Chapter 10

Environmental and Global Health Nursing

LEARNING OUTCOMES

After studying this chapter, you will be able to:

1. Describe the main factors related to environmental health: *climate change, global warming, air pollution, water,* and *sanitation*
2. Describe how environmental health factors affect health in Canada.
3. Examine the changes in population health over time and between countries, including *lifespan differences* and *epidemiologic transition*.
4. Distinguish between *global health* and *international health*.
5. Summarize the ways in which countries are organized and current theories of development in relation to global health.
6. Discuss the relevance of the Millennium Development Goals in reducing poverty and fostering development.
7. Describe the features of four main issues of global health and explain how they relate to life in Canada.
8. Describe the role of nursing in global health and the importance of educating nurses in global health issues.

This chapter will help you understand the evolution and characteristics of environmental and global health. **Environmental health** and global health are both important and relevant to nurses in Canada, even if they never travel out of Canada. It is already clear that climate change and changes in the global economy exert powerful effects on Canadians and Canada. Environmental and global health are not static fields; each is a rapidly changing and dynamic interface of many factors that impact how we live and work now and in the future. We present definitions of key terms, history, and development of these broad fields of health and introduce the idea of transitions for nations and populations in each section.

Environment and Health

Environmental factors exert significant influence on human health in all countries, including Canada. Climate change, access to safe water, sanitation, and indoor and outdoor pollution are perhaps most important as they are major factors in the deaths and burden of illness for millions of adults and children annually.

Almost 25% of all diseases and 23% of all deaths are caused by environmental factors. The most vulnerable are those who experience unequal access to health care resources or have specific vulnerabilities, for example, children, Indigenous peoples, people who live in poverty, and those who live on small islands and in rural or isolated communities (Griffiths, & Winant, 2007; United Nations Environment Programme [UNEP], 2010; World Health Organization [WHO], 2009a).

Young children are particularly vulnerable to illnesses and death related to environmental factors because children breathe, eat, and drink more in proportion to body size compared with adults (Prüss-Üstün & Corvalán, 2006). Globally, a third of illnesses and death in childhood are caused by environmental factors and from toxins, sometimes resulting in permanent developmental damage.

Climate Change

Climate change and its effects are now well documented (Balbus, 2010; Pachauri, & Reisinger, 2007; UNEP, 2010) and reasonable estimates of future effects are possible (Prüss-Üstün & Corvalán, 2006). **Climate change** occurs when long-term weather patterns change. Changes noted in weather patterns over the last few decades include global warming, increased rainfall in some regions, prolonged periods of no rainfall in others, extreme storm systems, and rising sea levels. Possible effects of climate change are presented in Table 10.1.

Global warming is caused by increases of "greenhouse gases," primarily carbon dioxide, methane, and nitrous oxide. Their emissions vary widely by country (see Table 10.2). It is important to understand that some countries with lower per capita rates of carbon production have, in fact, the largest total rate because they have very large populations. Others with very high per capita rates have a low total rate, as their national population is quite small in global terms (see Table 10.3). Both measures provide direction for carbon reduction activities.

The greenhouse gases are produced from human activity in industry, power generation, vehicle use, agriculture, and deforestation (Birn, Pillay, & Holtz, 2009a). Burning fossil fuels is the principal source of greenhouse gases, and deforestation adds to this, as trees are an essential sink for carbon dioxide. Greenhouse gases cause global warming as they form a layer above the earth's atmosphere. Radiation from the sun penetrates these gases and warms the earth. The greenhouse gas layer, however, limits the normal reflection of the sun's rays back into the upper atmosphere, which is necessary to maintain normal cycles of the earth's temperature. Global warming is increasing more rapidly since the 1970s. Patterns of change may last a decade or two, while others may persist and become permanent without interventions for change (Birn, Pillay & Holtz, 2009b).

Global warming effects vary. For instance, warming is greatest over land, highest over high northern latitudes, and least over the Southern Ocean and northern part of the North Atlantic (Pachauri & Reisinger, 2007). Predicted changes include increased frequency of tropical storms and heat waves, with precipitation increasing in some regions and decreasing in others. These changes will impact how and where people live and ultimately their health.

TABLE 10.1 Examples of Possible Impacts of Climate Change Due to Changes in Extreme Weather and Climate Events

Phenomenon and Direction of Trend	Likelihood of Future Trends for Twenty-First Century Using SRES Scenarios	Examples of Major Projected Impacts by Sector*			
		Agriculture, Forestry	Water Resources	Human Health	Industry, Settlement Projections, Ecosystems, and Society
Land areas, warmer ↓ Cold days and nights ↑ Hot days and nights	Virtually certain	↑ Crops in colder environments ↓ Crops in warmer environments ↑ Insect outbreaks	Effects on water resources relying on snowmelt; effects on some water supplies	↓ Human mortality from less cold exposure	↓ Energy demand for heating ↑ Demand for cooling Poor air quality in cities ↓ Disruption to transport due to snow; ice effects on winter tourism
Warm spells/heat waves; more often over land areas	Very likely	↓ Crops in warmer regions due to heat stress ↑ Danger of wild fire	↑ Water demand; water quality problems (e.g., algal blooms)	↑ Risk of heat-related mortality, especially for older adults, chronically sick, very young, and socially isolated	↓ Quality of life for people in warm areas without appropriate housing; impacts on the very young and poor
Heavy precipitation events ↑ frequency over most areas	Very likely	Damage to crops, soil erosion, inability to cultivate land due to waterlogged of soils	↓ Quality of surface and groundwater; contamination of water supply; water scarcity may be relieved	↑ Risk of deaths, injuries ↑ Infectious, respiratory, and skin diseases	Disruption of settlements, commerce, transport, and societies due to flooding; pressures on urban and rural infrastructures, and loss of property
↑ Area affected by drought	Likely	Land degradation; ↓ Yields due to crop damage and failure ↑ Livestock deaths ↑ Risk of wild fire	More widespread water stress	↓ Risk of food and water shortages ↑ Risk of malnutrition ↑ Risk of water-and food-borne diseases	Water shortage for settlements, industry, and societies ↓ Hydropower generation potential ↑ Possibility for population migration
↑ Intense tropical cyclone activity	Likely	Damage to crops; windthrow (uprooting) of trees; damage to coral reefs	Power outages causing disruption to public water supply	↑ Risk of deaths, injuries, water- and food-borne diseases; post-traumatic stress disorder	Disruption by flood and high winds Loss of risk coverage in vulnerable areas by private insurers ↑ Potential for population migrations and loss of property
↑ Incidence of extreme high sea level (excludes tsunamis)	Likely	Salinization of irrigation water, estuaries, and freshwater systems	↓ Freshwater availability due to saltwater intrusion	↑ Risk of deaths and injuries by drowning in floods ↑ Migration-related health effects	Similar to tropical cyclones above

Note: These projections do not take into account any changes or developments in adaptive capacity. SRES, Special Report on Emissions Scenarios.

Source: Adapted from Pachauri, R. K., & Reisinger, A. (2007). *Climate change: Synthesis report, fourth assessment report of the Intergovernmental Panel on Climate Change.* (Fourth Assessment of the Intergovernmental Report on Climate Change No. 2011). Geneva, Switzerland: IPCC.

TABLE 10.2 Top 10 Countries in Total Carbon Emissions in Metric Tonnes

Country	Metric Tonnes
China	6 103 493
United States	5 752 289
Russia	1 564 669
India	1 510 351
Japan	1 293 409
Germany	805 090
United Kingdom	568 520
Canada	544 680
Korea (South)	475 248
Italy	474 148

Source: Westerman, K., & Mogelgaard, K. (2009). *Population and climate change: A comprehensive approach to development can help build climate change resilience and adaptive capacity* (page 2). Washington, DC: Population Action International. Retrieved from http://www.populationaction

TABLE 10.3 Top 10 Countries Based on Per Capita Rates of Carbon Emissions

Countries	Per Capita Rate of Carbon Dioxide	National Total Metric Tonnes
Qatar	56.2	46 193
United Arab Emirates	32.8	139 553
Kuwait	31.2	86 599
Bahrain	28.8	21 292
Trinidad & Tobago	25.3	33 601
Luxembourg	24.5	11 312
United States	19	5 752 289
Australia	18.1	372 013
Canada	16.7	544 680
Oman	16.3	41 378

Source: Westerman, K., & Mogelgaard, K. (2009). *Population and climate change: A comprehensive approach to development can help build climate change resilience and adaptive capacity* (page 2). Washington, DC: Population Action International. Retrieved from http://www.populationaction

Over time, changes in temperature and weather patterns will change land use; rising seas levels will cause loss of coastal plains and small islands; and populations will be displaced and forced to migrate. Forest clearance, accompanied by changing weather patterns, will cause **vectors of diseases**, such as rats, ticks, flies, and mosquitoes, to migrate, bringing old diseases to new areas and giving rise to new diseases. West Nile virus infection is an example of a new disease in Canada.

