



ENVIRONMENTAL HEALTH OFFICERS IN NIGERIA IN THE 21ST CENTURY: ADVOCACY AND RAISING PUBLIC AWARENESS

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ABSTRACT

Healthy environment is important for the well-being of mankind and environmental factors play a crucial role in the spread of diseases, especially in the 21st century. Environmental health officers are stakeholders in this regard and in the sustainable development goals. This paper discussed the interplay between the environment and health, the importance of environmental officers in Nigeria and factors that influence their activities. A narrative review was carried out using secondary data from various databases and organizational websites. In Nigeria, an environmental health officer must be registered with the Environmental Health Officers Registration Council of Nigeria (EHORECON) in line with Act 11, of 2002 and requires investigative, analytical, communicative and educational skills, among others to function effectively. They are important stakeholders in environmental issues with roles in sanitary inspection of premises, prevention and control of diseases, disasters, antimicrobial resistance, food hygiene and safety, ecological health, planetary health and environmental impact assessment, among others. The challenges they face during their work include lack of enabling laws to deter defaulters, shortage of manpower, poor knowledge and access to various standardized tools, among others. The role of environmental health officers cannot be over-emphasized, especially in this 21st century. However, these professionals need to think outside the 'box' to address arising challenges.

Keywords: *Environment, Health, Environmental Health Officer, Sustainable Development Goals, Nigeria*

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INTRODUCTION

A healthy environment has a crucial role to play in the prevention of about 25% of the global disease burden. Modifiable risk factors in the environment are responsible for over 13 million deaths annually. Over 90% of the deaths from diarrhoea and about 40% of the deaths from malaria and upper respiratory tract infections can be prevented by health interventions targeting the environment (Pona *et al.*, 2021). Environmental determinants of health include physical, chemical and biological factors which are external; and all related human behaviour (PAHO/WHO, 2022). The United Nations Sustainable Development Goals have the overarching goals of eliminating poverty, hunger and disease with environmental health as a key element (WHO/SDG, 2022). The impact of environmental health hazards is borne disproportionately by people in low- and middle-income countries with far-reaching consequences. Morbidity and mortality indices in these regions are still high despite the global concerted efforts to address environmental issues (GEHSD, 2022).

Nigeria is the most populous African nation with the majority of the population living below the poverty line and exposed to poor environmental conditions. The poor conditions are as a result of the interrelationship of a multitude of factors (natural and man-made). The man-made factors could be direct or indirect. Land, air and water pollution have a direct effect while low socio-economic status, lack of education, poor political will, poor health systems, poor health behaviour, lack of enforcement of environmental health policies and rapid urbanization indirectly affect the environment (Aliyu and Amadu, 2017). This leads to mortality from largely preventable conditions. The prevalence of diseases such as diarrhoea, malaria, respiratory tract infections among under-fives in Nigeria is among the highest in sub-Saharan Africa. The periodic outbreaks of Lassa fever and cholera point to the abysmal state of the environment within which a great proportion of the population live and carry out routine daily activities (Chandra *et al.*, 2019; Liu *et al.*, 2016). Against this backdrop, bridging the gap between the current situation and the ideal environmental health conditions is of utmost importance.

In view of the fact that the ideal first contact with health care for any society is primary health care, environmental health officers are considered integral to the success of achieving health for all (Joubert *et al.*, 2020). They are indispensable members of the public health team. They are tasked with promoting health, preventing disease, improving and sustaining the environment. They carry out their functions via health education, consultation, environmental monitoring and surveillance and enforcement of public health legislation (Beaglehoe *et al.*, 2003; Musoke *et al.*, 2016). However, in resource-poor settings like Nigeria, their activities are impeded by several challenges such as poor capacity, inadequate funding, lack of required infrastructure and inequitable distribution of available resources, among others (Beaglehoe *et al.*, 2003).

This article gives an overview of basic concepts in health, environmental health and environmental health officers in Nigeria in the 21st century. It also aimed at raising awareness about the roles of environmental health officers in environmental health.

