Study Notes

Chapter 13: Environmental Health

# I. A Critical Theory Approach to Environmental Health

**A.** Helping communities become more aware of how the environment affects their health and helping them take actions to make needed changes in the environment is an important goal of community health nursing.

**B.** Using critical theory, community health nurses should be vocally critical of conditions in the environment that affect the safety and well-being of particular aggregates or deprive them of access to resources necessary for the pursuit of health.

**C.** Use of critical theory can identify environmental sources of health problems and implement strategies to rectify the environmental threat(s).

1. Nurses should listen to what the community defines as problematic, help to raise consciousness about environmental dangers, and assist in bringing about changes.

2. A critical perspective can help nurses plan and implement aggregate-level interventions.

3. In assessment and analysis of environmental health, community health nurses should always be aware of physical surroundings as well as the effects on communities of cultural realities, social relations, economic circumstances, and political conditions.

# II. Areas of Environmental Health

## A. Living Patterns

1. Living patterns are the relationships among persons, communities, and their surrounding environments that depend on habits, interpersonal ties, cultural values, and customs.

2. Living patterns are not individual lifestyle choices, (i.e., eating a high-fat diet or substance abuse), but they reflect population exposure to environmental conditions that are affected by mass culture, social practices, ethnic customs, and technology.

3. A significant living pattern problem is marginalization of unwanted land use (waste incinerators, sewage treatment plants, landfills, prisons) in urban environments with concentrations of poor, elderly, and minority groups.

a. In these situations all races, genders, and age-groups living near environmental hazards are more likely to become victims of the health threat.

b. Discriminatory land use that causes the poor and racial minorities to live in close proximity to contamination from industrialization has been termed “environmental racism.”

c. In the 1990s, the issue of environmental justice was raised and the EPA and the NIH have directed staff and research funds to respond to environmental health problems of poor and minority groups.

## B. Work Risks

1. Work risks include the quality of the employment environment as well as the potential for injury or illness posed by working conditions.

2. Work risks pose the following environmental health threats

a. Sexual harassment

b. Occupational toxic poisoning

c. Electrical hazards

d. Repetitive motion injuries

e. Work sites containing carcinogenic particulate inhalants such as asbestos and heavy metals.

3. Each year more than 20 million injuries and 400,000 illnesses are identified among American workers.

4. About 7,000 traumatic occupational fatalities occur each year in the United States, with highest numbers in mining, construction, and agriculture.

## C. Atmospheric Quality

1. Atmospheric quality refers to the protectiveness of the atmospheric layers, the risks of severe weather, and the purity of the air.

2. Environmental dangers related to atmospheric quality include chlorofluorocarbon destruction of the ozone layer, forest destruction, tornadoes, electrical storms, smog, carbon monoxide, herbicides, and acid rain.

3. Severe weather conditions affect the public’s health resulting in injury and loss of life, destruction of plants and wildlife, and property damage.

4. Atmospheric pollutants can cause lung cancer, chronic respiratory disease, and death as well as harming animals and plants.

## D. Water Quality

1. Water quality refers to the availability and volume of the water supply, mineral content levels, pollution by toxic chemicals, and presence of pathogenic micro-organisms.

2. Water quality consists of the balance between water contaminants and existing capabilities to purify water for human use.

3. Problems of water quality include droughts, contamination of drinking supply by human wastes, pesticide-contaminated aquifers, lead leaching from water pipes, oil spills, water-borne bacteria, and excessive chlorination.

4. Results of poor water quality may be an increase in water-borne diseases or problems brought about by toxic chemical pollution.

## E. Housing

1. Housing refers to the availability, safety, structural strength, cleanliness, and location of shelter.

2. The following environmental health problems are related to housing

a. Homelessness

b. Fire hazards

c. Inaccessibility for disabled persons

d. Illnesses caused by overcrowding, dampness, rodent or insect infestation

e. Chipping lead-based paint poisoning

f. Injuries sustained from collapse of building structures

g. Winter deaths from inadequate indoor heating.

3. Poor housing can spread infectious disease and can contribute to cardiovascular and respiratory disorders, cancer, allergies, and mental illnesses.

4. The term sick building syndrome has been used to describe instances in which buildings and homes cause toxic symptoms in occupants due to building materials, poor ventilation, substances in furniture and carpeting, and/or cleaning agents.

5. The immediate surrounding in which the housing is situated, including population density, proximity of industry, safety of adjacent buildings, level of security, and noise and pollution from nearby traffic, influences the housing environment.

## F. Food Quality

1. Food quality refers to the availability and relative costs of foods, their variety and safety, and the health of animal and plant food sources.

