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Global Health

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GLOBAL HEALTH
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Abstract

Within its 150 year history, public health has grown from a focus on local communities, to include country-wide, then international and now global perspectives. Using the United Nation's Millennium Goals as its primary framework, this article provides an overview of global public health within the broadest possible context of the world and all of its peoples. Also provided are discussions of the global burden of disease as measured in disability-adjusted life years (DALYs), global health statistics, current health priorities and recommendations for action by social workers and other health professionals.

Key words, global, public, international, health, global burden of disease and disability adjusted life years (DALYs)

INTRODUCTION

Global public health is a comprehensive area that includes broad subjects such as health determinants, the burden of disease, culture and health, health systems, ethical and human rights concerns and ways of working together (Skolnick, 2012). The history of global public

health is dynamic. In the last century and a half, thinking about public health has greatly advanced and has broadened its scope from the local to the global. Over time, concerns about public health have emerged almost as a social movement in England, continental Europe and the United States. Primarily developed and managed at state and local levels, these efforts were the direct result of a combination of new knowledge, especially those related to infectious disease epidemiology, and social reform. From these specific concerns, the field has evolved to face broader and even more complex issues. Today's public health community understands that what were considered to be local, state or countrywide issues are in fact worldwide concerns. Over time, public health has become the science of protecting and improving the health of entire populations be they local neighborhoods, small communities, entire countries or several countries at a time. Understanding global health necessitates understanding the social context of problems and interventions which include: history, social policy, the economy, security issues, culture, religion, and factors related to gender, race, class and caste. This article will use the United Nation's Millennium Goals as the framework to discuss the current priorities of global public health.

HISTORY

Early public health specialist Charles-Edward Winslow defined public health as “the science and art of preventing disease, prolonging life and promoting physical health and efficacy through organized community efforts for the sanitation of the environment, the control of communicable infections, the education of the individual in personal hygiene, the organization of medical and nursing services for the early diagnosis and treatment of disease, and the development of social machinery which will insure every individual in the community a

standard of living adequate for the maintenance of health; so organizing these benefits in such a fashion is to enable every citizen to realize his birthright and longevity” (1920, p. 183). During its approximately 100 year history, in order to encompass all that it means by “community,” the field has altered its name several times from public health, to international public health, to global public health and now to global health. This name change is important in that it reflects broadening perspectives in the field. Those who describe the expansion of (country-specific) public health to international health say that international health applies public health principles to challenges that affect low-income and middle-income countries, especially in relation to maternal and child health and to infectious disease (Merson, Black & Mills, 2012). Meaning, the emphasis of international health has been on health disparities between countries with greater resources and those with less.

The reach created by rapid globalization over the last quarter century has transformed *international health* into *global public health* (Brown, Cueto & Fee, 2005). Often, global public health is about improving health in order to address the growth or stability of the economy. In fact, goals of protecting populations from infectious disease, helping the poor and otherwise disempowered, and finally, decreasing the global burden of disease, have great economic consequences (Stuckler & McKee, 2008). Now, those in the field are asking that the point of focus be even more encompassing and they have changed the name of the field from *global public health* to *global health* (Fried, Bentley, Buekens, 2010). This is meant to indicate that nearly everything affects health, and, in turn, health status affects almost all dimensions of society.

Benatar and Upshur define global health as the science and art of preventing disease, prolonging life, and promoting health worldwide through organized global efforts. These efforts include: maintaining a safe environment, controlling communicable diseases, educating populations on safe living habits, and organizing medical services for the early diagnosis and treatment of disease (2011). Global health is characterized by inequities in life expectancy, susceptibility to disease, and access to health care. Such discrepancies are primarily related to the extent of poverty in a country, but are also related to inborn characteristics of individuals, as well as cultural and social factors. Key cultural and social factors to consider include: social status, education, social support, childrearing, health practices, community commitment to health priorities, and the degree of responsibility that governments take in relation to health and health care (Labonté & Schrecker, 2007). Marmot writes that, according to the World Health Organization, social determinants of health refer to “the conditions in which people are born, grow, live, work, and age; these circumstances are shaped by the distribution of money, power and resources at global, national, and local levels” (Marmot, 2009). Achieving good health requires attention to the social, cultural, and economic determinants of health that would ensure a standard of living and education for all peoples (Benatar & Upshur, 2011).

MILLENNIUM DEVELOPMENT GOALS

The United Nation’s Millennium Development Goals (MDG) are meant to reduce world poverty and many of the health problems that accompany poverty significantly by 2015 (UN Millenium Goals, 2000). Several global health initiatives related to the Millennium Goals developed from a rights-based approach (Jonsson & Jonsson, 2012), along the lines of the United Nation’s Universal Declaration of Human Rights:

Everyone has a right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control and 2) Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection (Article 25, UN General Assembly, 1948).

The Millennium Development Goals, Targets, and Selected Indicators were adopted by the United Nations following the UN Millennium Summit in 2000. All UN member states and more than 20 international organizations agreed to achieve these goals all of which are directly or indirectly related to health. These enormous goals are being addressed in very specific ways in programs throughout the world. The Millennium Development Goals are:

- Goal 1: Eradicate extreme poverty and hunger.
- Goal 2: Achieve universal primary education.
- Goal 3: Promote gender equality and empower women.
- Goal 4: Reduce child mortality.
- Goal 5: Improve maternal health.
- Goal 6: Combat HIV/AIDS, malaria, and other diseases
- Goal 7: Ensure environmental sustainability
- Goal 8: Develop a global partnership for development

These goals correspond to the current health priorities and leading causes of the global burden of disease. Achieving the Millennium Development Goals would greatly improve global health.

