

The Implication of Air Pollution on Human Health And Environment

Dr. Ahmed Bishir

Katsina State College of Health Sciences and Technology, Katsina

Kankiya Iro School of Health Technology, Kankia

Department of Public and Environmental Health Sciences

Tel. 08060718267 email: drahmedbishir@gmail.com

&

Dr. Sani Aliyu

Katsina State College of Health Sciences and Technology, Katsina

Kankiya Iro School of Health Technology, Kankia

Department of Public and Environmental Health Sciences

Tel. 07033063646 email:sanialiyu74@gmail.com

Abstract

More recently, air pollution has been a prevailing issue for discussion due to its adverse health and environmental effects in major cities in Nigeria. Air pollution is the introduction of chemicals, particulate matter, or biological materials that cause harm or discomfort to humans or other living organisms, cause damage to the natural environment or built environment and atmosphere. This paper reviewed the adverse effects of air pollution on human health and environment. The findings of these study revealed that Air pollution has a lot implications on human Health and environment. Among the problems found associated with air pollution include lung cancer, asthma, chronic bronchitis, heart diseases, mental illness, autoimmuneconditions, miscarriage, premature births, poor memory, premature deaths, eye and nose irritations . It was also found that indiscriminate burning, emission from factories and industries, agricultural activities as well as mining operations are the leading causes of Air pollution in the environment. Based on these findings, it was concluded that a lot of implications on the human Health and environment. It was finally recommended that Government should carryout regular inspections of automobiles to ensure that vehicles are not releasing harmful chemicals into the atmosphere, and ensure that factories that are not located within metropolitan areas follow guidelines regarding sustainable practices in order to decrease air pollution in Nigeria.

Introduction

Nigeria one of the countries with the largest number of deaths due to air pollution in Africa, while the country ranks fourth for air pollution across the globe. Statistics indicate that in 2016, 150 fatalities occurred per 100,000 people as a result of this environmental issue. The State of the Global Air Report that the Health Effects Institute (HEI) published determined that Nigeria's air quality is amidst the most lethal worldwide. Atmospheric threats such as generator fumes, automobile emissions and crop burning cause air pollution.

In 2016, The HEI indicated that industrialized countries like Russia and Germany have reported lower death rates than Nigeria with sixty two (62) and twenty two (22) per 100,000 people. Meanwhile, developing countries like Afghanistan, Pakistan and India have reported much higher rates with four hundred and six (406), two hundred and seven (207) and one hundred and ninety five (195) deaths per hundred thousand (100,000) people (Ratini, S 2021).

According to Johnson (2021) Air pollution emits through generator fumes which produce the deadly gas Carbon monoxide (CO). Automobiles with older engines are also likely to emit unhealthy fumes into the atmosphere. In households, kerosene stoves produce flames that contribute to the poor air ventilation. The nation creates over three (3) million tons of waste yearly and most Nigerians burn their waste in their neighborhoods rather than discarding it, contributing more pollution to the atmosphere. Another aspect that contributes to the air pollution crisis in Nigeria is the use of firewood and coal to cook.

Additionally, indoor air pollution in Nigeria is also a big issue, as the amount of fine particulate matter levels in many households surpass air quality guidelines by 20 times. In 2012, according to the WHO, Lagos, Nigeria experienced nearly seven (7) million deaths caused by indoor and outdoor air contamination (World Health Organization, 2021).

Air contamination across the African continent kills over seven hundred thousand (700,000) people annually; more people die from air pollution than unsanitary hygiene practices and undernourishment. Casualties as a result of the air pollution crisis in Nigeria has increased by nearly forty (40) percent in the last thirty (30) years. Nigeria has some of the highest rates of unhealthy air quality across the African continent. Overall, Nigerian cities contain the most

unhealthy air quality with 10 urban areas being classified on a list of 30 cities in Africa with the most unhealthy air quality. Johnson G, (2021).

Causes of Air Pollution

1. The burning of fossil fuels

Sulphur dioxide (SO₂) emitted from the burning of fossil fuels such as coal, petroleum and similar factory combustibles is one of the major causes of air pollution. Smoke emitted from vehicles like cars, trucks, jeeps, trains, and airplanes give rise to air pollution. Carbon Monoxide (CO) formation produced by vehicles due to improper combustion is a primary pollutant. Nitrogen Oxides, which results from natural as well as man-made processes, is another cause of air pollution (Ratini, 2021).