2. Food quality problems include malnutrition, bacterial food poisoning, carcinogenic chemical additives, improper or fraudulent meat inspection, viral epidemics among livestock, and food products from diseased animal sources.

3. Foods can be contaminated by toxic chemicals as they pass along the food chain and may result in reproductive and mutagenic effects in humans.

## G. Waste Control

1. Waste control is the management of waste materials resulting from industrial and municipal processes and human consumption as well as efforts to minimize waste production.

2. Several environmental health problems are related to waste control.

a. Use of nonbiodegradable plastics

b. Lack of efficient and affordable recycling programs

c. Unlicensed waste dumps

d. Inadequate sewage systems

e. Industrial dumping of toxic wastes

f. Cover-ups of illicit dumping

g. Lack of enforcement of environmental protection legislation.

3. The United States produces about 1 ton of waste per person per year.

4. Because of improper design, operation, or location of waste sites, hazardous substances may be spread through air, soil, and water to harm humans, animals, and plants.

## H. Radiation Risks

1. Radiation risks are the health dangers posed by the various forms of ionizing radiation.

2. Radiation risks include nuclear power emissions, radioactive hazardous wastes, medical and dental radiographs, radon gas in homes, and wartime use of nuclear weapons.

3. People and animals living in the vicinity of nuclear facilities such as power plants, waste storage sites, and nuclear test sites have increased rates of cancers, strokes, diabetes, immune system damage, infertility, miscarriages, and birth defects.

4. Millions of Americans are exposed to dangerous levels of radon gas in their homes, schools, and work places. Radon seeps through basement walls, pipes, and foundation cracks and is trapped in buildings with inadequate ventilation.

# III. Effects of Environmental Hazards

**A.** Environmental effects on public health are complex and often interconnected.

1. Nuclear power plant emissions can contaminate both water and air supplies.

2. Overcrowded housing may result in problems managing human wastes and perpetuate violent behavior.

**B.** Effects of environmental hazards may be general or specific, and may be categorized as immediate, long range or transgenerational.

1. Examples of immediate effects include burns, gunshot wounds, hurricane damage, and food poisoning.

2. Examples of long-term health effects include gradual occupational hearing loss, “black lung” disease in coal miners, and increased rates of cancer among migrant farm workers who are sprayed with pesticides.

3. Transgenerational effects may occur with radiation exposure of female factory workers at nuclear power plants or repetition of domestic violence in successive family generations.

# IV. Efforts to Control Environmental Health Problems

**A.** The 1970s was the decade of environmental concern. During this decade, Congress created new agencies designed to regulate environmental conditions at a national level.

1. The Environmental Protection Agency (EPA)

a. The EPA is responsible for protecting the environment and minimizing environmental risks to human health.

b. The EPA sets standards for air and water quality, health surveillance and monitoring evaluation of environmental risks, information acquisition, screening of new chemicals, and establishing evaluating and enforcing regulatory efforts.

2. Occupational Health and Safety Administration (OSHA)

3. Nuclear Regulation Commission (NRC)

**B.** In 1980 the EPA Superfund was established to clean up toxic sites.

**C.** There has been inadequate scientific research for formulating environmental health policy.

**D.** In general, most of the U.S. environmental health efforts have been directed by short-term goals rather than anticipating future needs and problems.

**E.** Nurses need to work with the public to set more stringent goals and actively enforce environmental regulations as well as promoting greater social control over corporations and other groups that damage the environment.

# V. Global Environmental Health

**A.** In the 21st century, actions related to environmental health must include not only the United State but also worldwide environmental policies.

**B.** Key global environmental issues include

1. Ozone depletion

2. Global warming

3. Burning of fossil fuels

4. Marine waste dumping

5. Abandonment of active land mines in war torn areas

6. Mass relocation of refugees

7. Destruction of tropical rain forests

**C.** Nurses need to support global actions such as replanting rain forests, stabilizing climate, and looking for state-of-the-art methods for removing pollutants from the biosphere, managing ecosystems, handling hazardous wastes, and preserving the oceans.

**D.**  Nurses need to be informed on cross-cultural aspects of caring for immigrants and refugees.

# VI. Emerging Illnesses Related to the Environment

## A. Other Emerging Threats

1. The United States is susceptible to many of the same problems that burden the rest of the world such as the illegal use of pesticides, medical waste incineration, the increased incidence of asthma related to air pollution, and the manufacturing of methamphetamine in home based laboratories that emit dangerous levels of toxic chemicals into the air.

2. Terrorist attacks pose a threat and can take many forms including biological or chemical warfare or nuclear threats.

3. Natural disasters that can disrupt and oftentimes overwhelm private and public health systems are also a threat. These may come in the form of hurricanes, tornados, droughts, floods, heat waves, and extreme cold.

