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Developing Countries: Egypt, China, India, and South Africa

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Objectives

After completing this chapter, the reader will be able to:

1. Discuss family planning, infertility, abortion, and sterilization practices in Egypt, China, India, and South Africa.
2. Explain how communism affects health and health care in China.
3. Discuss women's rights issues in South Africa.
4. Compare the health and healthcare systems of Egypt, China, India, and South Africa.

INTRODUCTION

This chapter addresses the health conditions of four developing countries: Egypt, China, India, and South Africa. These countries were selected for examination because they differ in culture, economics, politics, geographic regions, and types of health care and health issues.

EGYPT

Background

Egypt (the Arab Republic of Egypt) is located in the far northeastern part of the African continent, bordered on the north by the Mediterranean Sea, on the east by the Red Sea, on the west by Libya, on the south by Sudan, and on the northeast by the Gaza Strip and Israel. Egypt is traversed by the Suez Canal, which is located between its Asian and African territories.

The country's total land area is 1,002,450 square kilometers. Most of Egypt is located in Africa, but part of its land, the Sinai Peninsula, is located in Asia. The majority of its population of approximately 83 million people live on the banks of the Nile River or on the coasts of the Mediterranean Sea, the Red Sea, and the Suez Canal. The Nile River flows northward from Egypt from Sudan and into the Mediterranean Sea. The largest defined landmass within Egypt is the Sahara Desert, which is very sparsely populated. The largest cities include Cairo (the capital), Alexandria, and other cities in the Nile Delta. Ninety-eight percent of the Egyptian population live on just 4% of the country's land (Arab Republic of Egypt, 2010).

Most of Egypt's rainfall occurs during the winter months, with only 0.1 to 0.2 inches of precipitation falling each year. Before the construction of the Aswan Dam, the Nile River flooded annually, producing good soil and good harvests in its floodplains. Arabic is the official language; English and French are the most commonly used foreign languages. The majority ethnic groups are Egyptian, Bedouin Arab, and Nubian. Education is compulsory for children aged 6 to 15 years, and the literacy rate is 58% (About Egypt, 2010).

Egypt has a distinguished cultural heritage, accumulated over the thousands of years of its history. Most of Egypt's famous landmarks were built during the Pharaonic period, which includes more than 50 pyramids and many temples located along the Nile. Each of the Egyptian successive civilizations (Pharaonic, Greco-Roman, Coptic, and Islamic) contributed to the areas of philosophy, literature, and the arts. Because of its long-held ties with Europe, Egypt has been a cultural pioneer in the modern Arab world. In 2002, with the support of the United Nations Educational, Scientific and Cultural Organization (UNESCO), the new Bibliotheca Alexandria was inaugurated. This world-recognized special historical site is located in Alexandria. The goal of the reconstruction of the ancient Library of Alexandria is to revive the legacy of this universal center for science and knowledge (About Egypt, 2010).

Egypt has a legislative body comprised of the House of Representatives and the Shura Council, or Majilis al-Shura. The Shura Council is composed of at least 150 members, one-tenth of whom were appointed by the president (Saleh, 2013).

The Egyptian population consists of 94% Muslims and 6% Christians. The two main Islamic institutions in Egypt are the oldest and the most important Islamic institutions in the country:

- Al-Azhar, built by the Fatimids to spread the Shiite sect in North Africa. Later Salah El-Din converted it to Sunni University, which became one of the main pillars of Sunni Islam in the world.
- Dar el Eftaa, founded in 1895 and headed by the Grand Mufti of Egypt.

The Coptic Orthodox Church, one of the oldest Christian churches in the world, and the Roman Orthodox Church of the Arab Republic of Egypt are located in Alexandria (Arab Republic of Egypt, 2010).

Economy

Table 3-1 presents statistics on Egypt's current economy.

TABLE 3-1 Egypt's Economy

GDP	\$218.91 billion
GDP growth	5.2% per year
Inflation, GDP deflator	10.1% per year
Agriculture, value added	10% of GDP
Industry, value added	29% of GDP
Services and other revenue sources, value added	61% of GDP
Exports of goods and services	21% of GDP
Imports of goods and services	28% of GDP
Gross capital formation	19% of GDP
Data from The World Bank. (2010). Arab Republic of Egypt.	

Health

Table 3-2 presents population health statistics for Egypt.

Healthcare Systems

The majority of Egyptians have access to health care for basic health services, managed by the Ministry of Health and Population (MOHP), the Health Insurance Organization (HIO), private health practitioners, and nongovernmental organizations (NGOs). The HIO covers 45% of the population, and there is a growing and unregulated private healthcare sector. Pharmaceuticals account for nearly one-third of all healthcare costs (WHO, 2011a).

Communicable Diseases

Within the last decade there has been a huge decline in deaths from communicable diseases in Egypt, largely due to the high rate of vaccinations for preventable diseases. Schistosomiasis (a parasitic disease caused by flatworms), TB, malaria, and HIV, as well as Hepatitis A, B, and C remain the most serious infectious diseases today (WHO, 2011a). In addition, there is an increasing burden of antibiotic resistance. The incidence of TB in Egypt is 25 per 100,000 (2010 statistics). Of those in Egypt with TB, 16 to 40% are antibiotic resistant (Mohamoud, Mumtaz, Riome, Miller, & Abu-Raddad, 2013).

HIV in Egypt, as is the case with other Arab countries, carries tremendous stigma. The prevalence rate is <.1% but may be higher. One problem is a lack of knowledge of the disease due to the culturally conservative background of the people of the area. Malaria has been identified from Egyptian mummies from their DNA, which suggests that this disease has existed since antiquity. The Al-Fayoum Governorate in the northwestern part of Egypt today has a high rate of malaria risk. Up to 69% of the population of this area is infected, particularly the children (Boutros & Skordis, 2010).

TABLE 3-2 Egypt's Population Health Statistics, 2011

Birth rate	28.9 per 1,000
Underweight children	7.5%
Population younger than age 15 years	31.7%
Population 65 years or older	3.7%
Total births per woman	3
Adult literacy rate (among persons 15 years or older)	71%
Population with sustainable access to improved water sources	94%
Population with sustainable access to improved sanitation	94%
Smoking rate of adults	19%
Total government expenditure per capita on health	\$124
Total government expenditure on health as a percentage of GDP	6.4%
Out-of-pocket expenditure on health per capita	58.7%
Human Resources (per 10,000)	
Physicians	28.3
Dentists	4.2
Pharmacists	16.7
Nurses and midwives	35.2
Hospital beds	17.3
Primary healthcare units and centers	0.7
Primary Health Care (per 100)	
Population with access to healthcare services	88
Contraception prevalence	57.6
Prenatal care	52
Births attended by skilled personnel	84
Health Status	
Life expectancy	72.3 years
Infant mortality rate (per 1,000 live births)	17
Under-five mortality rate	21.8 per 1,000
Maternal mortality rate	55 per 100,000
Probability of not reaching 40 years of age	10.3%
Smoking prevalence (among males 15 years or older)	40%

Data from World Health Organization. (2011a). *Egypt: Country health profile*. Retrieved from http://www.who.int/gho/countries/egy/country_profiles/en/.

The hepatitis C (HCV) rate in Egypt is the highest in the world, with a rate of 14.9% of the population. It is estimated that 100,000 to 500,000 new cases are reported annually. The incident rate reported by the Minister of Health is 6.9 per 1,000 people. Historically, the high rate of this disease is linked to the widespread use of parenteral tartar emetic and the use of unsterilized needles and reuse of glass syringes. Currently in Egypt there is a public education prevention program to curb future infection transmissions of hepatitis C (Mohamoud, Mumtaz, Riome, Miller, & Abu-Raddad, 2013; Waked et al., 2014).

A study conducted in Egypt and supported by USAID to prevent typhoid fever in rural communities used the intervention of handwashing with soap. Studies indicate that 9,000 to 42,000 cases of typhoid are reported each year. Typhoid fever is transmitted by the fecal–oral route, so it is appropriate to build prevention strategies against this infection—yet only 40% of all households in Egypt had soap and water available for handwashing at the time the intervention was undertaken. The scarcity of water and problems with waste disposal are related issues for handwashing. As part of the intervention, proper handwashing techniques were taught, and general education of disease transmission was performed. Results indicated improvement in handwashing rates in the rural Fayoum region of Egypt (Lohinivak, El-Sayeed, & Talaat, 2008).

Maternal and Infant Health

Despite health clinics that are accessible to the general public, maternal and infant mortality rates in Egypt are high, with an infant mortality rate of 17 deaths per 1,000 live births and a maternal mortality rate of 55 deaths per 1,000 live births. In addition, the 21.8 per 1,000 death rate for children younger than five is considered high. These rates reflect exceptionally high mortality rates among women and children in rural Upper Egypt. Child survival initiatives, such as cord care, delivery instrument antisepsis, and infant warming have reduced the rate of mortality of children younger than five (Darmstadt et al., 2009).