MATERIALS AND METHOD

A narrative review of secondary data was carried out. A search method for the identification of relevant studies was conducted between 1st October, 2021 and 1st January, 2022 using grey literature, Medline, PubMed and Google scholar electronic databases. The search key words included: Environment, Health, Environmental Health Officer, Sustainable Development Goals and Nigeria

All searches were limited to the English language with no restriction on publication date to ensure that search results include all published articles related to the topic. Further search included articles from organizational publications and 'grey' literature from World Bank, Centres for Disease Control and Prevention, World Health Organization and European Centre for Disease Prevention and Control websites.

RESULTS AND DISCUSSION

Health is a fundamental Human Right as enshrined in Article 25 of the Universal Declaration of Human Rights (UNDHR, 1948). The preamble of the WHO Constitution affirms that health is one of the fundamental rights of every human (WHO, 1948). It is central to the concept of quality of life, an integral part of development and it involves individual, community, state and international responsibility. It is inter-sectoral, its maintenance is a major social investment and health is a world-wide social goal (Park, 2015). It is the responsibility of the governments to ensure that the people have access to the basic elements that would enable families and individuals to maintain good health and have access to good quality health care (Lucas and Gilles, 2003). Good health promotes development, and development promotes health and education promotes health. The strong association between health and level of education is particularly marked with regard to women's education. It affects their health status and behaviour as well as that of their children (Lucas and Gilles, 2003).

The environment is an important determinant of an individual's health, be it at the household, community, state, country, continent and planetary level and therefore, its importance cannot be over-emphasized, especially in the 21st century. Environmental health comprises those aspects of human health, including quality of life, that are determined by physical, biological, social, and psychosocial factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling, and preventing those factors in the environment that can potentially affect adversely the health of present and future generations (Fitzpatrick and Kappos, 1999).

No single professional can alone play the role of ensuring a positive interaction between the environment and humans alone; so environmental health involves the collective services of qualified public health doctors, practicing physicians, environmental health officers, epidemiologists, sanitary engineers, public health nurses, town planners, veterinarians, toxicologists, chemists, sociologists, economists and health inspectors, among others. With the emerging concept of 'One Health', the interactions between humans, the environment and animals are receiving more global attention with the global problems of zoonoses and antimicrobial resistance, climate change, disasters, sustainable development, planetary health and ecological health (EcoHealth), among others being brought to the fore (Unuraye and Olojobe, 2005; Obionu, 2018; Lueddeke, 2019).

A healthy environment is important for the well-being of mankind, because continuous interaction between man and his social or psychological environment may influence his health either positively or negatively. In developing countries (Nigeria inclusive), the major causes of morbidity and mortality are traceable to factors arising from poor environmental sanitation among others.

The importance of environmental health could be more appreciated by looking at its components which include-provision of adequate, safe, potable, wholesome water supply; proper and safe disposal of sewage (excreta disposal); proper disposal of solid waste (refuse); food hygiene and safety; provision of shelter/ housing and planning; control

of disease vectors and pests; control of air and noise pollution; protection from radiation and environmental impact assessment (EIA), among others.

The effects of lack of proper management of the environment are depicted in Figures 1, 2 and 3 below.



Figure 1: Open dumping of solid waste
(Source: <https://www.open.edu/openlearncreate/mod/oucontent/view.php?id=79946&printable=1>)



Figure 2: Discharge of liquid waste into street
(Source: <https://www.open.edu/openlearncreate/mod/oucontent/view.php?id=79946&printable=1>)



Figure 3: Industrial Air pollution ((Source: <https://www.open.edu/openlearncreate/mod/oucontent/view.php?id=79946&printable=1>)

THE ENVIRONMENTAL HEALTH OFFICER IN NIGERIA

Environmental health officers are relevant stakeholders on issues of environmental health, especially in the 21st century where environmental health issues have taken centre stage. But in Nigeria this group of professionals have been neglected and rendered voiceless at various levels of government. In addition, the important tools to ease their work have not been adequately provided for. The ratio of these workers to the population is very low (1 EHO to 24,500), compared with the global best practices of 1 EHO to 800 population (WHS, 2021).

