BEHAVIORAL EPIDEMIOLOGY:

EXPANDING THE BOUNDARIES

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INTRODUCTION

Behavior is fundamental to health

Diseases/disorders caused or prevented by behavior - examples:

Coronary heart disease (smoking,diet,exercise)

Cancer (smoking, alcohol, smokeless tobacco)

Cirrhosis (alcohol consumption)

Sexually trans. infections (partners, condoms)

Measles, rubella, hepatitis B (immunization)

Diarrheal disease (sanitation, hygiene)

Respiratory infections (smoking and ETS)

Trauma (alcohol, handguns, automobile safety)

Diseases/disorders controlled through health care related behavior - examples:

Early detection/treatment for cervical cancer, breast cancer, hypertension, diabetes, complications of pregnancy

Screening of newborns for phenylketonuria

Behavioral disorders - examples

Suicide, homicide, arson

Alcohol and drug dependence

Physical and sexual abuse

Psychiatric disturbances (in part)

War, famine, civil strife, racial/ethnic conflict

Epidemiologists increasingly study personal behaviors as exposures and/or outcomes, e.g.:

Alcohol

Compliance with medical regimens

Diet and nutrition

Handgun possession

Illegal drugs

Medication use

Physical activity

Risky sexual behavior

Seatbelt use

Smoking and smokeless tobacco

Violent behavior

Epidemiologists have devoted much less research attention to social, economic, and institutional behavior, yet:

1. Social and economic influences greatly affect health-related personal behavior, examples:

 Advertising and promotion

Availability

E.g., Food products, TV programming, movies

Highways versus bikeways and sidewalks

Financial incentives

E.g., Pharmacists, physicians

Intimidation

E.g.,Safe abortion

Norms

E.g., Violence and sexuality in youth media

Poverty and socioeconomic deprivation

Lack of personal resources, lack of community resources

Racism and discrimination

Police brutality and injustice, restricted economic, housing, social, political opportunity

2. Social, economic, and institutional behaviors greatly affect health-related governmental behavior

Campaign contributions

Conflict of interest

Fear campaigns

Lawsuits

Lobbying

Media campaigns

Smear campaigns

Stimulation and simulation of grassroots political activity

with adverse impact on:

Air and water quality

Environmental protection

Exposure to environmental tobacco smoke

Firearm violence and injury

Fluoridation of water supplies

Health insurance coverage

HIV and sexually transmitted diseases control

Lead poisoning in children

Occupational safety

Overconsumption of fat, salt, low-nutrition foods

Product safety and labeling

Tobacco use by children and teens

Unwanted pregnancy

Wildlife protection

World population control

3. Social, economic, and institutional behavior often directly harms health, human wellbeing, and the environment

Deforestation

Destruction of arable land

Destruction of habitats

"Ethnic cleansing"

Economic agrandizement and competitive excesses

Economic deprivation and insecurity

Family stress

Global warming

Irresponsible advertising, entertainment, and propaganda

Marginalization and alienation

Medical undertreatment, overtreatment, and improper treatment

Urban migration

Noise

Overpopulation

Ozone depletion

Pollution

Underfunding of public services

Underinvestment in children

Unfair treatment of workers

Waste production and disposal

Social, economic, and institutional behaviors reflect, in turn, behavior of individuals ("We have met the enemy and he is us")

Individuals direct and manage corporations, organizations, and institutions

Individuals carry out the activities of corporations, organizations, and institutions

Individuals provide the resources for corporations, organizations, and institutions

Individuals support the system within which corporations, organizations, and institutions operate

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\* Courtesy of Walt Kelly, creator of Pogo comic strip

Notwithstanding their negative effects, these same social, economic, and institutional behaviors underlay the advances in knowledge, technology, and organization that have revolutionized public health and material wellbeing

The poorest countries have the worst public health, material wellbeing, and environmental protection

Countries all over the world are turning to the economic system of the developed world

The world is rapidly becoming a global marketplace for capital, labor, knowledge, and professional/technical talent

Expansion and internationalization of the economic system is eroding racial, ethnic, religious, and other sources of prejudice and conflict

Nevertheless, the social, economic, and institutional behavior associated with this system may not be sustainable

The scale of human activity affects the global environment (e.g., ozone layer, global warming, air and water pollution, species elimination, destruction of arable land)

Protecting the environment requires increased cooperation -- domestically and internationally (e.g., chlorofluorocarbons, energy conservation, forest preservation, recycling, sewage treatment, population control)

Severe income inequality between countries impairs cooperation, promotes destructive behavior, and fosters communicable diseases

Resources are insufficient to permit all countries to use resources to the same degree as used by the developed countries of the world -- therefore the developed countries must reduce their resource use

Achieving a balance of competition and cooperation, based on broader awareness, can enhance public health, material wellbeing, and quality of life with fewer material resources

Substantial amounts of economic and environmental resources are devoted to needs arising from the inefficiencies of the system, rather than from the people it serves (e.g., excessive advertising and packaging, crime prevention, criminal justice, excess weaponry, manufactured wants, planned obsolescence)

Underfunding of education, public health, community development, and other public services worsens communicable disease control, reduces labor productivity, increases propensity for disease, injury, and destruction due to incompetence or error in operating equipment

Poverty and severe income inequality impair cooperation, promote conflict and destructive behavior, fosters communicable diseases, and draw health care and welfare resources thereby lowering societal economic efficiency

Finding ways to broaden human awareness offers the greatest potential for improving behavior at the individual, social, economic, and institutional level

The behavior of an institution or government is carried out by the people who staff it and therefore limited by their awareness

The behavior of an institution or government is conditioned by the behavior and understanding of the people whom it serves and therefore limited by their awareness