As is true in most developing countries, most births in Egypt take place in the home. A major contributing factor to maternal and infant morbidity and mortality is unhygienic conditions, which increase the likelihood of infections within both the mother and the newborn. Tetanus typhoid immunization is one method of reducing deaths due to tetanus, but many other infections can occur at the time of birth. Infection ranks third among the causes of maternal mortalities in Egypt. A cohort study explored the use of a clean delivery kit as a means of reducing infant and maternal infections. Kits were distributed from primary health facilities, and birth attendants received training on how to use the kits. Results from the study of 334 women indicated that neonates of mothers who had the use of the kits were less likely to develop sepsis from cord infection and mothers had fewer postpartum infections (Darmstadt et al., 2009).

Pregnancy outcomes in Egypt are poorer as compared to those in other developing nations with similar per capita gross national products (GDPs). The national rate of low birth weight in Egypt is 12% of all live births, but for 30% of low-birth-weight infants in Egypt, the mortality rate is 2.5 times that of full-term infants. These increased risks of mortality for low-birth-weight children persist throughout the first year of life and beyond, with this risk factor also associated with increased cognitive disabilities. A special antenatal nutrition project in Al-Minia, in Upper Egypt, demonstrated an ability to improve birth weight in newborns. Women in this project

received food supplements and nutrition education as well as prenatal care and home visits. Results indicated that infant birth weights increased, which ultimately resulted in healthier babies who were less likely to contribute to the infant mortality rate (Ahrani et al., 2006).

Noncommunicable Diseases

Neuropsychiatric (19.8%), digestive diseases (11.5%), chronic respiratory diseases (6.9%), cardiovascular diseases (6.7%), and diabetes are major noncommunicable diseases whose incidence continues to increase in Egypt. Smoking, substance abuse, failure to use car seats and seat belts, lack of exercise, and consumption of fatty and salty foods are major contributors to the disease burden. Diabetes mellitus affects nearly 3.9 million people in Egypt, and its prevalence is expected to increase to 9 million by 2025. A study conducted in 2011 in Cairo indicated that type 1 diabetes mellitus care needs to be carefully monitored, as complication rates were nearly 50% among patients in the study. Regular exercise for patients in this study demonstrated a significant positive effect for children and adolescents (Ismail, 2011).

The rate of diabetes in Egypt has significantly increased and Egypt is now ranked eighth highest in the world in diabetes incidence. According to a research study conducted in 2010 by the Zagazig University School of Medicine, the number of people with diabetes rose to 16.5 million people: half of this group did not know they had the disease, and the other half was receiving treatment. The disease has risen 83% over the past 15 years—a very large increase compared to international rates. The Middle East and the Arab world are the countries suffering from diabetes the most, specifically Egypt and the Gulf countries. The increase of the disease is due to unhealthy lifestyles and poor nutritional habits, in addition to genetic factors (Abdo & Mohamed, 2010).

Table 3-3 lists the top five most frequently occurring cancers in Egypt. Breast cancer accounts for 38% of all new cancer cases among women living in this country. The age-standardized rate (ASR) for breast cancer incidence in Egypt is 37.3 per 100,000, and the mortality rate is 20.1 per 100,000. Incidence of breast cancer is lower in Egyptian women than in U.S. women, possibly due to a lower rate of cancer screening, and mortality rates for Egyptian women are higher than those for U.S. women (WHO, 2010).

TABLE 3-3 Top Five Cancers in Egypt

Males	Females	Both Sexes
1. Bladder	1. Breast	1. Breast
2. Liver	2. Non-Hodgkin's lymphoma	2. Bladder
3. Non-Hodgkin's lymphoma	3. Ovary	3. Non-Hodgkin's lymphoma
4. Lung	4. Colorectal	4. Liver
5. Leukemia	5. Leukemia	5. Leukemia

Data from World Health Organization. (2011a). *Egypt: Country health profile*. Retrieved from http://www.who.int/gho/countries/egy/country_profiles/en/

Mortality and Burden of Disease

Table 3-4 provides child mortality data for Egypt in 2009 and 2010. Table 3-5 lists adult mortality rates, defined as the probability of dying between 15 and 60 years of age per 100,000 population; a breakout is provided for the maternal mortality rate. Table 3-6 identifies age-standardized mortality rates by cause. Table 3-7 lists causes of death for Egyptian children younger

TABLE 3-4 Child Mortality in Egypt, 2009 and 2010

	Year	Rates
Under-five mortality rate (probability of dying by age 5 per 1,000 live births)	2010	22
Number of under-five deaths (thousands)	2010	41
Infant mortality rate (probability of dying between birth and age 1 per 1,000 live births)	2010	19
Number of infant deaths (thousands)	2010	35
Neonatal mortality rate (per 1,000 live births)	2010	9
Number of neonatal deaths (thousands)	2010	18
Stillbirth rate (per 1,000 total births)	2009	13
Data from World Health Organization. (2011a). <i>Egypt: Country health profile</i> . Retrieved from http://www.who.int/gho/countries/egy/country_profiles/en/		

TABLE 3-5 Adult Mortality in Egypt, 2008 and 2009

	Year	Number of Deaths Among Persons Aged 15–60 Years per 1,000 Population
Male	2009	215
Female	2009	130
Both sexes	2009	174
Maternal mortality ratio (per 100,000 live births; interagency estimates)	2008	82 (range: 51–130)
Data from World Health Organization. (2011a). <i>Egypt: Country health profile</i> . Retrieved from http://www.who.int/gho/countries/egy/country_profiles/en/		

TABLE 3-6 Age-Standardized Mortality Rates by Cause, 2008 (per 100,000 population)

Mortality rate from communicable disease	76
Mortality rate from noncommunicable disease	749
Mortality rate from injuries	34
Data from World Health Organization. (2011a). <i>Egypt: Country health profile</i> . Retrieved from http://www.who.int/gho/countries/egy/country_profiles/en/	

TABLE 3-7 Causes of Death Among Children Younger Than Age Five Years, 2008 (percentage of all deaths)

Prematurity	30
Pneumonia	11
Diarrhea	6
Birth asphyxia	5
Injuries	5
Neonatal sepsis	1
HIV/AIDS	0
Measles	0
Malaria	0
Other	23

Data from World Health Organization. (2011a). *Egypt: Country health profile*. Retrieved from http://www.who.int/gho/countries/egy/country_profiles/en/

TABLE 3-8 HIV/AIDS, Malaria, and Tuberculosis in Egypt, 2008 and 2009

	Year	Data (Range)
Deaths due to HIV/AIDS (per 100,000 population per year)	2009	0.6 (0.5–0.9)
Deaths due to malaria (per 100,000 population per year)	2008	0.2 (0.1–0.2)
Deaths due to tuberculosis among HIV-negative people (per 100,000 population per year)	2009	1.10 (0.74–1.50)
Prevalence of HIV among adults aged 15 to 49 (%)	2009	<0.1
Incidence of tuberculosis (per 100,000 population per year)	2009	19.0 (16.0–22.0)
Prevalence of tuberculosis (per 100,000 population)	2009	30.0 (13.0–49.0)

Data from World Health Organization. (2011a). *Egypt: Country health profile*. Retrieved from http://www.who.int/gho/countries/egy/country_profiles/en/

than age five. Table 3-8 provides mortality data related to HIV/AIDS, tuberculosis, and malaria.

Road Traffic Injuries

Road traffic injuries are a major cause of mortality and morbidity worldwide. Estimates in Egypt indicate 42 deaths per 100,000 of the population, which is one of the highest of the Eastern Mediterranean region. The high burden of road traffic injuries and deaths include pedestrians, children, and those on bicycles and motorcycles (WHO, 2012a).

Female Circumcision

Female circumcision has been a tradition in Egypt since the Pharaonic period. The prevalence of female circumcision is widespread in Egypt; 91% of all women age 15 to 49 have been circumcised and 94 to 96% of women older than 49 have been circumcised. Urban women are less likely to be circumcised than rural women. The likelihood that a woman is circumcised also declines with the woman's education level and is markedly lower among women in the highest wealth quintile than in other quintiles (78% versus 92% or higher). The majority of circumcised women (63%) report that (midwives) were responsible for performing the procedure. Trained medical personnel (primarily doctors) performed most of the remaining circumcisions (Egypt Demographic and Health Survey, 2008). Girls in Egypt usually undergo the procedure prior to or around puberty. According to the Department of Health, doctors in Egypt carry out a large majority (72%) of circumcisions in girls under 17 years and dayas (traditional birth attendants) perform 21%. The issue of marriageability is often cited as the strongest motivation for circumcision. The expectation is that if a woman is not circumcised in a community where this is the norm, the girl's chances of getting married will be severely reduced and high social status and livelihood will be endangered (Fahmy, El-Mouelhy, & Ragab, 2010).

Spousal Violence in Egypt

Nearly three-fourths of women visiting family health centers in Alexandria, Egypt, have experienced spousal violence in their lifetimes. Approximately half of the women experienced physical violence (Spousal Violence in Egypt, 2010). Violence against women and exposure to physical abuse is common in Egypt as in other parts of the Arab world. A study of 5,249 married women within a 12-month period of time revealed women's experiences with physical violence by their husbands. The study indicated a 29.4% exposure rate, 60% of those who experienced marital violence were exposed within the last 12 months, with the majority of women not having any medical insurance for treatments (El-Rashidi, 2013; Monazea & Khalek, 2010).