An Environmental Health Officer (EHO) is a professional who has undergone the prescribed training for environmental health officers in an accredited training institution (e.g., university, monotechnic), and is duly registered or licensed to practice the profession within his/her state or country. In Nigeria, such a person must be registered with the Environmental Health Officers Registration Council of Nigeria (EHORECON) in line with Act 11, of 2002 (EHORECON, 2007). In addition to the above-mentioned requirements, an EHO requires investigative, analytical, communicative, educational, organizational, attitudinal skills, among others to function optimally (EHORECON, 2007; Ibrahim and Adebajo, 2014). For effective management of the environment, these professionals need qualified and adequate number of personnel.

THE ROLES OF ENVIRONMENTAL HEALTH OFFICERS

These roles of environmental health officers are as numerous as the components of environmental health. However, the professional body should know that the roles are not automatic, especially in Nigeria where there is professional rivalry and no clear job descriptions in most public jobs. They have to make themselves relevant and also let government at various levels in the country know that they know their jurisdictions in whatever policies and programmes that are being implemented, e.g., being an important player in EIA programmes, among others. The professional body is expected to liaise with the relevant government agencies for their roles in the society to gain more prominence. Additionally, the body is expected to carry out an enlightenment campaign of the benefits of keeping the environment healthy. Health is wealth.

Environmental Health Officers play very important roles in every society. Inspections of premises in environmental health practice is a fundamental oversight function of these professionals. In their practice, the word 'premises' describes passage, building, land, vehicle, ship or vessel and aircraft in any port or on any inland waters used or intended for use by man. Premises that are usually encountered by field environmental health officers include but are not limited to residential premises, food premises, recreational facilities, hotels, industries, business centre, hospitals, clinics, markets, schools, slaughterhouses. Registration of food premises and pest/vector control outfits are within their purview.

They promote clean and healthy environment, by preventing sanitation related diseases such as cholera, malaria, typhoid, scabies, Lassa fever, among others.

The functions of EHOs can be summarized as (EHORECON, 2007; FMOE, 2005a).

1. Promoting awareness and education of neighbourhood nuisance and abate them appropriately – the EHO should not only be seen as an inspector and environment law enforcement officer but also an educator because experience has shown that an attempt to perform public health work through law enforcement alone does not produce the best results (Lucas and Gilles, 2003). Cooperation of the individual is very important.
2. Investigating complaints from residents about nuisance.

3. Monitoring and management of environmental hazards for safety
 4. Planning, implementation and evaluation of environmental health services
 5. Providing technical advice in the enactment and enforcement of laws, regulations and by-laws relevant to public and environmental health
 6. Participating in health policies formulation and development for the management and improvement of public health and sustainable development
 7. Conducting research on environmental health problems and proffering solutions
 8. Participating as members of health teams in preventive and protective health care at all levels
 9. Surveillance and control of communicable diseases at local, state, national and international levels- the EHO 'put up the yellow flags on houses where cases of the more dangerous communicable diseases exist'. Environmental health officers play very important role in port health services which is linked to international health (international health regulation).
 10. Teaching, training and retraining of environmental health personnel, and other related health workers and community members on issues that relate to the environment and public health, among others
 11. Food hygiene and safety- The sanitary inspector role is not only to inspect the dairies, but more importantly to ensure that good quality milk is produced for the community. It is the responsibility of the EHOs not merely inspecting the premises, rather to ensure that the business premises is safe, sanitary means of excreta disposal and safe water supply system for every home are well executed for the benefits of man and the environment (FMOE, 2005a).
- A story has been told of a highly specialized mechanic who was called in, after several had failed, to determine what was wrong with a certain complicated engine that could not be started. After examining the engine very carefully for a few minutes, the mechanic selected a particular part of the engine and struck one blow with his hammer, whereupon the machine started immediately. He then rendered a bill for \$500 for his services. The owner of the engine objected to what he thought was an overcharge and demanded an itemized statement. The statement received read, "Five dollars for one tap, and \$495 for knowing where to tap (Waller, 1934)"

