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# HEALTH IMPACT OF DEFORESTATION ON RURAL COMMUNITIES IN SOUTHERN KADUNA SENATORIAL DISTRICT

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**ABSTRACT:** Forests significantly contribute to human health. Deforestation of these forests can have notable direct and indirect effects on human well-being. Deforestation greatly disrupts the ecological balance, leading to the spread of disease pathogens and their carriers in rural communities in the Southern Senatorial District of Kaduna State. This study examines the health impact of deforestation in the area, with a specific focus on adverse health outcomes. It explores and describes health-related perspectives linked to deforestation in rural communities. The research used both qualitative and quantitative social research methods for data collection. Questionnaires were randomly distributed to 600 respondents across four selected Local Government Areas, and ten key informants were also interviewed. Data analysis incorporated descriptive statistical techniques for the quantitative data and content analysis for the qualitative data. The results showed a high prevalence of malaria among residents, which is indirectly associated with deforestation as a result of the rise in temperatures, which, over time, enhances mosquito breeding and leads to more cases of malaria. The study recommends that relevant authorities, like the State Government, in collaboration with the LGAs, educate communities on the severity of deforestation on human health. Additionally, relevant forest control agencies must understand the social perceptions of the people to aid in addressing complex social-environmental challenges and support policymakers in adopting more sustainable and inclusive forest management practices. Based on these findings, the study advocates for the proper management and intensification of existing agriculture rather than expanding into untouched lands.

**Keywords**: Deforestation, Health Impact, Rural Communities, Malaria, Southern Kaduna

## INTRODUCTION

Forests are vital to both humans and ecosystems worldwide. Humans depend on forests for fuel, food, fibre, carbon storage, biodiversity, construction materials, climate regulation, social activities, and health-supporting resources. As a result, forests significantly contribute to human well-being; their species are part of balanced diets and are included in traditional healthcare systems, providing primary healthcare for many rural communities. Furthermore, forests filter the air, regulate water cycles, and help reduce the impacts of climate change through carbon sequestration. Environmental changes driven by deforestation have substantial effects on human interactions and elevate health risks. WHO (1992) defines health as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity. Accordingly, the

primary determinants of health include the social and economic environment, the physical environment, and individual characteristics and behaviours.

The threat of deforestation, motivated by the quest to increase per capita income in the study area, is timely. The rate at which forest plants are exploited for economic and non-economic purposes in recent years has become a cause for concern. According to the International Institute of Tropical Agriculture (IITA) (2011), Nigeria is ranked as the worst country with the highest deforestation rate. The deforestation rate in Nigeria is 3.5%, resulting in the loss of approximately 400,000 hectares of land each year. The Federal Ministry of Environment reports that 400 out of every 1,000 hectares of forest land are deforested annually, with only 26 hectares reforested, resulting in 374 hectares of deforestation (Babalola, 2012). The alteration of these natural forest systems through deforestation has created opportunities for disease-causing pathogens, such as viruses or bacteria, to infect other organisms, including humans, with which they previously had no contact. Such events can directly or indirectly contribute to the emergence of new diseases seen worldwide today, such as Human Immunodeficiency Virus (HIV/AIDS), severe acute respiratory syndrome (SARS), and COVID-19.

The impact of deforestation is evident in the quality of life people experience (Afrane, Githeko, and Yan 2011). Trees supply the oxygen necessary for human respiration, and when large numbers of these trees are removed, the amount of oxygen decreases while carbon dioxide levels rise. Elevated carbon dioxide levels in the atmosphere are a major contributor to global warming and climate change. In Nigeria, deforestation accounts for 87 per cent of total carbon emissions (Balarabe, 2011), which consequently leads to increased air pollution. These changes have various effects on human health. When forests are disrupted by deforestation, loss of valuable and medicinal plants is evident (Peacock, 2011). The disappearance of medicinal plants hampers the treatment of illnesses like fever, fungal infections, burns, gastrointestinal issues, pain, respiratory conditions, and wound care (Haidet, 2003).