Health Effects of Climate Change

Climate change is implicated in 13 million deaths worldwide annually and is a significant portion of disease burden. Globally, increasing millions will suffer malnutrition, death, and injuries related to extreme weather. In 2003, an extreme heat wave in Europe caused an estimated 70 000 deaths; such events are expected to be the norm by 2050. Diarrheal diseases associated with warmer temperatures and cardiorespiratory problems related to poor air quality will increase, and other diseases will emerge in new regions; malaria and Dengue fever have already extended into new regions and higher altitudes (WHO, 2009a). Changes in disease patterns require vigilance from public health systems so that early identification can lead to effective management for population health.

Although deaths from such causes as extreme cold may be reduced, benefits from climate change are believed to be far outweighed by its negative consequences, especially where resources are limited and in vulnerable populations (Pachauri & Reisinger, 2007). Knowledge and access to such resources as safe water will, in part, determine who survives and who does not.

Solutions for Climate Change

Three potential solutions for climate change are proposed: (a) adaptation, (b) mitigation, and (c) reducing emissions from deforestation and forest degradations (REDD); these solutions will be effective if widely adopted and implemented (McMullen & Jabbour, 2009).

Adaptation includes actions to live with climate changes and to identify shifts in disease patterns. Examples of adjusting to climate change include changing the timing of the planting season, matching types of crops planted regionally to suit new temperature and rainfall patterns, and new standards for insulation of buildings to protect against extreme cold or heat. Health care system adaptations include implementing heat and cold alert protocols and early identification of new patterns in disease. Successful adaptation results in reduced vulnerability to climate change.

Mitigation focuses on reducing greenhouse gas emissions. Actions include switching to cleaner, renewable energy sources, such as solar power and wind power. Reducing deforestation will decrease emissions from wood burning and help maintain the earth's capacity to absorb greenhouse gases, particularly carbon dioxide. Deforestation is an ongoing challenge, as national and corporate interests are heavily invested in clearing forests

to access mineral and other resources. Climate change is created locally but acts globally, so remediation efforts must start locally but extend globally to halt or reverse climate change. Successful actions will require intersectoral and intergovernmental collaborations and sharing of information and resources. Future health care needs will include managing heat exposure, old infectious diseases in new locations, and malnutrition, as well as disaster planning.

Water and Sanitation

Safe and clean drinking water and sanitation, a human right essential to the full enjoyment of life and all other human rights (WHO, 2010), are important for health and are closely linked. Water supplies are often contaminated when effective sanitation measures are not used to dispose of human waste. Sanitation systems can be compromised by flooding that overruns pit latrines, septic tanks, or piped sewage systems.

Safe water is essential for health, yet globally 884 million people do not have access to safe drinking water. Most live in rural areas and in Sub-Saharan Africa and East and Southeast Asia. Almost 94% of diarrheal diseases are related to unsafe drinking water. Access to safe drinking water is a key target of Millennium Development Goal 7 (MDG 7) (Prüss-Üstün & Corvalán, 2006).

Water comes from two main sources: (a) surface sources, such as pools and rivers, and (b) groundwater sources, such as wells. Surface water sources are easily contaminated by animal and human activities and should not be used without treatment. Groundwater sources are more protected, as water is filtered by soil and other layers until it is trapped by impervious bedrock. Groundwater may be accessed through springs or wells, which are often susceptible to contamination. Deep or bore wells are much safer sources of water; however, specialized equipment is required to construct them.

Contamination of water may also involve toxic substances, such as fertilizers, pesticides, dioxins, or polycyclic aromatic hydrocarbons (PAHs), which are a result of fires or petroleum production. All have been associated with risks to health and to diseases, such as cancer; these substances have been found in the breast milk of women living near a contaminated water source (Courter, Pereira, & Baird, 2007; Sudaryanto et al., 2006). Water is vulnerable to contamination at many points through animal or human feces at the source (surface water), chemical runoff from nearby industries and farms (groundwater), and improper purification procedures. Contaminated water supply results in death, as occurred in the United States (Milwaukee, 1993) and Canada (Walkerton, 2000).

The principles of safe drinking water are prevention of contamination, water treatment, and clean storage for use. The best source of water for drinking is piped from a central clean supply either to individual households or to community centres where people can easily access water for their use.

Sanitation is the treatment and disposal of waste products making them safe for public health. Sanitation is divided into two main activities: (a) wastewater treatment and (b) solid waste disposal. Wastewater treatment is the management of human sewage; solid waste management includes garbage collection and disposal.

The safe disposal of human feces to prevent contamination of soil is important to reduce the spread of diarrheal disease, intestinal nematodes, and hookworms. These parasites cause malnutrition and anemia in infected individuals. Parasites may be ingested in soil or in uncooked food that is contaminated. Sanitation of human waste is achieved using a latrine, septic tank, or piped system to a sewage treatment plant. The simplest is storage, usually in a pit latrine or outhouse; the mostly solid waste is stored until the pit is full, at which time the solids must be removed or a new pit must be prepared. Improvements have been made to improve privacy and ventilation (Markle, Fisher, & Smego, 2007). Septic tanks are often used around the world in rural communities; they handle larger quantities of human waste and are efficient and effective over longer periods. They work well in low-density housing locations, such as rural areas, and require little maintenance (Markle et al., 2007). The most efficient method of managing human waste comprises collection systems that use large sewer pipes conveying the waste material to a treatment plant. The raw sewage is processed through a number of phases enhanced with disinfection procedures, which allows the fluid content to be returned to surface water supplies and the separated solids to be further processed for soil enrichment or as crop fertilizer.

Solid waste management (garbage removal and disposal) is also important, and in many communities across the developing world, this means collecting these materials and burning them, even when they include materials that create toxic fumes and smoke. In many countries, sorting garbage into various components for recycling is an important diversion strategy to reduce landfills. Landfills have generated public resistance, as they pose a risk for harmful substances leaking into surrounding soil and water tables.

Access to safe drinking water and sanitation systems are important in promoting human health. Globally, children, Indigenous peoples, and those living in rural and remote areas or in urban slums are most at risk of living with inadequate access to safe drinking water or sanitation.

Air Pollution

Indoor and outdoor air **pollution** each cause respiratory illnesses, particularly among children, older adults, and those with compromised health.

Globally, indoor pollution is primarily caused by the use of biofuels for cooking and heating with inadequate ventilation in homes (Birn et al., 2009b; UNEP, 2010). Biofuels include wood, coal, and dried animal dung. Women and young children are the most commonly affected and have high rates of acute and chronic respiratory illnesses. Other causes of indoor pollution include tobacco smoke, industrial processes, and toxic chemicals in paint, wood finishes, and cleaning chemicals.

A few approaches are already bringing about reductions in indoor pollution. Simple, inexpensive, improved cooking stoves are being distributed in many developing countries to reduce indoor pollution among most of the affected population. Smoking is prohibited in public settings in many developed and developing countries. Paints and wood finishes are produced without noxious chemicals, and safety filtration masks are readily available for those who must use paints and wood finishes.

Outdoor pollution is more pervasive and causes chronic obstructive pulmonary disease (COPD). Outdoor pollution is produced largely by industry, emissions from vehicles, power generation, new allergens following forest clearing, and such natural events as volcanic eruptions. Some of the worst air quality is found in Linfen, China (Birn et al., 2009a, 2009b), mainly from coal-based industry, which is associated with acute respiratory infections and lung cancer. Plans to remediate this situation include the replacement of 200 industrial plants in the region.

Controls on car emissions, garbage burning, and industrial exhausts are important strategies for improving air quality. However, with a rapidly expanding airline industry, aircraft exhaust is a growing concern as is the expanding automobile markets in India and China. Cleaner fuels are more important than ever if outdoor air quality is to be improved and sustained.

Environmental factors are interactive and difficult to separate for independent actions. Their effects are pervasive and affect many millions of people globally, usually those who are already vulnerable because of age, location, or income. Successful resolution of these problems requires intersectoral and intergovernmental cooperation and collaboration. Nurses and other health care professionals have roles and responsibilities as citizens and professionals working for global health in health promotion, illness prevention, and public health.

Global Health versus International Health: What Is the Difference?

For many decades the terms "international health," "health geography," or "tropical medicine" were used to describe this growing field (Brown, Cueto, & Fee, 2006). While "international health" is still very much in use, those who work internationally are increasingly using the term "global health" to characterize their field of activity.

The term "**international health**" literally means "health status among nations" and has emphasized differences among countries rather than their commonalities. It is historically a concept more focused on the control of epidemics in developing countries that require nation-to-nation solutions, such as foreign aid and medical missionary work, rather than on collective action (Global Health Education Consortium, 2011).