Mental Health

A national household survey of prevalence of disorders in five governorates, using the Mini International Neuropsychiatric Interview-Plus (MINI-Plus) instrument, indicated that almost 17% (range: 11 to 25.4% in different governorates) of adults in Egypt had mental disorders, with the common being mood disorders (6.4%), anxiety disorders (4.9%), and somatoform disorders (0.6%). Psychoses were seen in 0.3% of the population (WHO, 2005).

Environmental Problems

Air pollution, especially in Cairo and Alexandria, is a major source of chronic respiratory diseases. According to the Country Cooperation Study, Egypt receives 98% of its fresh water from the Nile River; unfortunately, there is excessive water pollution in the Nile due to large discharges of pesticides, nutrients, and heavy metals from industry in Cairo, making obtaining

clean water a major health challenge for the country's population. Tap water assessments indicate that lead levels are at a high risk level as well. A recommendation by the WHO suggested that lead and other heavy metal residuals should be lowered for health safety of the population (Lasheen, El-Kholy, Sharaby, Elsherif, & El-Wakeel, 2008).

Egypt's Response to the Millennium Development Goals

Tables 3-9 to 3-15, presented in this subsection, profile Egypt's responses to WHO's Millennium Development Goals (WHO, 2011a):

- Millennium Development Goal MDG 1: Poverty and hunger (see Table 3-9).
- Millennium Development Goal MDG 4: Child mortality (see Table 3-10).
- Millennium Development Goal MDG 5: Maternal health.
 - Maternal mortality (see Table 3-11).
 - Births attended by skilled health personnel, 2008: 79%.
 - Reproductive health (see Table 3-12).
- Millennium Development Goal MDG 6: HIV/AIDS, malaria, and other diseases (see Table 3-13).

TABLE 3-9 Egypt: Hunger Indicators, 2008

	Male	Female	Both Sexes
Percentage of children younger than 5 years who are underweight	8.1	5.4	6.8
Percentage of children younger than 5 years who are stunted	33	28.4	30.7

Data from World Health Organization. (2011a). *Egypt: Country health profile*. Retrieved from http://www.who.int/gho/countries/egy/country_profiles/en/

TABLE 3-10 Egypt: Child Mortality Indicators, 2009 and 2010

	Year	Data
Under-five mortality rate (probability of dying by age 5 per 1,000 live births)	2010	22
Number of under-five deaths (thousands)	2010	41
Infant mortality rate (probability of dying between birth and age 1 per 1,000 live births)	2010	19
Number of infant deaths (thousands)	2010	35
Measles (MCV) immunization coverage among 1-year-olds (%)	2009	95

Data from World Health Organization. (2011a). *Egypt: Country health profile*. Retrieved from http://www.who.int/gho/countries/egy/country_profiles/en/

TABLE 3-11 Egypt: Maternal Mortality Indicators, 2008

Maternal mortality ratio (per 100,000 live births; interagency estimates)	82 (range: 51–130)
Births attended by skilled health personnel	79%

Data from World Health Organization. (2011a). *Egypt: Country health profile*. Retrieved from http://www.who.int/gho/countries/egy/country_profiles/en/

TABLE 3-12 Egypt: Reproductive Health Indicators, 2006 and 2008

	Year	Data
Contraceptive prevalence	2008	60.3%
Contraceptive prevalence, among women aged 15–19	2008	23.4%
Adolescent fertility rate (per 1,000 girls aged 15–19 years)	2006	50
Antenatal care coverage: at least one visit	2008	74%
Antenatal care coverage: at least one visit, among women aged 15–19	2008	76.5%
Antenatal care coverage: at least four visits	2008	66%
Unmet need for family planning	2008	9.2%
Unmet need for family planning: women aged 15–19	2008	7.9%
Births attended by skilled health personnel, among women aged 15–19	2008	78.8%

Data from World Health Organization. (2011a). *Egypt: Country health profile*. Retrieved from http://www.who.int/gho/countries/egy/country_profiles/en/

TABLE 3-13 Egypt: HIV/AIDS, Malaria, and Tuberculosis Indicators, 2008 and 2009

	Year	Data
Prevalence of HIV among adults aged 15–49 (%)	2009	<0.1
Deaths due to malaria (per 100,000 population per year)	2008	0.2 (0.1–0.2)
Incidence of tuberculosis (per 100,000 population per year)	2009	19.0 (16.0–22.0)
Prevalence of tuberculosis (per 100,000 population)	2009	30.0 (13.0–49.0)
Deaths due to tuberculosis among HIV-negative people (per 100,000 population per year)	2009	1.10 (0.74–1.50)
Case detection rate for all forms of tuberculosis	2009	63 (54–75)
Smear-positive tuberculosis treatment: success rate (%)	2008	89

Data from World Health Organization. (2011b). *Global health observatory data repository*. Retrieved from <http://apps.who.int/ghodata/?vid=710>

- Millennium Development Goal MDG 7: Environment sustainability (see Table 3-14).
- Not a Millennium Development Goal MDG. The following is a table relating summarizes nutrition in Egypt (Table 3-15).

TABLE 3-14 Egypt: Water and Sanitation Indicators, 2008

	Urban	Rural	Total
Population using improved drinking-water sources	100%	98%	99%
Population using improved sanitation facilities	97%	92%	94%

Data from World Health Organization. (2011b). *Global health observatory data repository*. Retrieved from <http://apps.who.int/ghodata/?vid=710>

TABLE 3-15 Egypt: Nutrition Indicators, 2008

	Male	Female	Both Sexes
Children younger than 5 years: overweight	19.8%	21.2%	20.5%
Children younger than 5 years: stunted	33%	28.4%	30.7%
Children younger than 5 years: underweight	8.1%	5.4%	6.8%
Children younger than 5 years: wasted for age	8.8%	7.1%	7.9%

Data from World Health Organization. (2011a). *Egypt: Country health profile*. Retrieved from http://www.who.int/gho/countries/egy/country_profiles/en/

Traditional Health

In the Arab Republic of Egypt, a national policy on traditional medicine/complementary alternative medicine (TM/CAM) is part of the national drug policy that was issued in 2001. Herbal medicine regulation in Egypt began in 1955, and is achieved through the same laws as are applied to conventional pharmaceuticals. Herbal medicines are regulated in the forms of prescription medicines, over-the-counter medicines, self-medication, and dietary supplements. Control mechanisms exist for both manufacturing and safety assessment requirements. There are 600 registered herbal medicines, though no herbal medicines are included on the national essential drugs list. In Egypt, herbal medicines are sold in pharmacies by licensed practitioners as over-the-counter products and as prescription medicines (WHO, 2011a).

Care of the Aging in Egypt

As life expectancy in Egypt is increasing with great morbidity, aging is becoming a greater social and health issue in Egypt, especially for lower- and middle-class people due to economic restrictions and lifestyle changes. Women are working during the day, and there is no one home to care for the older adults in many households. There is currently a shortage of institutions providing in- and out-patient care. Geriatric homes (nursing homes) are needed to reduce caregiver strain in families (Boggatz & Dassen, 2005).

CHINA

Description

China is the world's fourth-largest country in area (after the countries of Russia, Canada, and the United States), and is located in east Asia, bordering numerous countries, including the Russian

Federal Republic, India, Pakistan, Vietnam, and Mongolia. China, which is slightly smaller than the United States, has climates varying from tropical in the south to subarctic in the north. At present it has a great amount of air pollution—mostly greenhouse gases and sulfur dioxide particles from use of coal and other carbon-based fuels. It also has water pollution, hazardous waste, deforestation, and soil erosion problems (Central Intelligence Agency [CIA], 2011a).

Population

As of 2012, China has a population of 1.39 billion people (WHO, 2014a). Health and vital statistics of the Chinese population, as compiled by the World Health Organization (2014a), include the following:

Sex ratio: 1.333 males to 1 female

Infant mortality rate: 16 per 1,000 live births

Life expectancy: males—74 years and females—77 years

Total fertility rate: 1.54 children

HIV rate: 0.1% (2012 statistics)

Per capita government health expenditure: \$480 USD

Total expenditure on health as a % of GDP (2012): 5.4%

Major infectious diseases:

1. Food or waterborne diseases: bacterial diarrhea, hepatitis A, and typhoid fever
2. Vector-borne diseases: Japanese encephalitis and dengue fever
3. Soil contact diseases: hantaviral hemorrhagic fever
4. Animal contact diseases: rabies
5. Viral: H1N1

Ethnic Groups in China

The Han ethnic group makes up 91.9% of the population; the remainder comprise Zhaung, Uygur, Hui, Yi, Tibetan, Miao, Manchu, Mongol, Buyi, Korean, and other nationalities. The official religion of China is atheist, but 1 to 2% is Daoist, Buddhist, or Muslim, and 3 to 4% is Christian. The standard language is Mandarin; other dialects spoken in the country include Cantonese, Shanghaiese, Fuzhou, Hokkien-Taiwanese, Xiang, Gan, and Hakka. China has a 91.6% literacy rate (CIA, 2011a).

Government

The government of China (also called the People's Republic of China [PRC]) is communist, and the capital is in Beijing. China has 23 provinces and 5 autonomous regions (CIA, 2011a).

