

ASSESSING THE IMPACT OF ENVIRONMENTAL DEGRADATIONS ON HUMAN HEALTH IN CALABAR METROPOLIS, CROSS RIVER STATE, NIGERIA

BY

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Abstract

The study sort to assess the impact of environmental degradations on human health in Calabar Metropolis, Cross River State, Nigeria. Three research objectives and three research questions guide the study. A descriptive survey research design was used and it was conducted in Calabar Metropolitan, Cross River State, Nigeria. The population for the study was 713,000 estimated people living in Calabar Metropolitan, as at 2025 by National Population Commission. A sample size of 400 residents of Calabar Metropolitan was obtained using Taro Yamane formula and sampled using simple random sampling technique. Questionnaire was used for data collection. The questionnaire was face validated by three experts. Also, the reliability of the questionnaire was determined using Cronbach Alpha method and it yielded a reliability coefficient of 0.83. Data collection was carried out by the researchers and three trained research assistants. Analysis was done using mean and standard deviation. Results reveal fourteen (14) environmental degradations threatening Calabar Metropolitan; twelve (12) impacts of environmental degradations on human health in Calabar Metropolitan; and fifteen (15) strategies for mitigating the impacts of environmental degradations on human health in Calabar Metropolitan. Based on the findings, the study concludes that Cross River State government should develop policy that can reduce the impacts of environmental degradation on human health and promote a healthier and more sustainable environment for all. It was therefore recommended that government should enforce laws and regulations to reduce industrial emissions and promote clean technologies among others.

Keywords: Calabar Metropolitan, Environment, Environment Degradation, Human Health, Impact.

Introduction

Environmental degradation is a pressing global concern that significantly influences human health, particularly in urban areas where industrial activities and population density are high. Calabar Metropolitan, located in Cross River State, Nigeria, serves as a pertinent case study due to its rich ecological resources and its rapid urbanization, which has brought about various environmental challenges. The degradation of the environment encompassing air pollution, water contamination, and soil degradation among others has been linked to a myriad of health issues affecting the local population (Onyema & Nduka, 2021). The detrimental effects of degradation such as air pollution caused by traffic and industrial emissions have been associated with respiratory diseases, including asthma and chronic obstructive pulmonary disease (Chidinma et al., 2025). Furthermore, the quality of water resources in Calabar has been compromised due to industrial discharges and inadequate waste management practices, leading to waterborne diseases such as cholera and dysentery (Bassey et al., 2020). In addition, soil degradation, often resulting from excessive agricultural practices and deforestation, not only impacts food security but also contributes to nutritional deficiencies, further exacerbating health problems (Ekanem et al., 2023). Also, the interplay between environmental degradation and health outcomes is particularly pronounced among vulnerable populations, including children and the elderly, who are more susceptible to environmental health risks. It has been posited that addressing the health impacts of environmental degradation requires an integrative approach, combining public health initiatives with environmental policies to mitigate risks (Offiong, et al., 2018). This rising awareness emphasizes the need for localized studies that can provide insights into Calabar Metropolitan environmental challenges.

Environment is the sum of all external conditions affecting the life, development, and survival of an organism (Nwankwo, Udo & Asuquo, 2022). This emphasizes the holistic view of the environment as encompassing all external factors, including physical, chemical, and biological aspects that can influence living organisms. According to Tansley (2020), environment encompasses all biotic and abiotic components in a given area and their interactions, which dynamically maintain ecological balance. It highlights the balance within ecosystems, including interactions among organisms (biotic) and their physical surroundings (abiotic). Degradation is viewed by Sala (2021) as the process through which the ecological integrity of an environment is compromised, often leading to biodiversity loss. According to Sala, when ecosystems are degraded, they may lose species and become less resilient to environmental changes, which results to environment degradation.