The term "**global health**" refers to health issues and concerns that typically transcend national borders (Brown et al., 2006), class, race, ethnicity, and culture. The term acknowledges the ongoing process of the integration of national economies, societies, and cultures and emphasizes the commonality of health issues that require collective action. It has been defined as "the area of study, research and practice that places a priority on improving health and achieving equity in health for all people worldwide" (Koplan, Bond, Merson, Reddy, Rodriguez, Sewankambo, & Wasserheit, 2009, p. 1995). The term "global" is also associated with the growing importance of actors beyond governmental or intergovernmental organizations and such agencies as the media, internationally influential foundations, nongovernmental organizations, and transnational corporations (Macfarlane, Jacobs, & Kaaya, 2008).

The major international agency for health is the World Health Organization (WHO). Other important agencies are the United Nations Development Program (UNDP, 1992) and the World Bank, which are introduced later. A major initiative for improved global health is the United Nations Millennium Declaration, which includes the globally endorsed *Millennium Development Goals* (Patel & Prince, 2010). (See Weblinks for Canadian Nurses Association position statement.)

Global Health: Historical Perspective

The collective personal health of a population is defined as *public health*. At the turn of the twentieth century, the life expectancy for a citizen living in Canada was 47 years for a male and 50 years for a female, and the five leading causes of death were (a) influenza and pneumonia, (b) tuberculosis, (c) diarrhea and enteritis, (d) heart disease, and (e) stroke (Norris & Williams, 2000). The median lifespan for persons residing in the less developed regions of the world was even lower, and most public health problems largely were infections. Now, more than 100 years later, the health of populations globally has dramatically improved. In 2011, the average Japanese is living as long as 82 years, the average Canadian 80 years, and the average Costa Rican 77 years. Even in impoverished parts of Africa, Asia, and

Latin America, tremendous public health gains were seen in the twentieth century. Unfortunately, poverty and political strife have resulted in undermining these improvements. As of 2011, the average life expectancy of a person in Afghanistan is 45 years, in Zimbabwe 47.5 years, and in Guatemala 68 years. Longevity in Africa has been severely limited by the ongoing human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) pandemic. For example, the life expectancy for a Ugandan man has decreased from 47.4 years (1980–1985) to 39.7 years (1985–1990), to 38.9 years (1995–2000) (Watkins, 2005).

Globally, populations seem to be trading one set of diseases for another. In many countries, improved socioeconomic and public health conditions that led to a reduction in infectious disease-related morbidity and mortality have, however, resulted in the introduction of lifestyle-related diseases, such as obesity, coronary artery disease, hypertension, and other diseases related to excessive eating, smoking, alcohol consumption, and illicit drug use. Scientific, social, cultural, economic, and political factors all contribute to the overall wellness of a community, whether local or international. The impact of disease-oriented medical care on the overall health status of a country is relatively small compared with the collective contributions made by improved living conditions, including better nutrition, sanitation, housing, education, and income.

Epidemiological Transition

According to the theory postulated by Omran in 1971, an **epidemiological transition** occurs as a country undergoes the process of modernization from third-world status to first-world status (Omran, 2005). The development of cleaner water and better nutrition drastically reduces infant mortality rates and extends the average life expectancy, which, coupled with subsequent declines in fertility rates, reflects a shift from infectious diseases to chronic and degenerative diseases as more important causes of death.

Classification of Countries

For purposes of thinking in a global context, there are approximately 200 countries in the world. There are many ways of organizing or classifying these countries; by income, by level of development, and by geography. Such terms as "Western World," "First World" and "Third World" are well known. The term "developing country" is generally used to describe a nation with a low level of material well-being. There is no international definition of the term "developed country," and levels of development may vary widely within the so-called developed countries (e.g., certain population groups that do not share in the prosperity of the mainstream). In addition, some so-called developing countries have high average standards of living (e.g., South Korea, Brazil). All of these terms may be perceived as negative stereotyping, so some have suggested that classification on a North–South axis would be more accurate. The North is home to all members of the G8 wealthiest democracies. "The North" mostly covers the West and the so-called First World as well as much of the Second World (former Communist countries). Although the terms "North" and "South" are in common use, they lack precision as a method of classifying countries. As nations become more economically developed and integrated, they become part of the global economy regardless of geographical location.

Nation States Classified by Income

For analytical purposes, the World Bank's main criterion for classifying its 187 member countries is gross national income (GNI) per person per year. On the basis of GNI, every country is classified as high-income, middle-income (subdivided into lower-middle and upper-middle), or low-income (World Bank, 2011) countries. In addition, there are two elite groups classified as major industrialized democracies (the G8) and the world's top major economies (the G20). Canada belongs to both groups. (See http://data.worldbank.org/about/country.classifications)

In 2008, the richest fifth of the world's population received 82.7% of the total world income, whereas the poorest fifth received merely 1.4%. Just 1% of the world's adults owned 40% of the wealth, whereas 50% of the world's adults owned just 1% of the wealth (Davies, Sandström, Shorrocks, & Wolff, 2008). Almost half the world (>3 billion people) lived on less than $2.50 a day (Chen & Ravallion, 2008). Nearly one in four people (1.3 billion) lived on less than $1 per day, whereas, in 2007, the world's 358 billionaires had assets exceeding the combined annual incomes of countries with 45% of the world's people (UNDP, 2007). Figure 10.1 provides a dramatic illustration of "the champagne glass distribution" of the world's population by income divided into 20% increments (quintiles) (Conley, 2008).

Countries Organized by Religion

When one thinks of "culture," one can think of language groupings, nationality, religious traditions, and ethnicity. The world's principal religions and spiritual traditions may be classified into a small number of major groups, arranged by historical origin and mutual influence. Abrahamic religions originated in the Middle East, Indian religions in India, and Far Eastern religions in East Asia. Another group with supraregional influence are African diasporic religions, which have their origins in Central and West Africa.

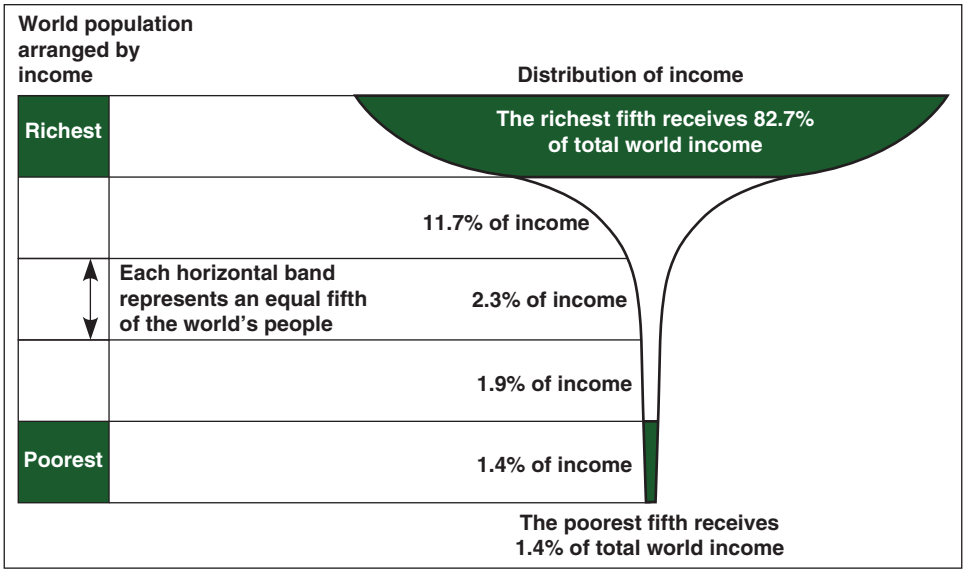


FIGURE 10.1 Champagne glass distribution of income for world populations

Source: United Nations Development Programme. (1992). The widening gap in global opportunities. UNDP Human Development Report *(p. 34). New York, NY: Oxford University Press.*

Countries Organized by Language

There are more than 2700 languages in the world. Some of the top languages by population are the six official languages of the United Nations: Arabic, Chinese (Mandarin), English, French, Russian, and Spanish. English is currently one of the most widely spoken and written languages worldwide. The impact of **colonialism** and the continued influence of Western power have contributed to making European languages dominant in many parts of the world.

Theories of Development

The observation that some countries are wealthier (and healthier) than others has spawned a host of theories to explain such differences, a few of the better known ones are presented in Table 10.4.

Regardless of which theories are used to describe or explain why some countries are wealthier and healthier than others, the inevitable fact is that the world is becoming increasingly more integrated, there has been an increase in overall life expectancy (Markle et al., 2007), and calls for social justice and equity are rising in every corner of the world. It can be argued that only when humanity tackles issues that confront all people globally will global solutions become possible.

Millennium Development Goals

During the 2000 Millennium Summit, all state members of the United Nations approved the United Nations Millennium Declaration, which asserts that all individuals have the right to dignity, equality, freedom, a basic standard of living that includes freedom from hunger and violence, and encourages tolerance and solidarity (United Nations, 2001). Among the several commitments stated in the declaration was the commitment to significantly reduce poverty and promote development by reducing economic and social conditions in the world's poorest countries. Eight **Millennium Development Goals (MDGs)** were identified to operationalize this priority area between 1990 and 2015. See Table 10.5.

