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The Environmental Impact of Leprosy Market (Kasuwan Kuturu) on Health in Mubi Metropolis, Adamawa State, Nigeria.

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ABSTRACT

This article explores the environmental impact of the Leprosy Market, known as Kasuwan Kuturu, on health in Mubi Metropolis, Adamawa State, Nigeria. The study utilizes a combination of primary and secondary data sources, employing structural questionnaires, field observations, oral interviews, and participant interactions. Two major types of environmental pollutants were considered to be the most predominant factors (air and noise pollution). Analytical methods involve descriptive statistical techniques. The findings revealed a complex interplay of positive and negative environmental effects stemming from the market's operations, including heightened air pollution, waste disposal challenges, land pollution, and a surge in diseases like diarrhea and cholera, as well as traffic congestion. In response to these issues, the article proposes recommendations for mitigating these impacts.

Keywords: Environmental Impact, Leprosy market, health, Mubi Metropolis

INTRODUCTION

Environmental pollutants (such as air and noise pollution) are pervasive issues in urban environments and exacts a profound toll on the environment and human health. Their impacts span visual aesthetics, vegetation, animal life, soil quality, water purity, natural and artificial structures, and the well-being of people. While originally concentrated in urban centers, the ramifications of air pollution have extended to previously pristine regions. For instance, near the juncture of New Mexico, Arizona, Colorado, and Utah, emissions from the Four Corners fossil fuel-burning power plants have drastically reduced visibility, once extending up to 80 kilometers (50 miles) on clear days [1]. Globally, air pollution has become a significant contributor to the mortality rate. In Hungary, a country grappling with severe air pollution, it's estimated that the death rate surges several times higher on heavily polluted days. Similarly, in the United States, particularly in the Los Angeles urban area, millions of residents are exposed to unhealthy air, resulting in an annual toll of up to 120,000 deaths, with associated healthcare costs exceeding \$50 billion. In sub-Saharan Africa, a staggering 94% of the rural population and 73% of urban dwellers rely on biomass, such as wood, charcoal, crop residues, animal dung, and coal, for cooking and heating. The combustion of biomass in poorly ventilated stoves generates various pollutants, including particulate matter, carbon monoxide (CO), and carcinogens. These pollutants pose significant health risks, particularly to women and children, who are often exposed during daily activities [2]. One striking case study highlighting the environmental and health consequences of unchecked industrial activity occurred in Nigeria. Illegal mineral processing plants proliferated, with little regard for the associated dangers. High levels of lead contamination led to widespread health problems, including the deaths of over 1,000 children and severe deformities. Additionally, experts warned of lead poisoning's potential to cause infertility and miscarriages in women, sparking the attention of governmental and non-governmental organizations like UNICEF, WHO, and Médecins Sans Frontières (MSF) worldwide [3]. This article explores the multifaceted issue of air pollution, delving into its causes, effects on the environment, and its grave health implications. Additionally, it touches on the less-discussed menace of noise pollution, which, like air pollution, adversely affects health and quality of life in densely populated urban centers. The article specifically examines the situation in Mubi, northeastern Nigeria, and sheds light on the pervasive noise pollution that poses health risks and disrupts daily life across the nation [4].

Study Area

Mubi town lies on latitude $10^{\circ}16'$ and longitude $13^{\circ}16'$. Mubi town was the provincial capital of the East Sardauna province. The town is situated at the foot of the Mander Mountain separating Nigeria from the Republic of Cameroon and on the western banks of the river Yedzeram which flows north into Lake Chad [5]. In 1952, when Mubi was ruled by the Native Authority (N.A) an announcement was made to all villages around Mubi. Those suffering from leprosy should come for free medicine every Wednesday from Germany Health Assistance, by medical doctor Dr. Plasal H. Both males and females came for the free medication at the same center. The women do carry foodstuff like kuka (dry baobab leaves) Guinea corn, Groundnut, Benny seeds, Maize etc to the center for sale. After selling they buy sugar, salt, palm oil, etc, and take home in return. Because of the cheapness of the products at the centre people from various parts of Mubi come there to shop instead of going to the main market. Within a limited period, the center became a commercial center called Leprosy Market (Leprosy Market). Before the present site of the General Hospital, it existed behind the Mubi Prison yard but was later shifted to the present site by Late Arnado Doka. HRH of lamorde. (Statistic record General Hospital Mubi and Poul venter). The population size of one hundred and twenty-nine thousand, nine hundred and nine hundred and fifty-six people (129,956) with a gender structure of 66,553 and female 63,403 (<http://www.Population.gov.ng/factandfigure2006htm>).