Environmental degradation encompasses the decline of the planet's ecosystems, primarily driven by unsustainable practices (Oyamo et al 2025). It contextualizes degradation within the framework of sustainability, advocating for practices that do not exceed the Earth's capacity to regenerate its ecosystems. According to Sutherland (2020), environmental degradation is the physical, chemical, and biological decline in the quality of the environment. It emphasizes that degradation involves changes to various environmental components and can result from a range of stressors, including industrial activities, pollution, and natural disasters. Degradation changes the environment's ability to sustain life. It entails the reduction in the capacity of an ecosystem to provide essential services for human well-being (Benayas & Bullock, 2021). It highlights the link between environmental health and human welfare, indicating that degradation not only affects the environment but also diminishes ecosystem services such as clean air and water, food production, and climate regulation essential for human survival. In this study, environmental degradation refers to the loss of biodiversity, soil degradation, and loss of ecosystem services due to unsustainable land use practices which impact on human health negatively. Some of the environmental degradations affecting Calabar Metropolitan City as outlined by Olufemi (2021) include: Deforestation, erosion, pollution of water bodies, solid waste management, air pollution, invasive species, climate change vulnerability, degradation of wetlands among others. These environmental challenges have adverse effects on human health.

Health is the ability of individuals to adapt to, respond to, or control life's challenges and changes (Offiong, et al 2024). This underscores the dynamic nature of health. It focuses on an individual's capacity to manage stressors and challenges rather than merely how they feel or their physical state. Health according to World Health Organization (WHO, 2020) is a state of complete physical, mental and social well-being of an individual and not merely the absence of disease or infirmity. WHO emphasizes that health is a multi-dimensional concept, which is not simply the absence of illness but a holistic state that comprises physical, mental, and social wellness. This broad perspective supports the understanding that a person can be free from disease yet still face mental health challenges or social isolation, indicating a need for comprehensive health care and policies that address all these facets. Human health on the other hand is fundamentally shaped by the social, economic, and environmental contexts in which individuals live and work (WHO, 2020). It indicates that individual health outcomes are greatly influenced by external conditions. Factors such as income, education, and environmental quality play significant roles. Human health can be seen as the outcome of complex interactions between biological, behavioral, and environmental factors. Poor management and control of the environment and its resources can result in environmental degradation.

When the environment is degraded, it poses serious health challenges to human health such as skin diseases, toxic exposures, mental health issues, vector-borne diseases, respiratory diseases, waterborne diseases, decreased life expectancy just to mention but a few (Okon & Udo, 2020). The cumulative effects of environmental degradation can lead to a decrease in overall life expectancy due to a rise in preventable diseases and health complications (Idika & Thomas, 2023). Also, the release of harmful chemicals from industrial processes as noted by Udo and Usen (2021) can lead to exposure to heavy metals and toxic substances, causing serious health issues, including cancer and neurological disorders. In addition, Akpan et al. (2020) stated that urban heat islands, exacerbated by deforestation and urbanization, can increase the risk of heat-related illnesses such as heatstroke and dehydration among vulnerable populations. Furthermore, environmental degradation can lead to mental health disorders due to stressors related to pollution and the degradation of natural spaces, which contribute to a decline in overall well-being of individuals living in such degraded areas in Nigeria including Calabar Metropolitan (Essien & Bassey, 2021).

Calabar Metropolitan according to Eloho & Mpinana (2023), is a significant urban area characterized by a high concentration of population, economic activities, and social amenities that highlights Calabar's Metropolitan as a hub for residents and activities within the Cross River State, serving not only as a local center but also attracting people from surrounding regions. The tradition can also be traced to the colonial heritage, though, designed to serve the colonial influence (Abdulquadir & Abdulkadir, 2024). As noted by Nwogbaga and Akpan (2022), Calabar metropolitan serves as a cultural hub, recognized for its rich traditions, festivals, and historical significance. The city plays crucial role in preserving and promoting the diverse cultural heritage of the Efik people and other ethnic groups, describe Calabar metropolitan as an emerging economic zone, with high potential for growth in commerce, trade, and entrepreneurship. This perspective is crucial as it emphasizes the metropolitan area's evolution into a formidable economic player within Nigeria. The presence of numerous small and medium enterprises (SMEs), a growing real estate sector, and potential investments in agribusiness are indicative of Calabar's economic vitality. These factors contribute significantly to job creation and the overall economic landscape of both the state and the country.