The Global Burden of Disease (GBD)

Recognized by World Health Organization in 1990, the global burden of disease (GBD) measures burden of disease using the disability-adjusted life year (DALY). Based on life years in less than full health and also years lost as a result of premature death, the DALY is a single measure to quantify the burden of diseases, injuries and risk factors. This concept was developed to assess the burden of disease consistently across diseases, risk factors and regions and by age, sex and region (WHO, 2012). An important dimension of the GDB studies is the capacity to use consistent data and metrics to compare the health outcomes of one nation with those of another. DALY rankings serve as a relative measure; a higher rank corresponds to worse health outcomes.

Insert Fig. 2 Highest DALYs

Insert Fig. 3 Lowest DALYs

Murray & Lopez posit that three world-wide transitions have contributed to changing patterns in global health since 1990. These transitions include: demographic changes, changes in causes of death, and changes in causes of disability (2013). Demographic effects on the burden of disease include both the increase in the numbers of people and the effect of an increasing average age of the population. The increasing mean age of the population decreased the number of DALYs from communicable, maternal, neonatal, and nutritional diseases by 22.2% but increased DALYs associated with noncommunicable diseases by 19.1%. Demographic change is the key driver of increases in the burden of noncommunicable diseases. The aggregate category of communicable, maternal, neonatal, and nutritional diseases, DALYs decreased by 52.1% from 1990 to 2010 because of decreases in age-specific and sex-specific rates of death. This decrease may be related to a combination of increasing levels of maternal

education, improved delivery of preventive and medical care with key forms of technology, increasing income per capita, and increasing health expenditure, including development assistance for public health and medical care (Murray & Lopez, 2013).

Insert Fig. 6 Leading Causes of Death High Income

Insert Fig. 7 Leading Causes of Death Low Income

Eight different risk factors account for the leading cause of attributable DALYs across countries. These are: alcohol use (22 countries), high BMI (32 countries), suboptimal breast-feeding (in 2 countries), high fasting plasma glucose level (in 3 countries), household air pollution (in 14 countries), high systolic blood pressure (in 59 countries), smoking (in 24 countries), and childhood underweight (in 31 countries) (Murray & Lopez, 2013). Quantifying the burden of disease provides useful input into health policy dialogues and identifies conditions and risk factors that may be relatively neglected and others for which progress is not what was expected. Regular GBD study updates will be provided annually as new data or major new studies are released. Continuous revisions will facilitate the incorporation of scientific feedback on how to improve the estimation for any particular disease, injury or risk factor in countries. The GBD effort may be used to understand patterns of health within countries that are differentiated according to geographic region, social class, or ethnic group (Murray & Lopez, 2013).

An Explication of Individual Global Millennium Goals in Relation to Global Health

Goal 1: ELIMINATE EXTREME POVERTY AND HUNGER

Specifically, between 1990 and 2015, the goal has been to halve the proportion of those who suffer from hunger. It is estimated that more than 100 million children under five years

continue to be underweight and undernourished and, worldwide, 870 million individuals are thought to be undernourished. According to the World Health Organization, nutrition is the intake of food assessed in relation to the body's dietary needs. Poor nutrition can bring about increased disease susceptibility, reduced immunity, impaired mental and physical development and lessened productivity (WHO, 2013). The world is in the midst of a complex burden of an obesity epidemic coupled with global acute malnutrition, hidden hunger and prolonged food insecurity and resultant childhood stunting and related health problems.

An estimated two billion people globally suffered from hidden hunger in 2012, meaning that people have enough calories but inadequate vitamin intakes (Hoeft, Weber & Eggersdorfer, 2012). Lack of access to nutritional foods in low-income countries and poor diet in high-income countries are both linked to noncommunicable diseases. Despite the global effort in the last decades to ameliorate micronutrient deficiencies and its consequences in the developing world, certain vitamin deficiencies continue to affect the lives and health of millions of people, particularly those of vulnerable populations. Micronutrient deficiencies are also present in industrialized countries, such as the U.S., Germany, and Great Britain (Hoeft, Weber & Eggersdorfer, 2012).

Millions of people worldwide die as a result of being overweight or obese. With the exception of sub Saharan Africa, more people are dying today from diseases related to obesity than from malnutrition (GBD 2010 Study). Between 1980 and 2008, the worldwide prevalence of obesity almost doubled with 10% of men and 14% of women being obese. In the Region of the Americas, 62% of people are overweight and in the South-East Asia Region, 14% are overweight. In low-income countries, middle-aged adults and most especially women in urban

wealthy areas are affected; in countries with higher incomes, obesity affects everyone but those in disadvantaged groups are at higher risk. It is thought that increases in obesity are driven by alterations in the global food delivery system, which is effectively marketing affordable processed food and achieving these outcomes (Swinburn, 2011).

