STRATEGIC MEASURES TOWARDS PROTECTING ENVIRONMENTAL HEALTH

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Abstract

The paper posited from observations and media reports that Nigerian's measures towards environmental health protection is poor. The paper reviewed the environmental health principles, practice, discussed the concerns of unhealthy environment and its threats to human existence, implications for emerging health policy and other challenges. It was therefore recommended that constant evaluation of the criteria for and implementation of health care delivery system should be focused. Health policies and interventions must be related to the assessment of the health risks and health outcomes. Collaborative partnerships focused on communities, local agencies and Non-Governmental Organization's (NGO's) services as relevant to environmental health protection should be highly concerned.

Keywords: Environmental health, threats, pollution, health policy, hazards, risks

Introduction

Many of the by-products of the scientific and technological break-through and other inventions of man have always created new causes of unhealthy environment. The key to man's health lies largely in his environment, but the by-products of scientific and technological achievements serve as adverse environmental factors such as soil pollution, water pollution, air pollution and even poor housing conditions. The presence of animal reservoirs and insects as vectors of diseases pose a constant threat to man's health. Often, man is responsible for contamination of his environment, due to urbanization, industrialization, poverty, ignorance and other human activities.

The total environment of human beings includes all the living and non- living elements in their surroundings. However, it consists of three major components: physical

(natural), biological and social (created or built) (Park, 2005). The *physical* refers to the non-living part of the environment- water, air, soil, housing, wastes, radiation and the climatic factors such as temperature and humidity. The physical environment is extremely varied in the tropics covering deserts, savannahs, upland jungles, cold dry or humid plateau, marshlands, high mountains steppes or tropical rainforest. The natural environment may create threats to human health as evidenced by temperature fluctuations, climate change and global warming, forest fires, tidal waves flooding and landslides. For example, a heat wave may result in case of heat stroke and forest fires to produce smoke resulting in respiratory problems. It also has a direct effect on humans, their comfort and their physical performance. The created or built environment also poses many risks to health. For example, the slum areas of many urban centre's and poor environmental sanitation in other towns and villages, are in themselves a health hazard due to poor housing and poor availability of safe water and sanitation.

All living things in an area - plants, animals and microorganisms constitute the *biological* environment. They are independent on each order and ultimately, on their physical environment. In many parts of the tropics, insects, snails and other vectors of disease abound and have direct effects on human existence. The *social* environment is entirely made by humans. In essence, it represents the situation of human beings as members of society: family groups, village or urban communities, culture including beliefs and attitudes, the organization of society (politics and government, laws and the judicial system, transport and communication, and social services including health care. (Fitzpatrick and Kappos, 1999).

Environmental health addresses all the physical, chemical and biological factors external to a person, and all the environmental health related factors impacting behaviours. It encompasses the assessment and control of those factors that can potentially affect the health of a population. Environmental health also comprises of those aspects of human health, including quality of life that are determined by physical, chemical, biological, social and psychological factors in the environment (Naidoo and Wills, 1994). It is concerned with those aspects of the human health and disease that are determined by factors in the environment. It also refers to the theory and practice of accessing, correcting, controlling and preventing those factors in the environment that can potentially affect adversely the health of present and future generations.

Specifically, environmental health focused on the control of all those factors in man's physical environment which exercise or may exercise deleterious effects on his physical development, health and survival. (World Health Organization, 2010). Thus, people

engaged in the sector of environmental health are working towards the protection of people from hazardous environments and the promotion of healthy environments. In short, it is targeted towards preventing diseases and creating health-supportive environments. It excludes behaviour not related to the environment as well as behaviour related to the social and cultural environment and genetics.

Concerns of environmental health

Environmental health addresses all human related aspects of both the natural environment and built environment. Environmental health concerns according to Howard (2010) include: air quality, control of pollution, body art safety including tattooing, body piercing and permanent cosmetics, climatic change and its effects on health, disaster preparedness and response; food safety/hygiene, including agriculture, transportation, food processing, wholesales, retail distribution and sale; hazardous materials management including hazardous waste management, contaminated site remediation, the prevention of leaks from underground storage tanks, the prevention of hazardous materials released to the environment and responses to emergency situations resulting from such release; shelter/housing and planning including substandard, housing abatement and inspection of jails and prisons, land use planning; excreta disposal; waste management; vector control; noise pollution control, occupational health and industrial hygiene, toxic chemicals, safe drinking water, recreational water illness prevention and radiological health.

