

Introduction to Global Health

Global Health Sustainability
Course

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Lecture Objectives

- To describe the concept of Global Health
- To describe the global environment and socio-cultural factors intervening in health
- To describe the relationship between sustainability, health, and the environment

Lecture Outline

- Introduction to Global Health
- Introduction to the different elements in the concept of health
 - Socio-economic structures and the environment
- Global Health assessment techniques
- Introduction to the concept of sustainability and its relation to health

“Global Health”

- Older phrasing: *International health*
 - Referred to the health problems in low- and middle-income countries
- Contemporary phrasing: *Global health*
 - The health issues that cross international borders
 - Also referred to as *transnational health*

Globalization

- *Globalization* is being connected through the flows of:
 - Information, e.g. media, social networking
 - People, e.g. travel and migration
 - Air and fresh water
 - Food transportation
 - Finance
 - Global weather systems

Examples of Globalization and Health

- Travel and the spread of disease:
 - Speed of the development of the H1N1 “swine flu” pandemic
 - Mosquito with West Nile virus believed to be transported to NYC via airplane
- International consequences of regional health practices
 - Development of drug-resistant strains of tuberculosis due to inappropriate or poor adherence to medical regimens

Examples of Globalization and Health - con't

- Bioterrorism: requires high levels of international coordination to respond to threats
- Health disparities: differences in levels of access to treatment and resources may result in international tension
- Health partnerships: positive example of globalization and health (e.g. Global Fund)
 - High levels of immunization coverage
 - Near-eradication of polio

Epidemiological Transition

- *The shift from infectious, communicable diseases to chronic, degenerative diseases that accompanies social and economic development*
- Shift due to infrastructure development:
 - Sanitation/hygienic practices, water usage, policy development
 - Changes in lifestyle: dietary changes to include greater amounts of fat, sugar, and sodium; greater usage of tobacco products, decreasing levels of physical activity
- Model is used frequently, but has several problems

Problems with the Epidemiological Transition Model

1. Shift does not occur smoothly: double burden of disease (infectious and noncommunicable) in middle-income countries
 - E.g., the four leading causes of death in China as of a 2005 report:
 1. Heart disease
 2. Cancer
 3. Stroke
 4. Infectious diseases, including tuberculosis, schistosomiasis, typhus, and cholera

Problems with the Epidemiological Transition Model - con't

2. False dichotomy with “infectious, communicable” and “chronic, degenerative”
 - HIV is a communicable disease that can become a chronic disease with proper treatment
 - Human papillomavirus is an infectious disease that can lead to cervical cancer
3. Re-emergence of treatment-resistant diseases in both low- and high-income countries
 - E.g. multi- and extensively drug resistant tuberculosis

Concept of Health

- WHO's definition:
 - *Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.*
 - WHO notes that health can be a driver of the social systems that support health, since health is required for peace and security in a nation
- Elements in a sustainable health system
 - Socio-economic structures
 - Global environmental systems

“Socio-Economic Structures” in Health

- I.e. the infrastructure and practices in place
 - Water treatment, sanitation, industry practices and regulations, agriculture, housing, fuel, etc.
- Infrastructure is the way we transform natural environmental resources so that it will support human life
- May have positive or negative impacts
 - Negative impacts: e.g. air pollution from manufacturing practices, the construction of a dam and related change to disease vectors in local ecology
 - Positive: appropriate wastewater treatment removes the risk of disease due to poor sanitation

Global Environmental Systems

- Physical characteristics of the local environment and its affect on health
- Examples:
 - Relationship between level of local biodiversity and quality of diet
 - Exposure to ultraviolet light and elevation/latitude of the community
 - Supply of clean fresh water vs. community need
 - Presence of disease vectors (e.g. fleas) and vector reservoirs (e.g. rats)

Complexity of Global Environmental Systems

- Local environment is strongly connected to global environmental systems via weather systems, disturbances in the food chain, etc.
 - E.g. canopies of Central and South American rain forests are fertilized largely by minerals blown in the dust blown from the Saharan Desert
- Difficult to understand all of the relationships involved, and well-intentioned human actions can have harmful unintended consequences

Partners in Public Health: Medicine and PH

- Medicine: the diagnosis and treatment done at the individual level
- Data based on patient interview and physical exam
- Reactive, with less focus on prevention
 - Much of prevention depends on the individual's context
 - Role of medicine is limited by the socio-economic structures in place within a community

Public Health Practitioners

- Diagnosis and treatment of a population
 - Can work on many levels: global, regional, national, provincial, municipal, or household
- Emphasis on *prevention* via socio-economic structures
 - E.g. water sanitation to prevent diarrheal disease
 - Can work at all three levels of prevention

Three Levels of Prevention

- Primary prevention
 - Keeping healthy people healthy (e.g. regular exercise, health diets)
- Secondary prevention
 - Treatment given to someone who is ill in order to return them to a state of full health (e.g. taking antibiotics for a bacterial infection)
- Tertiary prevention
 - Keeping a person with an illness from getting worse (e.g. anti-retrovirals for a person who is HIV+)

Public Health Practitioners

- Examination of the context for the individual
 - How the socio-economic structures are influencing individual health
- Data derived from the community and population-level studies
 - May use qualitative or quantitative research methods

