

The Need for Environmental Epidemiological Studies in the Niger Delta Area of Nigeria

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ABSTRACT The Niger Delta region is a peculiar part of Nigeria. Though epidemiological studies have been carried out in Nigeria in the past and have successfully arrived at identifying environmental and occupational diseases, the peculiar nature of the Niger Delta environment and its industrialisation were not taken into consideration. There is, therefore, the urgent need for environmental epidemiology, a scientific endeavour that studies humans as they interact with their environment leading to unhealthy living, to establish the exogenous diseases and ailments which residents and workers suffer from as a result of the terrain and activities arising from the industrialisation of the Niger Delta area, especially those of oil exploration. This would make it possible to know the distribution of the diseases and disabilities in the area and of the factors which influences that distribution in order to provide data essential for the management, evaluation and planning of services for the prevention, control and treatment of these diseases. It was recommended that every effort should be made to provide an empirically produced environmental epidemiological report for the Niger Delta region of Nigeria.

INTRODUCTION

A wide range of endemic diseases has since been found to be prevalent among workers in Nigeria (Weil 2008). Industrial ailments and accidents were later recognised as ailments affecting workers (Nsofor 2011). According to Loewenson (2001), the movement of capital and technology, and changes in work organization appear to have outpaced the systems for protecting workers' health. Working in the agriculture, manufacturing or mining sector are already being associated with high rates of injury from mechanical, electrical and physical hazards as well as physical and psychological diseases like respiratory and psychological stresses.

Environmental and Occupational Diseases

Environmental and occupational diseases are illnesses caused by exposure to disease causing agents in the environment, as opposed to illnesses related primarily to an individual's genetic make up or to immunological malfunctions (Asogwa 1982; World Health Assembly 2010). In everyday use, the term environmental diseases are confined to non-infectious diseases and to diseases caused largely by exposures beyond the immediate control of the individual; the latter restriction eliminates diseases related to personal habits such as smoking or to the use or

abuse of medications or drugs such as alcohol. Occupational diseases, a major category of environmental diseases, refer to illness resulting from job-related exposures.

Historically, awareness of environmental diseases began with the recognition of occupational illnesses, because exposures are usually more intense in work settings than in the general environment and, therefore, can more readily produce overt illnesses. Asuzu (1994) cited some examples which included silicosis, a lung disease of miners, industrial workers and potters exposed to silica dust, scrotal skin cancer in chimney sweepers exposed to soot, neurological disease in potters exposed to lead glazes; and bone disease in workers exposed to phosphorus in the manufacture of matches.

The occupational diseases that have been found to be prevalent in Nigeria include lead poisoning, phosphorus poisoning, mercury poisoning, manganese poisoning, arsenic poisoning, aniline poisoning, carbon disulphide poisoning and benzene poisoning, chrome ulceration of the skin, anthrax, asbestosis and silicosis. Others are pathological manifestations due to radiation, toxic jaundice, toxic anaemia and primary epitheliomathus ulceration of the skin due to tar, pitch, bitumen, mineral oil or paraffin and poisoning due to halogenated aliphatic hydrocarbon, compression air sickness. These diseases were found to be prevalent in Nigeria as a result

of epidemiological studies that were carried out in the past (Loewenson 2001; Asuzu 1996).

Epidemiological Studies

Epidemiology is the scientific study of factors affecting the health and illness of populations that serves as the foundation and logic of interventions made in the interest of public health and preventive medicine (Loewenson 1998). It is considered a cornerstone methodology of public health research and is highly regarded in the determination of risk factors for disease and optimal treatment approaches in clinical practice. Epidemiology is of utmost importance in the identification and control of any form of environmental or occupational disease. This is stressed in Feigin and Howard's (2008) claim that the importance of epidemiology has since been established and should be considered a basic science in medicine that has made major contribution to the saving of lives.

ENVIRONMENTAL EPIDEMIOLOGICAL STUDIES

Ascertaining that a particular disease plaguing a community is as a result of exposures in the environment is the domain of environmental epidemiology (Committee on Environmental Epidemiology 1993). Environmental epidemiological studies usually include infectious disease outbreak investigation, environmental exposures, and health promotion. Environmental epidemiological studies employ 'disease informatics', which are tools used in theoretical manipulations, including the development of statistical, mathematical, philosophical, biological, and psychosocial theory. Akinsola (1993) explained further that various study designs are used in environmental epidemiology to reveal unbiased relationships between exposures such as nutrition, biological agents, stress, or chemicals to outcomes such as disease, wellness and health indicators. These designs according to Hertz-Piccioto (1998) are generally categorized as descriptive, analytic (aiming to examine associations, commonly hypothesized causal relationships), and experimental (a term often equated with clinical or community trials of treatments and other interventions).

