Introduction to health, environment and sustainable development

Overview

Wherever people live and work is called their environment. The environment encompasses people's surroundings and the circumstances relating to their surroundings, so it includes physical, biological, social and cultural factors. People constantly interact with their environment; it helps shape their lives, and it affects their health. The aim of this chapter is to encourage thinking about how environmental health is relevant to you and your local area. Much of the chapter will be taken up by activities which will encourage you to examine your own environment in some detail.

Learning objectives

By the end of this chapter, you will be better able to:

- describe the general relationship between the environment and people's health
- understand the relationship between human activities, human health and sustainable development
- describe specific relationships between environment and health in your local area

Key terms

Environment Physical, biological, social and cultural conditions affecting people's lives and the growth of plants and animals.

Health State of physical, mental and social well-being and not merely the absence of disease or infirmity.

Sustainable development Meeting the needs of the present generation without compromising the ability of future generations to meet their needs.

Health, environment and development

The quality of the environment and the nature of any economic developments taking place are major determinants of the health of people in that environment. However, environmental health issues have not traditionally been seen as a priority
in policy making, or in developmental planning. This is despite the fact that biological agents in the environment such as mosquitoes, parasites and water-borne bacterial pathogens are involved in the world’s most significant health problems. These factors are responsible for the illness and premature death of millions of people (often infants and children) in the developing world, from causes such as malaria, intestinal parasites and diarrhoeal disease. In addition, chemicals such as pesticides and cleaning agents, and physical hazards in the home, the workplace and the natural environment are responsible for millions of additional illnesses, injuries and deaths. Health and the environment are not independent entities; they are influenced by external driving forces such as population pressure and poverty. If the world’s peoples are to achieve good health, then individuals, governments and other agencies must learn to balance the interaction between human activities and the environment. In order to achieve this in a manageable way, two important criteria must be met:

- Economic development must meet people’s needs;
- Ecological sustainability must be achieved; this means ensuring that natural resources can be sustained for present and future use without being irreparably damaged or destroyed.

To achieve these goals, action is required on the local, national and global level by individuals and through cooperation between governmental and nongovernmental agencies. As you read the book you will find examples of the interaction of health, the environment and sustainable development. You will also see how individuals and professional groups can work together to tackle these key issues.

The relationship between health and the environment varies in countries at different stages of development. For example, childhood deaths are far lower in high income countries such as the UK in comparison to low income countries such as Tanzania, and are largely related to traffic accidents. One of the main environmental features associated with this is road traffic, which both increases the incidence of accidents and also contributes to air pollution. Pollution may be responsible for exacerbating asthmatic illness. The types of illness that affect the child population of Tanzania relate mainly to the difficulty of ensuring supplies of clean water and the observance of hygienic food handling practices.

Adult deaths in the UK are largely the result of a relatively affluent lifestyle – where people indulge in too much food and take too little exercise. Adult health in Tanzania is subject to the same problems that cause childhood illness there – insufficient fresh water and poor quality food – as well as the widespread incidence of malaria-carrying mosquitoes and HIV. Tanzania, and countries like it, are also facing increasing pressures on health such as those described for the UK. This phenomenon is known as the risk transition and will be expanded upon later in the book.

**Defining the key issues**

This book aims to explore the relationships between health, environment and sustainable development. You will find that there are a number of different definitions of these terms, depending on the perspective of the author. The definitions of
health, environmental health and sustainable development that follow will be used throughout the book.

You will note that these are formal definitions, from such agencies as the WHO and various other United Nations (UN) bodies. It has only been within the past two decades or so that the alarm has sounded at an international level about the effects of environmental deterioration and its consequences for future generations in terms of human health and well-being. The international bodies, represented by the WHO and the UN in particular, have been very active in trying to develop ways to measure environmental dangers to health. There have been a number of international efforts to address issues concerning the environment and health, culminating in a series of world conferences and declarations.

Health

The WHO definition of health is that it is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO 1948). According to WHO, the conditions required for health not only include the availability of resources to meet basic human needs and provide protection from all environmental hazards, but also require a sense of security and well-being. If the environment in which you work or live is deficient in some way, this can lead to both physical and psychological problems. Health is no longer seen as being solely the responsibility of doctors, nurses and other medical personnel, but now is also the responsibility of individuals, households, communities, governments and multinational agencies. These groups have the knowledge and power to make changes in their environment and living conditions, and therefore can affect the health of the population at large.

