

Environmental Health and Safety

Lecture 13



Definitions

Environment -

The term "environment" refers to the surrounding conditions in which living organisms exist, encompassing both natural and human-made elements.

It includes components such as air, water, soil, and biodiversity, which are essential for sustaining life.

Environmental Health-

Environmental health is a branch of public health focused on assessing, correcting, and controlling physical, chemical, biological, and social factors in the environment that can potentially harm human health.

It promotes safety and well-being by ensuring clean air, water, and food.

Elements of the Environment

- ✓ **Abiotic (Physical) Elements**: Non-living, chemical, and physical parts that shape the environment.
 - a. **Atmosphere**: The gaseous layer surrounding Earth, containing air, clouds, and moisture.
 - b. **Lithosphere**: The solid, outermost rocky layer, including soil, rocks, mountains, and minerals.
 - c. **Hydrosphere**: All water resources, including oceans, rivers, lakes, and icecaps.
 - d. **Climatic Factors**: Sunlight, temperature, humidity, and wind.
- ✓ **Biotic (Biological) Elements**: All living organisms within the environment.
 - a. **Plants and Vegetation**: Producers that form the base of food chains.
 - b. **Animals and Wildlife**: Consumers (heterotrophs) including humans.
 - c. **Microorganisms**: Bacteria, fungi, and other microbes that act as decomposers.
- ✓ **Cultural/Anthropogenic Elements**: Human-made structures and systems that form part of the human environment.

Factors Affecting Environmental Health

- **Air Pollution**: The largest environmental health determinant, contributing to heart disease, stroke, lung cancer, and respiratory infections.
- **Climate Change**: Causes extreme weather (floods, droughts, heatwaves), increases vector-borne diseases (malaria), and raises food insecurity, causing an estimated 250,000 additional deaths annually between 2030 and 2050.
- **Water and Sanitation**: Unsafe water and lack of hygiene cause diarrheal diseases and other waterborne illnesses.
- **Chemical Exposure**: Exposure to toxins like lead, mercury, pesticides, and endocrine-disrupting chemicals (EDCs) can cause chronic conditions and developmental issues.
- **Built Environment and Noise**: Excessive noise causes stress and sleep disturbances. Poor housing and urban design (lack of green space) are linked to mental health issues and noncommunicable diseases.

Major Global Environmental Concerns

Global environmental concerns now face the world, including: -

- o Overpopulation**

- o Ozone depletion**

- o Global warming, deforestation, wetlands destruction, desertification**

- o Energy depletion**

► **Overpopulation-**

- o **Human population took hundreds of thousands of years to reach 1 billion in the 1800s and until 1960 to reach 3 billion. Less than 50 years later, it has more than doubled to 6.7 billion. Now, the number has reached 8 billion**
- o **Every 11 years, the world gains 1 billion people. Assuming that overall fertility rates continue to decline as they have since the 1970s.**
- o **by 2050 there may still be well in excess of 9.2 billion inhabitants of Earth.**
- o **in Germany, Italy, Russia, and Spain for instance, their populations will decrease by anywhere from 2% to 10 % by the year 2025.**
- o **Countries such as Nigeria, Zambia, and Jordan have high fertility rates, and it is likely that their populations will increase by 30% to 60% over the same period.**
- o **What do these statistics and trends mean for the health of populations and the ecosystem?**

Government's Role:

- o Provide a well-formed infrastructure of health and safety services for its population;
- o Economic development that provides employment,
- o Housing, and services;
- o Political strength to provide stability to the nation.
- o Many countries with unstable political systems are unable to deal effectively with overpopulation issues.

Nurse's Role:

Include the Following:

- (a) Teaching families that birth spacing improves child and maternal survival.**
- (b) Preventing high-risk pregnancies, such as those among teens and adult women.**
- (c) Preventing the growing epidemic of HIV/AIDS;**
- (d) Providing family planning education to prevent worldwide deaths from unsafe abortions.**
- (e) Providing prenatal care—because healthy mothers equal healthy children.**

► **Ozone Depletion-**

Its global warming, its trapping of heat radiation from earth surface that increase the overall temperature of the world, it caused by carbon dioxide & other gases that enter the atmosphere through depleted ozone layer & become trapped and effect on health.

Government's Role:

- o Set standards for air quality and industrial emissions and delegated funds to assist in pollution control programs.**
- o Public health efforts are needed to help identify pollution sources and related health hazards.**
- o Reduce sulfur in gasoline.**
- o Reduce use more energy.**
- o Consider transportation alternative**

Nurse's Role:

- o Cigarette smoke are common indoor pollutants that can have ill effects on nonsmokers as well as smokers.**
- o Infants and other exposed persons are at risk.**
- o Carbon monoxide poisoning may result from stove and boiler emissions or from car drain in a garage.**
- o Nurses can assist with the prevention or elimination of these health hazards by ensuring that the indoor environment is well ventilated (oxygenated) and heating equipment properly maintained.**

► Deforestation, Wetlands Destruction, and Desertification-

- o Deforestation is the clearing of tropical and temperate forests for cropland, cattle grazing, or urbanization.
- o Wetlands Destruction are natural inland bodies of shallow water. Benefit of Wetlands; it's water purification, flood control, carbon sink and shoreline stability.
- o Desertification refers to the conversion of fertile land into desert, which is unable to support crop growth or wildlife.
- o Any natural or manmade process that changes life-supporting regions into land for other use or into unproductive wastelands upsets the ecosystem of the area.
- o The destruction of forests and the upturning of Earth for urban sprawl uncovers organisms hidden for eons, to which humans and animals are then exposed

Government's Role:

Make decisions that save the wetlands and forests.

Nurse's Role:

Community health nurses can make a difference in this area. Perhaps no other person knows a community more intimately than the community health nurse. This role gives a valid voice of concern at the local level.

By using leadership and collaborative skills,

► Energy Depletion:

- o Most of the energy sources we use today are not renewable. Wood has been used for thousands of years and was our first fuel.
- o Natural gas for heat and fuel can be a highly efficient energy source.
- o Nuclear energy has been used for at least 50 years.

Government's Role:

- o Renewable sources of energy need to be discovered.**
- o A global effort to increase awareness and additional technology to use these energy sources.**

Nurse's Role:

- o The nurse can educate people about energy conservation.**
- o Discusses alternative energy sources presently available in the community.**
- o Encourages people to become interested in and knowledgeable about the importance of the potential for energy depletion in the future.**
- o Conservation methods include ensuring that a home or apartment is well insulated and free from drafts.**

Factors Affecting of the Population (Types of Pollution)

- 1. Air Pollution**
- 2. Dust, Gases**
- 3. Acid Rain**
- 4. Water Pollution**
- 5. Soil Pollution**

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