Studies have shown that deforestation has altered the distribution of malaria vectors and their associated risks (Austin, 2013; Burkett-Cadena & Vittor, 2018). Similarly, there is a link between deforestation and human malaria, as well as several ecological risks at local levels (Tucker Lima et al., 2017). Firstly, clearing forests can modify environmental conditions, such as increasing sunlight and local air and water temperatures. These changes affect the growth rate, larval development, and adult survival of vectors by creating ideal breeding sites and boosting adult productivity (Afrane et al., 2012; Kilpatrick & Randolph, 2012; Kweka et al., 2016). Secondly, it prompts behavioural changes in humans, such as increased contact with disease carriers, driven by the expansion of agricultural activities, logging and settlements. Together, these factors can contribute to an increase in the incidence of various diseases.

Fundamentally, water is essential for life, and deforestation activities impact the replenishment of the underground water table, leading to the drying up of rivers and wells. A shortage of water supply can cause waterborne diseases such as diarrhoea and vomiting. According to Jamie Bartram (World Health Organization 2020) and colleagues, a lack of safe drinking water is a ‘silent humanitarian crisis’ that kills around 3900 children every day and hinders progress towards the

MDG targets, mainly in Africa and Asia. According to the WHO (2020), approximately 50 litres of water per person per day are necessary to meet basic needs and minimize public health risks.

Deforestation causes soil in the area to be swept and washed away 10 to 40 times faster than it is replenished (Pimentel, 2006). The erosion of this agricultural soil poses a significant environmental challenge to crop production and the community's health. Reduced crop yields can lead to malnutrition, which impairs immune function and increases susceptibility to various health issues. Significantly, it affects the daily lives of rural farmers through its impacts.

The health effects of deforestation are numerous, including temperature-related illnesses and deaths, as well as extreme weather events and water and air pollution; some effects may be indirect. These indirect effects can result from the loss of natural 'goods and services' (leading to food and water shortages, as well as food-borne illnesses) and/or from changes in the transmission patterns of infectious diseases. For example, climate change might promote disease transmission by increasing pathogen reproduction and survival (due to higher temperatures), and by reducing predators of disease vectors (because of loss of biodiversity) (Riesco, 2005).

Deforestation is a critical issue that is impacting the health and well-being of communities in the Southern Kaduna district of Nigeria. The destruction of forests for agricultural expansion, logging, and bush burning has led to a range of negative health outcomes for residents. There is a dearth of knowledge on the health impact of deforestation in the study area. Therefore, this study sets out to investigate the health impact of deforestation on rural communities in the Southern Senatorial District of Kaduna State.

## MATERIALS AND METHODS

This cross-sectional descriptive study was conducted in the Southern Senatorial District of Kaduna State, Nigeria. The zone comprises the following Local Government Areas: Jaba (LGAs), Jema'a, Kachia, Kagarko, Kaura, Kauru, Sanga, and Zango Kataf. It is a multicultural society comprising closely related ethnic groups and several subgroups united by a shared culture and history. The primary occupation of residents is farming, alongside various commercial activities. The choice of the Southern Senatorial District of Kaduna was based on the observed rate of male and female involvement in deforestation in the area. The study population includes both males and females, land users, government officials responsible for forestry, health officials, and community leaders within the study area.

A multistage sampling method was used to select respondents. Initially, purposive sampling identified four LGAs based on forest resource availability: Sanga with 11 wards, Kagarko with 10 wards, Zango Kataf with 11 wards, and Kachia with 12 wards. Sanga LGA has five wards with forest cover, Kagarko has six, Kachia has seven, and Zango Kataf has six. Next, a simple random sampling technique was used to select two wards from each forested ward within each LGA. These include Gwantu and Gwantu West wards in Sanga LGA, Kurmin Jatau and Kagarko South wards in Kagarko LGA, Kurmin Masara and Kamaru wards in Zango Kataf LGA, and Katari and Gidan Tagwai wards in Kachia LGA. Subsequently, purposive sampling was used to select the headquarters of the political wards, based on their population size. Then, a purposively chosen

major street was selected, and houses were numbered. Systematic sampling was used to select 75 households from each street, with an interval of four, to contact the respondents. A total of 600 questionnaires were administered to respondents in the study area.