Global Health Assessment

Techniques: Quantitative

- Quantitative = data in numbers
- Can be used to for statistical analysis and comparison, and applied to all three levels of prevention
- Epidemiology: study of the distribution, determinants, and deterrents of disease in human populations
 - Tends to use quantitative research methods

Types of Epidemiologic Studies

- *Descriptive*: studies who is affected, the time sequence involved, and where it is occurring
- *Analytical*: hypothesis-driven, studies *risk factors*
 - *Risk factor*: an exposure to something that increases the likelihood of developing a disease
 - anything from genetics, to behaviors, to environmental conditions
- *Intervention-based*: evaluation research on whether an intervention was effective
 - Requires a broad basis of knowledge, e.g. knowledge of biology, social sciences, others

Assessment Techniques: Qualitative

- Qualitative research: research that is not based in numbers, but on information from discussions and interviews
- Can provide rich detail, but difficult to do statistical comparisons on the data

Qualitative Research Methods

- *Focus groups*: small group discussions with members who share an interest or a particular characteristic or demographic
 - Researcher or another partner acts as a discussion facilitator or moderator
- *Townhall meetings*: a larger public forum so that members of a community are free to express their opinions or thoughts on a particular issue
- *Key informant interviews*: information derived from specific members of a community who hold key positions within the society, e.g. religious leaders, educators, or law enforcement

Qualitative and Quantitative as Complements

- Qualitative can provide a broader, richer perspective than quantitative, allowing for nuances
- Quantitative can be used for comparisons and testing for statistical significance
- Complement each other well
 - E.g.: Qualitative can provide an introduction to a specific issue within a community, allowing for quantitative assessment tools to be created

Sustainability: Why is it relevant?

- Humans wield great influence over the natural environment, and have engaged in a number of ecologically disruptive practices
- Integrity of the global ecological system: an extreme necessity for public health to be effective and human communities to survive
- Sustainability and economic development
 - Previously viewed as competing agendas, but WHO has pointed out they are in a synergistic relationship

History, Public Health, and Sustainability

- Industrial Revolution:
 - Public health problem: infectious disease, etc.
 - PH solution: changing the socio-economic structures
- Technological Revolution
 - PH problem: pollution from noxious byproducts due to manufacturing practices, etc.
 - PH solution: creation of standards, regulations, and monitoring
- Green Revolution:
 - PH problems: sustainability and the integrity of the global ecological system
 - Must to ensure adequate supplies and equitable access to food, water, clean air, and other natural resources

What does it mean to be sustainable?

- “The balance between meeting current needs without depleting natural resources for the future”
 - But, humans have already left significant impacts on the Earth and the availability of natural resources
- Instead, think of sustainability as a set of principles, issues, and actions

Sustainability: A Set of Principles

- Equality between different generations
 - Current generation must not impair the access of later generations to resources
- Equality within groups in a single generation
 - Reduction of disparities of access to resources (clean water, etc.) between groups of people
- Preservation of animal and plant biodiversity
 - Knowledge and understanding of plant and animal domains only scratches at the surface
 - Preserving biodiversity is the key to solving problems like finding compounds for future medical treatments or food sources that can persevere despite climate change

Sustainability: Principles (con't)

- Taking risk into greater consideration
 - Reckless decision-making in the past has contributed to many present-day problems
- Developing accountability for human health and environmental preservation at local and global levels
 - Encourage individuals and organizations to take responsibility for the consequences of their actions

Sustainability: The Basic Issues Involved

- Environmental/ecological damage and overuse of natural resources
- Production and management of pollution and waste
 - Necessity of sanitary and efficient methods of managing human waste and industrial byproducts
- Risk to individuals and communities
 - Disruption of environmental and ecological systems, through resource misuse and waste mishandling, present severe threats and need to be taken seriously

Sustainability: A Set of Actions

- Changing and developing new ways of using resources more efficiently and producing less waste
- Decisions made at the managerial level must preserve and strengthen natural resource systems
 - Result must be that the systems can replenish what has been used
- Taking environmental and ecological risk and irreversibility more seriously than they have been in the past
- Integrating social and environmental concerns while keeping environmental issues a priority
 - See them as complementary and synergistic instead of competing
- Community involvement
 - Sustainability cannot succeed as a top-down approach only

The Three Needs for the Survival of Humans

1. Cannot allow our use of natural resources outpace their abilities to replenish themselves
2. Cannot produce wastes faster than natural processes can absorb them
3. Must investigating alternatives and new strategies to cope with these problems now, before they have become emergencies
 - Currently have the wealth and resources to explore and do research
 - Must be proactive, can no longer be reactive only

Why Sustainability is a Priority

- Healthy life is an outcome and a driver of sustainability
 - Sustainability should not be seen as being in competition with economic and social development
- An economic case can be made for investment
 - Strong relationship between healthy human life, healthy environments and ecological systems, and lasting economic development
- There are known best-practice strategies for improving human and environmental/ecological health, as well as scaling up interventions
- For the sake of long-term social stability, there is a need for long-term equality in global resource access

Sustainability as a Priority

- Environmental degradation is a serious contemporary issue
- Current threats due to the destruction of the ozone layer, climate change, flooding, landslides, deforestation, etc.
- Those who bear the negative consequences of unsustainable practices tend to be in poverty
- Globalization = what happens to some affects everyone, whether by way of economic effects, the spreading of new infectious diseases, mass migrations, social unrest, or other consequences