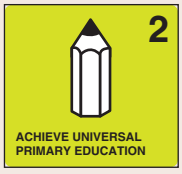
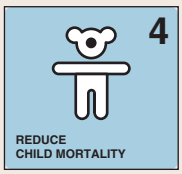
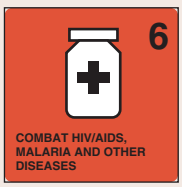
The government of Canada, along with other nations, has demonstrated commitment to achieving these goals, particularly in the areas of maternal, newborn, and child health; education; gender equality; and food security (Canadian International Development Agency [CIDA], 2010).

CAPACITY BUILDING In health, capacity building aims at developing new structures, approaches, or values to address the health challenges of the population (Crisp, Swerissen, & Duckett, 2000). **Capacity building** is a long-term, continual process of development that involves all stakeholders in a population, and uses a country's human, scientific, technological, and organizational resources and capabilities (United Nations, 2006). For capacity building to be successful, the interventions must be addressed at the individual, institutional, and societal levels and at both the local and international levels. Individually, people build capacity by enhancing existing knowledge and skills. Education and health are closely related in development; as people become more knowledgeable about their health, they are more able to care for themselves, and thus the burden of disease is reduced (Todaro, & Smith, 2009c). At institutional and societal levels, capacity building can be achieved by strengthening existing organizations, through supporting the development of sound policies, organizational structures, and

TABLE 10.4 Theories of Development

Theory of Development	Period	Salient Features
Colonialism	15th–20th centuries	• Sovereignty over the colony is claimed by the metropole or "mother country," and the social structure, government, and economics of the colony are changed by the colonists (Collins UK, 2010). • European nation states (e.g., England, France, Spain, Portugal, Belgium, The Netherlands, etc.) established colonies on other continents (Africa, Asia, Latin America) for trade. • A set of unequal relationships between the metropole and the colony and between the colonists and the Indigenous population has been cited as an explanation for extreme variation in health status between countries and certain groups within countries.
Neocolonialism	Post–World War II (1945–1960)	• Colonialism by other means, such as economic arrangements, military, or technological influences. • Based on unequal relationships and interference in the politics of weaker countries by stronger countries. • Certain forms of foreign aid or "development assistance" have amounted to neocolonialism. • Has also been used as a label to describe governmental social policy or attitude toward certain groups within countries.
Modernization Theory	18th century–present day	• Used to explain the process of improvements made within societies. • Looks at internal dynamics while referring to social and cultural structures and the adaptation of new technologies. • Assumes that with assistance, "traditional" countries and societies can be brought to "development" in the same manner that wealthier countries have (e.g., from hunting and gathering, to subsistence farming, to an industrial revolution, to the knowledge economy). • Criticized by communist ideologies, world systems theorists, globalization theorists, and dependency theorists, among others.
Linear Stages of Growth (also called Rostow's Stages of Growth) Model (Rostow, 1960)	1960s–1980s	• Developed by Walt W. Rostow, an American economist. • Economic modernization occurs in five fairly linear stages of varying lengths: (a) traditional society, (b) preconditions for takeoff, (c) takeoff, (d) drive to maturity, and (e) age of high mass consumption (Todaro & Smith, 2009a). • Economic "takeoff" must initially be led by a few individual sectors, such as agriculture, transportation, and manufacturing. • Criticized by Marxists, who push for economic self-reliance and development of all sectors equally, including the education and health sectors.
Dependency Theory	1970s–present day	• Resources flow from a "periphery" of poor and underdeveloped states to a "core" of wealthy states, enriching the latter at the expense of the former (Dos Santos, 1971). • Poor states are impoverished and rich ones enriched by the way poor states are integrated into the "world system." • The task in helping underdeveloped areas out of poverty is to accelerate them along a supposed common path of development, by such means as investment, technology transfers, and closer integration into the world market. • Opposes free market economists and modernization theorists. • "Underdeveloped" countries need to reduce their connectedness with the world market so that they can pursue a path more in keeping with their own needs, less dictated by external pressures (Todaro & Smith, 2009b).

TABLE 10.5 Millennium Development Goals

1. Eradicate extreme poverty and hunger 	Reducing by half the proportion of the world's population suffering from hunger and those whose income is less than 1 dollar a day and achieving full and productive employment for all, including women and young people.
2. Achieve universal primary education 	Ensuring that children in the world, girls and boys alike, will be able to complete a full course of primary schooling and will have equal access to all levels of education.
3. Promote gender equality and empower women 	Eliminating gender disparity in primary and secondary education as an effective way to stimulate sustainable development as women are still the poorest of the world's poor (United Nations, 2006).
4. Reduce child mortality 	Reducing by two-thirds the under-5 mortality rate, a 4% reduction per year (You, Jones, & Wardlaw, 2010) and increasing the proportion of 1-year-old children immunized against measles.
5. Improve maternal health 	Reducing by three-quarters the maternal mortality ratio and achieving universal access to reproductive health.
6. Combat HIV/AIDS, malaria, and other diseases 	Halting and beginning to reverse the spread of HIV/AIDS, the incidence of malaria, and other major diseases. This will be achieved through universal access to treatment for these diseases.
7. Ensure environmental sustainability 	Reducing the loss of biodiversity and environmental resources, reducing by half the proportion of people without sustainable access to safe drinking water and basic sanitation, and achieving a significant improvement in the levels of at least 100 million slum dwellers.
8. Global partnership for development 	Identifying targets for aid, trade, and debt relief.

Source: Adapted from United Nations. (2011). *The Millennium Development Goals report (United Nations, 2006) and a gateway to the UN System's work on the MDGs*. Geneva, Switzerland: United Nations.

Aspirations: An organization's mission, vision, and overarching goals, which collectively articulate its common sense of purpose and direction

Strategy: The coherent set of actions and programs aimed at fulfilling the organization's overarching goals

Organizational Skills: The sum of the organization's capabilities, including performance measurement, planning, resource management, and external relationship building

Human Resources: The collective capabilities, experiences, potential and commitment of the organization's board, management team, staff, and volunteers

Systems and Infrastructure: The organization's planning, decision making, knowledge management, and administrative systems, as well as the physical and technological assets that support the organization

Organizational Structure: The combination of governance, organizational design, interfunctional coordination, and individual job descriptions that shapes the organization's legal and management structure

Culture: The connective tissue that binds together the organization, including shared values and practices, behaviour norms, and, most important, the organization's orientation toward performance.

FIGURE 10.2 Capacity building framework

Source: All rights reserved and used with permission. This figure was taken from the report "The Effective Capacity Building in Nonprofit Organizations," Copyright 2001, Venture Philanthropy Partners (VPP), which was prepared for VPP by McKinsey & Company.

effective methods of management. Both governmental and nongovernmental organizations (NGOs) have active roles in global capacity building. The key is that people, organizations, and societies develop partnerships in pursuit of the same goal and use a framework to aid their success (Figure 10.2).

SUSTAINABILITY Similar to capacity building, the concept of **sustainability** in global health refers to the long-term maintenance of developed programs in a society. Sustainable development, as described by the United Nations World Commission on Environment and Development (WCED) (also known as the Brundtland Commission), is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987). People's basic needs include food, shelter, health, and protection, and when available resources cannot meet any of these needs, a condition of absolute underdevelopment occurs. Thus, to achieve sustainable development, a process of change must be consistent with future and present needs of the population.

The main indicators of sustainable development are environmental (water, land, atmosphere, and waste), economic, institutional, and social progress (Bell & Morse, 2008). These indicators address several interrelated global issues, such as poverty, inequality, hunger, and environmental degradation. Alleviation of poverty is a major hurdle to achieve sustainability and is considered a major cause of global health problems (Lusigi, 2008). Sustainability of health is important for reducing mortality, morbidity, and disability, especially in poor and marginalized populations, and is achieved through specific strategies that target health issues and create health systems that unfold over time (Yang, Farmer, & McGahan, 2010).

SOCIAL JUSTICE The concept of **social justice** is based on the principles of equity, equality, and respect for human rights. It is broadly concerned with the equitable bearing of burdens and reaping of benefits in society (Drevdahl, Dorcy, & Grevstad, 2001).

In health care, the focus of social justice is the allocation of health care resources and equitable access to these resources, as well as the broader determinants of health. The disparity in health status of virtually all populations in terms of their socioeconomic status, gender, race or ethnicity, and geographical location makes it necessary to identify and intervene within these determinants (Canadian Institutes of Health Research, 2005).

Nursing actively supports the value of social justice in health through national and **international nursing** associations' mandates. The Canadian Nurses Association (CNA) *Code of Ethics* states the following: "Nurses uphold principles of equity and fairness to assist persons in receiving a share of health services and resources proportionate to their needs and in promoting social justice" (CNA, 2008).