Statement of the Problem

This rapid development of Calabar Metropolitan, while essential for economic growth, has led to adverse environmental consequences that affect public health. Notably, air and water pollution, deforestation, and waste mismanagement are prevalent forms of degradation that compromise environmental quality and, consequently, human health. There has been a growing concern regarding the public health impacts of environmental degradation in Nigerian urban settings. However, studies show that many researchers have argued that increasing levels of air pollutants such as particulate matter (PM) and sulfur dioxide (SO₂) have been linked to respiratory diseases and cardiovascular issues among residents of urban areas, including Calabar. Similarly, many researchers too have researched on contaminated water sources due to industrial discharge and inadequate waste disposal promote the spread of waterborne diseases such as cholera and dysentery, disproportionately affecting vulnerable populations of the good people of Calabar metropolitans.

Despite the growing body of evidence linking environmental degradation to health problems in Nigeria, there remains a gap in localized studies that specifically assess the impact of these issues in the Calabar Metropolitan area. Hence, there is need to evaluate the health effects of environmental degradation in the region and providing actionable insights for policymakers and public health officials to mitigate these adverse effects. Therefore, this study assessed the impact of environmental degradations on human health in Calabar Metropolis, Cross River State, Nigeria.

Research Objectives

The general objective of this study was to assess the impact of environmental degradations on human health in Calabar Metropolis, Cross River State, Nigeria

Specifically, the study assessed the:

1. environmental degradations threatening Calabar Metropolitan in Cross River State, Nigeria;
2. impacts of environmental degradations on human health in Calabar Metropolitan of Cross River State.
3. strategies for mitigating the impacts of environmental degradations on human health in Calabar Metropolitan, Cross River State.

Research Questions

The following research questions guided the study:

1. What are environmental degradations threatening Calabar Metropolitan in Cross River State?
2. What are the impacts of environmental degradations on human health in Calabar Metropolitan of Cross River State?
3. What are the strategies for mitigating the impacts of environmental degradations on human health in Calabar Metropolitan, Cross River State?

Research Methodology

A descriptive survey research design was adopted for the study, and it was carried out in Calabar Metropolitan, Cross River State, Nigeria. The population for the study was 713,000 estimated people living in Calabar Metropolitan, Cross River State as at 20225 by National Population Commission (NPC). The information about the population was obtained from Population Forecast by National Population Commission in Calabar, Cross River State. A sample size of 400 obtained using Taro Yamane formula. The sample size consisted of 200 adult males and 200 adult females living in Calabar Metropolitan area of Cross River, State. Simple random sampling technique was adopted in sampling the respondents. The instrument for data collection was structured questionnaire designed by the researcher. The questionnaire is divided into two- Part 1 and 2. Part 1 sought personal information about the respondents while Part 2 was further divided into three sections A, B and C with each section soliciting responses on a particular research question. The instrument was structured into four-point response options of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) with assigned weights of 4, 3, 2, and 1 respectively.

The instrument was subjected to face validation by three experts, two experts from the Department of Environmental Education, and one expert from Measurement and Measurement, all from University of Calabar, Cross River State. Furthermore, the reliability of the instrument was determined using Cronbach Alpha method. Twenty (20) copies of the validated instrument were administered to adult males and female residents of Abakiliki, Ebonyi State. The completed instruments were collected and analyzed and it yielded a reliability coefficient of 0.83. This showed that the instrument was reliable and could effectively be used to collect the required data. The instrument was administered and collected by the researcher with the aid of three trained research assistants. A total of 400 copies of the questionnaire was administered to the adult residents of Calabar Metropolitan, that is 200 copies for adult males and 200 copies for adult females. At the end, 378

copies of the instruments were retrieved (191 from adult males and 186 from adult females) and used for data analysis.