Environmental health

WHO defines environmental health as those aspects of human health, including quality of life, that are determined by physical, biological, social and psycho-social factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling and preventing these factors in the environment that potentially can adversely affect the health of present and future generations (WHO 1993).

Activity 1.1

You have read the WHO definition of environmental health which suggests that physical, biological and social factors of the environment act on health. All human activity has environmental and health consequences. List some human activities that will affect health through their effect on the physical and biological environment.
Feedback

The WHO definition of environmental health highlights the connection between the state of the environment and the health experiences of individuals and communities. The relationship between human activities and the environment has the potential to either impair or improve health. Figure 1.1 gives an example of the relationship between human activities, health and the physical and biological environment. The environment can be improved by human activity, for instance, by draining mosquito breeding sites in marshland or by improving housing. Human activity can just as easily impair health, by releasing toxic chemicals into the atmosphere and changing the physical environment. Some environmental agents are responsible for damage to health without human intervention, for instance, ultraviolet light from the sun, leading to the development of skin cancers; or a lack of minerals such as iodine or selenium in soil and foodstuffs leading to nutritional disorders. In these instances, human activity can mitigate the effects of the environmental agents through the use of technology, nutritional supplements or education.

**Figure 1.1** Interaction between human activities and the physical and biological environment

Source: Adapted from WHO (1992)

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**Global burden of environmentally related disease**

The role of the environment on the burden of disease is significant; the environment has been implicated in 21 per cent of the overall burden of disease world-wide. Most of this burden falls on developing countries.

Figure 1.2 shows a breakdown of the global burden of environmentally related disease. Note the large burden of disease from diarrhoea (28 per cent); in developing
countries, 1.7 million children die from diarrhoea associated with inadequate water supplies. You will read more about this in Chapter 7. The second largest health burden is acute respiratory disease; this is mostly associated with poor indoor air quality, and is discussed further in Chapter 9.

Sustainable development

The World Commission on Environment and Development define sustainable development as ‘meeting the needs of the present generation without compromising the ability of future generations to meet their needs’ (World Commission on Environment and Development 1987). These needs include food, work, shelter and health care for all the population and they must be provided in a manner that prejudices none of them and preserves the environment and its resources.

Throughout our history, humans have interacted with the environment and freely used natural resources. It is only now that we are beginning to understand that this is no longer possible and that there are long-term consequences that can result from unrestricted use and abuse of the environment. It is this imbalance that the principles of sustainable development aim to address.

Sustainable development is also about addressing equity within the present generation. It is often the poorest groups in society who are most exposed to environmental hazards, including dangerous working conditions and restricted access to adequate and safe food and water. In addition, low-quality housing is
often situated in the most polluted areas, such as contaminated land, near roads and industrial plants. The importance of this has been enshrined as part of the United Nations Universal Declaration of Human Rights: ‘all people have the right to a standard of living adequate for the health and well-being of themselves and their family, including food, clothing, housing, health care and the necessary social services’ (UN 1948). It is only relatively recently, however, that this declaration has been translated into action that will ensure these rights for present and future generations. A number of international meetings have been held to discuss ways forward. At the 1992 Earth Summit in Rio de Janeiro, Brazil, a number of principles relating to an integrated approach to the environment, health and sustainable development were agreed upon, along with a plan for future action. The first principle is that ‘human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature’ (UNCED 1992). There will be more on the Earth Summit and follow-up meetings in Chapters 2 and 14.

The Earth Summit recognized that nature and human activity are often in conflict with one another. One of the key messages to come out of the summit was that the principle of respect for nature and the control of environmental degradation should guide human activities in order to balance the potential conflict between health and the environment. The only exception to this principle is when there is a conflict with the Declaration of Human Rights.

Activity 1.2

You have now been introduced to the definitions of health, the environment and sustainable development, as used in this book. This activity aims for you to bring the concepts together, to summarize your findings and then extend your thinking further. Use these concepts to answer the questions below:

1. What are the relationships between human activities, human health and sustainable development?
2. Can you think of the differences in the patterns of health and disease between low, middle and high income countries? What are the reasons for these differences?
3. Can you think of any differences between men and women in their relationship with the environment? What is the role of women in sustainable development?

Feedback

In order to make long-term progress and improve health and lifestyle, it is important to take the basic concerns of environment, health and sustainable development seriously. For example, it is difficult to make progress on the economic growth of a community if the water supply is inadequate for essential needs. Likewise, economic development and social growth will be impeded if communities are living in squatter camps on the urban fringe, subjected to environmental degradation and its subsequent health effects.

