

“Our Air is Biscuit”: Victims’ Perspective of Factory Pollution in Oluyole, Ibadan

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ABSTRACT: This study set out to investigate the knowledge of Oluyole residents about factory pollution, the health risks experienced by Oluyole residents, the measures taken to protect from the factory pollution, and government responses to factory pollution in the Oluyole industrial estate. The study was conducted in Oluyole Ibadan and it adopted a combined design of field and victim surveys. The study used qualitative data to identify the effects of factory pollution on dwellers’ health and ascertain the victimological perspectives of the health problems vis-a-vis factory pollution in Oluyole Ibadan. Using ten indepth interviews and five key informant interviews, the data were qualitatively analyzed using the content analysis method and the adoption of verbatim quotation where necessary. The study identified that the respondents are knowledgeable about the factory population and that factories in Oluyole are a major source of pollution and decease-causing agents in the area. Asthma, cough, catarrh, and headache are some of the side effects of the Oluyole factory pollution. It also discovered that the government had taken steps overtime to curb the menace, but those steps have been politicized and are inadequate hence, the upsurge in cases of factory pollution in Oluyole Ibadan.

KEYWORDS: factory, pollution, health hazard, asthmatic patients, Ibadan, Oluyole

Introduction

It has been estimated that the proportion of the global body of diseases and health risks associated with factory environmental pollution ranges from 23 to 30 percent (Lohchab & Saini 2018). These estimates include infectious diseases related to drinking water, sanitation and food hygiene, even respiratory diseases as a result of biomass burning on the health of dwellers around the factories.

In the submission of Ityavyar and Thomas (2019), the prevalence of factory pollution is a global issue and a challenge faced by so many individuals and societies especially given the industrial nature of the contemporary world. The issue of factory pollution has been a topical one since the dawn of the industrial age and has also remained relevant till date. It has been in existence since before the colonial era. Although there had been regulatory bodies to combat pollution in Nigeria, due to inadequacies of these agencies, efforts had yielded only but a few results. Olukanmi and Adeoye (2012) demonstrated that most factories are registered under the federal government and most companies or factories which cause pollution are under the Federal Environmental Protection Agency Act.

Industrialization and increased productivity are making unprecedented demands on natural resources. Moreover, chemical research and technologies have brought about 70000 compounds into use (Oyinloye 2015). The advancement in technology as a result of urbanization and industrialization has contributed to the increase in the discharge of pollutants into the environment through industrial effluents, domestic waste and auto-vehicle emissions (Olukanmi and Adeoye 2012). Studies have also shown that metals polluting soils can be hazardous to the health of dwellers around the factory areas i.e., the depository for pollutant metals as a result of adsorption processes which bind the metals to it. Proceeding, Jamshaid, Khan, Ahmed and Saleem (2018) added that high concentration of metals can cause harm to lives and environment of the individuals.

The effluents from factories are seen to have considerable effects on the water quality and making the water unsafe for human use. The negative consequences of factory pollution are of great health concern and this propelled Saini, Lohchab, Nain and Kumari (2019) to submit that microbes which are emitted into the water bodies are followed by fungi which are in themselves detrimental to human health system. To this effect, the public, especially individuals are speedily and increasingly becoming aware which has resulted in the interactions and in some case, conflicts between residents and factories. David (2015) believed that the problems are undoubtedly greatest in developing worlds where traditional sources of pollution such as factory emission, poor sanitation, inadequate waste management, exposure to health pollution from biomass fuels affect large numbers of people.

Being one of the industrial hubs of south-west Nigeria, Oluyole Industrial Estate houses such great industries like Yale Foods Industry, Seven-Up Bottling Company, Obasanjo Farms and many more high machine-powered industries. Despite the presence of these industries, a multifaceted and multi-layered study has not been conducted to ascertain the level of factory pollution from a victimological perspective especially given the siting of a new hospital in the estate- the Adeoyo State Hospital.

As a result, this study set the following objectives; to explore the knowledge of Oluyole residents about factory pollution; to identify the health risks experienced by Oluyole residents; to investigate measures taken in protection from the factory pollution and; to analyse government responses to factory pollution in Oluyole industrial estate.