2. Emissions from factories and industries

Manufacturing factories and industries release a massive amount of carbon monoxide, organic compounds, hydrocarbons, and chemicals into the atmosphere, thereby deprecating the quality of air. Petroleum refineries also emit hydrocarbons and several other chemicals which cause air as well as land pollution. Yusuf A, (2021)

Agriculture and allied activities

Ammonia is one of the most common by-products of agriculture and allied activities. It is also one of the most toxic gases in the atmosphere. Furthermore, the use of insecticides, pesticides, and fertilizers has increased a lot in agro-based activities. These release harmful chemicals into the air, and lead to both air and water pollution (Ratini, 2021).

Household air pollution

Household cleaning products, painting supplies release hazardous chemicals in the air and give rise to air pollution. Suspended particulate matter, or SPM, is another major cause of air pollution. SPM is commonly caused by combustion, dust, etc.

3. Mining operations

Mining is a process where minerals below the earth are extracted with the help of large equipment. During the mining process, dust and toxic chemicals are released into the

atmosphere, leading to air pollution. Mining operations are largely responsible for the deteriorating health conditions of mine workers as well as nearby residents (Ratini, 2021).

Health Implications of Air Pollution

While developed countries have effective solutions in place to handle air pollution, underdeveloped countries are struggling to handle this environmental issue. Some countries have begun taking appropriate measures to handle it, though. As a result, the number of people exposed to air pollution has decreased from 3.5 billion in 1990 to 2.4 billion in 2016.

The report also indicated that 95 percent of the globe's citizens are intaking polluted air. In 2016, extended subjection to air pollution contributed to roughly six (6) million deaths, all resulting from diseases such as strokes, lung disease, lung cancer, bronchitis, asthma and heart attacks. Air pollution is one of the top leading causes of fatalities, particularly in underdeveloped countries, even after smoking, increased blood pressure and unhealthy diets. Exposure to air pollution also increases the risk of developing cancer. Daniel. H. (2019)

Some of the medical conditions that are associated with air pollution are discuss as follows

1. Lung Cancer

Particles in air pollution can cause lung cancer, the leading cause of cancer-related deaths in the U.S. About 6% of deaths worldwide related to outdoor air pollution are due to lung cancer. Dirty air may play a part in other types of the disease too, such as urinary tract and bladder cancer (Ratini, 2021).

2. Asthma

Air pollution is any gas or particle that's in the air but isn't a natural part of it. Two main pollutants can cause asthma. Ozone is a gas that makes smog. It can affect how person breathe. Tiny particles like those in dust or smoke can get stuck in the lungs. These pollutants can damage the lungs and cause to have more attacks. Ahmed D. (2020)

3. Chronic Bronchitis

Exhaust from cars, trucks, and other vehicles pollutes the air. People living in a city and regularly breathe in traffic fumes, may likely develop chronic (long lasting) bronchitis. This is when the lining of the bronchial tubes, which carry air to the lungs, get inflamed. If this condition is developed, the patient may have shortness of breath and cough up thick mucus that may be white, yellow, or green (Yusuf, 2021).

4. COPD (Chronic Obstructive Pulmonary Diseases)

Chronic bronchitis and emphysema are common conditions that lead to chronic obstructive pulmonary disease, or COPD. These conditions block air flow in the lungs. Long-term exposure to gases, particles, or smoke is the main cause. Studies have shown that COPD is more common in areas where air pollution is high. If person developed COPD, He may find it even harder to breathe when the air is polluted. Serious cases may mean a hospital visit or even death (Samual, 2020).

5. Heart Disease

Air pollution can lead to a higher risk of heart attack, irregular heartbeat (arrhythmia), heart failure, and stroke. Tiny particles in the pollution are small enough to travel to the blood vessels and cause inflammation. Over time, they can make heart disease set in faster. People who live near busy streets or factories run a greater risk. But even short-term exposure can hurt person's heart (Daniel, 2019).

6. Mental Illness

Studies show a strong link between the quality of air and mental health. Researchers examined more than 150 million medical records in the U.S and Denmark. They found that people living in areas of with the worst air quality had a 27% increase in the rate of bipolar disorder and a 6% increase in major depression.

7. Autoimmune Conditions

This is when your immune system attacks own body. This usually damages the tissue and may cause inflammation around the heart and lungs. Researchers think that air pollution triggers an immune response in the lungs that might set off certain autoimmune conditions. Researchers

don't know exactly how it works, but particles from air pollution get into them and trigger an attack response (Johnson, 2021).

8. Miscarriage and missed abortion

The risk of missed abortion in the first trimester increasing the exposure to a particulate matter (PM) 2.5, sulphur dioxide (SD), Ozone (O₃) and carbon monoxide in older women. Anumita Roychowdhury (2019).