The questionnaires, which provided the study with quantitative data, were administered by four research assistants who have degrees in social sciences and are fluent in the local language, English, and Hausa. The research assistants were adequately trained in research ethics and in administering the questionnaire. In addition to administering it, they also read the questions to respondents who are aged or non-literate, and translated the questions when necessary. Key informant interviews were also conducted, involving four community leaders, four government forestry officials from the selected LGAs, and two healthcare professionals. The in-depth interviews included lead questions focused on the research objectives, providing the study with qualitative data. They were conducted by the researcher in English at the convenience of the interviewees. Instruments such as a recording device, pens, and a notebook were used for the interviews. The qualitative data were presented and analysed through respondents' narrative statements, which were used to supplement the quantitative data. Observed patterns and inferences were also described in respondents' narratives. The questionnaire data were analysed using the Statistical Package for the Social Sciences (SPSS) version 23. Descriptive statistics such as frequency distributions and percentages were employed. Additionally, a content analysis approach was used, with discussions transcribed and presented verbatim.

## RESULT AND DISCUSSION

Data analysis is based on five hundred and twenty (520) copies of questionnaires retrieved from the six hundred (600) administered questionnaires and ten (10) Key informant Interview sections.

### Socio-Economic Characteristics of Respondents

**Table 1: Socio-economic Characteristics of the Respondents**

| Variables | Frequency | Percentage (%) |
|---|---|---|
| **Sex**: | | |
| Male | 360 | 69.3 |
| Female | 160 | 30.7 |
| **Total** | **520** | **100** |
| **Age**: | | |
| <35 years | 9 | 1.7 |
| 40- 44 | 127 | 24.4 |
| 45-49 | 180 | 36.6 |
| 50 and above | 204 | 39.3 |
| **Total** | **520** | **100.0** |
| **Marital Status**: | | |
| Single | 7 | 1.3 |
| Married | 453 | 87.1 |
| Divorced | 50 | 9.6 |
| Widowed | 10 | 2.0 |

| | | |
|---|---|---|
| **Total** | **520** | **100** |
| **Level of Education**: | | |
| Non-formal education | 40 | 7.7 |
| Primary | 75 | 14.4 |
| Secondary | 198 | 38.1 |
| Tertiary | 207 | 39.8 |
| **Total** | **520** | **100.0** |
| **Occupation**: | | |
| Farming | 380 | 73.1 |
| Trading | 36 | 6.9 |
| Civil servant | 84 | 16.2 |
| Artisan | 20 | 3.8 |
| **Total** | **520** | **100** |
| **Income per annum**: | | |
| Less than ₦200,000 | 25 | 4.8 |
| ₦200,001-₦300,000 | 148 | 28.5 |
| ₦300,001-₦400,000 | 154 | 29.6 |
| ₦400,001-₦500,000 | 95 | 18.3 |
| ₦500,001 and above | 98 | 18.8 |
| **Total** | **520** | **100.0** |

*Source: Field survey, 2024*

Table 1 shows that the majority (69.3%) of respondents are male, while 30.7% are female. This suggests that most deforesters are male adults. The table also indicates that 87.1% of respondents are married, with the least common marital statuses being divorced (9.6%) and widowed (2.0%). It further reveals that a significant portion of respondents are educated—38.1% have secondary school education and 39.8% possess tertiary education—implying they can understand issues related to deforestation. The extent of deforestation in the study area indicates that a higher percentage (73.1%) of the population relies on farming, particularly crop cultivation, which involves cutting down trees and converting forested areas into farmland. Field investigations confirmed that the primary method of increasing agricultural output was through the clearing and conversion of primary forests into farmland.

**Respondents' Knowledge of Deforestation**

The health impact of deforestation cannot be discussed effectively without a clear understanding of what deforestation entails. The respondents were asked about their understanding of deforestation in the study area, and their views are presented in Table 2.

**Table 2: Distribution of Respondents' Knowledge of Deforestation**

| Awareness | Frequency | Percentage |
|---|---|---|
| Yes | 470 | 90.4 |
| No | 50 | 9.6 |
| **Total** | **520** | **100.0** |

*Source: Field survey, 2024*

Table 2 indicates that most respondents (90.4%) are aware of deforestation activities in the study area, while 9.6% appear to have limited understanding of the impact of deforestation on human life. This suggests that communities recognise deforestation but are either unable to prevent it or feel helpless to control the activities.

**The Drivers of Deforestation**

Several factors were reported to have influenced deforestation in the study area. Table 3 presents the respondents' views on the causes of deforestation.

