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Department of Environmental Health Science FUT Owerri Imo State Nigeria



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Preamble
 Environmental Health has vaguely been defined as the control of all factors in man's physical environment which exercise, or may exercise, a deleterious effect on his physical development, health or survival or on his psychological factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling, and preventing those factors that can potentially affect adversely the health of present and future generations. Environmental health programmes are organized community efforts to monitor and modify man-environment-relationships in the interest of better health.

The under-graduate Environmental Health Science programme in Federal University of Technology, Owerri is designed to provide the training needed for an understanding of the environmental health and safety to build upon the foundation by exploring in some depths and specific aspect like: Waste management; food hygiene and control; pest and vector control; environmental health control of housing and sanitation; epidemiological investigation and disease control; environmental health laboratory instrumentation and standard operating procedures (SOPs); air quality management; occupational health and safety; water resources management and sanitation; noise control; protection of recreational environment; radiation control and health; health control of frontiers, air and sea ports and border crossing; pollution control; and abatement; educational activities (health promotion and education); promotion and enforcement of environmental health quality standards; collaborative efforts to study the effects of environmental hazards (research); environmental health impact assessment (EHIA) and the management of emergency situations, disasters, flooding, disease outbreaks, etc.

Philosophy, Aims and Objectives of the Programme
(a) Philosophy: The philosophy of the programme is in the training of personnel to the highest academic and professional standards in the identification and resolution of environmental health and safety issues. The programme will provide higher capacity skilled manpower, trained specifically for promoting health and preventing illness through applying scientific skills to solving real life problems and better management of environmental hazards.
 The programme is therefore designed to provide the training needed for an understanding of the environment, health and safety to build upon the foundation by exploring in some depths, specific aspect like epidemiology, workplace safety, hazardous and municipal waste management, impact of science and technology on the environment.

(b) Aims and Objectives: The overall objective of the Bachelor of Environmental Health Science Degree Programme is to impart relevant knowledge and skills needed for promotion and sustenance of the health and safety of man in his environment. The specific objectives are:
 i. To impart and generate knowledge that pertains to effective recognition and response to environmental health problems.
 ii. To acquaint the students with the knowledge of prevailing communicable diseases, their mode of transmission and methods of controlling the biological and physical environment so as to prevent them.
 iii. To impart the basic knowledge of physical, sociological and biological theories, concepts and principles and application of these in the practice of environmental health.
 iv. To impart skills and relevant methods used in identification, diagnosis and management of environmental health hazards.

v. To impart on the students attitude of team work, leadership and scientific enquiry in relation to every aspect of his professional activities.
 vi. To equip students with relevant knowledge and skill for advanced training and research in environmental health.

Learning Outcomes:
 It is expected that at the end of the programme, an environmental health graduate should have acquired the following:

I. Regime of Subject Knowledge, to:
 1. describe and apply the scientific principles in the identification, analysis and proffering solutions to environmental health challenges/problems.
 2. identify and apply communication and group dynamic processes necessary to effect behavioural changes in man.
 3. Describe, plan and implement appropriate environmental health programmes aimed at solving identified environmental health problems.
 4. describe the basic knowledge of physical, sociological and biological theories, concepts and principles and apply them in the practice of environmental health.
 5. describe in detail any prevailing/endemic disease in the country, its mode of transmission, seasonal trends and methods of control.
 6. apply knowledge of Public and Environmental Health Laws of the country to effect compliance to environmental standards.

ii. Competencies and skills:
 1. To perform accurately standard laboratory tests employed in the monitoring of environmental media.
 2. To design a satisfactory graphic representation of various environmental health infrastructure e.g. water treatment plant, sewage disposal and treatment plants etc.
 3. To be able to design management strategy for disease control

iii. Behavioural Attributes that demonstrate an attitude:
 1. that places premium on team work, accepting and performing leadership and followership role with equal effectiveness.
 2. of pride in the contribution of his profession to the health of the nation and hence continually seek self-education and improved effectiveness.
 3. of scientific enquiry in relation to every aspect of his professional activity, never taking anything for granted nor prematurely jumping to conclusions.
 4. to manage resources adequately and perform required administrative functions.