Insert Fig. 8 BMI Females

Insert Fig. 9 BMI Males

On the other hand, malnutrition, a lack of some or all nutritional elements necessary for human health, can cause anemia, stunting, blindness, brain damage, infection vulnerability and death. Of the two basic types of malnutrition, the first is the lack of enough protein and food that provides energy measured in calories. The second is micronutrient deficiency (vitamin and mineral), particularly iron, vitamin A, iodine, folic acid and zinc. Each problem requires an improved understanding of extent, severity, causal pathways and health implications (Center for Human Nutrition, 2013). The link between poverty and undernutrition is well recognized. One new response to global nutrition problems is WHO's launching of the Global Database for Implementation of Nutrition Action, which will map the presence, scope and implementation of nutrition programs and policies around the world (WHO, 2013).

GOAL 2: ACHIEVE UNIVERSAL PRIMARY EDUCATION

Studies indicate that education is associated with health outcomes. Higher educational attainment—the years of schooling a person has—is correlated to increased life expectancy, better health outcomes, and increased likeliness to practice health-promoting behaviors

(Sanchez-Vaznaugh, 2009; Egerter, et al, 2009). The contribution of maternal education to a reduction in child mortality is well described by researchers (Bhutta & Black, 2013). Adult educational attainment is associated with their children's health; research suggests that children of more educated parents exhibit better health outcomes. Higher maternal educational attainment and higher household income has a significantly positive impact on child survival rates (Matthews & MacDorman, 2007). In a study conducted in the United States, researchers found that each additional year in school was correlated with increased life expectancy (Sanchez-Vaznaugh, 2009). Education impacts health through three major pathways: health knowledge and literacy, employment and income, and psychosocial factors (Egerter, et al, 2009). The health knowledge and literacy pathway is linked to nutrition, exercise, health and disease management, and drug and alcohol usage. The employment and income pathway influences health through the working conditions and benefits individual experiences, as well as the living conditions and resources the individual experiences (Egerter, et al, 2009). Education is part of the pathway of psychosocial factors influencing health outcomes includes social standing, social support, stress, mental health, and health-related behaviors (Egerter, et al, 2009).

Parents' educational attainment influences their children's health and development during childhood as well as their children's educational attainment—factors linked to the children's ultimate health outcomes in adulthood. Parents with less years of schooling are more likely to face greater obstacles than parents with high educational attainment. Research demonstrates that obstacles such as lack of knowledge, skills, time, and resources are part of direct and indirect pathways towards decreased health outcomes for children. Adverse effects

on cognitive and behavioral development in early childhood are correlated with increased rates of cardiovascular disease, hypertension, diabetes, smoking, and depression in adulthood (Egerter, et al, 2009). Thus, promoting educational attainment may lead to improved health outcomes.

GOAL 3: PROMOTE GENDER EQUALITY AND EMPOWER WOMEN

Female empowerment and gender equity are important issues to consider in regard to the health of women, as women and girls are disproportionately affected by poverty, violence, and certain diseases (Bhutta & Black, 2013). Several sociocultural factors prevent women from obtaining health care or attaining maximal health. These factors include the power differential between men and women, social norms that keep women undereducated and more poorly paid, the focus on women's reproductive roles, and women's experience of sexual and other kinds of violent abuse. Girls and women are more likely to experience sexual and other violence. In middle and high-income countries, among adolescent girls, road traffic injuries are the leading cause of death (WHO Media Centre, 2011). In addition, in developing countries, pregnancy-related complications are a leading cause of death for those 15-19, and unsafe abortions performed under poor conditions contribute greatly to these deaths (WHO Media Centre, 2012). Although contraceptive use has increased greatly over the last 30 years, many women in low-income countries have little opportunity to manage their child bearing. Also, there are also increasingly higher rates of tobacco and alcohol use among adolescent girls which further compromise present and future health.

Insert Fig. 12 Women Living with AIDS

In all areas where HIV is at epidemic levels, HIV infection and other sexually transmitted infections are high among adolescent girls and young women because of unsafe and often unwanted sexual activity (Piot & Quinn, 2013). In these regions HIV/AIDS is the leading cause of disease and death for women of reproductive age (15-44). In countries where HIV/AIDS is hyperendemic, prevalence among women is high—for example in Swaziland, the prevalence of HIV among women between the ages of 30 to 34 years is 54% (Piot & Quinn, 2013).

Tuberculosis is often linked to HIV infection. Unequal power in sexual relations, lack of information and health care, poverty and some biological factors make young women especially vulnerable to HIV. With little to no access to cervical cancer screening and treatment, women in low income countries have 80% of the world's cervical cancer with most cases being linked to genital infection with the human papillomavirus (Akinyemiju, 2012).

Cardiovascular disease is the highest cause of death for women as it is for men. Increased smoking among women has allowed them to catch up to men in this area. Women develop cardiovascular disease later than men, and because their cardiovascular symptoms are different than those for men, cardiovascular disease is under-diagnosed for women (CDC, 2013). Breast, lung and colon cancers are in the top 10 causes of older women world-wide. Again, tobacco use has added to the disease burden; 71% of lung cancer deaths are caused by tobacco use (U.S. Cancer Statistics Working Group, 2013). Many of the poor health behaviors that women adopt in adolescence such as tobacco and alcohol use, sedentary life styles and unhealthy diets affect their health in old age. At that time in their lifespan women must deal with debilitating conditions such as poor vision and hearing, dementia, arthritis and depression.