Major Issues in Global Health

Major issues in global health are related to the circumstances in which people live, their behaviour, and the environment. These factors, the determinants of health, were described more than 30 years ago, when the need for a focus on public health and primary health care was identified as the best approach to improve health in Canada (Lalonde, 1974). These ideas were reaffirmed by the declaration of Alma Ata a few years later (1978), which added that health is a fundamental human right

and called on governments, the WHO, and others to act (WHO, 1978).The Commission on Social Determinants of Health (CSDH) described the impact of **the social determinants of health** and the link to health inequities within and between nations (CSDH, 2008).

> *The poor health of the poor, the social gradient in health within countries, and the marked health inequities between countries are caused by the unequal distribution of power, income, goods, and services, globally and nationally, the consequent unfairness in the immediate, visible circumstances of people's lives—their access to health care, schools, and education, their conditions of work and leisure, their homes, communities, towns, or cities—and their chances of leading a flourishing life.*

These differences in health status of populations are areas for action; many examples of successful change and ongoing problems are presented in the report of the Commission for the Social Determinants of Health (Marmot & Friel, 2008).

Migration

In global terms, **migration** means the movement of people, usually from one country to another. It is increasing, and at present, there are an estimated 214 million international migrants worldwide (International Office of Migration, 2011). Migration brings many benefits to the receiving countries, such as new ideas, skills, and resilience. Migrants stimulate local economies as they establish themselves in their community.

There are a few important distinctions among migrants. Voluntary migrants move for many reasons, primarily to improve their circumstances. Significant numbers of business class or skilled workers, including health care professionals, migrate to other countries to improve their opportunities (Dumont, & Widmaier, 2010). Forced migrants include refugees and asylum seekers, who are unable to remain in their country of origin because they are at risk from war, persecution, or natural disasters. They are usually not able to return to their homeland until significant changes occur.

The 1951 Refugee Convention establishing the United Nations High Commission for Refugees (UNHCR) states that a refugee is someone who:

> *owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality, and is unable to, or owing to such fear, is unwilling to avail himself of the protection of that country.* (UNHCR, 2012)

The majority of refugees (approximately 80%) live in neighbouring countries to their country of origin (Baba Fall, Das, Kintu, Wilkinson, Zhdanov, & Zuefle, 2009; UNHCR, 2012). Canada is a destination or receiving country for immigrants and refugees. This means that nurses and health care professionals will care for people with different beliefs and expectations and whose needs will relate to their migration history. Evidence suggests that access to health care (Gagnon, 2004; Wahoush, 2009) and health vary by immigration status (Gagnon et al., 2007; Newbold, 2005; Newbold, 2009). Nurses in Canada must be proficient in caring for culturally diverse populations (see Chapter 11) and understand the additional impact of migration on expectations for health.

Indigenous Peoples

Indigenous peoples, or Aboriginal populations, are described by the WHO as:

> *. . . communities that live within, or are attached to, geographically distinct traditional habitats or ancestral territories, and who identify themselves as being part of a distinct cultural group, descended from groups present in the area before colonists arrived, modern states were created and current borders defined. They generally maintain cultural and social identities, and social, economic, cultural and political institutions, separate from the mainstream or dominant society or culture* (WHO, 2011a)

This description does not mention the forcible displacement that is characteristic of many Indigenous populations with loss of land and sometimes catastrophic lifestyle changes. Globally, there are approximately 350 million Indigenous people living in more than 70 countries. They are often marginalized and experience poorer health than the general population. For example, infant mortality is almost always higher among Indigenous populations (see Figure 10.3) (Stephens, Porter, Nettleton, & Willis, 2006). Although Indigenous populations around the world are diverse, they experience similar health issues and determinants of health (Gracey & King, 2009; King, Smith, & Gracey, 2009). Many live in isolated communities with limited access to services, water, and sanitation and experience inadequate nutrition and poverty.

In Canada, Indigenous peoples include First Nations, Inuit, and Métis. Like many other Indigenous populations, they experience poorer health compared with the general population. Suicide, diabetes, and premature deaths occur more frequently than in the general population (Gracey & King, 2009; WHO, 2011a). Health Canada has targeted improved health outcomes and reduction in health inequalities between First Nations, Inuit, and other Canadians as a priority (see Chapter 11). A global perspective of Indigenous health can be found in the *Lancet* series (Gracey & King, 2009; King et al., 2009).

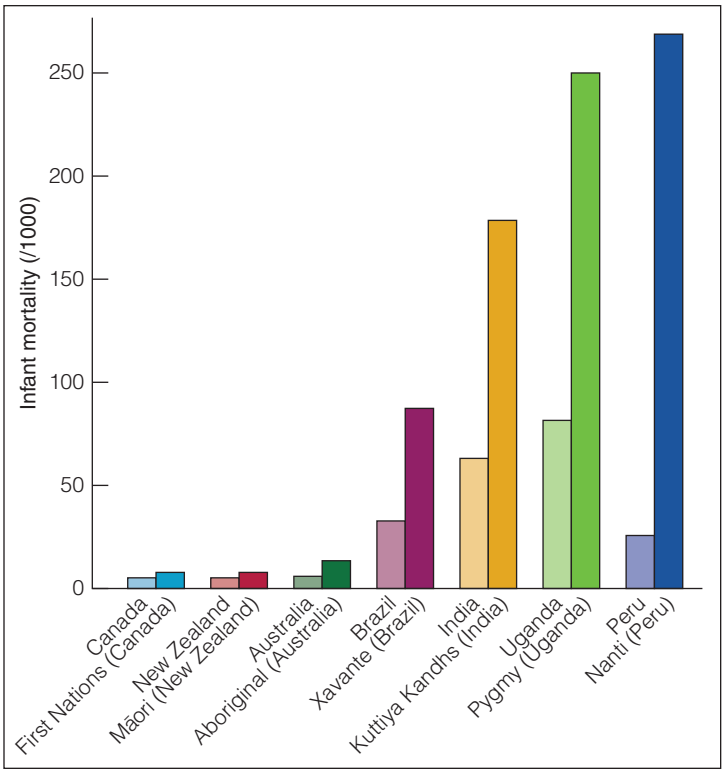


FIGURE 10.3 Infant mortality among Indigenous populations across the globe

Source: Reprinted from *The Lancet*, 367.9527, C. Stephens, J. Porter, C. Nettleton, & R. Willis, "Disappearing, displaced, and undervalued: A call to action for indigenous health worldwide," pp. 2019-2028, Copyright © 2006 with permission from Elsevier.

Poverty and Inequality

Poverty is a complex concept with many definitions; in this chapter, poverty means more than low income. Our definition includes the limited choices and opportunities that are often associated with low income, that is, limited choices with regard to where people live, food, and recreational activities. Measuring poverty is also challenging but is necessary to evaluate changes over time and differences between groups or populations. Comparisons between countries are possible using a purchasing power parity (PPP) estimate in dollars. This estimate is calculated such that differences in currency values are accounted for and the measure focuses on what it takes to buy the same bundle of goods in different countries.

The World Bank defines extreme poverty as having an average daily consumption of $1.25 or less; this means living on the edge of subsistence (World Bank, 2010). Globally, poverty rates are declining, but the improvements are not universal, and the proportion of those living in deep poverty remains largely unchanged (Chen & Ravallion, 2008). Between 1980 and 2005, almost half of the population in Sub-Saharan Africa lived in extreme poverty, and in Southeast Asia, extreme poverty was significantly reduced from 80% to 20%. Poverty is implicated in the death of more than 10 million children annually. Children growing up poor face many challenges that have negative consequences for their health in adulthood and their future earning power, which affects their living standard, health, and well-being and the material circumstances of their future children.

In developed countries, income inequality is more damaging to health and well-being than low income alone (Marmot, Friel, Bell, Houweling, & Taylor, 2008). Income inequality, which was reduced in many countries during the mid-1990s, is increasing again, and in Canada, it is now above the OECD (Organisation for Economic Co-operation and Development) average (Gurria, 2008). Globally, Indigenous peoples, recent immigrants, and women, especially those in single-parent households, are most at risk of low income and the associated risks of poor living conditions and homelessness. They are also less likely to move out of poverty.

The current global economic downturn is a concern for everyone; as countries are forced to reorganize their financial systems, trade and the prices of goods will be negatively affected. Social programs and other supports for families and those living in poverty may be cut or reduced or may fail to keep up with the growing needs that are anticipated during a recession. Many countries across Europe and the United States currently facing these challenges are also major trading partners with Canada. The consequences of economically restrained economies will likely affect everyone, in particular those living in poverty

and many working families within the affected countries and within their trading partner countries.