**Table 3: Causes of deforestation**

| **Variable** | **F**requency | percentage |
|---|---|---|
| Urnaization | 71 | 13.6 |
| The high cost and scarcity of kerosene and cooking gas | 184 | 35.4 |
| The timber (Log) and wood/charcoal consumption | 215 | 41.4 |
| Clearing of trees for the expansion of farming land | 29 | 5.6 |
| Weak law | 21 | 4.0 |
| **Total** | **520** | **100.0** |

*Source: Field survey, 2024*

Table 3 shows that most respondents (41.4%) identified timber (logging) and wood/charcoal consumption as the main causes of deforestation. This suggests that the majority of wood used as fuel results from the high demand for wood fuel, driven by the inaccessibility and high cost of modern fuels, making it the primary cause of deforestation. The high price and scarcity of kerosene/cooking gas (35.4%) are other factors contributing to the use of fuel wood. The quotes below reflect the opinions of community leaders' experiences: a 54-year-old community leader in Kachia said:

> The scarcity and high cost of kerosene, which has been our primary cooking fuel, are no longer evident. Even if it is available, many cannot afford to buy it; a 50cl bottle costs between ₦700 and ₦900. Considering the family sizes in the community, which range from eight to twelve members per household, one would need a substantial amount of money to buy kerosene for cooking, as cooking may be needed two or three times a day. The difficulty in obtaining kerosene has led people to engage in firewood and charcoal trading, contributing to deforestation.

Corroborating this statement, a 48-year-old forest official from Sanga Local Government said:

> Many forests are destroyed for agricultural practices or burned for charcoal or in search of bush meat, exposing the deforested areas to sunlight, which raises the temperature and makes it favourable for

> mosquitoes to feed. Yet, people are not willing to plant trees but are eager to cut down existing ones, which were not even planted or cared for by them. Most of the old trees you see around have been there for years, and if we allowed communities to cut them down, none of these would be present here. People living nearby enjoy the shade provided by these old trees, but no effort is made to replace them.

The finding implies that agriculture, which has been the primary cause of deforestation as shown in other studies (Tindan, 2013; Insaido et al, 2012, and Beyene, 2011), is overtaken by timber (Logging) and wood/charcoal consumption. This suggests that the steady increase in utilisation of fuel wood as a result of the lack of access to clean, affordable energy has opened more channels for health problems in the study area.

**Impact of Deforestation**

Participants during the interview identified the importance of forests as mainly dependent on the needs of the social community concerned, and that deforestation has facilitated communities' development, such as building residential houses, factories, and other structures. Participants also noted that deforestation is necessary for constructing roads, improving transportation and trade, and making life more suitable for people. Similarly, they recognised the negative impacts, such as environmental degradation, which can make human existence unbearable. The distribution of the survey respondents according to impact is presented in the Table.

**Table 4: Positive impact of deforestation on the socio-economic livelihood of communities in the Southern Senatorial District**

| Positive impact | Frequency | Percentage |
|---|---|---|
| Expansion of farm lands for the production of food crops | 54 | 10.4 |
| Fuel wood is the main affordable energy for cooking | 267 | 51.3 |
| A means of creating a healthy environment | 27 | 5.2 |
| Source of income for traders in wood/charcoal | 150 | 28.8 |
| Urban expansion | 22 | 4.2 |
| **Total** | **520** | **100.0** |

*Source: Field survey, 2024*

Table 4 indicates that most respondents (51.3%) reported that fuelwood is the most affordable energy source for cooking. This aligns with the report by the National Bureau of Statistics (2024), which states that Nigerians rely on fuelwood for up to 75% of their annual energy needs, while 4.2% cited urban expansion. This suggests that communities cut down trees to source wood for their domestic needs. Interviews with forest officials also support the ongoing demand for wood despite regulations concerning deforestation. A 48-year-old forestry officer in Sanga Local Government Area stated:

> Thousands of people in this area rely on the forest for their subsistence and income. The trade in wood products is a clear source of significant income and their well-being. The irony of it all is that the forest and the trees are almost gone, leaving only open fields.

Expressing a similar view, a 60-year-old community leader from Kagarko said:

> …Forests around us have been providing us with firewood for our cooking, medicine, timber to build our houses, but we need to reduce them to get land for farming.

The statements show that forests in the district are serving the people immensely.