Deleterious behavior -- individual and institutional -- arises from failure to appreciate the wider consequences of the behavior

Broader awareness will improve the working of any economic and political system

Epidemiology can enhance its contribution to public health by investigating the broader realm of individual and collective behaviors and their determinants

The epidemiologic perspective involves population-level determinants of health, multidisciplinary synthesis, observational research in populations, weighing of evidence, and commitment to public health

Epidemiologists draw from substantive areas as they need to and collaborate with researchers in diverse fields

Epidemiologists recognize that population-level factors offer the greatest leverage for improving public health

The public health profession looks to epidemiology as the basic science of public health

New epidemiological research methods and strategies will be needed

SELECTED SUPPORTING CITATIONS

**Children, families, and economic deprivation**

The average 17- to 18-year old has spent 15,000 hours watching television compared with 11,000 hours spent in school. (Hamburg, 1992, 192).

Youths will have been exposed to 18,000 televised murders, glamorous messages portraying sex, smoking, drinking, risky behavior, and unhealthful products. American TV viewers are annually exposed to some 9230 scenes of suggested sex or innuendo, commonly among adults not married to each other. (Abelson, 1992)

The root causes of homelessness are related to systemic, structural, and economic factors including the lack of low-income housing, the gap between income and median rents, the growth of households living in poverty, gender-related biases which in part explain our unwillingess as a nation to commit the necessary resources to extremely poor families, most of which are headed by women. (Bassuk, 1993)

"In addition to the usual goals of targeted disease prevention and health promotion, solutions to public health problems will require redress of the fundamental causes of economic deprivation and further resarch regarding the pathways through which those economic conditions are related to disease and death." (Sorlie, Backlund, Keller, 1995: 955)

The impact of poverty on mortality as estimated in the NHANES I and Follow-up Survey, based on the population attributable risk percent, was 16% in white and black persons age 25-74 in 1973. The PARP for poverty 3.5 times as much for Black men as for white men. Potential confounders explained 40% of the effect if poverty on mortality.

In 1990, 40% of children in families headed by parents under age 30 years lived in poverty. (Children's Defense Fund, 1992)

Note - cited from Edward Zigler in Amer J. Orthopsychiat 1993:334

"For the atrocities now being commited on our children--however inadvertently and regretfully--we are all paying a great deal. These costs have many facets: economic inefficiency, loss of productivity, lack of skill, high health-care costs, growing prison costs, and a badly ripped social fabric." (Hamburg, 1992, 327-328)

"The casualities in disadvantaged minority communites are now so heavy that they have a damaging effect on the entire nation. . . . the costs of disease and disability, ignorance and incompetence, crime and violence, alienation and hatred. These are infections . . . that cannot be effectively contained." (Hamburg, 1992: 323)

". . . our current difficulties in child-rearing--worldwide in nature and sharply accentuated in the United States--are not some oddity, some transient aberration, but, rather, a sea change reflecting evolutionary and historical currents of profound long-term significance." (Hamburg, 1992: 329)

"In 1980, many people incorrectly assumed that tuberculosis in the United States had been controlled; the case rate of tuberculosis in Central Harlem in New York City was 50 per 100,000 persons. In 1991, there was widespread concern about tuberculosis in New York City--the case rate for all of New York City was 50 per 100,000, and Central Harlem's rate had increased to 221 per 100,000. If we had been as concerned about Central Harlem in 1980 as we were about all of New York City in 1991, much of the city's epidemic might have been avoided." (Frieden, 1994)

**Global health**

"The eleven articles published in The Lancet over the past seven weeks have shown how anthropogenic damage to the biosphere has potentially important implications for health." (Haines, Epstein, McMichael, 1993: 1464))

"Greater integration of efforts to collect data on health and global environmental change is needed. Many of the potential effects of climate change will be insidious and will take a long time to manifest themselves, and sometimes the links between ecosystem damage and health are unclear. . . . Much of the burden of global environmental change may fall on poorer countries, which are less well equipped to monitor, and the danger is that monitoring will focus disproportionately on the problems affecting the rich nations. . . . If monitoring is to be effective international collaboration on epidemiological surveys, field studies, and routine data collection . . . will have to improve." (Haines, Epstein, McMichael, 1993: 1469)

From 1860 to 1991, the number of people in the world increased more than fourfold; human use of inanimate energy increased 93-fold. (Cohen, 1995)

In 1992, 79% of the world's income was earned by the 15% of people in the world's richest countries. (Cohen, 1995)

"Late in the 20th century, a set of global environmental changes is getting underway which has ominous potential to erode the biosphere's carrying capacity for the human--and many other--species. This category of environmental health problem poses urgent and challenging tasks for epidemiologists." (McMichael, 1993a)

". . . the utter dependence of human well-being on productive land makes its continued degration for short-term gain an unwise course. . . . Historically, land degradation has been implicated in the fall of great civilizations and merits serious attention by this one." (Daily, 1995)

". . . at the time of the first major international conference on the environment in Stockholm in 1972, there was next to no mention of what have now become established as front-rank problems: global warming, acid rain, and tropical deforestation. Environmental scientists could have gone at least partway toward anticipating these problems." (Myers, 1995)

"The . . . underlying problem is the entrenched inequality between rich and poor countries. . . . [The] central manifestations of this inequality are .. . poverty-related population growth and land degradation in poor countries, and excessive consumption . . . [and] high production of wastes in rich countries." (McMichael, 1993b)

From the review by Aaron J. Cohen and Jonathan A. Samet, Epidemiology, 1995?, 195

"With nearly 1 in 3 US tuberculosis cases occurring in foreign-born persons, we cannot afford to continue our policy of public health isolationism." (Frieden, 1994)

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