Food Security

The WHO (2011b) considers that **food security** exists "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life." Food security is based on three pillars: (a) *food availability,* or having sufficient amount of food available on a consistent basis; (b) *food access,* or having sufficient amount of resources, both physical and economic, to obtain appropriate and nutritious food; and (c) *food use,* or the appropriate use of available food based on knowledge of basic nutrition and adequate water and sanitation. If one of these three pillars is affected, then food security is at risk. There are many factors that jeopardize food security in the world; however, poverty is the major contributor to food insecurity, leading to hunger and malnutrition. Around 1.2 billion people in the world are chronically hungry due to extreme poverty, and up to 2 billion people lack food security intermittently due to varying degrees of poverty (Food and Agriculture Organization [FAO], 2009).

Food safety is also important in maintaining health. Food can become contaminated with biological and chemical agents, causing adverse effects on health. Currently, the most common threats to food safety are pesticides, industrial chemicals and metals, allergens, bacteria, viruses and parasites, natural toxins, veterinary drugs, and food additives. That is why it is important that food safety regulatory agencies such as the Canadian Food Inspection Agency (CFIA)in Canada ensure that food is safe for consumption (Chassy, 2010).

Disasters

Disasters are situations where the normal infrastructure is severely disrupted on a large scale, necessitating external help to enable people to live their lives in safety and health. Many die at the time of the disaster and others continue to die later because of longer-term impacts of disease and contamination from the event. **Natural disasters** are often climate related. They include storm systems, such as typhoons that cause severe and extensive floods; extreme weather conditions, such as heat waves or extreme cold; earthquakes; and drought. The March 2011 earthquake in Japan is an example of how a natural disaster can have significant impact well beyond national borders, as the resulting tsunami damaged a nuclear power plant, causing radiation leakage into the air and seawater.

Disasters generally include the disruption of normal services, including access to clean water, sanitation, school or work, and health care services. Organizations providing help on the large scale needed include national governments, International Red Cross, Save the Children, Oxfam International, and Médecins Sans Frontières. Initial activities focus on providing temporary shelter, clean water, and latrines and on assessment of the extent of damage and need for help in the immediate as well as longer term. Disaster relief teams are multidisciplinary and often include nurses along with other health care professionals, logistics support personnel, engineers, skilled workers, and volunteers. The Disaster Assistance Response Team (DART) includes 200 members of the Canadian forces, who arrive quickly and establish mechanisms for safe drinking water, shelter, safety, and urgent health care and eventually leave to allow space for other personnel engaged in longer-term relief activities.

Infectious Diseases and Surveillance

In global health terms, monitoring disease outbreaks and threats to public health is a priority for the global community; 194 countries have committed to implementing global rules to improve global health security. This monitoring is called **surveillance**. The International Health Regulations (IHRs) developed these rules after the severe acute respiratory syndrome (SARS) outbreak in Canada. An international example is the global monitoring of H1N1 virus (WHO, 2008). The Public Health Agency of Canada (PHAC) is responsible for the implementation of the IHRs and leads the Emergency Preparedness Response in Canada (PHAC, 2008).

Gender

Gender may not relate to the biological sex distinction of the individual alone but refers to the socially constructed roles, behaviour, activities, and attributes that a particular society considers appropriate for men and women (WHO, 2009b). Inequities between men and women exist in many societies, often with men enjoying better health compared with women. Yet women live longer than men in almost every country; this means that life expectancy is not the best measure of health when exploring gender issues. Measuring gender inequalities is difficult, but two measures that assess different but complementary aspects of gender are widely used: (a) the Gender Inequalities Index and (b) the Social Institutions and Gender Index.

The Gender Inequalities Index (GII) compares outcomes for women against those for men within a nation (Klugman, 2010); the score represents women's loss of potential for human development in comparison with men within the same country. This new experimental measure includes features of reproductive health, empowerment, and labour market participation at national levels, comparing men and women on these aspects of life. The world average GII score is 0.56, which means that 56% of potential human development is lost because of discrimination against women; the score for Canada is 0.289 (Klugman, 2010; Varkey, & Gupta, 2005).

In contrast, the Social Institutions and Gender Index (SIGI) is a measure of gender equality. Developed by the OECD (Branisa, Klasen, & Zeigler, 2009), SIGI employs different indicators or factors at the root of gender inequity. Factors include measures of civil liberty, decision-making power, exposure to violence, male offspring preference, and ownership rights. Scores range from 0 to 1; a lower number indicates less discrimination against women compared with higher scores. In 2009, using this scale, the OECD reported that Paraquay (0.00248) had the lowest and that Sudan (0.67781) had the highest level of discrimination against women (OECD, 2010).

These measurements are significant, as they provide a mechanism to evaluate changes over time and to compare countries. Most important, readers need to understand what each measure includes and to use more than one to get a clearer picture of gender equity and inequality.

Women's Health

Women in low-income countries face high levels of mortality, associated with poor nutrition, unsafe water, poor sanitation, smoke from solid-fuel stoves, and lack of care during pregnancy and childbearing. This section will focus on reproductive health, as reproductive health is the most significant factor in gender inequality.

Many of the causes of death and illness in the childbearing years, such as HIV/AIDs, complications of pregnancy and childbirth, and vesicovaginal fistula, are preventable with simple improvements in care during and after pregnancy (Lester, Benfield, & Fathalla, 2010). Risks to women's health in the childbearing years impact more than the health of women; they have negative consequences for their children, families, and communities. Poor nutrition, infectious diseases, and limited access to health care are associated with low-birth-weight infants, and women in low-income countries often experience all three. Low-birth-weight infants have increased risk of death or poor health in the long term.

Maternal Health Guideline 5 (MDG 5) is now part of a global strategy to improve women's and children's health. Almost all (98%) of the more than a half million maternal deaths occur in 68 priority countries, with little progress on improvements to date. The most common causes of maternal death include hypertension, hemorrhage, sepsis, and other direct causes (e.g., those related to cesarean section and anesthesia). Improvement in the ratio of maternal deaths globally has been slow, going from 430 down to 400 per 1 000 000 births from 1990 to 2005 (Lester et al., 2010). Interventions to achieve sustainable reduced rates of maternal mortality are similar to those in Box 10.1, along with four prenatal checks. In low-income and middle-income countries, almost three-quarters of pregnant women had at least one antenatal check, but this rate drops to less than half for pregnant women in Sub-Saharan Africa. Births attended by a skilled birth attendant increased from 41% to 65.7% from 1996 to 2008, but varied with the much lower rates in Eastern Africa (33.7%), Western Africa (41.2%), and South Central Asia (46.9%) (WHO, 2009b; WHO, 2009c).

Progress is also hampered by the shortage of skilled health care providers (doctors, nurses, and midwives). See the Evidence-Informed Practice box on the provision of essential newborn care (ENC) training to midwives. The WHO estimates that approximately 700,000 midwives are needed to achieve the goal of skilled care at every birth. Migration of skilled health care providers to urban settings, the private sector, or out of the country further hampers progress. Improvements that have been achieved in some countries demonstrate that improvements are possible.

BOX 10.1 WHY INVESTING IN WOMEN'S AND CHILDREN'S HEALTH MAKES SENSE

To reduce poverty and improve a country's overall well-being:

- Research confirms that a health system that delivers reproductive health care is a strong system that delivers for everyone.
- A woman's poor health often pushes her family further into poverty.
- Children born to women who have had at least 5 years of education are 40% more likely to live past age 5 years.

To enable families to thrive:

- A mother's death or disability greatly raises the chances her newborn and her other children will die before age 5 years.
- Women connect their families and communities, instilling cultural and social values.
- It helps women and children to realize their fundamental human rights.
- Women's health and children's health are inextricably linked to meeting the other Millennium Development Goals (MDGs).

The principal strategies to reduce maternal mortality include the following:

- Improved nutrition and education of girls—improved physical health; growth and development
- Gender equality and women's empowerment—enables choices by women
- Reducing adolescent pregnancies—deferred age of marriage and access to contraception
- Promoting access to contraception—enables birth spacing, reduces unwanted pregnancies, and limits unsafe abortions
- Skilled birth attendants—evidence-based practice promoted via the Integrated Management of Pregnancy and Childbirth (IMPAC)
- Postbirth care for mother and infant

Source: Ki-Moon, B. (2010). Investing in our common future: Global strategy for women's and children's health. Retrieved from http://www.who.int/pmnch/topics/maternal/201009_globalstrategy_wch/en/index.html

EVIDENCE-INFORMED PRACTICE

Is the Provision of Essential Newborn Care (ENC) Training to Midwives a Cost-effective Intervention to Reduce Neonatal Mortality in Zambia?