On average, women tend to live six or seven years longer than men; thus they represent a higher proportion of the elderly (74% aged 70 years and above).

In fact, all stages of women's health from infancy through old age have specific health care needs. Generally, women are more susceptible to depression and anxiety than men with about 73 million women having a major depressive episode each year. The key to public health intervention seems to be within the family and community in terms of raising awareness of health and hygiene measures and behaviors such as clean water and proper sanitation, hand washing, umbilical cord care, breast feeding and keeping the newborn warm.

GOAL 4: REDUCE CHILD MORTALITY

It is estimated that many of the deaths of the approximately 6.6 million children younger than 5 years of age who die each year (down from 12.6 million in 1990) are preventable (Bhutta & Black, 2013). Poverty, which is often accompanied by lack of access to safe water and sanitation, education and health services, is an underlying cause of morbidity and mortality in childhood. Wars, conflicts and resulting displacement greatly increase childhood mortality and morbidity. The major causes of death in children in low-income countries, which include lower respiratory tract infections, diarrhea, malaria, complications of preterm birth, and neonatal encephalopathy, were among the top 15 DALYs in 2010 (Murray & Lopez, 2013). Approximately 45% of all deaths among children younger than 5 years of age may be associated with undernutrition (Bhutta & Black, 2013).

Insert Fig. 18 Leading Causes of Death in Children

Insert Fig. 17 Infant Mortality Rate

According to the Child Health Epidemiology Reference Group, in 2010 approximately 40% of deaths among children under 5 occurred in neonates. Major causes of death in neonates include: complications of premature birth, intrapartum-related complications, and sepsis or meningitis. Other leading causes of death among children under 5 include: pneumonia, diarrhea, and malaria (Bhutta & Black, 2013). In many instances, issues in child health are inextricably linked to maternal health. For example, a very high percentage of child deaths occur in low birth weight babies and generally reflect the poor nutrition and health of the mother. As would be expected, the rates of infant and child mortality vary with income, locale and education, especially of the mother.

Global vaccination coverage has significantly reduced worldwide child mortality rates. Measles deaths, for example, were cut by 74% in the last decade (WHO, 2012). While measles deaths have greatly decreased, there are gaps in the provision of other basic vaccines such as those against diphtheria, pertussis, tetanus, polio, and tuberculosis. In addition, there has been a big push for the use of three additional vaccines, hepatitis B, haemophilis influenza Type B and retrovirus. The widespread use of antibiotics has created a problem here as well, because drug resistance increases the costs of treatment and makes the development and global dissemination of certain vaccines, such as pneumonia, imperative (WHO, 2012).

Despite the progress in some areas in the last 20 years in reducing morbidity and mortality for children under 5, the challenges remain of how to improve the health of the children in low- and middle-income countries. Very little progress has been made for neonates with 40% of the children who die being under 28 days old. Also, in many low-income countries in particular, interventions that are effective and inexpensive are not being implemented

because there is no skilled staff and families do not have access to simple technologies for conditions such as diarrhea and malaria. It is thought that 60% of these deaths could be prevented (WHO, 2012).

Insert Fig. 20 Child Health Chart

With a substantially larger proportion of malaria deaths of children younger than 5 years in Africa (about 24% of child deaths in 2010), researchers argue that combating malaria should be a central strategy to achieving the fourth Millennium Development Goal (Murray et al, 2012). A discussion on malaria is included in the section on Goal 6. More skilled birth assistants and access to what are now considered simple technologies in terms of preventative and curative measures are also necessary for improved child health. Based on recent trends, 31 countries will achieve MDG 4 (Lozano, et al. 2011).

GOAL 5: IMPROVE MATERNAL HEALTH

In response to slow progress of Goals 4 and 5, the UN Secretary-General launched the Global Strategy for Women's and Children's Health in 2010. The greatest burden of maternal mortality and poor health is concentrated in the lowest-income countries of sub-Saharan Africa and South Asia. The WHO's International Classification of Diseases (ICD) and the MDG's definitions of maternal mortality include deaths during pregnancy or within 42 days of termination of pregnancy from direct obstetric causes, indirect obstetric causes, and all HIV (Lozano et al, 2011). The highest maternal mortality rates occur among poor and marginalized women living in remote and rural areas or in urban slum conditions. Bhutta and Black write that this clustering of deaths is attributed to lack of health care services and knowledge, as well as poor environmental conditions of low-income urban areas (2013).

Insert Fig. 13 Maternal Mortality Rate

Tracking trends in maternal mortality has changed and varies from country to country. Using the ICD and MDG definitions minus the HIV-related deaths during pregnancy, Lozano et al report that 273,500 maternal deaths occurred in 2011, which is a decrease from 409,100 in 1990 (2011). There was an estimated 56,100 deaths due to HIV among pregnant women in 2011 (Lozano, et al., 2011). In 2011, the highest maternal mortality rates were seen in Eritrea, Liberia, Burundi, and Afghanistan, and lowest in Iceland and Austria.