Economy

Since 1978, the Chinese economy has moved from a centrally run and planned Soviet style of government to a market economy. Business and agriculture are now more locally run, rather than being controlled by the central communist government. The overall economic system continues to function within strict communist political control, however. The change in

management style of business has increased the GDP four times and boosted per capita income to \$8,288 in 2011 (CIA, 2011a).

China has now moved beyond Japan to become the world's second-largest economy, and it may overtake the United States in terms of national income within the next 10 years, though it remains far behind in per capita income. The country now has hundreds of millions of people who have moved out of poverty and has a large group of students and tourists who visit the West. In spite of China now having many billionaires, as well as numerous millionaires, the average income for most of its residents is still among the world's lowest (China Surges Past Japan, 2010).

History of the Healthcare System

China has one of the longest historical records of medicine of any existing civilization in the world. Both traditional medicine and new technology are components of the Chinese healthcare system. In 1949, Chairman Mao Zedong established a rural preventive healthcare program, emphasizing disease prevention. At that time, the ministry of public health was made responsible for all health care. Large numbers of more sophisticated urban physicians were sent to the countryside to practice. In addition, less trained “barefoot doctors” were sent to small rural communities to help supply the needs for local rural health care. They worked out of village medical centers, providing preventive and primary medical care. In addition, township health centers containing 10 to 30 bed hospitals were established as part of the so-called rural collective health system. Only seriously ill patients went to county hospitals, which served a much larger population base. In large urban areas, health care was provided by paramedical personnel, who were assigned to factories and neighborhood health stations. Patients with serious illnesses went to the district or municipal hospitals.

In the 1950s, China was isolated by the Western powers, and the Soviet Union was its only ally. During this era, medical schools and hospitals in China were built with the help of Russians. There was an emphasis on public health and prevention of illness. The government mobilized the people to begin massive patriot health campaigns aimed at environmental sanitation and preventing disease. An example was the assault on the “four pests” (rats, sparrows, flies, and mosquitoes), as well as the efforts directed toward eradicating snails that carried schistosomiasis disease. Other health campaigns were devoted to water quality and waste management (CIA, 2011a). Unfortunately, much of the country's agricultural sector was ignored or handled poorly by overplanting and not harvesting all the crops, leaving them to rot. Thus, many of the agricultural programs failed. As many as 20 to 30 million people starved to death, and infant mortality rose to 300 per 1,000 (CIA, 2011a).

In the 1960s, campaigns to prevent sexually transmitted diseases, such as syphilis, were successful. By the 1970s, China was able to set up affordable primary health care in the rural areas. During the 1980s, its health policy was restructured based on market-driven reforms. The barefoot doctors were needed less, as a more sophisticated system of health care was established. With a 1% growth rate and a population of 1.3 billion people, China became very concerned about population growth and began restricting family size by implementing the “one child per family” policy. Diseases such as tuberculosis, hepatitis, hookworm, and schistosomiasis still remained problems. Later, other more chronic diseases such as HIV/AIDS, cancer, cardiovascular

disease, and heart diseases became frequent causes of mortality, similar to other developed societies (CIA, 2011a).

According to Freedom House (an organization that judges how much freedom citizens of various countries have), China is near the bottom of the list of countries for limiting freedom. It is possible that these restrictions actually helped the healthcare system in China, however. From the 1950s to the 1970s, health care in China improved greatly under a very strict authoritarian rule. Brothels and opium dens were officially closed, the four pests (flies, mosquitoes, rats, and sparrows) were greatly reduced, and the training of a million barefoot (lay) doctors by urban doctors was accomplished. Health care through prevention was promoted. The communist government claimed that the incidence of sexually transmitted diseases, schistosomiasis, and leprosy decreased, access to health care for all was promoted, and infant mortality decreased. It is almost impossible to verify all of these claims, however, because China was a closed system that allowed few outsiders to document facts. The irony today is that as China becomes freer and turns toward a more market-driven economy, some advances in health care have actually been reversed. For example, universal access to health care for all is gone, and poor rural Chinese have great difficulty today getting prevention and treatment under the current partial out-of-pocket payment system (CIA, 2011a).

China, through its market reforms, has experienced tremendous economic growth. One of the results of the economic upturn has been the establishment of a fee-for-service private medical practice with few governmental restrictions. Private medical practice was not allowed during the Cultural Revolution, but it reemerged in the 1980s after the dissolving of the Cooperative Medical System (CMS) during the Maoist times, when many people lived in communes. At present, rural families must pay out-of-pocket fees for medical services; these often prohibitive costs render health care inaccessible for many (CIA, 2011a).

The Chinese barefoot doctors today in the small remote villages of the far west are often supported by a very small government salary each month and typically work out of their homes rather than a clinic, which enables them to maintain their farms when there are no patients. The doctors charge a small fee to the patients for their services, and the remainder of their salaries comes from drug sales. Often doctors overprescribe medicines simply to increase their incomes. Village doctors have inadequate training and often do not take patient histories or keep medical records as part of China's economic reforms. The Chinese government has increasingly cut the funds made available for health care, so by 2000, 60% of all healthcare costs were paid for by the individual. The typical city doctor earns \$600 to \$1,200 per month and sees 60 to 80 patients per day. The government has recently budgeted \$350 million dollars to establish disease control and prevention centers in poor areas. Many poor areas had difficulty treating severe acute respiratory syndrome (SARS) cases when this disease emerged in China because of the inadequate resources (Life as a Village Doctor in Southwest China, 1997).

Access to Health Care and Costs

Since the 1980s, the Chinese government has had a laissez-faire policy for health care in rural areas. As part of that policy, it reverted to a self-pay system for clinic visits and hospitalization, which are now both very expensive relative to income. One average hospitalization stay costs

50% more than the average annual income. Access to health care in many areas is now priced on a sliding scale based on the ability to pay, yet many people are still unable to afford health care. In urban areas, medical care includes the use of high technology. The government health insurance program has given more equal access to health care, but cost inflation is now a major governmental concern. Copayments were first started to make the users more aware of health costs when accessing medical care. Medications and high-tech tests are now charged to patients and not covered by the government insurance. The majority of China's population lives in rural areas. Those who live in urban areas are in many ways advantaged. The distinction between rural and urban subpopulations is reinforced by a system of population registration that limits migration from rural to urban areas (Liu & Darimont, 2013).

Chinese health care has changed greatly in recent years. The most recent is the attempt to establish a healthcare provision that is a middle path between public health care and commercial private insurance. Before the economic reform in 1978 all people in China were guaranteed basic health care, yet more recently in the last 10 years there has been a decline in quality of public health care. The budgets of local governments have been decreased, and many private healthcare services began especially with the shift into the market economy. The Chinese healthcare system is separated into two parallel systems, one for providing health care to urban populations and the other for providing health care for rural areas. The decision about which system a citizen belongs to depends on the household registration (*hukou*). Once the household members are registered as rural residents, it is difficult for any members to transfer to an urban registration, though sometimes it is allowed at great financial cost. Hence many migrant workers live in urban areas without any entitlement to receive the social benefits of the urban residents (Hu, Cook, & Salazar, 2008; Liu & Darimont, 2013).

All employers must participate in Urban Employee Basic Health Insurance (UEBNI) to insure their employees. This plan currently covers 20% of the population (about 237 million people). Six percent is paid by the employers and 2% is paid by the employees. The remainder is paid by the government. Additionally, each person saves a percentage of their wages into an individual medical savings account maintained by the Office of Human Resources and Social Security. Children, students with severe disabilities, poor elderly greater than 60 years, and residents living in deprived areas receive extra government subsidies (Liu & Darimont, 2013).

The old cooperative medical system has been financed primarily through the rural collective economy and administered by the village municipalities. All funds are managed at the district level. The medical financial assistance healthcare program is voluntary and does not provide care to all groups of people. Regulations for payments are set up by local governments. In recent years, China has made great efforts to improve its public health system. Funds have been expended to modify and enlarge the disease prevention and control centers and to establish emergency centers and hospitals throughout the country. The major infrastructure has been improved. The ministry of health set up 10 national medical teams for disaster relief and disease prevention in some of the major cities. The SARS epidemic was controlled rapidly through this new infrastructure (Liu & Darimont, 2013).

In 1949, when the Communists came to power, there were only 2,600 hospitals in China. About 4.5% of the gross domestic product (GDP) is allocated to health care, half of which comes from the private sector. By comparison the average healthcare expenditure of countries in the European Union is 9% of GDP, while in the United States, it is closer to 16% (Hays, 2011).

The makeup of the current healthcare workforce in China differs from that in many other nations. China has more doctors than nurses. In 2005, there were 1.9 million licensed doctors and 1.4 million licensed nurses. The density of healthcare providers is much greater in urban as compared to rural areas—specifically, a three-to-one ratio. Most doctors and nurses have only a junior college or high school level of education. Approximately one third of physicians and nurses have been educated at the college level or higher. The majority of the higher-educated healthcare workers can be found in the urban areas, which creates a great disparity in the quantity and quality of healthcare providers in urban versus rural areas (Anand, Fan, & Zhang, 2008).

Ouyang and Pinstруп-Andersen (2012) addressed the health inequalities of the ethnic majority Han population and the minorities. The Han are the dominant ethnic group of China, comprising 91.6% of the population, and the other ethnic groups together comprise 8.4%, representing 114 million people. The general health and nutritional status of the minority groups were significantly lower than the majority Han population.