Manasyan, Chomba, McClure, Krzywanski, and Carlo (2011) conducted a cost-effectiveness analysis to evaluate whether the training of midwives who worked in first-level (primary care, low-risk) health facilities in Zambia and participated in the WHO ENC (essential newborn care) course on 7-day neonatal mortality was effective in reducing early neonatal mortality (ENM) rates. Eighteen college-trained midwives were certified as ENC instructors after a 5-day ENC training-of-trainer course. The course included universal precautions, routine neonatal care, resuscitation, prevention of hypothermia, early and exclusive breast-feeding, "kangaroo care," small infant management, danger signs, and recognition of illness. These instructors were responsible for training a total of 123 midwives in each of the 18 delivery clinics in two urban areas. The effect of training was calculated by comparing ENM rates before and after ENC training. It was found that all-cause 7-day neonatal mortality decreased from 11.5/1000 to 6.8/1000 live births after ENC training. This was indicative of 97 lives being saved. With Zambia's gross domestic product (GDP) of $1500, the intervention cost was calculated to be $208 per life saved.

NURSING IMPLICATIONS: The WHO developed the ENC course, as neonatal deaths in the first 7 days are significantly higher in developing countries than in the industrialized world. Nurses in developing countries benefit from this type of training, as they are often the first health care team member that expecting mothers would see in a care facility and as they also work closely with midwives or receive midwifery training. In addition, this training-the-trainer approach allows for knowledge transfer to occur between nurses and nursing students. Having knowledge of the different topics offered by this course would be an empowering asset for nursing students. In Canada, the low cost of this intervention would make it possible to use it in limited resource settings.

Source: Based on Manasyan, A., Chomba, E., McClure, E. M., Krzywanski, S., & Carlo, W. A. (2011). Cost-effectiveness of essential newborn care training in urban first-level facilities. *Pediatrics, 127*(5), e1176–e1181.

Child Health

Risks to newborn health are highest during the first month after birth; deaths during this time occur most often when mothers have limited access to skilled health care during pregnancy, during birth, and after birth. Improved maternal care improves outcomes for newborns. Globally, most deaths among children less than 5 years old are caused by infections and malnutrition (see Box 10.2). Children in this age group are particularly vulnerable because of their immaturity.

Worldwide, improvements reduced mortality rates in this age group from 89 to 60 per 1000 live births in 2009. Almost two-thirds of these 8 million deaths in 2008 were caused by infectious diseases (WHO, 2011c). In the period 1990 to 2009, only three regions—Sub-Saharan Africa, Southeast Asia, and Oceania—failed to achieve reductions of more than 50% in child mortality (You et al., 2010).

Data on infants or children in marginalized groups, such as refugees and Indigenous or Aboriginal populations, are limited. Evidence suggests that children in these groups are at additional risk of poor health and premature death (see Box 10.3).

BOX 10.2 SUMMARY FACTS ABOUT MORTALITY IN CHILDREN UNDER 5 YEARS

- Approximately half of all deaths in children under 5 years occur in five countries: India, Nigeria, Democratic Republic of Congo, Pakistan, and China.
- Girls are more at risk of early death compared with boys (due to selective abortion and infanticide).
- One-third of deaths are caused by pneumonia (18%) and diarrhea (15%).
- Almost half of mortality (40%) in those under age 5 years occurs within the first month after birth.
- The majority of deaths (70%) in those under age 5 years occurs within the first year of life.

BOX 10.3 SUMMARY OF INTERVENTIONS KNOWN TO REDUCE CHILD MORTALITY IN CHILDREN UNDER 5 YEARS

- Care during pregnancy, during birth, and after birth by a skilled health care provider
- Early initiation of breast-feeding, that is, within 1 hour of birth
- Exclusive breast-feeding for the first 6 months of life
- The introduction of nutritionally adequate and safe complementary foods at 6 months, together with continued breast-feeding for up to 2 years and beyond
- Immunization programs
- Sleeping under mosquito nets treated with insecticide
- Use of oral rehydration salts and zinc supplements for diarrheal diseases
- Hand washing and hygiene (safe disposal of feces)
- Reduction of indoor pollution (see environmental health)
- Prompt care by a skilled health care provider
- Improved standards and delivery of care through the Integrated Management of Childhood Illness (IMCI) available to children under 5 years, with specific emphasis on common diseases in the region (WHO, 2001).

The Integrated Management of Childhood Illness (IMCI) program, now operational in more than 70 countries, strengthens the capacity of health care providers, families, and communities to support child health and development and reduce child mortality, illness, and disability (Rowe, Rowe, Holloway, Ivanovska, Muhe, & Lambrechts, 2008).

Child health and deaths among children under 5 years old represents a significant loss of potential for human development. Effective low-cost interventions have reduced child mortality rates in some countries, but some others lag behind. Success in reducing child mortality to meet MDG 4 requires additional efforts to accelerate progress (Ki-Moon, 2010). A collaborative global partnership is now in place to achieve accelerated improvements in the least improved countries.

Nurses and Global Health

Nurses have many roles in global health. Information in this section describes such changes as the inclusion of global health into nursing curriculae, the relevance of nursing and nursing organizations to global health, and finally suggestions from our collective knowledge and experience as practitioners, educators, researchers, and nursing leaders in global and international health settings.

Global Health Nursing Education

Global health issues are now an important part of nursing education, health policy, research, and practice. As societies interact, share common concerns, and face similar health challenges, nurses in Canada and around the world are becoming more aware of global health issues. Nurses need to understand cultural, social, political, economic, environmental, and ethical issues that affect health. Nursing curriculae now often include these topics and may offer opportunities for students to gain experience in international settings.

Globally, increased migration, international travel, and commerce are associated with new patterns of diseases and risks, such as SARS, tuberculosis, and avian flu. Also, the impact of global warming, environmental pollution, and natural disasters affect the entire world (Carlton, Ryan, Ali, & Kelsey, 2007; Dickenson-Hazard, 2004; Tanner, 2002).

According to the 2009 annual report to parliament on immigration, Canada has the highest per capita immigration rate in the world (Citizenship and Immigration Canada, 2009). Statistics Canada predicts that by 2031, an unprecedented 25% to 28% of the country's population could be foreign-born persons (Statistics Canada, 2010). The implication of these immigration trends for nurses is clear: At some point in their careers, nurses will be responsible for patients from diverse cultures and areas in the world. This idea is supported by professional nursing organizations, who maintain that nurses should be able to provide safe, culturally congruent, and ethical care to their patients (American Association of Colleges of Nursing [AACN], 2008; CNA, 2009; College of Nurses of Ontario [CNO], 2009; Registered Nurses, Association of Ontario [RNAO], 2007).

Schools of nursing have addressed education in global health in their curricula in a variety of ways. Some have integrated theoretical concepts, such as principles of primary care, health promotion, environmental aspects of global health, population and development, prevention of infectious diseases, health systems, social justice, and so on (Hegyvary, 2004; Messias, 2001; Mill, Astle, Ogilvie, & Gastaldo, 2010; Mill, Astle, Ogilvie, & Opare, 2005). Others provide international cultural immersion opportunities to increase students' understanding of culture on health (Mill et al., 2010). These exposures to different global health concepts enable nursing students to become competent caregivers, educators, and global citizens.

Nursing and Global Health

National and international nursing organizations have emphasized the importance of addressing global health issues in clinical practice (AACN, 2008; CNA, 2008; International Council of Nursing [ICN], 2007). The CNA (2009) endorses the principles of primary health care, whereby essential health care in the form of health promotion and illness prevention is universally accessible to the entire population. The CNA also considers global health a fundamental right; therefore, nurses have the right and responsibility to learn about the root causes of inequity in global health and be actively involved in developing solutions. Furthermore, although there is no defined set of competencies needed for nurses to practise safely and ethically in the global health context, there has been an emphasis on cultural competence as a key component of global health (CNA, 2008; RNAO, 2007).

Currently, nurse migration is a growing phenomenon in the world, and there is a need to ensure the availability of well-trained nurses in all health care settings to meet patients' needs in diverse cultural and geographical areas (WHO, 2006). Nurses should be active participants in the development of clinical practice guidelines that ensure comprehensive global health care.

Preparing to Work in Global Health

Nurses interested in working in global health need to consider their motivation and the assets that they may bring to the job and share with others. Skills and knowledge in

nursing and the ability to prioritize, make decisions, and work with limited technologies are all important, as are general abilities, such as being able to drive and speak or understand languages other than one's own. Such attributes as personal interest, sense of adventure, and willingness to learn from and with others in the local setting are important for success. Many education programs for health care professionals now include specifically relevant courses to help prepare them for work in international settings (Markle et al., 2007). Nurses work overseas as volunteers, nurses, or support staff in some projects. Roles are often flexible and multitasked. Before applying for or accepting any offer, you should review information about the mission and values of the proposed receiving organization, conditions of employment and living arrangements, expectations of duration on site, expenses, and security. Consider the ethical perspectives of the role you will fill and the code of ethics and practice from your jurisdiction in Canada in comparison with those of the organization you will be working with and the setting in which you will work. Country reports are available from the Department of Foreign Affairs and International Trade Canada (DFAIT, 2011) and the Central Intelligence Agency (CIA) *World Fact Book* (CIA, 2011). A sample of organizations that hire, place, or support nurses and undergraduate students who work abroad is presented in Table 10.6.