TOOLS FOR ENVIRONMENTAL HEALTH OFFICERS

Just like other professionals require tools to function properly, EHOs also have tools to be employed systematically for inspection. For the sanitary inspection of premises, there is a need to follow an approved protocol. This begins with self-identification followed by external and internal inspection of the premises in question. The various forms that could be used include (EHORECON, 2007; Ibrahim and Adebajo, 2014).

Sanitary Inspection of Premises (Appraisal) form {Form ES 1}- It is an approved tool to be used by EHOs while inspecting living premises; usually analyzed weekly or monthly to depict status or trends of sanitary conditions of premises in a particular area or community.

Sanitary Inspection of Premises (Routine) form {Form ES 2}- This form is used for the routine inspection of premises. The Call Back Form {Form ES 3}- This form is filled out to indicate that the EHO will come on a return visit, hence the name.

Abatement Notice {Form ES 4}- An abatement notice is served only when an EHO confirms the existence or presence of a nuisance. The form is completed in triplicate to include the deadline at which an identified nuisance is to be abated.

Complaint Form {Form ES 5}- The complaint form is completed only when a complaint is received.

Complaint Acknowledgment Form {Form ES 6}- The complaint acknowledgement form is usually completed in triplicate. The complainant receives a copy while a copy is sent to the area office having jurisdiction and the third copy is retained for office use.

Closing Order Form {Form ES 7}- An EHO usually makes a complaint to the court justifying that certain premises are unfit for human habitation or constitutes a threat to public health before this form is issued, which temporarily closes down the premise. This order prohibits further use of the premises until the existing nuisances are removed.

Withdrawal of Prohibition Order Form {Form ES 8}- It is the court that issues out a “withdrawal of prohibition order form” on the request of an EHO that the detected nuisances have been abated in the premises.

School Sanitation Inspection Form {Form ES 9} -This is a tool for sanitation inspection of nursery, primary, or secondary school. The form is divided into four sections A-D. Section A deals with the external description of the school, Section B deals with the internal inspection of the school buildings while Section C relates to internal inspection of hostel buildings. Section D is the summary of findings and recommendations.

Market Sanitation Inspection Form {Form ES 10}- It is used for market sanitation programmes.

Abattoir Sanitation Inspection Form {Form ES 11}- This is an inspection tool designed for Abattoir Sanitation programmes.

Inspection of Private Slaughterhouse Form {Form ES 12G}- This form is completed for two purposes.

- i. When an individual, private or corporate intends to operate a private slaughterhouse, an initial inspection is required on the premises. If found satisfactory, Form E.S.12G is issued.
- ii. When an individual, private or corporate also applies for a renewal of a license to continue operation of a private slaughterhouse, a re-inspection of the premises for renewal is required. If such premises were found to be satisfactory, form E.S.12G could also be issued.

Inspection of Private Slaughterhouse Form {Form ES 12R}- When an individual, private or corporate applies for a renewal of a license to operate a private slaughterhouse, a re-inspection of the premises for renewal would be conducted. If such premises were found to constitute a threat to public health, then a renewal would be denied and form E.S.12R is issued. This means that previous permission granted has been cancelled for the rest of the year.

Certificate of Registration of Food Premises {Form ES 13}- This certificate expires 31st December of the year of issue. The license is subject to renewal/revocation at the discretion of the issuing authority.

Inspection of Pest and Vector Control Outfit Forms {Form ES 14G}- When a Pest and Vector Control outfit has complied with the set of requirements for operation, this form is issued to permit the outfit to operate for the year. Such permit expires on the 31st December of the year of issue.