Data collected were analyzed using mean and standard deviation. Mean was used to answer the three research questions while standard deviation was used to determine how close or far the respondents were to the mean. The cut-off points of 2.50 was used for decision-making regarding the mean. The decision rule was that any item with a mean rating of 2.50 and above was accepted while any item with mean value less than 2.50 was rejected. All the data analyses were carried out with the use of statistical package for Social Sciences (SPSS) 25.0 version.

Presentation of Results

Table 1: Mean Responses and Standard Deviation Analysis on the Environmental Degradations Threatening Calabar Metropolitan in Cross River State, Nigeria

S/N	Environmental Degradations Threatening Calabar Metropolitan are:	\bar{X}	SD	Rmks
1	Loss of forest cover due to logging and agricultural expansion	3.14	0.80	Agreed
2	Increased erosion due to land clearing and poor agricultural practices	3.20	0.81	Agreed
3	Contamination of rivers and streams from industrial discharges and sewage	3.02	0.77	Agreed
4	Emissions from vehicles, industries, and open burning affecting air quality	3.10	0.81	Agreed
5	Poor disposal and management of solid waste leading to littering and health risks	3.30	0.80	Agreed
6	Increased flooding from urbanization and poor drainage systems	3.11	0.89	Agreed
7	Decline in wildlife and plant species due to habitat destruction	3.20	0.80	Agreed
8	Land degradation and water quality issues from sand and gravel extraction	3.00	0.55	Agreed
9	Pollution of water bodies	3.03	0.76	Agreed
10	Depletion of fish populations in local rivers and coastal areas	3.02	0.76	Agreed
11	Urban activities contributing to elevated noise levels affecting quality of life	3.01	1.02	Agreed
12	Untreated wastewater from households impacting public health	3.09	0.89	Agreed
13	Elevated temperatures in urban areas due to low vegetation cover	3.03	0.99	Agreed
14	Reduced access to clean water due to pollution and over-extraction.	3.06	0.70	Agreed

Key: \bar{X} = Mean; SD = Standard Deviation, Adult Males = 191, Adult Females = 186; Total = 378

The data presented in Table 1 showed the mean responses and standard deviation of the environmental degradations threatening Calabar Metropolitan in Cross River State, Nigeria. The result revealed that all the 14 items obtained mean values above 2.50 cut of mark. This indicated that the respondents agreed that all the items are the environmental degradations threatening Calabar Metropolitan in Cross River State. The corresponding standard deviation to each of the items ranged from 0.55 to 1.02 showing that the opinions of the respondents were very close to each other.

Table 2: Mean Responses and Standard Deviation Analysis on the impacts of environmental degradations on human health in Calabar Metropolitan of Cross River State.

S/N	Impacts of environmental degradations on human health in Calabar Metropolitan include:	\bar{X}	SD	Rmks
1	Increased cases of asthma and other respiratory diseases due to air pollution	2.60	1.01	Agreed
2	Rise in diseases like cholera and typhoid from contaminated water sources	3.03	0.80	Agreed
3	Increased prevalence of skin diseases from exposure to polluted water	2.87	0.86	Agreed
4	Reduced agricultural productivity leading to shortage of food supply	3.00	0.80	Agreed
5	Environmental degradation can result to stress and anxiety	3.05	0.67	Agreed
6	It led to higher temperatures causing heat exhaustion and other related health issues	3.04	0.89	Agreed
7	Increased incidence of diseases like malaria due to habitat changes for mosquitoes	3.00	0.60	Agreed
8	Inability to access safe, nutritious food due to agricultural degradation	2.01	0.87	Disagreed
10	Increased allergies due to changes in vegetation and air quality	3.02	0.76	Agreed
11	Weakened immune response linked to pollutants and environmental stressors	2.09	0.83	Disagreed
12	Higher susceptibility of older adults to health problems from degradation.	3.14	0.88	Agreed
13	Loss of medicinal plants affecting traditional healthcare systems	2.60	0.87	Agreed
14	Increased accidents and injuries from flooding and other environmental factors	3.18	0.66	Agreed

Key: \bar{X} = Mean; SD = Standard Deviation, Adult Males = 191, Adult Females = 186; Total = 378

Table 2 showed the mean responses and standard deviation of the impacts of environmental degradations on human health in Calabar Metropolitan of Cross River State. The result indicated that 12 items out of the 14 items obtained mean responses above 2.50 cut of point, implying that the respondents agreed that the 12 items are the impacts of environmental degradations on human health in Calabar Metropolitan of Cross River State. Also, the corresponding standard deviation for all the items ranged from 0.60 to 1.01, indicating that the respondents were very close to the mean and one another in their responses.