In another dimension, the respondents identified the negative impact of deforestation as presented in Table 5

**Table 5. Negative impact of deforestation in the Southern Senatorial District**

| Variable | Frequency | Percentage |
|---|---|---|
| Soil erosion and Loss of soil fertility | 167 | 32.1 |
| Biodiversity loss | 195 | 37.5 |
| Vegetation degradation | 50 | 9.6 |
| Risk of disease pandemics, | 63 | 12.1 |
| Flooding | 45 | 8.7 |
| **TOTAL** | **520** | **100.0** |

*Source: Field survey, 2024*

Table 5 shows that among the negative effects, biodiversity loss (37.7%) is the most common. Meanwhile, 32.1% of respondents indicated soil erosion and loss of soil fertility. Cumulatively, the table reveals that deforestation impacts various sectors of communities, with some being more affected than others. Additionally, the 60-year-old community leader from Kagarko, during the interview, asserts that:

> The rate at which wood fuel harvests, timber harvests, forest fires, and road construction have affected this area cannot be measured. It has led to soil erosion, poor water quality, harsh weather, and exposure to new diseases that we have never experienced before. For instance, we cannot relate well with our kinsmen; people are compelled to wear nose masks in fear of the new disease.

Explaining further, a 46-year-old forest officer from Zango Kataf said:

> Deforestation is a complex and multifaceted issue that affects both the environment and the social structures of communities. It is a fact that people gain many benefits from the forest, but when forests are

> destroyed, the resources they provide are lost, leaving those who depend on them without a means of support. My colleagues and I are trying to help communities understand this, but they feel that the forest belongs to them.

These statements imply that ongoing deforestation can lead to loss of livelihood assets and outcomes like incomes, employment, food, medicine, and social unrest for most of the population in forest fringe communities who directly and indirectly depend on forest resources for their survival (Owusu et al, 2011; Mayers & Vermeulen, 2002). Since the survival of most households depends on these livelihoods, it is likely to aggravate poverty, which is often endemic in rural areas and can expose them to various health challenges.

A 54-year-old community leader from Kachia Local Government Area who participated in the interview stated:

> The impact of deforestation on people's lives is often overlooked, but it is undeniable that the loss of forests can have extensive health consequences. Due to forest loss in my immediate community, we have lost our village square's gathering spot, which was often held under the trees, lost the fresh air we breathe, lost livelihoods, and lost our cultural and spiritual connection to the forest.

Sharing a similar view, a 58-year-old community leader from Zango Kataf said:

> My community depends on fuel wood from the forest for cooking and roofing our houses, but to be honest, we are not planting new trees. The existing ones are gone, leaving us with unfertile land and exposure to many health challenges. Rivers that once supplied drinking water and other domestic needs have dried up. There is conflict over the little fertile land, and I have witnessed families relocating to other communities in search of better opportunities.

These statements imply that deforestation enables the earth’s soil to run off into sources of water supply due to the absence of tree roots to absorb water, thereby causing water pollution and health consequences.

**Health Impact of Deforestation**

Forests provide a wide array of health benefits for humans, and when they are not available, it subjects people to health challenges. The respondents were asked about the most significant health benefits derived from forests and subsequently the health challenges of deforestation; the results are presented in Tables 6 and 7.

**Table 6: The most health benefits derived from forests**

| Variable | Frequency | percentage |
|---|---|---|
| Reducing heat | 66 | 12.7 |
| Reducing stress | 54 | 10.4 |
| Filters the air for human breathing | 105 | 20.2 |
| Enhance the immune system | 65 | 12.5 |
| Help to recover from illness | 72 | 13.8 |
| Provide nutritious food | 84 | 16.2 |
| Provide powerful medicinal values | 74 | 14.2 |
| **Total** | **520** | **100.00** |

*Source: Field survey, 2024*

Table 6 shows that 20.2 per cent of respondents believe that forests filter air for human breathing, while stress (10.2 per cent) is less common among other health benefits. During the interview, a 63-year-old community leader from Sanga said:

> The value of forests for our existence cannot be overemphasised. In this area, we derive many health benefits from the forest. For instance, the air we breathe in this community is different from the air I usually experience when I am in towns like Kaduna or Jos. The air in town areas is filled with bad odours, and continuous exposure to such air may make one ill. Also, you can spend time doing various activities in these forests without getting tired.