Environmental epidemiology investigations usually start with the identification of the 'epi-

demiologic triangle', a term used to describe the intersection of *Host*, *Agent*, and *Environment* in analyzing an outbreak. Identifying the epidemiologic triangle, require the development of a theory which is either some combination of, or both philosophical, biological, psychosocial, statistical and mathematical, so as to reveal the nature and cause of a particular disease outbreak (Rothman and Greenland 2004). Describing the relationship between the host, agent and the environment according to Henneckens and Buring (2004) help to generate or expand theory, to test hypotheses, and to make educated, informed assertions about which relationships are causal, and about exactly how they are causal. Environmental epidemiology therefore makes it possible to define diseases, draw disease causal chain / chains, and formulate health promotion strategy.

THE NIGER DELTA TERRAIN'S NEED FOR EPIDEMIOLOGICAL PROFILING

People in the Niger Delta live with a lot of exogenous factors. These factors create additional pressure to highly stressful work, resulting in cardiovascular and psychological disorders (Fuentes et al. 1994; Kathari and Nababasing 1996; Ilo 1998; Loewenson 1998). Many factors in the work environment that cause ill-health, modify, or are modification of wider causes of ill-health such as the combined effects of the workplace and environmental effects of the workplace. Accidents, stress and intense exposure to health hazards arise from unrealistic production quotas and inadequate controls of overtime, which is a common feature found among industrial workers in the Niger Delta.

According to Roberts (1985), the industrialisation of any region is greatly influenced by the presence of rich mineral deposits. This could have informed the heavy industrialisation of the Niger Delta region of Nigeria. The Niger Delta area is where most of the oil exploration activities take place in Nigeria. The result is that many people and companies are attracted to the area. The heavy human presence and attendant influence of the various companies could impact adversely on the health of the residents. Beside this, gas flaring, oil spillage and other effluents of the oil industries that pollute the environment could affect people's lives and well-being in the area.

According to Morakinyo and Atare (2005), "The Niger Delta annually experiences two tropical weather forms, the dry and rainy seasons, the former occurring from November to April and the latter, April to October." It had also been shown that the Niger Delta region experiences an average yearly rainfall of over 2500mm (Alakpodia 2000), while temperature ranges between 28 and 33 degree Celsius with a mean annual air temperature of 31 degrees Celsius (Ejemeyovwi 2008). Ejemeyovwi observed that the area is made up of streams and rivers whose banks are thickly lined with impenetrable mangrove swamps along the coast, evergreen forests in the centre, savannah vegetation in the north. He observed further that soft sedimentary rocks underlie the area which is generally low lying with a broad coastal belt drained by streams and rivulets. A region of this nature cannot be without its own peculiar share of health problems. In fact it should not be out of place to assume that the peculiarity of the terrain in the Niger Delta area is capable of breeding its own types of diseases that are prevalent in the area.

There is, therefore, the need to do an epidemiological study of the area to ascertain if the environment and the industrial concerns in the area are predisposing residents and workers in the Niger Delta to some diseases not yet known. There is also the need to ascertain that the Niger Delta environment and what it has been turned into, by actions and/or inactions of authorities and residents, is responsible for the preponderance of certain diseases. With the aid of environmental epidemiology it should be possible to know the nature of diseases that the environment can sustain. It should also be possible to empirically establish that it is the factors in the environment that are actually responsible for the diseases that are being experienced in the environment. All the aetiological factors in the pathogenesis of the diseases, distribution of the diseases and related problems in human populations in the Niger Delta that should aid in the planning of services for the prevention, control, and treatment of these diseases could be best achieved with studies in environmental epidemiology.

Residents and workers in the Niger Delta area live with a lot of exogenous factors. Some are essential for life, others are not. Everyone live in a house either rented or owned; the kind of house or room could constitute a health haz-

ard. The location of the house could also be an important determinant of disease distribution in the Niger Delta. The nearness of residences to any facility such municipal solid waste sites, high tension electric wires, factories, motor ways that exposes persons to internal combustion engine fumes, among others, are possible sources of illnesses. People have to live in the very congested environment, known as '*face me I face you*' areas, and so are at risk of exposure to infectious disease.

CONCLUSION

It is very possible that just as the Niger Delta region of Nigeria is richly endowed in natural resources, it could also be plagued by environmental and occupational diseases and ailments. There is, therefore, the urgent need to empirically establish facts regarding the diseases and ailments that are prevalent among the people who reside or work in the Niger Delta region of Nigeria. Records regarding the facts of diseases that predominate in the Niger Delta are hardly available in the Local, State and Federal Governments' health establishments. It is, therefore, imperative to carry out quality researches that should establish these facts.

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