Literature review

The central role played by industry in the economy of any nation is clearly evident in being one of the main determinants of economic growth and development. This is made possible through its role in increasing both national and per capita income, augmenting international trade, job creation, facilitating the growth of domestic markets, urbanization, among others (Obafemi, Eludoyin & Akinbosola, 2019) in the submission of Obafemie et al. (2019); they believe that although industrialization is inevitable, various devastating ecological and human disasters which have continuously occurred over the years implicate industries as a major contributor to environmental degradation and pollution processes of various magnitudes. To this end, there is the inordinate release of particles that engender pollution into the environment thereby causing industrial pollution.

Peterson (2018) opined that industrial pollution is caused by particles especially waste gases like carbon monoxide, sulfur oxides, and nitrogen oxides which are the waste products of industry which ultimately end up in the air, water and/or land. Most of the pollution on the planet can be traced back to industries of some kind and industrial emissions are the second largest pollutants of the atmosphere after automotive exhausts (Thirugnanasambandham & Ganesamoorthy 2019). To Bishnoi, et al. (2017),

factory pollution is often thought of, as those mostly visible and smelly smokestack emissions which are bound to occur in every society, because it is virtually impossible to have a productive process without waste and the pollution that follows after.

The issue of industrial pollution is presently receiving a universal attention because it affects the climate of the environment and its impact is therefore global. Its health implication, which is a form of negative externality imposed on other agents in the economy who are non polluters, makes the issue of grave importance (Ojekunle et al. 2018). It has been asserted that air pollution (which is one of the different forms of pollution resulting from factory operation) is now the world's largest single environmental health risks, and is fast becoming one of the leading causes of illness and death in developing countries (World Health Organization 2019). These industrial emissions have the potential of aggravating the problem of climate change which poses serious health challenges in terms of cardiovascular and cerebrovascular diseases among the elderly as it is usually associated with excessive temperatures and heat waves that can alter arterial pressure and blood viscosity among other health risk factors (Peterson 2018). Other human health effects due to air pollutants include asthma, carcinogenicity, pulmonary tuberculosis, cerebrospinal meningitis, pneumonia, whooping cough and measles (Thirugnanasambandham & Ganesamoorthy, 2019). The World Health Organization (WHO 2019) estimates that in the case of outdoor air pollution alone, it accounts for about 2% of all heart and lung diseases, about 5% of all lung cancers, and about 1% of all chest infections. The number of deaths attributable to outdoor pollution has significantly increased, with 176,000 deaths annually from outdoor air pollution in Africa, and 3.7 million deaths globally (WHO 2019).

In the case of Nigeria, the worrisome effect of pollution cannot be overemphasized as the country has a high record of some of the worst health and healthcare statistics in the world. For instance, life expectancy at birth had remained low which is put at 52 years in 2014 and this is owed not just to socio-economic conditions but ecological factors as well as others (CIA World Factbook 2015). Mortality is high, with infant mortality rate in 2013 pegged at 74 percent per 1000 live births and maternal mortality rate was 560 per 100,000 live births (Asubiojo, 2016). The findings of Asubiojo (2016) further asserted that respiratory diseases which are major pollution related diseases especially influenza and pneumonia, asthma and lung disease have been found to account for 249,211 deaths in Nigeria.

These diseases account for about 15% of the total deaths in Nigeria with influenza and pneumonia being among the top 3 causes of death. Following the health situation described above and in addition to other World Health Organization health indicators, numerous studies have investigated the effect of factory pollution on health using health care spending as a measure of health status but there is the dearth of researches on the influence of industrial pollution on public health in and around the Oluyole industrial area in Ibadan. As the concerns and questions about industrial pollution and its accompanying effect on humans and the environment grow louder, understanding its effect on the public health of Nigerians becomes increasingly important.

Questions to address this burgeoning impact of factory pollution have been thrust forward such by different scholars. Is there a way we can link the deteriorating health situation in Nigeria to industrial pollution? If there is a link, what policies should be designed and implemented to reduce the level of emission generated from industrial activities? Or should industrial pollution be permitted as industries are major drivers of economic growth and development? If they are to be permitted, what quota of emissions is to be allowed that will not be detrimental to human health? Are there other factors besides industrial emissions responsible for the health status of Nigerians?

The ideas of Obafemi, Eludoyin and Akinbosola (2019) further state that the industrial revolution brought with it technological progress such as exploration of oil mass food production, packaging and distribution among others. The virtually universal use of such revolutionized technologies throughout different industries have aggravated the concentrations of pollution in recent time (Obafemi et al. 2019). The concerns of environmental pollution (especially in third world countries) have been raging on for decades, which made Nobuko as far back as 1993 to submit that it is the contamination of the physical and biological components of the earth/atmosphere system to such an extent that normal environmental processes are adversely affected.