9. Premature Birth

Exposure to air pollution is linked to preterm, or premature, birth. Pollution can raise the level of toxic chemicals in the blood. This stresses a pregnant woman's immune system. This can weaken the placenta and cause an early birth. This can lead to health problems for the baby right away or in the long term. Air pollution also may cause low birth weight.

10. Premature Death

Breathing in polluted air for even a short amount of time can shorten life span. More than 4 million people around the world die early deaths each year due to outdoor air pollution. Those deaths are mainly from stroke, heart disease, lung cancer, COPD, and respiratory infections. The most deadly components of air pollution are ozone, nitrogen dioxide, and sulfur dioxide.

11. Learning and Memory Problems

Studies have shown that air pollution can have a harmful effect on the brain. Traffic-related air pollution can slow a baby's brain and behavior development. In the elderly, it raises the chances of dementia. Research has shown that traffic-related air pollution may target parts of the brain, including gray matter, white matter, and basal ganglia. These changes to the brain due to pollution are thought to affect development. Ahmed D. (2020)

12. Eye and Nose Irritation

Outdoor air pollution can cause a number of health problems. But so does pollution found indoors. Freshly painted walls can release fumes and volatile organic compounds (VOCs) that irritate eyes and nose. New furniture or carpet may have strong-smelling chemicals that can cause a headache or dizziness.

Preventive measures of air pollution

In order to effectively handle the air pollution crisis in Nigeria, it is important for the country to provide regular inspections of automobiles to ensure that older vehicles are not releasing harmful chemicals into the atmosphere. It is also integral that Nigeria removes vehicles from the road that are toxic to the environment (Johnson, 2021)

The implementation of efficient electric energy will help decrease the need for generators, which produces unhealthy air pollution in households and work environments. However, Nigeria does have access to sustainable energy resources that are capable of providing power to its citizens. These methods are safer for the environment and the usage of them decreases the use of gasolinepowered generators, thus decreasing pollution (Ahmed, 2020).

Nigerians can reduce air pollution in the household by substituting fuel wood for biogas, which is a form of biofuel that is instinctively manufactured from the decay of natural waste. Biogas will provide sustainable options for preparing food and heating the household while eliminating air pollution both inside the household and the outside environment (Ratini, 2021).

In terms of trash disposal, recycling methods will be helpful to make certain that people are not burning waste. Additionally, daily waste removal from households will also help to properly dispose of trash, which reduces the fragmentation of waste and prevents odors that contribute to air pollution. Additionally, factories that are within metropolitan areas follow guidelines regarding sustainable practices in order to decrease air pollution in Nigeria. The National Environmental Standards and Regulations Enforcement Agency (NESREA) monitors operations to ensure that these work environments are abiding by the pollution proclamations.

Conclusion

Based on the findings of this paper, it was concluded that air pollution is a serious threat to human health and environment as it causes a lot of health problems such as chronic bronchitis, asthma, miscarriage, autoimmune conditions, mental health problems, premature births, premature death, and nose and eye irritation among the others.

Recommendations

Based on the findings of this paper, the following recommendation were made:

1. Government should carryout regular inspections of automobiles to ensure that older vehicles are not releasing harmful chemicals into the atmosphere.
2. Factories that are within metropolitan areas follow guidelines regarding sustainable practices in order to decrease air pollution in Nigeria
3. Recycling methods of waste management should be adopted to prevent indiscriminate waste disposal that causes air pollution in the environment.
4. Nigerians can reduce air pollution in the household by substituting fuel wood for biogas, which is a form of biofuel that is instinctively manufactured from the decay of natural waste
5. Regulations Enforcement Agency (NESREA) monitors operations factories to ensure that these work environments are abiding by the pollution proclamations.

References

- Ahmed D. (2020) Adverse effects of Air Pollution on Human Health. *Journal of Public and Environmental Health*. Vol. 1 (2).
- Aliyu, S. (2021). *The management of environmental pollution*. Ibadan. (2nd ed). HPK press.
- Anumita Roychowdhury (2019), Air pollution may cause 'silent' miscarriages risk. India Environment portal resources, Down to Earth. Org.
- Daniel, H. (2019) Adverse effects of air pollution on human and environment. *Journal of environmental Health Sciences'* vol, 5 (8). Pp. 92-7
- Johnson, G. (2021) Causes and prevention of Air Pollution in Nigeria. *Journal of Environmental Health Sciences*. Vol. 2 (4).
- Ratini, S (2021). Causes and control of Air pollution in the community. *Journal of Community Health*. Vol. 3(4).
- WHO (2022). *Environmental Pollution. A challenge to Global Health*. Pdf.
- Yusuf, A. (2021) Environmental pollution: A threats to human health: *International Journal of Public health*. Vol. 9 (2). Pp. 102-8