Health threats and emerging health protection policy

Threats to environmental health standards are not new; for as long as human kind has existed, there has been a constant interface with the dangers of the environment. Protection from threats to health in people's environment has been an essential fundamental part of environmental health services carried out by the environmental health practitioners or environmental health specialists including physicians and veterinarians. The environmental health services are those services which implement environmental health policies through monitoring and control activities. They also carried out that role by promoting the improvement of environmental parameters and by encouraging the use of environmentally friendly and healthy technologies and behaviours. They also have the leading role in developing and suggesting new policies.

The scale and nature of current health threats from the physical and biological environmental hazards are very wide including an acute major incident from radioactive leaks or from a nuclear installation site; a major food poisoning or outbreak or food contamination; a public accident; exposure to hazardous materials; uncertain hazard of new technologies e.g.

telecommunications and new technologies and newly emerging infectious diseases including zootoxic infection (Avian Influenza). These threats are resulting in new threats such as climate change and terrorism (Boko Haram in Nigeria), as well as the re-emergence of existing threats such as infectious diseases e.g. Avian Flu and SARS. However, these threats to environmental health are moderated by global, national, states and local, socio-economic population and industrial advancements.

Globally, about 5% to 10% disability adjusted life years lost is due to the unhealthy environments (with contaminated or fine particulate matters in urban air) in both developed and developing countries (United Nations Development Programme, 2001). Similarly, environmental exposures have been estimated to account for 4.9million (8.7%) death and 86 million (5.7%) disabilities globally (European Environmental Agency, 2011). Health protection has its origins and organizational arrangements based on the prevention and control of contagious diseases, non- infectious environmental hazards and health related emergency planning (Regan, 1999; Department of Health/Welsh Office, 2002). Protecting human beings from threats involves environmental health services – those services which implement environmental health policies through monitoring and control activities; promoting the improvement of environmental parameters; encouraging the use of environmentally friendly; and developing and suggesting new policy areas towards protecting environmental health.

The wide range of resources in protecting environmental health in different sectors and organizations involves multidisciplinary working practice. It requires collaborative partnerships at local and state levels supported and informed by an integrated national and international expertise with an explicit well driven policy framework. In dealing with the diverse nature of health risks to a particular population it may require incident response and proactive intervention.

Hazards to health are involuntary hazards and different in nature with the common characteristics such as affecting large groups of population with a short period (epidemics); the causes of the hazards may be unknown initially; its control requires speedy and coordinated action; and its management requires collaborative efforts of emergency health services, local authorities and National health services (Department of health/Welsh Office, 2012).

Global and local environmental changes resulting from the impact of resources over-utilization and ecosystem degradation are now presenting themselves and are being linked to newly emerging diseases and to global environmental hazards including stresses on food

producing systems. (Lee, 2000; WHO, 2005). These health threats may result in direct and indirect health impacts on national economics, on population and communities. Globally, over the past three decades, threats to health have included climate change/global warming, bioterrorism risks, infectious diseases HIV/Aids and Avian Flu and Severe Acute Respiratory Syndrome (Morens, 2004; WHO, 2003)

Organizational framework for protecting environmental health.

At the national level the increasing range and complexity of health threats focused attention on the need for national expert advice and information to support improved coordination at all levels of government. Planning for or dealing with any health threat event, where causation may very well be unknown in the early stages, requires broadly similar emergency response and investigation through surveillance, whether the threat is chemical, biological or radiological (Briggs, 2007).

The services provided to state and local health authorities should be based on routine and incident-based environmental and infectious diseases monitoring with laboratories maintained in the regions. Interface working between National Health Protection Agency and other National and International Health organizations such as NAFDAC, NDLEA, UNICEF, WHO, would facilitate national high level memoranda of really understanding of the communities and population at the state and local levels through working agreements.