Inspection of Pest and Vector Control Outfit Form {Form ES 14R}- When an individual, private or corporate applies for a renewal of license to operate Pest and Vector Control outfit a re-inspection of the premises for renewal would be conducted. If such premises were found to constitute a threat to public health, then a renewal would be denied and form E.S.14R is issued. This means that previous permission granted has been cancelled for the rest of the year.

CHALLENGES OF ENVIRONMENTAL HEALTH OFFICERS IN NIGERIA

Some of the challenges faced by environmental health officers in Nigeria can be summarized as:

1. Increasing population, urbanization, industrialization, climate change and globalization. As of midyear 2019, Nigeria had a population of 201 million, with an annual population growth rate of 2.5%. Nigeria's population is projected to increase by 117 million people between 2015 and 2050, a period of 35 years indicating an average of over 3 million people every year. This makes Nigeria one of the fastest growing countries in terms of population (NDD, 2021).
2. Poor National Environmental Health Information Management System (EHIMS). This information is very useful for evidence-based planning and policies.
3. Problem of integrated waste management- (4R-reduce, reuse, recycle, recovery), colour coding and waste segregation among others; thus, the need for research, development and partnership.
4. Food hygiene and safety- Lack of certification of food establishments and conduction of regular medical examination, training and re-training of food handlers.
5. Emerging and re-emerging diseases- Lassa fever, Ebola, multidrug-resistant Tuberculosis and malaria, COVID-19, monkey pox, methicillin-resistant *S. aureus* among others. These are diseases of public health significance, especially in Nigeria where the health system is fragile.
6. Disaster prevention and preparedness – roles of government and disaster agencies and professional bodies such as EHOs. Nigeria is not immune to disasters, be it natural or man-made, therefore, disaster preparedness is very crucial.
7. Noise pollution: Environmental noise should not be above seventy-five (75) decibels and equipment should not be kept in a manner or condition as to produce noise that will be injurious to health. There have been reports of industries with high noise pollution located within residential areas. Siting of industries and Environmental Impact Assessment are very important.
8. The establishment of illegal slaughterhouses pose serious dangers to the general public. There are requirements for slaughter houses required to ensure public health in the area of meat safety, among others (FMOE, 2005b).
9. Shortage of environmental health officers. There is a big gap in the ratio of EHO to the population, recruitment, training, re-training and retention.
10. The insecurity in the country affects the effectiveness of these professionals like others. The insecurity has contributed to Internally Displaced Person camps with the consequent health events such as cholera, Lassa fever, among others.

THINKING OUTSIDE THE 'BOX' BY ENVIRONMENTAL HEALTH OFFICERS IN NIGERIA (giving the right 'tap')

These involve more investment in Research, Development and Partnership, playing an active role in Disaster Management- like in the State Emergency Management Agency and Local Emergency Management Committee, the establishment of effective Environmental Health Information Management System for evidence-based Environmental Health Services, being active players in promoting the concept of One Health and in the control of antimicrobial resistance, inventing ways of converting waste to wealth, and in provision of innovative port health services in Nigeria.

CONCLUSION

As environmental health officers in Nigeria continue to face many challenges in the course of disease prevention, control and the sustenance of environmental integrity, among others, they must think outside the 'Box' in the 21st century. Their duty is one of the most important parts of essential welfare and a necessary service to humanity and

such an EHO should have the satisfaction of rendering practical and necessary service to humanity. Their activities should be directed towards solving societal problems by knowing where and when to "tap". Meaning that environmental health officers should be more innovative and also use evidence to solve environmental problems.

There is need for government at all levels to create an enabling environment for EHOs to be more effective and efficient in carrying out their duties. Furthermore, there is the need to partner with the private sectors for assistance towards ensuring healthy and sustainable environment for all. There should be increase public awareness and education and advocacy for policy makers on the importance of EHOs and the need for partnership.

COMPETING INTERESTS

The authors have no conflict of interest.

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