Table 3: Mean Responses and Standard Deviation Analysis on the Strategies for Mitigating the Impacts of Environmental Degradations on Human Health in Calabar Metropolitan, Cross River State.

S/N	Strategies for mitigating the impacts of environmental degradations on human health in Calabar Metropolitan	\bar{x}	SD	Rmks
1	Educating residents of Calabar Metropolitan on environmental health impacts of environmental degradation and sustainable practices	3.04	0.89	Agreed
2	Promoting organic farming, agroforestry, and crop rotation	3.15	0.80	Agreed
3	Implementing better solid waste collection, recycling, and composting initiatives	3.10	0.70	Agreed
4	Enforcing regulations on emissions from industries and vehicles	3.05	0.80	Agreed
5	Planting native trees to restore degraded forests and improve air quality	3.11	0.85	Agreed
6	Regular testing of water sources for contamination and promoting safe water protocols	2.80	0.94	Agreed
7	Integrating green spaces and sustainable designs in urban developments	3.21	0.85	Agreed
8	Investing in infrastructure for safe and reliable water sources	3.00	0.65	Agreed
9	Restoring wetlands and other critical ecosystems to support biodiversity	3.09	0.79	Agreed
10	Establishing local clinics focused on environmental health issues	3.23	0.75	Agreed
11	Advocating for strict environmental protection laws	3.08	0.98	Agreed
12	Educating on sustainable farming techniques to minimize land degradation	3.01	1.10	Agreed
13	Investing in research to better understand local environmental issues and health impacts	2.99	0.79	Agreed
14	Establishing systems to track pollution levels and report issues	3.00	0.99	Agreed
15	Promoting the use of solar and wind energy to reduce pollution	3.08	0.97	Agreed

Key: X = Mean; SD = Standard Deviation, Adult Males = 191, Adult Females = 186; Total = 378

The data presented in Table 3 revealed that all the 15 items on the strategies for mitigating the impacts of environmental degradations on human health in Calabar Metropolitan, Cross River State obtained mean values above the cut-off point of 2.50. This indicated that the respondents agreed that all the items are the strategies for mitigating the impacts of environmental degradations on human health in Calabar Metropolitan, Cross River State. The standard deviation to each of the items ranged from 0.65 to 1.10 showing that the opinions of the respondents were very close to each other.

Discussion of Findings

The findings on Table 1 revealed fourteen (14) environmental degradations threatening Calabar Metropolitan in Cross River State, Nigeria among which are: loss of forest cover due to logging and agricultural expansion; increased erosion due to land clearing and poor agricultural practices contamination of rivers and streams from industrial discharges and sewage; emissions from vehicles, industries, and open burning affecting air quality; poor disposal and management of solid

waste leading to littering and health risks; increased flooding from urbanization and poor drainage systems; urban activities contributing to elevated noise levels affecting quality of life; elevated temperatures in urban areas due to low vegetation cover among others. The finding on increased erosion due to land clearing and poor agricultural practices aligns with Olufemi (2021), who stated that soil erosion exacerbated by both natural processes and human activity is a significant problem in Calabar. Heavy rains, deforestation, and poor land management practices contribute to soil erosion and flooding in Calabar. Also, the finding on contamination effects on drinking water quality and aquatic life, creating health risks for residents. The outcome on poor disposal and management of solid waste leading to littering and health risks is in line with Offiong et al (2024), who opined that the inadequate solid waste management system in Calabar contributes to environmental degradation and health risks. Improper disposal of waste in the region leads to the proliferation of pests and increases pollution. In addition, the outcome on emissions from vehicles, industries, and open burning affecting air quality conforms with Chidinma, et al (2025) who buttressed that rising vehicular emissions, coupled with industrial activities in Calabar, have led to deteriorating air quality. This pollution poses serious health risks and lowers the quality of life for residents.