Health Priorities

China's Five-Year Plan (2011–2015) consists of goals including:

1. Rebalancing the economy (which includes environmental protection and social services to increase economic growth).
2. Reduction of social inequality by increasing social safety nets, increasing minimum wages, and increased investment in the infrastructure and healthcare insurance.
3. Environmental reforms from corporations and individuals.

Economic growth and urbanization have created sedentary lifestyles with greater Western diets, smoking, alcohol and air pollution, which have all led to increases in obesity, cardiovascular diseases, and cancer. About 80% of all deaths in China are now due to noncommunicable diseases and injuries with cardiovascular disease being the most common, and cancer, the second most common (Gross, Strasser-Weippl, & Lee-Bychkovsky et al., 2014).

China has experienced such rapid growth in social and economic development it has created a demand for high-quality health care within the country. The life expectancy of the average person has increased, and this trend is expected to create an aging population with chronic health problems. Currently the leading cause of death in those 1 to 44 years is injury. Approximately 750,000 deaths and 3.5 million hospitalizations occur each year. More people are now using motorcycles and cars, resulting in fewer people who are walking or using bicycles. As a result of such changes in diet and activity, cardiovascular disease is increasing rapidly. Nearly 2.6 million deaths occur annually from this problem, but by 2020 it is projected that 13 million people will die each year from cardiovascular disease (Yang et al., 2013).

The leading causes of deaths in China are as follows:

1. Stroke (1.7 million deaths)
2. Ischemic heart disease (948,700 deaths)
3. Chronic obstructive pulmonary disease (934,000 deaths)
4. Cancers
5. Mental disorders, substance abuse
6. Infections
7. Injuries

Noncommunicable diseases have risen because of the urbanization of the population, rising incomes, and longer life spans. Poor diets, an increase in hypertension, tobacco use, high cholesterol and elevated fasting glucose levels, and control of air pollution are highest health issues in China (Yang et al., 2013).

Environmental Health Issues

Air pollution is a major public concern. It is associated with higher risks for ischemic heart disease, strokes, lung cancer, and chronic obstructive pulmonary disease. Air pollution has been estimated to cause nearly one to two million premature deaths in China in 2010, which is responsible for nearly 20% of the global air pollution deaths (Alcorn, 2013).

China's movement toward a market economy has increased incomes and improved health for its population, but created some difficult environmental problems. Biomass fuel and coal are burned in most of China for cooking and heating especially in most rural areas, and a significant number of urban areas, which contributes to a major problem with indoor air pollution. In addition, the country has intense pollution from coal combustion for industry, which is damaging the air, water, and ultimately the agriculture, which in turn affects the residents' health. Of the 10 most polluted cities of the world, China is home to 7 of them. China is also the world's second-highest emitter (after the United States) of carbon dioxide pollution, mainly from industry. With the help of the United Nations and the United States, China hopes to develop a multimillion-dollar energy strategy to combat pollution (Zhang, Mo, & Weschler, 2013).

Respiratory diseases are now a widespread and serious issue. Driven by China's tremendous industrial growth, the pollution that causes these diseases is taking a heavy toll on both the environment and public health. High rates of smog from industrial and traffic pollution are associated with very high rates of respiratory infections and chronic illnesses. China relies heavily on coal that contains high levels of sulfur; this fuel is used to satisfy 70% of the country's domestic energy needs. Outdoor air tends to be more polluted in large cities than in rural areas, a result of industrial plants and vehicle emissions. Most residents in China spend the majority of their days indoors, and are exposed to coal and oil combustion from power plants, industry, pesticides, building materials, furniture, wall coverings and heating (Zhang, Mo, & Weschler, 2013).

Tobacco smoking, especially among adult males, is another growing environmental problem in China that has caused many respiratory diseases and deaths. China makes and sells more cigarettes than any other country in the world and has more than 350 million smokers,

which represents about one-third of the population. Rates are highest among adult men who have a 67% smoking rate; in contrast, only 4% of all females smoke. Cigarette smoking is now the leading cause of preventable deaths in China (and the rest of the world). It seems inevitable that China will see a tremendous increase in mortality from smoking-related diseases such as chronic obstructive pulmonary disease (COPD), lung cancer, and pulmonary tuberculosis. The China National Tobacco Corporation is the largest tobacco manufacturer in the world. As part of an effort to stem the tide of smoking, the Minister of Health publishes an annual tobacco control report and campaigns have been launched to increase tobacco taxes and put health warnings on tobacco products beginning in January 2009 (Gonghuan, 2010).

Water pollution is another major problem in China. Half of all Chinese water sources are considered too polluted for human consumption. Air and water pollution in China cause 2.4 million premature deaths per year from cardiopulmonary and gastrointestinal diseases. Increases in the use of fossil fuels in industrial and residential use increases the country's production of greenhouse gases, which also cause significant health risks to the population. Significant health disparities exist between poor and wealthy populations, related to the exposure to polluted air and water especially in poorer households (Zhang, Mauzerall, Zhu, Liang, Ezzati, & Remais, 2010).

Lead poisoning is a concern among many residents. In 2009, approximately 2,000 children living near zinc and manganese smelting plants in two provinces were found with unsafe levels of lead in their blood—a revelation that provoked riots (Watts, 2009). A rapidly growing economy and population has increased the deterioration of the water supply in rivers and lakes due to large discharges of industrial and domestic waste water, poorly planned disposal of solid waste, and extensive use of fertilizers and pesticides. In addition to the contamination of water, the supply of clean water is inadequate for the population (Gross, Strasser-Weippl, & Lee-Bychkovsky et al., 2014).

Food contamination is another major health hazard in China. A major food safety incident in China was made public in 2008. An estimated 300,000 infants and young children were made ill, and six died after melamine was deliberately added to diluted raw milk as well as other food and feed products. This additive led to formation of kidney stones and renal failure. Twenty-two manufacturers of infant formula sold this contaminated product, in what is considered one of the largest ever food contamination incidents—which also had implication for international food safety (Gossner et al., 2009). Findings from a 2011 study demonstrated that about 10% of the Chinese rice is contaminated with harmful chemicals (Gross, Strasser-Weippl, & Lee-Bychkovsky et al., 2014).

Mental Health

Mental health is a major issue in China today because of the rapid social and economic changes. Changes that some members of the population face today include financial losses from bad business deals and gambling; higher rates of extramarital affairs, family violence, and divorce; rising rates of substance use and abuse; weakening of traditional family values and relationships; large numbers of rural migrants seeking employment in larger urban environments; a widening

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gap between the rich and poor; work-related stress; and a faster pace of life. Eighty percent of the country's healthcare budget goes to the urban residents, even though they represent only 30% of the total population. Funds for mental health are very limited for the rural population, most of whom cannot afford the out-of-pocket costs for mental health care. Shanghai, the largest population in China, boasts having the most comprehensive mental healthcare system in the country (Chang & Kleinman, 2002).

Thirteen percent of the Chinese population has psychological problems, and 16 million people in China suffer from serious mental illness. Every year in China, some 280,000 people commit suicide, accounting for 25% of the entire world's suicide statistics. Another 20 to 50 million people attempt suicide each year. Suicide is the fifth-leading cause of death for Chinese people 15 to 35 years of age. The suicide rate in China is three times higher in rural areas as compared to urban areas. This rate is 25% higher among women than men, a trend that is the opposite of that found in many other nations of the world. The higher rates of female suicides in rural areas are primarily due to poverty, the low status of rural women, forced marriages, family violence and conflict, chronic stress, and no hope for the future. Men in rural areas are often absent from the homes for long periods of time, leaving the women to work in the fields, take care of children, cook, and care for the house (Pochagina, 2005).

Nutrition

Throughout China, there has been a change in diet and physical activity and overall body composition patterns. During the past 10 years, the number of people living in China in absolute poverty has significantly declined. The proportion of those considered extremely poor decreased from 20 to 6% of the total population during the same period. As a result of this change in economic status, the prevalence of obesity and diet-related noncommunicable diseases has increased more rapidly in China than in other developed societies. Diets have shifted from high-carbohydrate to high-fat and high-density energy foods, leading to overweight and obesity—and their associated diseases, such as diabetes, stroke, cancer, and cardiovascular diseases (CIA, 2011a).

Cardiovascular Disease

Cardiovascular disease is the leading cause of mortality in the world, including in China and other developing countries. China and other developing nations have been experiencing an epidemic in cardiovascular disease during the last few decades mainly because of lifestyle and diet changes. Currently, there is a growing prevalence of metabolic syndrome and overweight individuals among adults in China. Metabolic syndrome is characterized by a cluster of problems that consists of abdominal obesity, increased blood pressure and glucose concentration, and elevated cholesterol levels. Obesity is a risk factor not only for cardiovascular disease but also type 2 diabetes, hypertension, and cancer. Excess weight is also a cause for osteoarthritis and gallbladder disease (CIA, 2011a).