1. The relationship was spelt out at the 1992 Earth Summit, where it was noted that human activities are compromised by ill health and degradation of the environment.
Development cannot be sustained where water supplies are unsafe and where the waste products of human industry are allowed to pollute the environment. In these circumstances, no safeguards are being applied against communicable disease.

2 Both infant and adult mortality is much higher in low than in high income countries. There are a number of environmental factors that account for these discrepancies, including a lack of safe water supplies and sanitation, overcrowding, squalid urban conditions and the inability to vaccinate against childhood illnesses. There will be more on these issues later in the book.

3 There is a difference in the impact of the sexes upon the environment and health. Women are more vulnerable to environmental hazards because they are closely involved with the factors impacting upon basic living conditions – housing, sanitation and the provision of food and drinking water. They are also less represented in any political institutions that might consider the means of alleviating them. The impact of the environment on women is covered more fully in later chapters on water, sanitation and air pollution.

Activity 1.3

Before moving on to examine environmental health in more depth, it is important to provide a background for your studies and show their relevance to everyday life. The best way to do this is to start with something that is familiar, so this activity requires you to think about the local area in which you live or work. What is it about your environment that might affect your health or that of other members of your community’s?

1 Find or draw a map of your local area. Go for a walk and mark up on the map any aspects of the outdoor environment that you consider important for health.

2 How could the environmental features that you have identified affect the health of the community?

3 The WHO definition of environmental health takes account of human, physical and biological factors in the environment. Make notes on the human activities, and the physical and biological environment in your local area that may affect human health.

Feedback

1 Your map could include the location of:
   - water pipes
   - sewage works
   - street drains
   - chimneys – domestic and commercial
   - locations where food is sold
   - traffic areas – roads and railway lines
   - residential areas, including different housing types
   - animal housing such as kennels or stables
   - factories
   - agricultural areas
Figure 1.3 Environmental features of ‘Ordinaryville’
2. A map of a fictional area called ‘Ordinaryville’ (Figure 1.3) is provided to illustrate the environmental features that should be taken into account when considering the effect of the environment on human health. In Ordinaryville, the wind usually comes from the west. This blows the factory emissions onto the dense and poor-quality housing. The abattoir and the island factories discharge waste directly into the river, as does the sewage treatment works. There is, however, a water treatment plant that operates efficiently to supply fresh water to the area.

Some of the roads are very busy, leading to possible problems with air pollution and traffic accidents. Animals are kept near to human dwellings, with the potential to spread infectious disease. Some of the housing is of poor quality – this could exacerbate the spread of any infectious diseases resulting from the poor quality of the plumbing or its absence. Respiratory illness may be a consequence of poor air quality. The number of road traffic accidents may be high, due to the poor level of road repair.

Some of the potential environmental problems depend on the quality of, and adherence to, local regulations concerning the housing of animals, food storage and service and industrial processes.

There are other things that could be stated about this town and its amenities, and you may have identified other important factors in your own environment.

3. You may have included some of the following points:

**Human activities**
- agricultural activities. These might include the types of crops grown; the machinery and fertilizers used; the extent to which crops are sold locally or exported; and government policies concerning assistance to local farmers, or crop subsidies
- industrial activities. These could indicate heavy and light manufacturing industries and the provision of water and waste facilities. This also encompasses local policies on pollution and working condition regulations and the identification of local and remote markets

**Physical environment**
- for agricultural regions, this would include the nature of the soil; the amount of annual rainfall and water availability and average seasonal temperatures
- for urban or industrial areas, water availability and climate might also be relevant, as well as waste provision, population characteristics and housing conditions

**Biological environment**
- indigenous animals and plants which are harmful to human health. For example, the malaria mosquito, or if you are in a built-up area, rats may be a problem. In rural areas, farm animals may be subject to particular parasites.

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**Summary**

This chapter introduced the definitions of health, environment and sustainable development. By now it should be apparent that the environment plays a crucial role in the health of individuals and communities. The importance of sustainable development was also discussed. The cornerstone of sustainable development is...
the belief that everyone in the community should have access to a safe environment for health – and this needs to include future generations.

References


Further reading

UN Division for Sustainable Development: http://www.un.org/esa/sustdev/
World Health Organization (WHO): http://www.who.int/