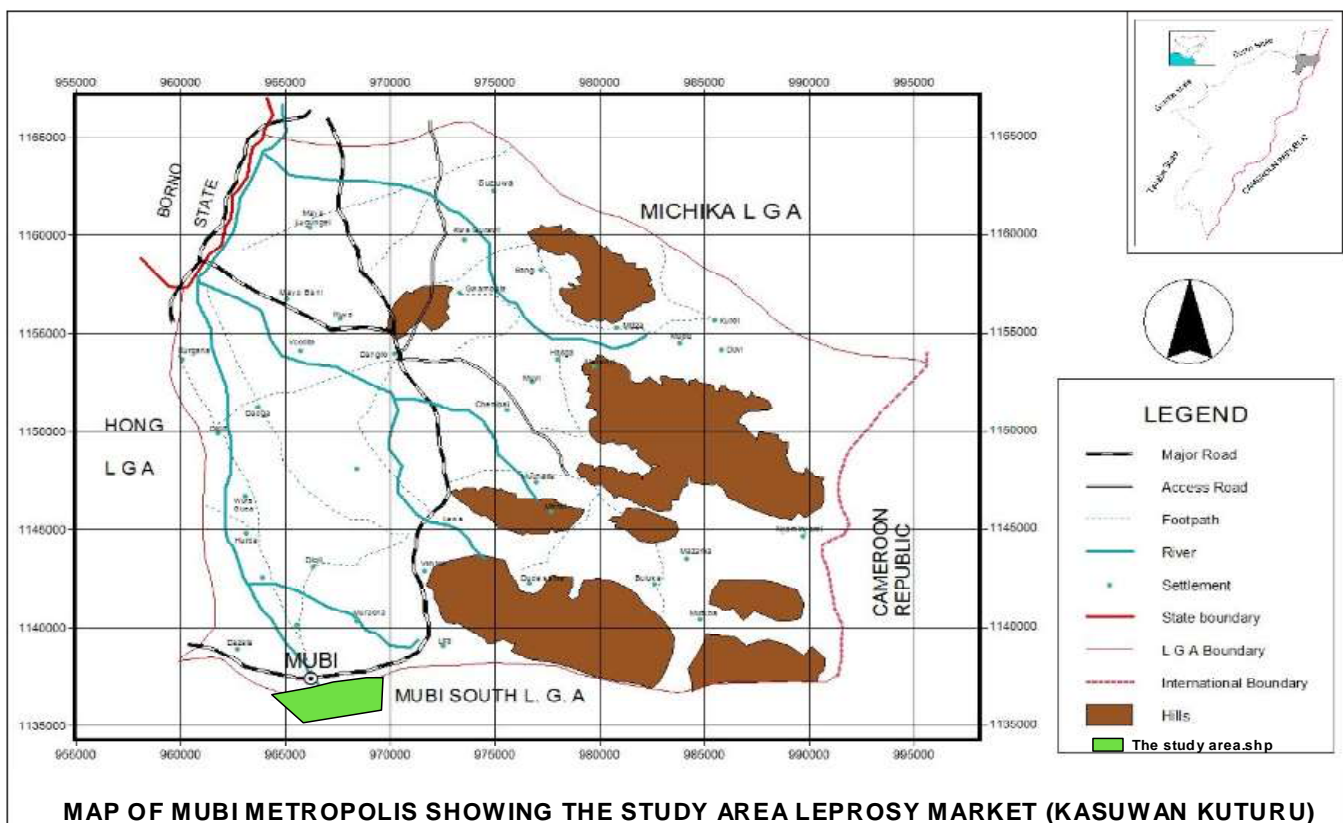


Figure 1: The Study Area
MATERIALS AND METHODS
Data Collection

Relevant information collected by oral interviews at leprosy market sites (Wuro Bulude A, General Hospital, Wuro Bulude) was collected by picking respondents at random to ascertain the implication of the health, socio socio-economic impact of the leprosy market on the environment. Questionnaires were administered and a random sampling method was used to select the respondents. Questions contained in the questionnaire schedule covered all the aspects related to the assessment of environmental impacts of the area, 80 questionnaires were administered to the respondents within the study area.



**Figure 2: The Kasuwan Kuturu Sites
Data Analysis**

The data was presented in a frequency table in relation to research question. The data obtained from the study was analysed using percentages. In the frequency table, there are columns for respondents, frequency, and percentage. The data obtained from the study was analysed using frequency and percentage of respondents as stated in the individual tables.

RESULTS AND DISCUSSION

This chapter contains the result of the analysis of data obtained from fieldwork. Discussions based on analysis, personal interaction with participants at the Mubi Leprosy market, and physical observation are also contained in this chapter.

TABLE 1: Relationship between Air Pollution and Diseases

RESPONSE	FREQUENCY	PERCENTAGE
YES	68	85%
NO	12	15%
TOTAL	80	100%

Based on the table presented above, the analysis shows that 85% of respondents agreed that there is a relationship between air pollution and disease while 15% of respondents disagreed with the question. This indicates that there is a relationship between air pollution and disease in the leprosy market.

Causes of Air Pollution

Air pollution is when chemicals or materials can cause harm to living organisms or the environment in general. It occurs most often in cities, where it manifests itself as smog, as well as gases that are not visible to the human eye. Urban air quality and pollution found in the environment, [6].