Infectious Diseases

Major infectious diseases in China include the following (CIA, 2011a):

- Food- and water-borne diseases (bacterial diarrhea, hepatitis A, and typhoid fever)
- Vector-borne diseases (Japanese encephalitis and dengue fever)
- Soil-contact diseases (hantaviral hemorrhagic fever and renal syndrome)
- Animal contact diseases (rabies)

HIV/AIDS

The general population of China knows little about the sexual practices that increase the risk of contracting HIV infection. HIV/AIDS prevention in the general population has been rare. Those now living in China with HIV/AIDS face severe discrimination and have limited access to healthcare services, especially in the rural areas. The government has promised to provide free HIV tests to anyone who wants one and to fully cover treatment costs for poorer patients. The CIA (2011a) has estimated that 0.1% of the total Chinese population is infected with HIV, which ranks China 115th worldwide in number of cases. It translates into 700,000 adults living with HIV/AIDS, which ranks as the 17th largest population with this disease in the world. The estimated number of deaths from this cause—39,000 per year—places China at 15th worldwide in AIDS deaths.

Tuberculosis

China reported the worldwide second-highest number of new tuberculosis (TB) cases (1.31 million) and the second-highest number of TB deaths (201,000 TB cases) in 2007, behind only India. China has 4.5 million TB cases currently, and each year 1.4 million people develop the disease. TB killed 160,000 people in China in 2008, according to WHO. TB also represents a drain on China's health budget because of the high incidence of people with a drug-resistant strain of the disease, which is much more difficult and expensive to treat; these patients need to take drugs for up to two years and one out of every two patients dies. Regular TB costs 1,000 yuan (\$158.60) to treat in China, whereas drug-resistant TB costs range from 100,000 to 300,000 yuan (\$15,900 to \$47,600) per person. China spent \$225 million fighting TB in 2008, up from \$98 million in 2002, according to WHO. (These figures do not take into account the amounts that patients pay out of their pockets, which typically amounts to between 47 and 62% of their hospital bills.) The World Bank funded the first TB survey in China, which was followed by a new program that aimed to treat the existing cases and prevent new ones (Lyn, 2010).

Population Control

China has only 7% of the world's arable land, yet 22% of the world's population. To feed, house, and promote good health care for this country's citizens despite the relatively scarce resources, the "one child per family" policy was established by Chinese leader Deng Xiaoping in 1979 to limit China's population growth. The advantages of such a policy are that each child will have a healthier life, family costs will be lower, and the child will get a better education. Women will be

able to focus on their careers as well as on care for their families. The government claims that this policy has prevented mass starvation (Rosenberg, 2011).

Fines, pressures to abort a pregnancy, and even forced sterilization occur with subsequent pregnancies after the first. The policy includes ethnic Han Chinese living in urban areas. Citizens living in rural areas and minorities living in China are not subject to the law. The “one child” policy has estimated to have reduced the population of the country by as much as 300 million people in the past 20 years. A new law in addition to the “one child” regulation states that if both parents have no siblings, they may have two children, thus preventing too dramatic a population decrease (Rosenberg, 2011).

One problem with this population control policy is that Chinese parents usually rely on their children, especially their sons, for support in their old age. The result is that most couples want a male child as their only child. In turn, sex selection during pregnancy (e.g., through ultrasound and subsequent abortion of female fetuses) has resulted in a ratio of 114 males to 100 females among children from birth to four years old. Over time, the population control policies have caused serious problems for female infants, including abortion, neglect, abandonment, and even infanticide (Rosenberg, 2011).

China is a lineage-based society and *bare branches*, a term used for unmarried men who represent the end of the line for their families, are poorly regarded in China. They often suffer discrimination, which frequently extends to their parents, ultimately causing an increase in shame, leading to greater alcoholism and mental health disorders (Rosenberg, 2011).

Traditional Medicine

The practice of traditional Chinese medicine was strongly promoted by Chinese leaders, and it has remained a major part of health care although Western medicine gained acceptance in the 1970s and 1980s. The goal of China’s medical personnel is to synthesize the use of both Western and traditional Chinese medicine, yet this practice has not always worked seamlessly. Physicians trained in traditional medicine and those trained in Western medicine are very separate groups with different basic ideas. Traditional Chinese medicine uses herbal treatments, acupuncture, acupressure, moxibustion, and cupping of skin with heated bamboo. These approaches are very effective in treating minor ailments and chronic diseases, and they produce far fewer side effects. Some more serious and acute problems are also treated with traditional medicine. For more information regarding this topic see Chapter 11 entitled, “Global Use of Complementary and Integrated Health Approaches.”

Road Traffic Accidents

Road traffic accidents in China kill more than 250,000 people (21.3/100,000 people) annually, which is more than in any other country in the world. Accidents are the fourth leading cause of premature deaths. Interventions to decrease speeding and drunk driving began in the cities of Suzhou and Dalian in 2010. Underreporting of accidents impedes the gathering of statistics for the various regions. Social marketing campaigns are attempting to reduce the incidence of drunk driving and speeding, but no great outcomes so far have been reported (Bhalla, Li, Duan, Wang, Bishai, & Hyder, 2013).

INDIA

History

The Indus Valley civilization, one of the world's oldest, was a vibrant presence during the second and third millennia BCE. Aryan tribes from the northwest came to the Indian subcontinent in 1500 BCE, merging with the earlier Dravidian people and creating the classical Indian culture. Many years later in the nineteenth century, India came under British rule. Nonviolent resistance to British rule, led by Ghandi and Nehru, brought India to independence in 1947. Violence in the new state eventually led to a partition of the nation, creating two countries, India and Pakistan. Later, a war in 1971 resulted in East Pakistan becoming the country of Bangladesh (CIA, 2011b).

Geography

India is located in southern Asia, bordering the Arabian Sea and the Bay of Bengal, between Burma and Pakistan. It has a large land area, ranking seventh in the world. The climate includes monsoons in the south and a more temperate climate in the north. The country's natural resources include coal (India has the fourth-largest reserves in the world), iron ore, manganese, mica, titanium ore, natural gas, diamonds, and petroleum, among others. Within this country there is an abundance of deforestation, soil erosion, overgrazing, air pollution from industry and vehicle emission, and water pollution from raw sewage and agricultural pesticides, making water nonpotable throughout the country (CIA, 2011b).

Population

India has a population of 1.24 billion people, ranking the country second in the world in population size. The population is growing at a rate of 2% annually, which will create the world's largest population, surpassing China by 2030. By 2050, India's population is expected to reach 1.6 billion people. The population increase is due to increases in life expectancy, decreases in infant mortality, and emphasis on eradication of diseases such as hepatitis, tetanus, and polio among infants. The gross national income is \$3,910 USD. Life expectancy is 64 years for men and 68 years for females. The total expenditure on health per capita is \$157 USD. The annual percentage on health as a percentage of the GDP is 4.1%. The maternal mortality ratio is 190 per 100,000 live births. The HIV rate is 169 per 100,000 population (WHO, 2014b).

The majority of India's people (70%) live in a rural agrarian economy and have incomes of less than \$1 per day (CIA, 2011b). Only 29% of the total population lives in urban areas. Twenty-two percent of the population is malnourished and 48% of the children have stunted growth. This country's poor health conditions contribute to two thirds of the global morbidity. Those people living in rural areas have many more healthcare access challenges. The ratio of hospital beds for the rural population is 15 times lower than for urban areas. The ratio of doctors to people in rural areas is six times lower than in the urban population. The infant mortality rate in the poorest 20% of the population is two and a half times greater than the wealthiest 20% of the population. India also ranks third in Southeast Asia in greatest out-of-pocket

expenses for health. Only 17% of healthcare expenses are paid by the government and the remainder is paid by out-of-pocket payments (WHO, 2014b).

Infectious Diseases

India has about 2.40 million people living with HIV, with an adult HIV/AIDS prevalence of 0.31% (2009). Children up to 15 years old account for 3.5% of all infections, while 83% are in the age group 15 to 49. Of all HIV infections, 39% (930,000) are among women. India's epidemic is largely concentrated in a few states in the industrialized south and west, and in the northeast. The four states of South India (Andhra Pradesh—500,000, Maharashtra—420,000, Karnataka—250,000, Tamil Nadu—150,000) account for 55% of all HIV infections in the country. West Bengal, Gujarat, Bihar, and Uttar Pradesh are estimated to have more than 100,000 people with HIV/AIDS, accounting for another 22% of HIV infections in the country (Sabharwal & Lamba, 2014; The World Bank, 2012).

Food- and water-borne diseases cause a high rate of bacterial diarrhea, hepatitis A and E, and typhoid fever. Vector-borne diseases include chikungunya, dengue fever, Japanese encephalitis, and malaria. Rabies comes from contact with an infected animal, and leptospirosis is traced to contact with infected water. India's malaria and TB rates are ranked third in the world (Sabharwal & Lamba, 2014).

Chronic Diseases

India is now faced with a double burden of long-term chronic illnesses and serious acute illnesses. Cardiovascular diseases, cancer, degenerative diseases, and diabetes have become major health issues in addition to the acute communicable diseases mentioned previously.

Culture

Indians practice a number of different religions: Hindu (80.5%), Muslim (13.4%), Christian (2.3%), Sikh (1.9%), other (1.8%), and unspecified (0.1%). English is the official language, though Indians use many other languages as well. Hindi is the most widely spoken of these languages (used by 41% of the population), but 14 other languages are also spoken. Approximately 61% of the population is literate, being able to read and write, and the average education level is 10 years. Inequality of opportunity has caused the lower-caste Hindus, Muslims, tribal people, and other minority populations to be disproportionately represented within the poor, the uneducated, and those with most health problems (CIA, 2011b).