Lack of health care services and a skilled health workforce have been major barriers to maternal health. Scaling up interventions while removing financial barriers to health care are necessary to reduce maternal mortality, and these must be combined with sound governance, assurance of health services, and attention to quality-of-care issues (Lozano et al, 2011; Bhutta & Black, 2013). Key determinants of maternal health include issues of fertility and population growth, therefore, researchers call for more attention and funding for global reproductive health care and family planning (Bhutta & Black, 2013). Thirteen countries are projected to achieve MDG 5 by 2015; they include: China, Egypt, Iran, Jordan, Libya, Maldives, Mongolia, Morocco, Peru, Samoa, Syria, Tunisia, and Turkey. And an estimated 96 countries will take more than 20 years after 2015 to reach the target (Lozano et al, 2011).

GOAL 6: COMBAT HIV/AIDS, MALARIA, AND OTHER DISEASES

Communicable diseases

A communicable disease is an illness due to a specific infectious agent or its toxic products capable of being directly or indirectly transmitted from human to human, from animal

to human, from animal to animal, or from the environment to human. Communicable disease pathogens include bacteria, viruses, fungi, parasites and prions (Porta, 2008). While great attention is paid to communicable diseases—primarily HIV/AIDS, tuberculosis and malaria—they account for only about 10% of all deaths world-wide. The reason for this attention may be attributed to the successes of addressing infectious disease in high-income countries through improvements in living conditions and medical interventions, which could be transferable to lower-income countries (Anderson, 2007).

AIDS

The AIDS epidemic has lasted approximately 30 years. UNAIDS, the Joint UN Program on HIV/AIDS released a report that showed that infection rates have dropped by more than 50% in 25 middle- and low-income countries. In 2012 compared to 2001, there were 700,000 fewer new infections (UNAIDS, 2012). These results have been achieved through a complex strategy that involves promotion of testing, distribution of antiretroviral drugs, education and the provision of nondrug-based preventive means. Presently, more than 34 million persons are still living with HIV infection worldwide (Piot & Quinn, 2013).

Insert Fig. 1 Regional HIV AIDS

The epidemiologic trends of HIV are heterogeneous. The rates of HIV infection are slowing in most areas of the world, while the incidence of infection is increasing in Eastern Europe and several Asian countries (Piot & Quinn, 2013). Sub-Saharan Africa continues to be the most affected continent, followed by Eastern Europe and the Caribbean. In southern Africa, HIV infection has become hyperendemic. The search for a vaccine continues because no matter

how effective other interventions may be, no disease can be eradicated without a successful vaccination campaign.

Malaria

Studies indicate that the malaria mortality burden is larger than previously estimated. According to researchers at the Institute for Health Metrics and Evaluation (IHME), there were 1,238,000 global malaria deaths in 2010, which is double the figure estimated by the World Health Organization for the same year (Murray et al., 2012). IHME data show that malaria deaths in 2010 in those aged 5 years and older were significantly higher than previously thought—524,000 deaths compared to the figure of 91,000 presented by WHO. Most malaria-related deaths in both children and adults occur in western, eastern, and central Africa. The peak in malaria mortality was in 2004, which saw 1,820,000 malaria deaths. The reduction in malaria deaths since then is attributed to the large decreases in malaria deaths in sub-Saharan Africa. Outside of Africa, malaria deaths have steadily decreased from 502,000 in 1980 to 104,000 in 2010 (Murray et al., 2012). The rapid decrease in malaria mortality in Africa owes much to the scaling up of control activities supported by international donors. However, if malaria elimination and broader health goals are to be met, donor support needs to be increased (Murray et al., 2012). Investments made by major funders such as the Global Fund to Fight AIDS, Tuberculosis and Malaria have rapidly decreased the burden of malaria.

WHO and other organizations have also called for the eradication (world-wide interruption of transmission of disease) of various diseases throughout history. Smallpox is one disease that was eradicated, with the last naturally occurring case appearing in 1977 (Hopkins, 2013). Since then, although WHO has supported the eradication of other diseases such as

guinea worm disease and poliomyelitis, many obstacles have prevented eradication which always requires more time, effort, and funding than initially anticipated (Hopkins, 2013). For example, endeavors to eradicate diseases such as yaws, hookworm, and malaria have failed. Eradication campaigns require intervention everywhere the disease occurs, close monitoring of the disease target and the extent of interventions, flexibility to respond to urgent operations, focus on interruption disease transmission even as costs per case increase and the numbers of cases decrease and continued surveillance (Hopkins, 2013). Each disease eradication campaign is different and necessitates unique strategies to overcome challenges such as political insecurity where a disease is endemic, inadequate or delayed funding, and difficulty motivating officials and affected populations (Hopkins, 2013).

Noncommunicable Diseases

There has been a profound shift toward a greater fraction of the burden of disease occurring from disability rather than from than from premature death. “What ails most persons is not necessarily what kills them” (Murray, 2013 p. 453). At the present time, the great burden of disease in rich and poor countries involves noncommunicable diseases. Globalization is the chief cause of the rise of noncommunicable diseases, and the burden of noncommunicable disease is greater than that of communicable disease around the world. As low-income countries develop their economies, participate more fully in the world economy and become more urban, their noncommunicable disease prevalence rises. Cardiovascular disease (CVD), diabetes, cancer, and mental disorders are the most prevalent noncommunicable diseases, with cardiovascular disease being the leading cause of death worldwide. Decreases in rates of noncommunicable diseases and injuries from 1990 to 2010

have been small, thus indicating that the impact of noncommunicable diseases and injuries on global health will deepen.