Table 2 identified twelve (12) impacts of environmental degradations on human health in Calabar Metropolitan of Cross River State. The impacts identified are: increased cases of asthma and other respiratory diseases due to air pollution; rise in diseases like cholera and typhoid from contaminated water sources; increased prevalence of skin diseases from exposure to polluted water; reduced agricultural productivity leading to shortage of food supply; it leads to higher temperatures causing heat exhaustion and other related health issues; increased incidence of diseases like malaria due to habitat changes for mosquitoes; increased accidents and injuries from flooding and other environmental factors among others. The finding on increased cases of asthma and other respiratory diseases due to air pollution is in line with Chidinma et al (2025), who maintained that environmental degradation leads to increased air pollution levels, primarily from vehicular emissions and industrial activities; and this can exacerbate respiratory diseases such as asthma and chronic obstructive pulmonary disease (COPD). The finding on increased incidence of diseases like malaria due to habitat changes for mosquitoes that stated that environmental changes, such as breeding grounds for vectors like mosquitoes, thus increasing the transmission of diseases such as malaria and dengue fever is in line with. Offiong et al (2024) who also stressed that degradation of water sources due to industrial waste and poor sanitation can lead to waterborne illnesses like cholera and typhoid fever, posing severe health risks, particularly to children.

The result in Table 3 found fifteen (15) strategies for mitigating the impacts of environmental degradations on human health in Calabar Metropolitan, Cross River State. These include: educating residents of Calabar Metropolitan on environmental health impacts of environmental degradation and sustainable practices; promoting organic farming, agroforestry, and crop rotation; implementing better solid waste collection, recycling, and composting initiatives; enforcing regulations on emissions from industries and vehicles; planting native trees to restore degraded forests and improve air quality; integrating green spaces and sustainable designs in urban developments; investing in infrastructure for safe and reliable water sources; advocating for strict environmental protection laws; establishing systems to track pollution levels and report issues; promoting the use of solar and wind energy to reduce pollution among others. The results on implementing better solid waste collection, recycling, and composting initiatives, are in line with Offiong et al. (2018), who opined that effective waste management strategies, including recycling and proper disposal methods, can prevent soil and water contamination, which is vital for public health. Educating residents about waste segregation can further enhance community participation in maintaining a clean environment. The result on promoting organic farming, agroforestry, and crop rotation aligns with Obi et al., (2021) who noted that encouraging organic farming and sustainable agricultural practices can mitigate the effects of chemical runoff and soil degradation. This not only improves food quality but also protects water sources and public health. The finding on investing in infrastructure for safe and reliable water sources is in agreement with Offiong et al (2024) who noted that ensuring access to clean water and providing adequate sanitation facilities can drastically reduce waterborne diseases in urban populations. Investments in water infrastructure are essential in combating the health effects of poor environmental conditions.

Conclusion

The study on assessing the impact of environmental degradation on human health in Calabar Metropolitan, Cross River State, Nigeria. It highlighted the significant risks posed by environmental degradation to human health. The findings of this study would inform policy interventions aimed at mitigating these risks and promoting sustainable development. By implementing the recommendations of this study, policymakers can reduce the impacts of environmental degradation on human health and promote a healthier and more sustainable environment for all.

Recommendations

Based on the findings, the following recommendations are made:

1. Government should enforce laws and regulations to reduce industrial emissions and promote clean technologies.

2. Public enlightenment programme should be implemented for the residents in Calabar Metropolitan on the importance of environmental conservation and sustainable practices.
3. Cross River State government need to develop and implement effective waste management systems to reduce environmental pollution and the associated health effects on human beings.
4. Cross River State government through Ministry of Environment should establish a monitoring and evaluation system to track progress and identify areas for improvement in environmental issues.

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