Environmental pollution is the process whereby various harmful substances are added to the environment (i.e., land, water, air, and the acoustic environment etc.) by human and/or natural activities (Saini, Lohchab, Nain and Kumari 2019).

The harmful substances called contaminants released into the environment (i.e. water, land, air) cause harm or discomfort or damage to humans or other living organisms. This is not in anyway being oblivious of the fact that pollution can be naturally occurring substances, they are considered contaminants when it exceeds natural levels. Federal Environmental Protection Agency (FEPA) as contained in Asubiojo (2016) views pollution as man-aided alteration of chemical, physical or biological quality of the environment to the extent that it is detrimental to the environment or beyond acceptable limits. Nature maintains elements of the environment- the air we breathe, the water we drink and the soil on which our foods grow, so that the composition of these elements within certain ranges ensure our survival on this planet. But Saini et al. (2019) submits that in the contemporary days, man depends on better methods and techniques to achieve his aims for better standard of living e.g. to provide good food, transport, shelter, good roads and so on, environmental degradation and pollution notwithstanding.

Environmental pollution has become an unending problem in the modern society and it is now becoming a threat to the livelihood of the people. Man's efforts both technologically and industrially have resulted in the exploitation of the earth's resources which in effect has led to environmental degradation. Pollution of the environment is likened to different sources. For instance, air pollution results from the discharge of toxic materials from man's domestic and industrial activities into the air which remain suspended in the air for a period of time. More importantly, Ityavyar and Thomas (2019) believe that there are about five major pollutants that are constantly discharged into the air namely carbon monoxide, particulate matter, sulphur dioxide, hydrocarbon and nitrogen oxides. These pollutants are obtained from burning of agricultural combustion, space heating and other industrial activities.

Carbon monoxide results from incomplete combustion of fuel in engines, sulphur dioxide results from burning of coal and oil both in utility and industrial plants. Petroleum refining is also a major source of sulphur oxide. The particulate matter includes soot, lead, asbestos, dust which varies in size ranging from the visible to the microscopic components (Yakubu 2018). Yakubu (2018) further highlighted other sources of hydrocarbons as evaporation of industrial solvents, combustion of weed as well as emissions from internal combustion engines using gasoline while the harmful nitrogen oxides result from certain combustion processes such as industrial boil from plants and transportation vehicle.

Similarly, Lohchab and Saini (2018) explained that the discharge of waste materials like industrial effluents, dust, smoke, solid waste and so on, are the products of industrialization and urbanization. The introduction of such waste materials has led to adverse effect of environmental pollution on the health of man, animals, both aquatic

and terrestrial and of course on plants. On the whole, man is essentially responsible for many of the environmental problems encountered and this invariably suggests that the unwanted by-products of man's attempts to improve his standard of living have contributed largely to the deterioration of the environment.

Theoretical Representation

Modernization theory was adopted for this work. The theory is used to explain the progressive transition from a pre-modern or traditional to a modern society in terms of technology, industrialization and how it can cause pollution in the society.

Omoju (2014) submitted that environmental pollution is inevitable in developing countries and that pollution is one of the many environmental challenges facing the world today. In addition, the modernization theory, according to the American Journal of Sociology (1960) explains the process of transition in the economy from being traditional to modern. During this period of modern transitioning, the society faces a number of challenges and these are what include pollution in the environment with health and environmental effects.

The modernization theory explains that in halting environmental or factory pollution, it may undermine the economic growth and competitiveness of developing societies.

In the desires of factories to develop and improve standards of living of the people, the society opts for the goals of economic growth and cheap energy for all; leading to environmental pollution and degradation. The competitiveness of factories in developing societies, like Oluyole for instance, contributes to economic growth, job creation and development.

As much as modernization has brought about positive effects on dwellers health in Oluyole, Ibadan, by improving the income, productivity of the people, it has as well brought about degradation and adverse effect on the health of dwellers in Oluyole, Ibadan, it has caused people, their health, even their jobs leading to poverty. Developing societies desires industrialization and economic growth and this tend to consume more cheap energy. Factories are created to develop massive infrastructure to promote economic growth, but as it has been said earlier, the creation of pollution in the environment, affecting the socio-economic and health of dwellers in this area.