Insert Fig. 21 Noncommunicable Diseases

The most notable change to the global burden of disease is a shift from risks related to childhood communicable diseases to noncommunicable diseases in adults. Findings from the Global Burden of Disease Project (2012), indicate that alterations are related to global reduction in mortality for children under five years of age as well as changes in causes of death. The Global Burden of Disease Project suggests that the rising burden from mental disorders, musculoskeletal disorders, and diabetes will create new global health challenges.

Cardiovascular disease accounts for nearly 30% of deaths and 10% of DALYs world-wide. The percentage in the richest countries and that in lower-middle and low-income countries are nearly matched. By 2020, it is thought that CVD will be responsible for more than half of all deaths world-wide.

Insert Fig. 4 CVD and Diabetes Females

Insert Fig. 5 CVD and Diabetes Males

Especially for cardiovascular disease and diabetes, incidence is related to health habits, poor nutrition, obesity and lack of regular physical activity. Diabetes provides an interesting example because about two-thirds of those with the illness have some disability and so DALYs lost from diabetes are much greater than one would predict by its prevalence.

Noncommunicable diseases pose a major financial burden on affected persons. Studies indicate that poor households are the most financially affected when they seek care, with medication comprising the bulk of the costs (Kankeu, 2013). Diabetes treatment in particular is a major

cost for affected patients. Studies found that poorer households spend a higher proportion of their income on care for diabetes than richer households.

According to the World Health Organization, the greatest threats in terms of disease burden are person made; the five leading global risks for mortality are high blood pressure (13%), tobacco use (9%), high blood glucose (6%), physical inactivity (6%), overweight/obesity (5%) (WHO, 2009), all of which are related to a great extent to health habits. It is difficult to know how to address issues related to noncommunicable disease. Some interventions should be provided at the population level and others at the personal level. Much of the empirical evidence of the effects of interventions for noncommunicable disease come from high income countries but research needs to be furthered in low- and middle-income countries.

GOAL 7: ENSURE ENVIRONMENTAL SUSTAINABILITY

Environmental sustainability is an important topic in public health, as natural disasters, complex humanitarian emergencies, and injuries significantly impact the health of populations. Low-income countries experience the highest morbidity and mortality rates due to natural disasters, armed conflict, and injuries. Globally, natural disasters have affected approximately 217 million people annually since 1990. Presently, 300 million people are living in regions marked by armed conflict (Leaning & Guha-Sapir, 2013). The mortality rate due to injuries is greater than the number of deaths from HIV/AIDS, TB and malaria combined, yet the subject of injuries garners little attention in the health arena (Lozano et al., 2012; Norton & Kobusingye, 2013). The latest threats to water, air, sanitation and personal hygiene, especially in new forms such as climate change, vehicular and industrial emissions, energy problems and economic and

food crises, make the development of effective public health responses even more difficult (Fidler, 2010).

National Disasters

National disasters involve a physically uncompensated interaction between a natural event and a social system. They are classified as biologic, geophysical, and climate-related events. These classifications encompass a number of scenarios: 1. biologic disasters include epidemic infectious disease, insect infestation, and animal stampede; 2. geophysical disasters include earthquake, volcano, and mass movement; 3. climate-related events include hydraulic disasters, such as flood, and meteorologic disasters, such as storm, extreme temperature, drought, and wildfire (Leaning & Guha-Sapir, 2013). Examples of recent natural disasters are the 2010 earthquake in Haiti and Hurricane Sandy, which affected seven countries in 2012. In the aftermath of Hurricane Sandy, which shut down the United Nations, UN Secretary-General, Ban Ki-moon stated, “emergency situations can also lay bare where we may have been operating on flawed assumptions and must do better” (UN News, 2012).

Over recent decades, the number of natural disasters has gone up and the scale of the disasters has expanded due to increased urbanization, deforestation, intensifying climate variables, and environmental degradation (Leaning & Guha-Sapir, 2013). The main needs after natural disasters are water, food, sanitation, and shelter; these needs are often acute and short-lived. However in low-income countries, especially if they experience recurrent events, natural disasters can lead to longer-term health issues. UN General Assembly President Jeremic stated that extreme meteorological disasters demonstrate the necessity of collective global efforts to better address climate change (UN News, 2012). National disasters and complex

humanitarian emergencies present crucial threats to the health and wellbeing of a community usually over a broad geographic area.

Complex Humanitarian Emergencies

A complex humanitarian emergency is a man-made situation where a population is affected by civil or international war or a forceful attempt to restructure a society or a state leading to displacement and deterioration in living conditions (Albala-Bertrand, 2000). Violent conflicts between nations and groups, state and group terrorism, rape as a weapon of war, and the displacement of peoples occur worldwide (WHO, 2002). WHO named the 20th century as one of the most collectively violent periods in human history and in 1996, the World Health Assembly declared that violence is a leading worldwide public health problem (WHO, 2002). During modern political violence, civilians often bear the burden and those who are most vulnerable to death and disease are infants and refugees (De Jong, 2010; Leaning & Guha-Sapir, 2013). Armed conflict decreases infrastructure stability and access to vital services such as medical care and food (WHO, 2002). Therefore, the main resulting health consequences are not combat-related, but instead are indirect consequences that lead to mortality, such as malnutrition and disease— particularly common childhood diseases (Leaning & Guha-Sapir, 2013).