## B. Nursing Actions

Nurses must work with the public to promote more stringent and actively enforced environmental legislation both nationally and globally. Concerns include:

1. Ozone depletion, global warming, fossil fuel burning, marine dumping, active land mine abandonment in war-torn areas, mass relocation of refugees across national borders, and destruction of tropical rain forests are among key global environmental health concerns.

2. Actions that support biodiversity, including pushing back the deserts, replanting the forests, stabilizing the climate, and seeking alternative development pathways that do not destroy plant and animal species.

3. Environmental concerns for clean air, clean water, and freedom from noxious chemicals.

# VII. Approaching Environmental Health at the Aggregate Level

**A.** In the United States, personal independence and individual responsibility for success and failure have always been very important.

1. Placing responsibility for the cause and cure of health problems exclusively on the individual reinforces the belief that all individuals are free to exert meaningful control over the quality and length of their lives.

2. This absolves society, government, industry, and business from accountability for changing conditions under which people live and work.

**B.** The current focus on interventions directed to the individual overlooks environments that sicken people.

1. Emphasizing only public health interventions to modify lifestyles through exercise programs, smoking-cessation, and stress-reduction fails to include the broader environmental origins of disease, injury, and ecological destruction.

2. Often changing individual behavior does not lead to significant reductions in morbidity and mortality in the absence of basic social, economic, and political changes.

3. Changes in basic social, economic, and political structure must be accomplished to improve the environment.

**C.** Looking beyond the individual to recognize the environmental determinants of illness and wellness can be complicated and threatening.

# VIII. Critical Community Health Nursing Practice

## A. Taking a Stand: Advocating for Change

1. Consequences of hazardous environments are often experienced inequitably.

a. Some vulnerable groups are exposed to more health-damaging substances or situations than are less-vulnerable groups.

b. Racial minorities, children, the elderly, and illiterate manual laborers are some of the groups in the United States who have little power to institute environmental change.

2. Decisions about the positions nurses accept and the interventions they undertake have the potential to increase or decrease these inequities.

3. Community health nurses have a mandate to assist vulnerable aggregates who are less able to protect themselves from pollution, inadequate housing, toxic poisoning, unsafe products, and other hazards.

## B. Asking Critical Questions

1. Critical questioning can assist in building collective strategies for problem resolution.

2. The nurse must ask the following critical questions:

a. How do policies concerning ecological preservation, energy, housing, immigration, civil rights, crime, nutrition, minimum wage, occupational safety and defense affect the well-being of people who live in the United States?

b. Who has access to resources in this country?

c. Whose interests are served in the system?

## C. Facilitating Community Involvement

1. It is essential that the members of the community participate in the process of identifying and working to solve environmental problems.

a. Nurses should join in mutual exchanges with community members.

b. Nurses must ask questions and assist the community members to determine how the environmental problems affect their lives.

2. The nurse should provide support, information and expertise to assist the group in meeting their goals for environmental change.

3. The nurse can help the group members in looking beyond immediate environmental problems to explore social, cultural, economic, and political circumstances that affect them.

## D. Forming Coalitions

1. By building a strong basis of collective support, nurses can insist on structural changes that eliminate hazards and improve the public’s health.

2. Nurses can approach already existing community organizations and family and friendship networks to help mobilize aggregate members.

3. Nurses can be instrumental in organizing forums where community groups can meet with scientific experts to gather evidence about health threats.

4. Nurses can meet with managers of businesses, heads of industry, and legislators to learn about problems and bring about change.

5. Press releases, media events, interviews, television spots, speeches, and newsletters can rage awareness among communities and call attention of outsiders to a situation.

## E. Using Collective Strategies

1. Nurses can use combinations of the following strategies to organize people to change health-damaging environments.

a. Coalition building

b. Consciousness-raising groups

c. Educational forums in neighborhoods, workplaces, schools, churches, and social clubs

d. Seminars for health care providers, city officials, teachers, and employers

e. Community needs assessments

f. Dissemination of clinical research

g. Use of mass media

h. Litigation

i. Legislative lobbying

j. Testimony at public hearings

k. Demonstrations.

2. An effective aggregate-level community health nursing intervention is participatory research (action research).

a. The goal of participatory research is generation of open discussion and debate to intensify the community's awareness of how health is affected by environmental constraints.

b. Participatory research calls for nurses, community members, and other resource people to work together to identify environmental health problems that should be investigated.

c. Nurses should help design the studies, collect and analyze data, disseminate results, and pose solutions to the problems.

d. The nurse helps citizens gather data on suspected environmental hazards, document their effects on health, educate the community, persuade corporations to rectify problems and lobby local, state, and federal governments for stricter regulations and better enforcement.