Government and Economy

India is a federal republic with New Delhi as its capital city. The country contains 28 states and seven union territories. The economy is developing into an open-market economy, which encompasses traditional village farming, modern agriculture, handicrafts, and a wide range of services, including information technology and software workers. India's annual per capita income is \$3,400 (2010 estimate). The country has a significant labor force of 467 million people (second largest in the world) and has 81 million people using the Internet (the fourth-largest group

of users in the world). The unemployment rate is 10.7%. The Indian pharmaceutical market has grown rapidly in the past few years and the federal government uses price controls to ensure that vital drugs are available to the general population (CIA, 2011b).

Health Care

India has the world's largest democracy and the second most populous country in the world. Twenty-two percent of the residents are malnourished and 48% of the children have stunted growth, conditions that are responsible for two thirds of the burden of morbidity. There remains a significant disparity in access to and equity of health care for different ethnic and socioeconomic groups within the population. In addition, the ratio of people to hospital beds for rural residents is 15 times lower than for urban residents, and the ratio of doctors to rural residents is six times lower than for urban residents. The infant mortality rate for the poorest 20% of the population is two and a half times higher than that of the richest 20% of the population. India ranks third in the Southeast Asia region with the highest out-of-pocket expenditures for health care. The private health sector of the population has a monopoly of the ambulatory urban and rural healthcare services. The government has a general obligation to provide free and universal access to healthcare services to all and ensure that no one is denied health services. The healthcare system continues to suffer from inadequate funding and poor health management, and numerous health problems related to malnutrition, starvation, and disease, especially in the rural areas (Sabharwal & Lamba, 2014).

Health care is the responsibility of each state or territory of India. Each state is expected to pay for 80% of healthcare facilities, and the federal government pays 15%, mainly through national healthcare programs. Health care in India can be traced back 3,500 years to the inception of Ayurvedic traditional medicine, which is still used today. India has historically suffered from great famines, which have been eradicated, yet continues to experience significant problems with undernutrition. Undernutrition rates in children in India are higher than Sub-Saharan Africa. Approximately 46% of children from birth to three years are undernourished (Rao, 2009). A preference for male babies has led to an imbalanced ratio of 93.5 girls per 100 boys, in contrast to the natural gender ratio at birth of 105 males to 100 females. Maternal and infant death rates remain high. The vast majority of the Indian population suffers from waterborne and airborne infections. Most of the country lacks a basic infrastructure, as its development has not kept up with the growing economy. Almost one million people die each year due to inadequate health care, and 700 million people lack access to specialist care, which mainly exists in large urban areas. Forty percent of the healthcare facilities in India are understaffed (Rao, 2009).

The number of hospital beds is low with only 0.7 per 1,000 population, compared to the world average of 3.96 hospital beds per 1,000 population. In addition, India lacks an adequate number of trained healthcare personnel for its growing healthcare industry. Rural healthcare services are mainly provided by smaller primary healthcare centers, which rely on trained paramedics for most of the care. Serious cases are sent to urban areas, where specialists and acute care facilities are available. Skilled birth attendants are needed, yet are still not provided in adequate numbers to decrease the high rates of maternal and infant mortality (Rao, 2009).

Indigenous traditional medicine is practiced throughout the country. The main forms are Ayurvedic medicine, which addresses mental and spiritual well-being as well as physical well-being. In addition, Unani herbal medicine is practiced. Today only 25% of the Indian population has access to Western medicine (Rao, 2009).

The government has made a major commitment to telemedicine to reach the majority of the poor, rural, underserved population. Health insurance is inaccessible to the majority of Indians, and 75% of healthcare expenses are paid on an out-of-pocket basis, which is very difficult for the many people who live in poverty. Emergency and specialty care is well beyond the reach of most of the poor lower-class residents. Among those in the urban middle and upper classes, approximately 50% have private health insurance (Rao, 2009).

The National Rural Health Mission was begun in 2005 to provide major improvements in health care for the rural population. Primary healthcare clinics, which have social activist leanings, help support public health priorities such as childhood immunizations and compliance with TB treatments. The National Rural Health Mission program was established to address issues of poverty and provide 100 days of work at minimal wage to one family member per household. In addition, an increase in primary school enrollment, particularly among girls, was established as a goal (Rao, 2009).

SOUTH AFRICA

Geography

South Africa is located at the southern tip of the continent of Africa. It is bordered by Botswana, Lesotho, Mozambique, Namibia, Swaziland, and Zimbabwe, as well as the Atlantic and Indian oceans. Its climate is mostly arid, with a subtropical region found along the country's east coast. Natural resources include gold, chromium, antimony, coal, iron ore, manganese, nickel, phosphates, tin, uranium, gem diamonds, platinum, copper, vanadium, salt, and natural gas (CIA, 2012).

Population

South Africa's population as of 2013 was approximately 53 million people of diverse origins, cultures, languages, and religions. The growth rate is 1.34%, birth rate is 19.1 per 1,000 population, and the death rate is 16.99 per 1,000. Life expectancy is 49.2 years overall, with 50.08 years for men and 48.29 years for women. The infant mortality rate is 43.78 deaths per 1,000 live births. The probability of dying under age five is 45 per 1,000 live births. The total expenditure on health per capita (2012) was \$982 with a percent of the GDP as 8.8%. The literacy rate is 93% of the population, and there is a 51.9% unemployment rate (CIA, 2012; WHO, 2012b).

There are 11 official languages consisting of Afrikaans, English, Ndebele, Northern Sotho, Sotho, Swazi, Tswana, Tsonga, Venda, Xhosa, and Zulu. Despite the fact that English is the recognized language for commerce and science, it is ranked fourth and spoken by only 9.6% of South Africans as their primary language.

Religions include Zion Christian (11.1%), Pentecostal (8.2%), Roman Catholic (7.1%), Methodist (6.8%), Dutch Reformed (6.7%), Anglican (3.8%), and other Christians (36%), Muslims (1.5%), Hindus (1.3%), and Jews (0.2–15.1%) (CIA, 2012b).

South Africa spends 8.5% of its GDP on health care, ranking 54th in the world. The ratio of physicians in the population is 9.76 per 1,000, and there are 2.6 hospital beds per 1,000 people.

South Africa is considered a middle-income nation with a progressive constitution that guarantees the right to health care. The National Health Insurance (NHI) delivers universal health coverage.

Ethnic groups in South Africa include the following (CIA, 2012):

- Black African (79.6%)
- White (9.1%)
- Colored (8.9%)
- Indian/Asian (2.5%)

Languages spoken in South Africa include the following:

- IsiZulu (23.8%)
- IsiXhosa (17.6%)
- Afrikaans (13.3%)
- Sepedi (9.4%)
- English (8.2%)
- Setswana (8.2%)
- Sesotho (7.9%)
- Xitsonga (4.4%)
- Other (7.2%)

South Africa has the largest population of people of European descent in Africa, the largest Indian population in Africa, and the largest colored (mixed European and African) group in Africa. It is one of the most ethnically diverse countries in Africa. The country has had a long history of racial problems between the black majority and the white minority. The country's Apartheid policy, a system of racial segregation in South Africa enforced through legislation, was introduced in 1948 and ended in 1990. Crime remains a major problem in South Africa, which ranks first in the world in number of murders by firearms, manslaughter, rape, and assault cases. It also ranks fourth in the world in robbery incidence, according to a survey conducted by the United Nations from 1998 to 2000. Problems also persist with illegal drug transportation and sales (CIA, 2012b).

The South African population is relatively young, with approximately one-third younger than age 15. Fertility is declining, and there is an increase in persons older than 60 years. The country's healthcare services include not only services for obstetrics, pediatrics, and adolescents, but also those for the aging population. A large proportion of the population (18% in some areas) is illiterate. Half of all households use electricity for cooking. Since 1994, life expectancy in South Africa has declined by 20 years, mainly because of the increase in HIV/AIDS incidence. The global burden of disease is quite high, and morbidity and mortality rates

are very high due to HIV/AIDS, violence and injury, chronic diseases, mental health disorders, and maternal, neonatal, and child mortality (Chopra, Lawn, Sanders, Barron, Abdool Karim, & Jewkes, 2009).

Government

The government is a republic, formally named the Republic of South Africa (RSA), with a legal system based on Roman-Dutch law and English common law. The system of government is also called a parliamentary democracy. South Africa has three capital cities: Cape Town, the largest, is the legislative capital; Pretoria is the administrative capital; and Bloemfontein is the judicial capital. The country comprises nine provinces (CIA, 2012).

Economy

South Africa has a two-tiered economy. One segment is similar to other economically strong developed countries, and the other is more like developing countries with only the basic infrastructure. South Africa has well-developed financial, legal, communication, energy, and transportation systems. It has the world's 10th-largest stock exchange and a modern infrastructure. It has the best telecommunications system in Africa. At the same time, South Africa has a very high unemployment rate (25%) and most of the country's citizens live on less than \$1.25 per day. The country's wealth is unevenly distributed, with the minority whites having a much larger portion of the wealth and the majority blacks having a very challenging existence with difficulty finding well-paying jobs (Index Mundi, 2013).