Sharing a similar view, a 48-year-old forest officer from Sanga said:

> We are trying to preserve the forest for the well-being of our people because the forests around the area help to combat malnutrition and diseases prevalent in people. I believe the edible plant materials found in these forests provide high antioxidant activity, which reduces the risk of chronic diseases, such as heart disease, lung cancer, prostate cancer, and asthma. Therefore, the preservation of forests and woodlands is extremely important for the supply of forest food, especially for its nutritional value.

It can be inferred from the statements that forests can provide a rich source of medicinal and nutritional resources for people. Additionally, they promote mental and physical health in various ways by reducing stress and fatigue, while also enhancing both psychological and physical rehabilitation.

**Health Challenges of Deforestation**

Despite the forest's benefits to the people, it was observed that deforesting these forests and their associated uses presents several health challenges, primarily by disrupting ecosystems and

increasing the risk of disease transmission. It can cause the spread of zoonotic diseases, respiratory problems from smoke exposure, and heightened vulnerability to climate change impacts. A 42-year community health officer in Kachia Local Government highlights common health issues when she said:

> The common health challenges associated with forest clearing include malaria, typhoid fever, diarrhoea, respiratory conditions, water-borne diseases, heat stroke, and hypertension. Most of these ailments are directly or indirectly related to forest clearing. For instance, the immediate effects associated with fuel wood combustion include respiratory illness due to inhalation of high levels of particulate matter and eye ailments. The majority of people in this area, especially women and children, prefer to use wood or charcoal for cooking, so they stand at high risk of these illnesses.

The respondents were asked about their experiences of the diseases that are common in their families as a result of deforestation, and these are presented in Table 6

**Table 7: Common Health Challenges Experienced by Families**

| Variable | **Frequency** | **percentage** |
|---|---|---|
| Malaria | 303 | 58.3 |
| Typhoid Fever | 102 | 19.6 |
| Diarrhoea | 70 | 13.5 |
| Respiratory | 20 | 3.8 |
| Water borne | 15 | 2.8 |
| Heat stroke | 10 | 2.0 |
| **Total** | **520** | **100** |

Table 7 shows that most respondents (59.6%) stated that malaria is the most common disease affecting their family members. Malaria is the leading infectious disease, causing many deaths, particularly among women and children, due to significant forest loss (deforestation), which leads to climate change and encourages mosquito breeding. Supporting this, a 42-year-old female health professional from Kachia said:

> Many people are now infected with malaria every year, and this type of malaria is closely linked to deforestation, which constitutes a major problem for us. Health officials have identified malaria as a significant driver of human infections and diseases in this area. The incidence continues to rise as forests recede further from nearby communities due to deforestation. The rate of complaints about malaria is quite alarming compared to some years ago, when the forests were closer to us.

Reiterating on the health challenges experienced by families in the study area, a 40-year health officer from Zango Kataf LGA said;

> Aside from malaria, typhoid, diarrhoea, and respiratory illnesses, there are other related illnesses arising from tree cutting, such as cough, backache, arising from repetitive lifting of heavy wood logs, snake-bite, accident, burns, wounds and chest pain, among many.

The finding is consistent with the research result of Wilson (1995), who opined that the incidence of malaria is directly associated with a high rate of deforestation in Maxico, whereby the increase in temperature facilitated the strongest predictor of dengue fever, with the vector being mosquitoes that are efficient at high temperatures. Deforestation and biomass burning release excessive greenhouse gases, such as carbon dioxide, which contribute to global warming and subsequently impact human health in various ways. The quotes below reflect most opinions of community leaders' experiences: a 60-year-old community leader in Kagarko Local Government Area said:

> Several trends are reducing the health benefits of forests. Some medicinal plants used to treat various ailments, including internal and external infections, parasitic diseases, and poisons, are becoming extinct due to human activities without being replaced. The open canopy of the forest cover has increased temperatures, which affects some medicinal plants and exposes them to disease vectors. That is why mosquitoes are common in this area. Even if you go to the hospital, the most common complaint is malaria (Zazzabi). To help treat patients with various ailments locally in this area, some herbalists have to travel to different regions within the country to collect herbs for their treatments.

This implies that the continuous removal of forest trees increases the risk and spread of infectious diseases, burns, and wounds, leading to loss of life.