The ratio of collective violence among low-to middle-income countries versus high-income countries is ten to one, thus, health and nutritional indicators act as determinants of political conflict (WHO, 2002). In high-conflict countries relative to non-conflict countries, child mortality rates are 102% higher and malnutrition rates are 45% higher (De Jong, 2010). Approximately 36% of the total global burden of maternal death, child death, and stillbirth

occurs in countries that have ongoing national or sub-national armed conflict (Bhutta & Black, 2013). Political violence increases the risk for mental health problems including depression, anxiety, suicidal behavior, and post-traumatic stress disorder. Preventative strategies from the public health framework can restore balance between risk and protective factors in the midst of political violence. Achieving the MDGs will contribute to a decreased risk of political violence (De Jong, 2010).

Injuries

In 2010, there were 5.1 million deaths from injuries. Injuries refer to physical damage to a person caused by transfer of energy or sudden absence of heat or oxygen, as well as damage resulting in psychological harm, maldevelopment, or deprivation. Injuries are categorized into unintentional and intentional injuries (Norton & Kobusingye, 2013). Unintentional injuries include road-traffic accidents, falls, fires, drowning and poisonings. Intentional injuries are those caused by self-harm, interpersonal violence, and war and conflict (Norton & Kobusingye, 2013). Unintentional injuries make up the majority of injury-related deaths globally. Transportation-related injuries were the leading cause of injury-related deaths in 2010 and road-traffic incidents are the eighth leading cause of death overall (Norton & Kobusingye, 2013).

Low- and middle- income countries exhibit disproportionately high numbers of injury-related deaths— 89% of the total number of deaths in low- and middle- income countries are attributed to injury while injuries account for 6% of deaths in high-income countries. Nearly 95% of deaths and DALYs attributed to interpersonal violence and almost all deaths due to war and conflict occur in low- and middle-income countries (Norton & Kobusingye, 2013). Males

account for 68% of all injury-related deaths world-wide. A high prevalence of injuries is seen in young people (particularly between the 10 and 24 years of age) and are attributed to unsafe environments in homes, neighborhoods and workplaces (Norton & Kobusingye, 2013). The problem is amplified when related disability is taken into account, and disability is probably underreported in lower-income settings because of a combination of poor record keeping and low reporting. Norton and Kobusingye write that the global burden of injuries is projected to rise over the next two decades, even though the burden of injuries is likely to decrease in high-income countries (2013). A key to addressing these problems is raising awareness about prevention and control, particularly in low- and middle-income countries. It may be, too, that instituting low cost emergency medical services and emergency transportation in low-income countries as well as others will lessen the burden of disease.

GOAL 8: DEVELOP A GLOBAL PARTNERSHIP FOR DEVELOPMENT

Global public health agendas have been set by several agencies and organizations concerned with world-wide health and well-being including WHO, the United Nations, the Center for Disease Control and Prevention and various non-governmental organizations such as the Bill and Melinda Gates Foundation. The primary organization responsible for international public health and now global public health is the World Health Organization (WHO). New partnerships are forming and are establishing the roles and rules of engagement (Szlezàk, 2010). Health workers agree that what is needed to address global public health is to change fundamentally the ways in which public and private organizations and individuals work together. Before this is possible, one has to understand the ideational factors (the ideas and

discourse) that inform both policies and the networks that have shaped and support them (Harmer, 2011).

Here, the goal is true partnership rather than interaction. “It is a liberating argument because it cuts through the pessimistic and dispiriting assumption implicit in many public health debates that the strongest states (e.g. the USA) or the richest actors (e.g. the Bill and Melinda Gates Foundation) ultimately shape global health” (Harmer, 2010, p. 715). This kind of change would allow those in public health to ask questions that are neither power-based nor interest-based. Therefore they would help move questions and solutions from an international approach to a truly global one. Such an ideas-based analysis provides ways in which innovations can avoid cultural and institutional barriers, and entrenched interests to be adopted globally. It has been demonstrated that three global health policies, the TB Alliance, Drugs for Neglected Diseases initiative (DND), and Stop TB Partnership were made possible by the meanings that were created and connected to a specific problem. The problems were understood through the discourse of globalization, global health governance and global public goods. These ideational factors allow for paradigm shifts in public and private relationships that overcome self-interest and allowed for real partnership.

As is true in finding solutions to these kinds of problems, there needs to be the development of new knowledge and then a system for applying the knowledge, for putting the knowledge into effect. In the face of advancing knowledge in public health, the people of the world have not built global infrastructures that can adequately address world-wide problems. In fact, over time, as problems have become more multifaceted and public health knowledge

has grown, public health infrastructures have eroded even at local and state levels. This kind of disarray makes timely data collection and effective responses difficult (Garrett, 2007).