Employment Opportunities.
 A career in Environmental health is both rewarding and challenging. Thus graduates of the discipline will be very suitably equipped to take on gainful employment in the following areas:
 1. Public Health related Agencies and Environmental Sanitation Parastatals.
 2. Pollution Monitoring and control outfits.
 3. Diseases surveillance units / Establishments
 4. Research Institutions
 5. Public Health department of State and Federal Ministries of Health, Public utilities etc.
 6. Agencies concerned with food inspection, standards, disease control viz-a-viz- immunization programmes etc.
 7. Private Establishments and independently operated Environmental and Public Health laboratories and referrals units for the analysis of environmental samples such as polluted water, food (cooked); confectionaries/bakery etc.
 8. Professionals may set up the following practice: Environmental Health Laboratory practice, PPP on Sanitary

Inspection of Premises, Collection and disposal of wastes, Public Health Pest Control, Clearing Services, Pollution Control and abatement according to law, Municipal Environmental Health Practice (Installation, Maintenance, and Amendment).

POSTGRADUATE PROGRAMME IN ENVIRONMENTAL HEALTH SCIENCE, FUTO
AIM: The educational aim of this programme is to offer a challenging scheme of study invigorated by research, which advances students' ability to develop the academic and practical skills needed as an Environmental Health Professional. It is intended that graduates will be encouraged to be creative and proffering solutions to problems.

GOAL: The broad goal of the post-graduate programme in Environmental Health is to train qualified professional to serve as a yardstick for assessing curricula relevance of various Environmental Public Health and its technologies for prevention of preventing diseases promoting Health, proffering skills and improving scientific technological and environmental development.

OBJECTIVES: The post-graduate programme in environmental health is guided by some broad objectives that serve as a yardstick for assessing curricula relevance of various teaching-learning processes and course content. These objectives require that upon completion of the relevant curriculum, a successful post-graduate student should be able to:
 • demonstrate adequate knowledge of the concept of environmental health and its relevance in the assurance of optimal health for members of various communities and different at risk population groups.
 • assess and carry out health needs assessment, as well as epidemiological studies on prevalent health problems of communities and groups, and also to formulate and implement communities health action plans for the prevention and control of these problems.
 • formulate and implement programmes of multi-disciplinary and multi-sectoral approach toward protecting the health status of communities and other at risk population groups.
 • plan, administer and evaluate appropriate health intervention programs of promotive, preventive and rehabilitative scope, in collaboration with other members of the health team with view to reducing mortality and morbidity risks in the population.
 • initiate, implement, and evaluate specific Legal health policies in advocacy of the health needs of defined target populations.

AREA OF SPECIALIZATION FOR CONSIDERATION
 Students admitted into the Master and Doctor of Philosophy Degree in Environmental Health Science (M. Sc. EH & Ph. D) may choose one of the following areas of specialization:
 1. Pollution Control Management (PCM)
 2. Environmental Epidemiology (EEP)
 3. Environmental Health and Safety (HSE)
 4. Water Sanitation and Hygiene (WASH)
 5. Solid and Special Waste Management (SSWM)
 6. Food Hygiene, Safety and Quality Assurance (FHSQ)
 7. Vector Control and Pest Management (VCPM)
 8. Environmental Health Physics (EHP)
 9. Bioremediation and Clean Technology (BCT)
 10. Population Health (POPH)
 11. Health and Hygiene Promotion (HEP)
 12. Health Jurisprudence and Environmental Law (HJEL)
 13. Aviation Hygiene and Sea Vessels Sanitation (AHSV)
 14. Environmental Health Laboratory and Instrumentation (EHLI)
 15. Environmental Health Economics
 16. Environmental and Health Impact Assessment (EIA/EHA)

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PREVENTION OF INFECTIOUS DISEASES THAT AFFECT NUTRITIONAL STATUS

INTRODUCTION

Nutrition is the science that interprets the interrelation of nutrients or other substances in food, in relation to maintenance, growth reproduction, health and disease of an organism. For humans, healthy diet requires proper preparation and storage of food.