There are several effects of air pollution, some of which affect the plants, and living organisms [7] estimated that for the year 2000, 350,000 sub-Saharan children died of lower respiratory infection, and 34000 adult women died of chronic obstructive pulmonary disease, both attributable to indoor air pollution caused by burning biomass, worldwide studies suggest that exposure to indoor and outdoor air pollution responsible for over 1.6 million premature deaths a year, and nearly three 3% percent of the global burden of disease, [8].

Sources of Air Pollution

Many of the pollutants in our atmosphere have natural as well as human-related origins. Examples of natural emissions of air pollutants include the release of gases, such as sulphur dioxide SO₂ from a volcanic eruption. The releases of hydrogen sulphide from the geyser and hot spring activities and by biological decay from dogs and mashes an increased concentration of ozone O₃ in the lower atmosphere as a result of an unstable metrological condition such as violent thunderstorms and emission of a variety of particles from wildfires and windstorms [1].

TABLE 2: Effects of Air Pollution

RESPONSE	FREQUENCY	PERCENTAGE
YES	67	83.75%
NO	13	16.25%
TOTAL	80	100%

From the above table presented, 83.75% agreed while 16.25% disagreed. This indicates that majority of the respondents agreed that air pollution has effects on human health. Strong oxidizing agents such as sulphates SO₂, NO_x, and O₃ irritate and damage delicate tissue in the lungs, fine suspended particulate materials penetrate deep into the lungs causing irritation, scarring, and even tumor growth. Heart stress results from impaired lung function carbon monoxide Co binds to haemoglobin reducing oxygen flow to the brain. Headaches, dizziness, and heart stress result lead also bind to the brain and damaging in mental and physical impairment and development, and retardation [9].