Categories of international health organizations

International health organizations can be categorized in as multilateral, bilateral, and non-governmental organizations (NGOs). For multilateral organizations, funding comes from multiple governments (as well as from non-governmental sources) and is distributed to many different countries. The main multilateral organizations are part of the United Nations. The World Health Organization is the leading international health organization. WHO and other intergovernmental agencies are "separate, autonomous organizations which, by special agreements, work with the UN and each other through the coordinating machinery of the Economic and Social Council." According to its constitution drafted in 1948, WHO's principal goal is "the attainment by all peoples of the highest possible level of health" (WHO, 2012). Primarily, WHO manages international health activities and offers technical assistance directly to countries. Using standards that it has developed, it provides training, promotes research, collects and analyzes epidemiological data, disseminates information and provides monitoring and evaluation systems for health programs (IMVA, 2012). The unprecedented coordinated global response to the AIDS pandemic can serve as a model for the response to other global health threats (Piot & Quinn, 2013). The AIDS response has had multiple collateral benefits, including: increase in awareness and funding for global health issues, particularly malaria and tuberculosis, and a strengthening of services for maternal and child health in certain countries.

Although these are the efforts about which we hear most often, most health care in developing nations is carried out by the countries themselves with international health

organizations paying for only about 5% of health care costs. While the overall percentage may be generally small, the benefit is critical to many developing countries. Bilateral agencies are single country agencies that provide aid to other countries. The most prominent and largest example is the United States Agency for International Development (USAID), but most industrialized countries have such agencies. In the case of USAID, most of the funds are directed through private, international cooperating agencies that contract with USAID. Often, historical, political and economic relationships influence the direction of these provisions. France, for example, sends this sort of aid primarily to its former colonies; Japan sends most of its funds to developing countries.

Real progress is possible and progress can be seen in some of the lowest-income countries in the world. Since 2010, through the Burundi Health Sector Development Support Project funded by the World Bank and Health Results Innovations Trust fund, Burundi health programs have focused on results, and the number of children immunized has risen by 20 percent, births in health facilities by 23 percent, and pregnant women treated to prevent transmission of HIV to their babies by nearly 60 percent. Columbia economist Jeffrey Sachs, founder of the Millennium Village Projects, believes that village level development can trickle up and that rural development and market and technology driven development improvements can make millions of people's lives better (Millenium Villages, 2013). World Vision and the Ministry of Health in Rwanda have begun a campaign called Child Health Now that is meant to reduce mortality for children under 5 from 76 to 50 deaths per 1,000 live births by the end of 2015 (Child Health Now, 2013). Directly or indirectly, each of these partnerships, all based in Africa, is meant to boost the health of the communities from villages to a continent.

LEGACY

Are we close to reaching the WHO's original goal of health for everyone by 2000 (WHO, 1978)? Are we closer than we were? As reflected in the changes of name for the field itself, as we learn more, we find that solving these challenges is more complicated than anyone imagined. It's impossible to limit the numbers of variables that affect disease and health care. We know for certain that poor health is related to poverty and lack of education. We know that powerful market forces and other economic issues are related to health and access to health care. We also know that many issues seem uncontrollable.

When we talk about the decaying of the global health infrastructure or see what little progress we have made with certain communicable diseases or point to the rise in noncommunicable diseases such as diabetes, we forget about the enormous progress we have made in some areas. For example, life expectancy has increased 30 years since 1900 with 25 of those years considered to be in response to public health efforts (Life Expectancy, 2010) and smallpox, a great scourge of mankind, has been eradicated.

It has been suggested that a "trio of health threats," bring unprecedented health challenges. The trio includes:

1. The unfinished agenda of infections, undernutrition, and reproductive health issues,
2. The Increasing global burden of noncommunicable diseases and
3. The health challenges attributed to globalization (Frenk & Moon, 2013).

As there is around the world, there is a new generation of citizens, students, scientists, scholars, philanthropists and nongovernmental organizations (NGO's) in the United States who are determined to make a difference in global health. Not content to focus only at home, these individuals and groups are determined to act as citizens of the world and to address health

problems and health disparities world-wide. In turn, the United States government has dedicated unprecedented resources to global health, committing more than \$360 million through the CDC in 2011.

As social workers, we need not only to understand global public health issues but to be able to intervene. New interventions are being created to address health problems around the world; however, most countries be they high, medium or low income, have underdeveloped, fragile, inflexible and poorly maintained infrastructures. Thus, it is essential that every new intervention be well integrated with health systems and their users. The academy understands the need for social workers to be educated in this area. There are increasing numbers of courses offered in social work programs and of cooperative arrangements between social work programs and schools and programs and schools focused on global public health. One big problem for social workers and citizens of the world is with paralysis; that is, with being about to read situations involving mass starvation and epidemics, natural and manmade disasters and, while momentarily saddened, not be we mobilized for action? In this meaning of paralysis, we can react with great intensity to a terrifying global such as an earthquake in Haiti, a tsunami in Japan or Hurricane Katrina and then move on to something else? According to Jonathan Glover, we are influenced by distance and paralyzed by the vastness of problems and seeming insolubility of problems that we decide cannot be affected by an individual or even a group of people. He says, "In morality there are also common illusions. Those created by large numbers and by the imperceptibility of individual contributions help cause the paralysis . . ." (Glover, 2012, p. 313).

We, as a profession, have learned to act in the most difficult circumstances. To think and work globally, social workers, who identify so deeply with individual pain, have to shift from thinking about individuals, small groups and even countries to thinking instead about world-wide collective action. As we live our professional code of ethics, we have the capacity to understand all sides of a problem and to be neither power nor interest based. In our continued commitment to others, we will find ways to respond globally in order to protect the health of all of the world's populations.

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