The enhanced **State** focus for health protection through the State Ministry of Health in conjunction with State Environmental Health protection Agency enables proper coordination between State government, local government, state health agencies, health services and other essential services. The State health team supports the State Director of public health in managing the responses to major incidents and coordinates the activities of several environmental health protection units. The structure and functions of the State and Local environmental health teams vary consideration the local populations and the risks to their health e.g nuclear plants, major chemical industries or low rate of childhood immunization. The quick response of the state and local governments on health hazards would have a significant reduction in the fatality rate for the disease outbreak most especially the childhood killer diseases (Starfield, 2003).

At the local level, the responsibility for environmental health of the population rests on the Primary Health Care (PHC) system, working with other health services most especially on health protection. The PHC system should ensure local delivery and monitoring of national health action plans with broadly equivalent arrangement. The local health authorities have the responsibility to deal directly with the risk factors in the

environment such as environmental conditions (air, water, sanitation and waste pollution); infections diseases control, food hazards, housing, working conditions and emergencies and civil contingencies. They have statutory powers and responsibilities to prevent the impact of environmental and communicable disease hazards, and contribute to promoting the well being of communities working under the well being power of the local government authorities.

Health protection: Principles and practice

The first principle in establishing an effective system for protecting environmental health is the identification of health hazards (the intrinsic ability to cause a specific adverse consequences in terms of population health and environmental impact) and their potential to cause harm (the risk) the potential of a hazard to cause harm depending on specific circumstances (Pencheon and Gust, 2001).

This can be considered in term of the host (human exposure susceptibility, response of the harmful agents); the external influences (socio-economic, environmental, and cultural) and the pathway or mechanism for the agent to cause harm (South West Regional Resilience Forum, 2006).

The second principle is to take risk assessment. This is related to the potential impact of a chemical, physical, microbiological or psychological hazard on a specific human population under a specific set of conditions for exposure and for a certain time frame (Peckham, 2004). Decision making models which take account of uncertainty and lack of knowledge about risks are required in order that appropriate interventions can be undertaken, towards making decision about health hazards and risks,

Europeans Environment Agency (2003) was of the view that developed exposure indices for health hazard should include ambient (background) exposure for all individuals to pollutant/particulate matters; individualized exposure (occupational exposure or high risk groups); and exposure through combined exposure pathways (through inhalation, ingestion and contact). There is also need to be recognized that there are impacts of psycho-social effects on environmental hazards such as noise, disturbances, isolation, anxiety or loss of amenity on health of population and communities. We need to recognize assessing risks to children from environmental hazards. Children are at most risk from environmental hazards due to a number of factors including genetics, host state such as immune system, immaturity and exposure pathways (WHO, 2003).

However, it is also important to highlight that both exposures and health outcomes and the associations between them are affected by contextual conditions such as social,

economic or demographic factors (Briggs, 2003). There should be health and Environmental Impact Assessment (EIA) of major health development project. For example, assessment of non-toxic wastes disposal facility. The use of Health Impact Assessment (HIA) must stress more than just indicate that a development may create pollution or a health hazards, it must also assess options in relation to health outcomes. There must be risk perception and health communication about a particular hazards and how to deliver the information at the local level for easy understanding of the recipients. For instance, involuntary man-made hazards such as pollution especially if poorly understood by science and perceived to be higher risk than voluntary ones such as dangerous sports and smoking.

There is need to establish measures to deal with emerging and re-emerging infections through a surveillance system with comprehensive coverage to detect unusual diseases presentation, changes in occurrence or profile micro-organisms and the use of data to predict outbreaks and prevent them. Surveillance information is necessary to determine the need to undertake health intervention. Communicable disease surveillance most especially on childhood killer diseases involves the continuous monitoring of the frequency and distribution of diseases and death due to infection that can be transmitted from human to human, or from animals, insects, food, water or environment to human and the monitoring of risk factors for those infections (Health Protection Agency, 2005).

Globally, WHO, UNICEF and United Nations Specialist Agency for health working through networks are responsible for health surveillance. The global surveillance systems cover epidemic intelligence systematic events detection (reports on suspected disease outbreaks and related conditions such as food, water, safety and chemical events, events verification in order to avoid false alerts causing unnecessary public anxiety and inappropriate response and destruction to travel, trade and economic loss; information management and discrimination, real time alert by WHO, UNICEF and united Nations and outbreak response logistics.