Materials and Methods

The study adopted a combined design of field and victim surveys. The study made use of qualitative data to identify the effects of factory pollution on dwellers' health and to also ascertain the victimological perspectives of the health problems vis-a-vis factory pollution in Oluyole Ibadan. The designs were pertinent because they are human-friendly, i.e., social science-friendly, as it is non-experimental in nature and therefore, lack active manipulation (Bhattacharjee 2012).

The study was conducted in Oluyole Ibadan. Oluyole is a popular estate that doubles as a local government in Oyo State, Nigeria. Oluyole Local Government was established in 1976, and the Council occupies a total area of 4,000km². Based on the 2006 population census, its population is 202,725 (Oyo State Government, 2019). This study area was justified by the existence of several production factories such as Yale Foods, Seven-Up Bottling Company, Obasanjo Farms, etc. Due to the overwhelming effects of pollution from these factories, a government hospital known as the "New Adeoyo State Hospital" has been established in the area to tackle incidences of pollution-related diseases contracted by the inhabitants.

The study population was drawn from the inhabitants of the industrial estate. Ten in-depth interviews (IDI) were conducted among the residents of the estate, while five key informant interviews (KII) were conducted among health workers of the newly established hospital so as to ascertain pollution-related diseases in the area. The data were qualitatively analyzed using the content analysis method and the adoption of verbatim quotations where necessary.

Analysis and Discussion

As to respondents' awareness of pollution, a great number of them agreed to be aware of pollution and the detrimental effects of pollution. With the level of awareness of what pollution is among the study respondents, it will pose no threat for them to be able to identify when either the air they breathe or the water they drink is polluted; hence, their ability to present valid data for the issue under study. In trying to understand whether the factories in Oluyole are a source of pollution or not, the researcher asked the respondents to indicate whether the factories in Oluyole are a source of pollution and they had this to say;

Most times, the air we breathe is full of biscuit smell. Not a day goes by without us smelling biscuit, even inside your bedroom. There was even a time when our well water was contaminated by a factory that kills and processes chickens. It was not until we were upset that the government chased them away (IDI/Male/Igbo/20 years of residency).

Air pollution, water pollution and noise pollution were identified as the types of pollution within the area. One in-depth interviewee succinctly depicted this thus;

I just told you about the air we breathe and how our water at some point was contaminated. Ehe, one more thing, the trailers that those factories use to park on our roads, most times, it is their noise that wakes us up. You know because they are many, they used to make a great noise (IDI/Male/Yoruba/20 years of residency).

Another respondent has this to say;

I don't think there is any ind of smell we have not smelled here since I have been living here. Believe me when I say that even chicken faeces had been poured on our roads many times thereby contaminating the air we breathe. (IDI/Female/Yoruba/10 years of residency)

As to the frequency of the pollution, the respondents were torn between daily experience and weekly experience. Those who submitted that they experienced the different forms of pollution on a weekly basis believed that their responses are occasioned by their absence from the area in most circumstances. This is a show of the frequency and magnitude of the pollution, even though those that submitted that they experienced it daily believed that air pollution (such as the smell of hot biscuit) surmounted other types of pollution. For instance, a relatively young respondent for the qualitative data argued thus;

Bros you no dey smell am? The biscuit weh dem dey bake? Na so we dey smell am everyday na. Even though the smell na fine one, it still dey block our ability to smell real and better things (IDI/Female/Yoruba/4 years of residency).

The respondents also believed that factory pollution is a bad factor with accompanying health challenges and therefore ought to be tackled decisively. This was depicted in the response of one of the in-depth interviewees who said;

You see the way my eyes are red, this is how it had been for so many years. I finished building my house and I parked into it 23 years ago, then suddenly

I realized that my eyes were getting red and we'd gone for different medical tests but they asked me to park out of the place. Should I run away from the house I built with my money? (IDI/Male/Yoruba/23 years of residency).

In trying to determine whether factory pollution affects both the health of dwellers and/or the neighbourhood, the respondents were asked to respond on questions which border on this objective and to submit whether they had been victims of chronic or non-chronic diseases resulting from factory pollution. A great number of the participants submitted to have experienced non-chronic health challenges resulting from factory pollution while a small number of them lamented experiencing chronic health issues suspected to have engineered by the factory wastes in the area.