TABLE 10.6 Organizations of Interest to Nurses and Students Interested in Working Overseas

Organization	Role	Weblink
Global Health Council	The Global Health Council is a membership organization with an extensive list of NGOs, faith-based foundations, academic institutions, and government agencies.	http://www.globalhealth.org
Canadian International Development Agency (CIDA)	Three priority themes are food security, securing the future of children and youth, and supporting sustainable economic growth.	http://www.cida.gc.ca
Canadian Red Cross	The Canadian Red Cross Society is linked to the International Red Cross and Red Crescent Society providing relief during crises.	http://www.redcross.ca
Canadian Institutes of Health Research (CIHR)	Health care professional student grants are provided for study or research abroad. Global health research is a priority interest.	http://www.cihr-irsc.gc.ca
Médecins Sans Frontières (MSF)	MSF is an international, independent medical humanitarian organization. Medical staff include nurses, midwives, dieticians and doctors. Support staff are also hired.	http://www.msf.org
FHI 360	FHI 360 is a global health and development organization, with programs that aim to bring lasting change to the world's most vulnerable people.	http://www.fhi.org
Save the Children	Save the Children is the world's leading independent organization for children.	http://www.savethechildren.net http://www.savethechildren.ca
The Canadian Nurses Association (CNA)	The Canadian Nurses Association (CNA) is a federation of 11 provincial and territorial registered nurses' associations and colleges.	http://www.cna-aiic.ca
Provincial Nurses Associations, for example, Registered Nurses, Association of Ontario (RNAO)	These associations provide information that helps with career planning and provides a link to interest groups, such as the International Nurses' Interest Group, which has information about working overseas and in global health.	http://www.rnao.org

Case Study 10

Following the civil war in Somalia in the1990s, Canada accepted large numbers of Somali refugees. The first wave of families were settled in two large urban cities (Toronto and Vancouver), and these families tended to group together socially and geographically. Some administrators in charge of resettlement felt this was hindering their assimilation into Canadian society by allowing small ghettos of refugees to develop. Consequently, the next wave of Somali refugees were dispersed throughout the country to small towns—in many cases, only one or two families per town. However, when an evaluation of the resettlement program was carried out a year later by qualified, independent evaluators, it was found that the separated families had poorer scores in English skills and had higher rates of health and adjustment problems and work absenteeism, compared with the concentrated families. The administrators were puzzled by these results.

CRITICAL THINKING QUESTIONS

1. How would you satisfactorily explain the results to the administrators?
2. What are some of the barriers that you would expect Somali refugees would have to face in Canada?
3. What sorts of health problems would you expect to find in a cluster of Somali refugee families?
4. Which level(s) of government is/are responsible for the health and well-being of refugees and asylum seekers in Canada?

After working through these questions, go to the MyNursingLab at **www.mynursinglab.com** to check your answers and see explanations.

KEY TERMS

capacity building *p. 189*
climate change *p. 183*
colonialism *p. 189*
environmental health/ factors *p. 183*
epidemiological transition *p. 188*
food security *p. 195*
global health *p. 187*
Indigenous peoples *p. 193*
international health *p. 187*
international nursing *p. 192*
migration *p. 193*
Millennium Development Goals (MDGs) *p. 189*
natural disasters *p. 195*
pollution *p. 186*
poverty *p. 194*
safe water *p. 186*
sanitation *p. 186*
social determinants of health *p. 193*
social justice *p. 192*
surveillance *p. 195*
sustainability *p. 192*
vectors of disease *p. 185*

CHAPTER HIGHLIGHTS

- International organizations agree that climate change is the most significant environmental challenge and that multiple actions are needed to cope with climate change already in progress and to reduce carbon emissions now and in the future.
- Access to clean water and sanitation, which is important for human health, has improved globally. However, people living in rural and remote areas or in urban slums face increased risks to their health in many regions of the world because they continue to have limited or no access to safe drinking water or appropriate sanitation.
- Pollution continues to reduce indoor and outdoor air quality and is associated with increased risks of respiratory and other illnesses.
- There is a difference between international health and global health. International health is health status among nations, and global health relates to worldwide improvement of health, reduction of disparities, and protection against global threats that disregard national borders.
- The United Nations Millennium Declaration asserts that all individuals in the world have the right to dignity, equality, freedom, a basic standard of living that includes freedom from hunger and violence, and encourages tolerance and solidarity.
- Eight Millennium Development Goals (MDGs) have been identified to significantly reduce poverty and promote development by reducing economic and social conditions in the world's poorest countries by the year 2015.

- Capacity building, sustainability, and social justice are important for development to occur.
- Theories of development, such as colonialism, neocolonialism, modernization, and linear stages of growth, attempt to explain the economic growth of countries around the world.
- Globally, major issues include the health of migrants and Indigenous peoples, and issues of poverty and inequality.
- Women's and children's health and mortality have improved globally, but some regions have not realized these improvements. Unacceptable mortality rates in some regions require focused efforts to accelerate the rate of improvement.
- National and international nursing organizations have emphasized the importance of addressing global health issues in clinical practice.
- Global health education in nursing has become important in the Canadian undergraduate nursing curriculum.

ASSESS YOUR LEARNING

1. The Millennium Development Goals (MDGs) are expected to be achieved by:

a. 2015

b. 2018

c. 2020

d. 2025

2. Which of the following BEST describes the process of economic development from traditional society, through economic "takeoff," initially led by a few individual sectors such as agriculture, transportation, and manufacturing, and ending in mass consumption?

a. The neocolonial theory

b. The only reasonable development path for poor countries

c. Rostow's linear stages of growth theory

d. How "underdeveloped" countries can reduce their connectedness to world markets

3. Which of the following is an example of a new disease in Canada believed to be caused by changes in temperature and weather?

a. Dengue fever

b. Tuberculosis

c. Malaria

d. West Nile virus

4. How many countries, approximately, exist in the world?

a. 100

b. 200

c. 500

d. 1000

5. The six official languages of the United Nations include:

a. English, French, Spanish, Arabic, Russian, Chinese (Mandarin)

b. English, French, German, Arabic, Russian, Chinese (Mandarin)

c. English, Spanish, Arabic, Russian, Chinese (Mandarin), Hindi

d. English, French, German, Dutch, Spanish, Russian

6. Which of the following BEST describes the distribution of the world's income per capita?

a. Equal among the 20% quintiles (5ths)

b. Half are rich and half are poor

c. The richest 20% own more than 80% of the wealth

d. The poorest 60% own less than 10% of the wealth

7. What has sometimes caused catastrophic lifestyle changes in Indigenous (Aboriginal) populations?

a. Education

b. Economic assistance

c. Migration

d. Forcible displacement

8. You are a student nurse working with a nongovernmental organization (NGO) on a community development project with women and children in Indonesia. Which would be a key capacity building intervention?

a. Sitting with families at a community feast upon arrival

b. Leading a consultation with prominent community members

c. Reflecting on your motivation for undertaking this opportunity

d. Relying on the expertise of professional occupational trainers in Canada prior to departure

9. An unnamed country has a Gender Inequality Index score of 0.446. What does this mean?

a. Women are almost 45% less powerful than women in other countries.

b. Women earn almost 45% less than men.

c. Almost 45% of human development potential is lost.

d. Women have almost 45% more power than men.

10. Which is the safest source of clean drinking water?

a. A natural spring

b. A deep and covered well

c. Piped water at a community centre

d. A clear stream with a rocky riverbed

After working through these questions, go to the MyNursingLab at **www.mynursinglab.com** *to check your answers and see explanations.*

WEBLINKS

Global Health Council

http:// www.globalhealth.org

The official website of the Global Health Council, this site, funded by the Bill and Melinda Gates Foundation, hosts current information about global health issues. The Global Health Council informs and supports those working to improve global health and equity.

David Suzuki Foundation

http://www.davidsuzuki.org/issues

This website presents information and updates on climate, health, oceans, wildlife and habitat, and freshwater. Information about what a single individual or groups of individuals can do to improve the present and the future in relation to these five topic areas is also presented.

Canadian Nurses Association

www.cna-aiic.ca

This group revised their position statement on Global Health and Equity in 2009. They also have other position statement relevant to global health.

Measure DHS (Demographic and Health Surveys)

http://measuredhs.com

This website presents information and data on many health topics collected from more than 75 countries across the world. Topics include HIV/AIDS, women's and children's health, and many more. Data that are available are current.

Futures Institute

http://www.futuresinstitute.org

The Futures Institute started in 2006 in the United States, and its work focuses on longer-term improvements achieved through policy and long-range planning projects. Maternal and child health and HIV/AIDS and other infectious diseases are featured in their work to date. Information on this website includes details of current and past projects.

MyNursingLab Visit **www.mynursinglab.com** to find chapter tests, Nursing Skills Videos, something else, and that other helpful thing.

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