wellbeing of an individual, and not merely the absence of disease and infirmity (World Health Organisation, 2005). An alteration in the living cells of the body which jeopardizes survival in the environment results in diseases, health problems arise from a variety of man's activities include

industrialisation, farming, mining, migration and others. Health is the level of functional and metabolic efficiency of living organism. In human it is the ability of individual or communities to adopt and self-manage when facing physical, mental, psychological and social change with environment (Huber et al, 2011). Generally, the context in which an individual lives is of great importance for both his health status and quality of their life. It is increasingly recognised that health is maintained and improved not only through the advancement and application of health science, but also through efforts and intelligent lifestyle choices of the individual and the society.

According to (WHO, 2011) the main determinants of health include the social and economic environment, the physical environment, and the person's individual characteristics and behaviors. More specifically the key factors that have been found to influence whether people are healthy or unhealthy include the following; income and social status, social support network, education and literacy, employment/working conditions, social environment, physical environment and personal health practices and coping skills (WHO, 2011).

Proximity of Nasarawa state to Federal Capital Territory is of advantage, this is because of the fact that in the year 2004 most of the displaced persons from the federal capital territory due to the massive demolition found solace in Nasarawa state. Today thousands of victims of insurgency have also relocated to the north central state, especially to the nearby settlements including keffi LGA and Karu LGA and its surroundings thereby promoting intensive pressure on land acquisition for infrastructure, urbanization, agriculture, energy production, hunting with attendant consequences on the forest resulting in deforestation and land degradation (Guardian newspaper, 2015).

Increasing challenges of deforestation globally due to urbanisation, the United Nations in 2008 launched the Reducing Emission from deforestation and forest degradation plus (REDD+) programme. The REDD+ is an effort to create a financial value for the carbon stored in the forests, offering incentives for developing countries to reduce emissions from forested lands and invest in low carbon paths to sustainable development (Guardian newspaper, 2015). It's against this backdrop it become imperative to assess deforestation and its effects on human health in Nasarawa state of Nigeria.

This paper examined the effects of deforestation on human health in Nasarawa state of Nigeria. Specifically the objectives of the paper are to:

- I. Identify the causes of deforestation in the study area.
- II. Determine the diseases prevalent in the surrounding communities resulting from deforestation in the study area.

II. STUDY AREA

The study area is located in North Central Nigeria. It lies between latitude 8°16'915" N to latitude 8°17'884"N of the equator and Longitude 8°17'135" E to longitude 8°17'955"E of the Greenwich meridian in Doma local government of Nasarawa State of Nigeria. The study area falls predominately under Guinea savannah also the study area covers 86,374.40 hectares of land with the elevation 151 meters above sea level. Doma forest reserve covers 86,374.40 hectares of land. Doma local government area has an area of 2,714 km² a population of 139,607 (NPC, 2006).

III. METHODOLOGY AND RESEARCH DESIGN

Purposive sample selection was used to conduct this study on effects of deforestation on human health in Nasarawa state of Nigeria. This sampling was used for this study because the forest is undergoing serious logging activities. Yelwa forest in Doma local government area was selected for this study. To determine the sample size of this study (Krejcie and Morgan's, 1970) method of determining sample size was adopted, systematic sample were used to administer the questionnaires and 385 copies of questionnaire were administered, out of the 385 questionnaire administered 372 were fully answered and returned. The objectives of this study were achieved through primary, secondary source data and field observation to examine deforestation and its effects on human health in the study area.

IV. RESULTS AND DISCUSSION

Causes of Deforestation

Forest loss in the study area has therefore been caused by the interaction of different factors identified as distal driving forces such as poverty, population growth and weak government policies, but more importantly farming, urbanization and logging.

Table 1: Causes of Deforestation

Factors	Frequency	percentage
Farming	147	39.5
Logging	173	46.5
Urbanisation	52	13.9
Total	372	100

Source: Field Survey, 2017

Table 1 revealed that 46.5% of the respondents point out that logging activity is the most important factors responsible for deforestation in the study. This is due to the fact that most population across the globe especially the third world countries depend on wood fuels as energy. Firewood and charcoal are mostly used domestically for cooking and heating in many parts of Africa.