Furthermore, we need to make use of active or enhanced surveillance data sources which requires special efforts to collect the data and confirm the diagnosis, through laboratory reports and statutory notifications. The Health protection Agency takes data from hospital micro biology laboratory information systems and notification of chemical diagnosis on specified diseases such as food poisoning, tuberculosis, malaria, mumps, rubella, polio, yellow fever, whooping cough and diphtheria.

Strategic preventive measures

Protecting the environmental health involves or requires adequate preventive measures which could be in primary, secondary and tertiary categories. The primary prevention most especially of infectious diseases is used to prevent the onset of a target infection at a time prior to any exposure to that infection. This is the main focus of national, state and local childhood immunization programmes against a range of childhood infections to safeguard public health.

The secondary prevention is used to identify and treat asymptomatic persons who have already developed risk factors or pre-clinical disease but in whom the condition is not clinically apparent. For example, chemoprophylaxis family contacts of cases of invasive meningococcal diseases, post exposure immunization against hepatitis B following a needle stick injury and acute-natal screening of mothers for various infections that can affect the fetus or newborn.

Tertiary prevention consists of measures to reduce or eliminate the adverse health effects of particular incidents or outbreaks. Towards protecting the environmental health there must be an extensive planning for emergencies such as fuel crisis, fire outbreaks and climate change and flooding. There must be an immediate dealing with major health incidents in the population of a particular community. Environmental incidents with less extensive population and with health implications also require coordinated action to be taken by relevant local health agencies most especially in workplace.

The national, state and local government authorities rendering environmental health and consumer protection services should adequately embark on thorough surveillance and monitoring the risk factors in the environment (air, water, food, soil, vegetable and animal health) for early intervention to prevent human disease and others that are transmitted by animals (Edward, 2006).

It is of importance to monitor food hazard and chemical hazards in the environment through food hazard product alert and information system. This should be under the auspices of the food standard Agency/NAFDAC. They should be able to monitor food industries and local food authority services (canteens, cafeteria, fast food centres). This would afford them rapid response and recall of contaminated food at the earliest point in the supply chain. Special monitoring and control measures should be in place for imported food due to the highest associated risks both of animal and human disease through illegal import routes.

The Environmental Health Protection Agency should be able to provide comprehensive chemical releases inventory on the basis of emissions from industrial processes under the integrated preventive and pollution control system/regime. This can be

facilitated by data sets on health and environmental quality being coordinated on common geographical boundaries so that links between health events, ambient environmental quality changes or pollution released incidents can be ascertained.

Conclusion

The various health threats for the past three decades undoubtedly moved the needs for health protection of the environment through health and hazard surveillance and emergency response nationally and globally. The organizational framework for protecting unhealthy environment as earlier highlighted is the pathway towards improving the environment of the population.

Recommendations

Based on the various identified health threats, it is therefore recommended that:

1. There should be health protection policy and strategies towards prevention and improvement of health using intervention and control models of health. Towards this, there is a need to further review and evaluate the criteria for and implementation of health care delivery system for prevention and response to health threats and emergencies.

2. Health policies and interventions must be related to the assessment of the health risks and health outcomes. Transparency, information and communication about health risks in decision making are key requirements to planned health hazard prevention.

3. Public/Environmental Health Officers or Workers/Practitioners working with the communities should be informed and engaged in the process of understanding health risks, and requirements needed to be taken to prevent and reduce them, and to enable an appropriate response to emergencies when they occur.

4. Collaborative partnerships focused on communities, local agencies, Non-Governmental Organization (NGO's) services are relevant to environmental health protection. Therefore, they should pay more attention to the local population needs and health threats or the excess burden of environmental hazards borne by socially deprived communities and addressing inequalities that exist.

5. There should be explicit policy and regulatory strategies for health protection and adapting within organizational structures to enable the integration of health protection provision.

6. There should be an effective coordination and support of partnerships arrangement with regards to the health related disciplines and the effective coordination of expertise available at the national, state and local government levels.

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