To drive home this certainty, the key informant interview conducted on a doctor with the New Adeoyo State Hospital (which is the nearest government health facility to Oluyole estate) stated thus;

Even though this is a state-owned medical facility, people from Oluyole patronize here a lot. Some of them are with asthma, while some come for treatments for as little as headache (KII/Male/11 years with the Adeoyo State Hospital).

They believed that such wastes that are indiscriminately disposed of around the neighborhood have the tendency to degrade the quality of the environment. They also believed that at some point when the factories want to burn waste such as unused cartons, the smoke gets into the atmosphere thereby affecting the quality of the atmosphere. For instance, an 80-year man who had resided in the area for 45 years (and was coincidentally celebrating his 80th birthday on the day of the interview) lamented thus;

Sometimes they bring out their cartons to burn and you see the cloud getting dark due to the smoke. The smoke goes so high that the whole environment becomes dark as if it's going to rain. (IDI/Male/Yoruba/45 years of residence).

The researcher inquired into the efforts taken by both the community and the government as to stopping factory pollution in the area and the effectiveness of those efforts where they exist.

About 20 years ago, all our water coming from the ground including our tap and well, was contaminated with chicken waste and smell. We couldn't use it for anything, we didn't know that a factory that rears and processes chicken was the fault. The pipe through which the waste water goes had broken somewhere and the whole water was now channeled into our source of water. It took the effort of me and some other elders in the community to go to the government and mount pressure on them before they came to chase them away. Whenever something like that happens, we gather all the landlords in the area and we go first to the ministry of health and later to town planning and through our efforts, they do something about it (IDI/Male/Yoruba/45 years of residence).

Another respondent for the in-depth interview had this to say;

There was a time when this carton industry close to us here started burning their cartons, most times you'll see the particles of the cartons everywhere inside your sitting room and bedroom not to talk of the smoke so some community leaders went and spoke to company about it but they did not listen so they went to the government. It was through the effort of the government that the company had to raise their funnel so that the smoke and particles started going up (IDI/Female/Yoruba/4 years of residence).

Anthropogenic (man-made) pollution has long been implicated as a major contributor to poor health, and has been recognised as an exacerbating factor when it is present with other

contributory factors such as exposure to cigarette smoke and natural allergens such as pollen. He, Liu and Salvo (2019) believe that direct causality is notoriously difficult to prove when considering the range of potential pollution sources and the almost infinite variety of chemicals to which the public is often exposed such as documented in and around Oluyole industrial area. Despite the concerns of difficulties as expressed above, an antique study done by Ginns and Gatrell (1996) had shown evidence of an association between pollution of different types as experienced in Oluyole and diseases of different kinds, mortality and morbidity, even when adjustment for other risk factors is made. Many of the residents living around the major industries that exist in Oluyole have complained about the plume of emissions, water contamination and noise pollution and have reported an increased incidence of headaches, sore eyes, sore throats, runny or blocked noses, and wheezing or asthma attacks.

One of the major concerns among parents and teachers of school age children whose schools are close to the factories in the area was an apparent increase and severity in the incidence of asthma. For instance, a nonacademic staff of one of the public schools in the area submitted that when the factory begins to burn their empty cartons, the students start experiencing asthmatic condition with high intensity. This is in line with the study conducted by Persico and Venator (2019) which relatively focused on the possible effects of particulate air pollution on the incidence of asthma and other respiratory problems, and which eventually submitted that there is a strong association between exposure to particulate pollution and asthmatic symptoms.

From the foregoing, it could be deduced that the concerted effort of both the community and the government had yielded more gains in the fight against factory pollution but the study population believed and submitted that more needs to be done by the government with respect to curbing the still existing factory pollution.

The chemical conversion of raw materials into usable (or consumable) products requires different industrial activities ranging from heating to melting which may be traditionally done by burning fossil fuels. These activities bring about the inevitability of factory waste emission and the need to curb them.

Conclusion

This study has been able to thrust forward the negative effects of factory pollution, especially how they affect the health of the individuals residing around factories located in the Oluyole industrial estate of Ibadan. The study has also established that through the combined efforts of the community members and leaders in Oluyole and the government at different levels, factory pollution had been reduced in the area with few cases of pollution still traceable to the factories in and around the estate.

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Conflict of Interests

The authors declare that there is not any conflict of interest regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/ or falsification, double publication and/or submission, and redundancy have been completely observed by the authors.

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