Effects of Deforestation on Health

There are several direct and indirect linkages of deforestation and human health. Therefore to find remedies to alleviate these unhealthy situations created by deforestation, if not completely eradicate them, it is prudent to identify the main causes of the disease (health impacts) and destroy it or break the chain of connections between deforestation and human health.

Table 2: Deforestation and Health

Disease suffer	Frequency	Percentage
Malaria	257	69
Diarrhoea	43	11.5
Fever	72	19.3
Total	372	100

Source: Field Survey, 2017

Opinions on effects of deforestation on health were sought from respondents. Table 2 gives the respondents' responses on the diseases they usually contracted in the study area, and this shows that majority of the respondents (69%) identified malaria as the frequent disease in the study area.

Table 3: Family Frequent Disease

Malaria	222	59.6
Diarrhoea	56	15
Fever	94	25.2
Total	372	100

Source: Field Survey, 2017

The respondents were further asked about disease that is common in their families. Majority of the respondent (59.6%) asserted that malaria is the most common disease their family members are experiencing. Deforestation and combustion of biomass produce excessive greenhouse gases such as carbon dioxide (CO₂) that helps contribute to global warming. Malaria is the most common infectious disease that takes many lives especially that of women and children in Africa due to much forest loss (deforestation) causing climate change which promote mosquito breeding. 52.4% of the respondents asserted that the diseases endemic in the study area were as a result of deforestation with 47.5% refuting this claim

Table 4: Source of Medicine

Hospital	85	22.8
Traditional Medicine	138	37
Drugs Stores	149	40
Total	372	100

Source: Field Survey, 2017

On sources of medicine in the study area, majority (40%) of the respondents identified drug stores as the major source of medicine. The forest floor primary growth is thick and well shaded and with rich layer of acidic organic material

that renders unfavourable conditions for mosquito breeding. But many of these forests is destroyed for agricultural activities or burnt for charcoal or in search of bush meat exposing the deforested area to sunlight which raises the temperature favourable for mosquitoes breeding.

This is consistent with the research result of (Wilson, 1995) who opined that incidence of malaria is directly associated with the high rate of deforestation in Mexico, median temperature during the rainy season was the strongest predictor of dengue fever with vector being mosquitoes with the effects of higher temperatures increased vector efficiency. Causes of climate change such as deforestation can influence higher temperatures. That is why mosquitoes are very common in Africa, Asia and Latin America due to higher temperatures.

Table 5: Top 5 Causes of out Patient Attendance from 2013-2017 in the study area

No.	Years	2013	2014	2015	2016	2017
1		Malaria	Anaemia	Ulcer	Skin disease	Malaria
2		Ulcer	Malaria	Malaria	Malaria	Diarrhoea
3		Malaria	Malaria	Diarrhoea	Ulcer	Anaemia
4		Diarrhoea	Malaria	Malaria	Malaria	Malaria
5		Ulcer	Skin disease	Malaria	Malaria	Malaria

Source: General hospitals in the study area, 2017

Evident from the hospital record revealed that malaria is the most frequent diseases recorded in the study area from 2013- 2017. To confirm this, some health workers including medical officers and nurses were interviewed at the hospital, they asserted that there is high prevalence rate of malaria among patients in the study area, high prevalence of malaria in the study area is attributed to mosquito breeding due to the climate change.

V. CONCLUSION AND RECOMMENDATIONS

Health effects associated with deforestation activities are noteworthy. The research revealed that there is high prevalent rate of malaria among residents of the study area which is indirectly associated with deforestation activities in the study area. High prevalence of malaria in the study area is attributed to mosquito breeding from climate change, high rate of deforestation lead to increase in temperatures which in long run increase the rate of mosquitoes breeding that result to high cases of malaria in the study area.

Based on the findings from this study, the following recommendations were made to reduce the effects of deforestation on human health in the study area.

- Individual and households in the study area should be educated on the need to use mosquito nets in their rooms to avoid malaria infections through biting by mosquitoes.
- There should be proper management and intensification of existing agriculture rather than expanding it on virgin lands
- Stringent and rigorous efforts on re-forestation, and other measures aimed at restoring back degraded environment after deforestation activities should be intensified by the government. This will reduce the negative environmental and health impacts on the people in the study area.

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