Infectious diseases are caused by infectious agents that result from viruses, bacteria, parasites, protozoa etc.

The relationship between nutrition and infectious diseases has expanded steadily within the past few decades. It has been established that adequate nutritional status is necessary for the normal functioning of the various immune system.

The relationship between nutrition, infection and immune function is generally clinical in nature. Even in a well nourished host, the cause of infection adversely affects nutritional status. If it is left untreated, it becomes chronic and develops to severe disease that could damage the immune system. If the host is malnourished, acquiring an infection will lead to further nutritional deficiencies such that the host rapidly progresses towards its morbidity stage.

We must note that the consequence of infection on our nutritional status tends to be predictable no matter the micro-organism causing it. Any infection whether symptomatic or asymptomatic (i.e. having no symptom), is accompanied by loss of nutrient and redistribution of other nutrient. The magnitude of these changes depends on the severity and duration of the infection.

THE EFFECT OF INFECTION ON NUTRITIONAL STATUS

Acute infection causes increase in metabolic rate and oxygen consumption, including the anabolic and catabolic processes involved.

The cells and tissues of the liver rapidly increases the rate of protein synthesis needed for body defense and there is a sudden increase in the number of cells. Precisely, the phagocytic cells which helps to absorb bacteria.

In the bid to support the anabolic requirements and maintain high metabolic rates in the presence of diminished food intake, catabolism processes are accelerated as well. The body starts to utilize the glucose content of the body so as to fuel the metabolic activities required to fight infections. As a result of this catabolic process, the body losses weight and muscle mass due to the excess consumption of nutrient stores.

If the infection becomes chronic, available nitrogen stores are used up, fat deposits are consumed and wasted and body develops to a cachetic state (a general state of ill health involving marked weight loss and muscle loss).

THE EFFECT OF MALNUTRITION ON HOST DEFENCE MECHANISM

Malnutrition is best understood as a syndrome associated with variable loss of protein, carbohydrate and fat stores along with changes in micro nutrients such as vitamins and minerals.

Malnutrition is a major determinant of morbidity and mortality for many major infectious diseases particularly among children in developing countries. Some of these infectious diseases among include;

1. **Diarrheal diseases:** This is the second leading cause of death in children younger than 5yrs of age. It is estimated to cause 1.5 million deaths each year worldwide. The main cause of diarrheal diseases among children are; Escherichia Coli, Shigella, Vibro cholera, Salmonella and Entamoeba histolytica .

Community preventive measure: requires implementing proper sanitation and water safety to prevent transmission of diseases. An estimated 2.6 million people globally do not have access to adequate water and 900 million do not have access to safe water.

- i. **Sanitation:** involves the safe disposal and hygienic separation of human and animal excreta from water source or further human contact. If the environment is not safe for food production, processing and consumption, bacteria that cause diseases and infection can be transmitted. Poor sanitation and water supply can cause the prevalence of diarrheal disease, under-nutrition and respiratory infections.
- ii. **Water supply:** at the community involves intervention at the source of water supply or in the distribution system. To achieve the greatest benefits, water safety must consider not only the quality of the water supplied but;
 - ❖ The quality that is either available or can be transported, as safe water is necessary for drinking as well as food preparation and personal hygiene.
 - ❖ Reliability of the water supply throughout the day, month or year to aid in the nutritional status of the community.
 - ❖ How easy or necessary it is for users to access, maintain and manage the water supplied so as not to contaminate it.

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