TABLE 3: Contribution of dust emission in leprosy market

RESPONDENTS	A	B	C	TOTAL
FREQUENCY	38	25	36	100
PERCENTAGE	47.5	27.5	25	100%

Based on the table 3 presented above, the analysis shows that 47.5% on Movement of vehicles, 27.5% ticked on burning of waste while 25% ticked on firewood consumption. This indicates that the majority of the respondents agreed that the movement of vehicles contributed to dust emissions in the leprosy market

TABLE 4: Presence of abnormal noise in the leprosy market

RESPONSE	FREQUENCY	PERCENTAGE (%)
Yes	76	95%
No	4	5%
Total	80	100%

Based on the table presented above, the analysis shows that 95% of the respondents experience abnormal noise in the leprosy market and its environs while the remaining 5% disagreed with the question. According to medical experts, problems associated with such pollutants include stress-related illnesses, high blood pressure, speech interference, hearing loss, sleep disruption, and loss of productivity. Noise including Hearing Loss (NIHL) is the most common and often discussed health effect, but research has shown that explosive to constant or high levels of noise can cause countless adverse health effects, [10].

Sources and Nature of Noise Pollution

Noise emanates from siren-blaring government officials: speakers of co-operate bodies such as telecommunication and drinks and beverages, manufacturers, who now take their waves directly to consumers. On the street, passengers-calling, National Union of Road Transport Workers (NURTW) [11, 12], members in a motor park, Road sick compact disc (CD) music concerts, religion revivalists who will always have reason to hold crusades, the cry of Muslims at the wee hours of the morning and overzealousness of police escorts or patrol vans, among others.

TABLE 5: Effects of noise in induced hearing

RESPONSE	FREQUENCY	PERCENTAGE (%)
Yes	72	91.25%
No	7	8.75%
Total	80	100%

The above table shows that 91.25% of the respondents agreed that induced hearing loss is caused by noise, while the remaining respondents know the effect of noise pollution on health.

TABLE 6: Effects of noise on the productivity

RESPONSE	FREQUENCY	PERCENTAGE (%)
Yes	16	20%
No	64	80%
Total	80	100%

Based on Table 6 above, the analysis indicated that 20% of the respondents agreed with the question while 80% disagreed. This showed that most respondents do not know the effects of noise on productivity.

TABLE 7: Effects of noise on high blood pressure

RESPONSE	FREQUENCY	PERCENTAGE (%)
Yes	53	66.25%
No	27	33.75%
Total	80	100%

Based on the table presented above, 66.25% of the respondents agreed that causes of noise affect people with high blood pressure, while the remaining 33.75% disagreed with the question. This indicates that the majority of the respondents knew the health effects of noise pollution on humans and the environment.

TABLE 8: Effect of noise on human health

RESPONSE	FREQUENCY	PERCENTAGE (%)
Yes	52	65%
No	28	35%
Total	80	100%

The above table shows that 65% of the respondents agreed with the question, while the remaining 35% disagreed with the question. This indicated that the highest number of the respondents understood the noise effect on human health.

TABLE 9: Effects of noise on the heart, liver and brain

RESPONSE	FREQUENCY	PERCENTAGE (%)
Yes	72	91.25%
No	7	8.75%
Total	80	100%

The above table shows that 46.25% of the respondents disagreed with the question, while the remaining 53.75% agreed with the question. This indicated that the majority of the respondents did not know the noise effect on the question.

CONCLUSION

This study showed the extent of air particulate pollution and waste disposal in the leprosy market site in Mubi Nigeria. It was undertaken as preliminary work bearing in mind that the activities of the leprosy market could be emitting high levels of particulate matter in their atmosphere which may be degrading the quality of the air. The particulate concentrations were found gravimetrically in the range of $546.12\mu\text{g}\cdot\text{m}^{-3}$ and $5222.3\mu\text{g}\cdot\text{m}^{-3}$. It was observed however the weekly particulate matter, especially of PM_{10} emitted was quite high when compared to particulate matter of a diameter of 2.5 microns. The duration in which individuals are exposed to particulate matter may be a better predictor of long-term lung damage, hypertension, etc. It was concluded that the particulate matter comes from three major sources the movement of vehicles and people, domestic activities around the study area, and traffic emissions due to the fuel burning. In addition, waste disposal has effects in creating unpleasant conditions. Noise pollution also has serious effects on people living around the market site.

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