**Conclusion and Recommendations**

The study demonstrates that deforestation has significant health impacts on communities. When forests are destroyed, the ecosystem services they provide, such as water regulation and air purification, are lost. This can lead to increased air and water pollution, which can have adverse health effects on people living in the surrounding areas. Additionally, deforestation can increase the risk of disease transmission, as it leads to the loss of natural habitats for disease vectors, such as mosquitoes.

This study has established that deforestation resulting from the clearing of forests for expanding agricultural land, timber, and wood consumption for commercial purposes, such as fuelwood and charcoal selling**,** contributes to the loss of biodiversity, leads to outbreaks of malaria, and is associated with diseases such as diarrhoea, typhoid, and respiratory ailments.

The study recommends that the State Government, LGAs, in collaboration with NGOs to educate the communities regarding the severity of deforestation on people's health.

The control of unplanned activities and increasing awareness about the medicinal importance of trees should generally be promoted by the Government and the Forestry Department. The medicinal benefits of herbs should be communicated to the people through healthcare services, and proper documentation of research by the Government should be carried out.

**REFERENCES**

Afrane, Y. A., Githeko, A. K., & Yan, G. (2012). The ecology of *Anopheles* mosquitoes under climate change: Case studies from the effects of deforestation in East African highlands. *Annals of the New York Academy of Sciences, 1249*(1), 204–210. https://doi.org/10.1111/j.1749-6632.2011.06432.x

Austin, K. F. (2013). Export agriculture is feeding malaria: A cross-national examination of the environmental and social causes of malaria prevalence. *Population and Environment, 35*(2), 133–158. https://doi.org/10.1007/s11111-013-0187-7

Babalola, F. D. (2012, Month unknown). Charcoal business hurting forest communities. *Premium Times Nigeria*. Retrieved from http://premiumtimesng.com/metro/5020

Balarabe, M. A. (2011, June 2). Tackling deforestation problems. *Daily Trust*.

Beyene, K. K. (2011). Soil erosion, deforestation and rural livelihoods in the central Rift Valley area of Ethiopia: A case study of the Denku micro-watershed, Oromia Region (Unpublished master's thesis). University of South Africa.

Burkett-Cadena, N. D., & Vittor, A. Y. (2018). Deforestation and vector-borne disease: Forest conversion favors important mosquito vectors of human pathogens. *Basic and Applied Ecology, 26*, 101–110. https://doi.org/10.1016/j.baae.2017.09.012

Haidet, A. (2003). Final paper: The medicinal value of the rainforest. Retrieved from http://jrscience.wcp.muohio.edu/fieldcourse03/PapersCostaRicaArticles/FinalPaper.TheMedicinalVa.html

Insaidoo, T. F. G., Ros-Tonen, M. A. F., Hoogenbosch, L., & Acheampong, E. (2012, April). Addressing forest degradation and timber deficits in Ghana. *ETFRN News, 53*.

Peacock, J. (2013, May). Deforestation: Nigeria ranked worst in the world. *This Day Live*. Retrieved from www.illegal-logging.info/content/deforestation-nigeria

Pimentel, D. (2006). Study: Soil erosion threatens human health. Retrieved from http://phys.org/news12033.html#jCp

Riesco, I. L. (2005). Forest loss and human health: Focus on EU policies and practices. Brussels, Belgium: FERN.

The International Institute of Tropical Agriculture. (2011). Deforestation: Nigeria ranked worst in the world. Retrieved from http://www.thisdaylive.com/articles/deforestation-Nigeria-ranked-worst-in-the-world/103321

Tinda, P. D. (2013). The causes of and impact from deforestation on local-level sustainable forest management in Ghana: A survey of Dwease and Praaso communities in the Ashanti region (Unpublished thesis). University of Agder, Norway.

Tucker Lima, J. M., Vittor, A., Rifai, S., & Valle, D. (2017). Does deforestation promote or inhibit malaria transmission in the Amazon? A systematic literature review and critical appraisal of current evidence. *Philosophical Transactions of the Royal Society B: Biological Sciences, 372*(1722), Article 20160125. https://doi.org/10.1098/rstb.2016.0125

World Health Organization. (2020). *Domestic water quantity, service level and health* (2nd ed.). ISBN 978-92-4-001524-1 (electronic version); 978-92-4-001525-8 (print version)

Wilson, M. E. (1995, December). Infectious diseases: An ecological perspective. *BMJ, 311*(7021), 1681–1684. https://doi.org/10.1136/bmj.311.7021.1681