The country has an overall per capita GDP of \$11,500 (2013 estimate) (Index Mundi, 2013). Its industries include mining (South Africa is the world's largest producer of platinum, gold, and chromium), auto assembly, metalworking, machinery, textile, iron and steel, chemicals, fertilizers, ship repair, and foods. The main agricultural products are corn, wheat, sugarcane, fruits, vegetables, beef, poultry, mutton, wool, and dairy products (OECD, 2013).

Healthcare System

South Africa's healthcare system consists of a large public sector and a smaller, yet fast-growing private sector. Basic primary health care is offered free to all residents of the country, but is highly specialized; high-tech care is limited to only those who can afford private care. The dilemma is that the government contributes approximately 40% of healthcare costs for the public health, yet 80% of the population uses the services. The number of public hospitals continues to grow, and companies in the mining industry operate their own 60 hospitals and clinics in different locations within the country (Coovadia, Jewkes, Barron, Sanders, & McIntyre, 2009).

The South African healthcare system faces many challenges. The country's history of very high rates of communicable and noncommunicable diseases, combined with the legacy of colonialism, Apartheid, and post-Apartheid turmoil, have led to major racial and gender discrimination, a migrant labor system, destruction of family life, great disparities in family incomes, and extreme violence, which have all affected the health and healthcare system of the nation. For many decades, black people were forced to work for the white minority for very low

wages. Before 1994, politics restricted health and health care for blacks. The public healthcare system has now been transformed into an integrated national service, but is plagued by a lack of management and leadership. Some of the main problems related to health include poverty-related illnesses such as infectious diseases (HIV/AIDS, TB, and malaria), maternal mortality, malnutrition, and high rates of noncommunicable diseases. HIV/AIDS accounts for 31% of the disability-adjusted life-years, and violence and injury continue to cause premature deaths (Coovadia, Jewkes, Barron, Sanders, & McIntyre, 2009).

South Africa is considered a middle-income country because of its economy, yet its disease rates are higher than those of many low-income countries. It is one of only 12 countries in the world where child mortality has increased, rather than decreased, since the 1990 Millennium Developmental Goals were established (Coovadia, Jewkes, Barron, Sanders, & McIntyre, 2009). There are great disparities between the country's public and private healthcare systems. Less than 15% of the population uses private health care, yet 46% of all healthcare expenditures are devoted to private healthcare services. There is also a disparity in funding among the provinces within South Africa's healthcare system (Coovadia, Jewkes, Barron, Sanders, & McIntyre, 2009).

Major Health Issues

As noted previously, South Africa is challenged by very high rates of injury, the problem of underdevelopment of the country as a whole, and numerous residents with chronic diseases. The largest rise in death rates for adults has occurred among the young adult group, who are dying in increasing numbers from HIV/AIDS. Deaths from tuberculosis, pneumonia, and diarrhea are also increasing rapidly. The leading cause of death in South Africa is HIV/AIDS (infants and young adults), followed by homicide (young adult men), tuberculosis, road traffic accidents, and diarrhea. Large numbers of deaths from noncommunicable diseases occur in the 60 and older group of the population. Causes of death for children younger than five years are ranked as follows:

1. HIV/AIDS
2. Low birth weight
3. Diarrhea
4. Lower respiratory infections
5. Protein-energy malnutrition
6. Neonatal infections
7. Birth asphyxia and birth trauma
8. Congenital heart disease
9. Road traffic accidents
10. Bacterial meningitis

Health care in South Africa varies from the most basic primary health care, offered free by the state, to highly specialized, hi-tech health services available in the both the public and private sector. The private sector, on the other hand, is run largely on commercial lines and caters to middle- and high-income earners who tend to be members of medical schemes. It also attracts most of the country's health professionals. This two-tiered system is not only inequitable and

inaccessible to a large portion of South Africans, but institutions in the public sector have suffered poor management, underfunding, and deteriorating infrastructure. While access has improved, the quality of health care has fallen (SouthAfrica.info, 2014).

National, Provincial and Local Health Care

Prior to South Africa's first democratic elections, hospitals were assigned to particular racial groups, and most were concentrated in white areas. With 14 different health departments, the system was characterized by fragmentation and duplication. But in 1994 the dismantling began, and transformation is now fully underway; nonetheless, high levels of poverty and unemployment cause health care to remain primarily a burden of the state. The Department of Health holds overall responsibility for health care, with a specific responsibility for the public sector.

Provincial health departments provide and manage comprehensive health services, via a district-based, public health care model. Local hospital management has delegated authority over operational issues, such as the budget and human resources, to facilitate quicker responses to local needs. Public health consumes around 11% of the government's total budget, which is allocated and mostly spent by the nine provinces. Hundreds of NGOs make an essential contribution to HIV/AIDS and TB, mental health, cancer, disability, and the development of public health systems. The part played by NGOs from a national level, through provincial and local, to their role in individual communities—is vitally important to the functioning of the overall system (SouthAfrica.info, 2014).

National Health Insurance

The Department of Health is focused on implementing an improved health system, which involves an emphasis focused on public health, as well as improving the functionality and management of the system through stringent budget and expenditure monitoring.

Known as the “10-point plan,” the strategic program is improving hospital infrastructure and human resources management, as well as procurement of the necessary equipment and skills.

Under this plan, health facilities—such as nursing colleges and tertiary hospitals—are being upgraded and rebuilt to lay the way for the implementation of the National Health Insurance (NHI) scheme. The NHI is intended to bring about reform that will improve service provision and healthcare delivery (SouthAfrica.info, 2014).

Facilities

There are 4,200 public health facilities in South Africa. Since 1994, more than 1,600 clinics have been built or upgraded. Free health care for children under six and for pregnant or breastfeeding mothers was introduced in the mid-1990s. The National Health Laboratory Service is the largest pathology service in South Africa. It has 265 laboratories, serving 80% of South Africans. The labs provide diagnostic services as well as health-related research (SouthAfrica.info, 2014).

Doctor Shortages

In March 2012, 165,371 qualified health practitioners in both public and private sectors were registered with the Health Professions Council of South Africa, including 38,236 doctors and 5,560 dentists. The physician-to-population ratio is estimated to be 0.77 per 1,000 people in the

population, but because the majority (73%) of GPs works in the private sector, there is just one practicing doctor for every 4,219 persons (SouthAfrica.info, 2014).

In response, the Department of Health has introduced clinical health associates, mid-level health care providers, to work in underserved rural areas. In an attempt to boost the number of doctors in the country, South Africa signed a cooperation agreement with Cuba in 1995. South Africa has since recruited hundreds of Cuban doctors, and South Africa is able to send medical students to Cuba to study (SouthAfrica.info, 2014).

Infectious Diseases

Life expectancy has increased because of expansion of HIV/AIDS and TB treatment and care. South Africa has one of the highest TB rates in the world and has 17% of the global burden of multiresistant tuberculosis. Diagnosis and treatment is costly using a substantial portion of the medical budget with a treatment success rate of about 40% (SouthAfrica.info, 2014).

HIV/AIDS

Currently 6.4 million people, a 17.9% prevalence rate, in South Africa are living with HIV/AIDS (2012), an increase from 4.6 million in 2008, which is attributed to antiretroviral therapy (ART). The country continues to have the world's highest rate of people with HIV/AIDS, as well as the world's highest mortality rate from this disease. In 2013 there were 235,000 deaths from AIDS. Domestic investment in HIV is \$735 million USD (2012). More than 2 million people in 2013 were accessing ART (antiretroviral therapy), representing 54% of those in need. Although the government plans to increase ART accessibility to 4.6 million people in a few years, HIV/AIDS continues at an extremely high rate with 900 people infected and 500 dying each day. In May 2012, the government said it had cut the mother-to-child transmission rate from 3.5% in 2010 to less than 2%. It also said the rate of new infections had dropped from 1.4% to 0.8% in the 18 to 24 age groups (WHO, 2012b).

South Africa has the largest antiretroviral treatment programs in the world. Life expectancy has increased by five years since the height of the epidemic. These efforts have been largely financed from its own domestic resources. The country now invests more than \$1 billion annually to run its HIV and AIDS programs. HIV prevalence is almost 40% in Kwazulu Natal compared with 18% in Northern Cape and Western Cape. HIV prevention initiatives are having a significant impact on mother-to-child transmission rates in particular, which are falling dramatically. New HIV infections overall have fallen by half in the last decade. Moreover, while South Africa is yet to make significant inroads into the reduction to TB deaths, the country has made great progress in the scaling up of ARV access for co-infected people. In South Africa there were still 370,000 new HIV infections in 2012, the world's highest (UNAIDS, 2013).

The HIV epidemic in South Africa fuels the TB epidemic. People with HIV are at a far greater risk of developing active tuberculosis as a weakened immune system facilitates the development of the disease. Similarly, TB can accelerate the course of HIV: about 1% of the South African population develops TB every year and the number of TB cases continues to rise. Seventy percent of people living with HIV in South Africa are co-infected with TB (AVERT, 2014).

Another HIV/AIDS risk factor is the very high rate of violence against women in South Africa. The incidence of rape in South Africa is considered to be among the highest in the

world, yet these crimes are seldom reported. Rates of rapes of female children are exceptionally high. A myth that having sex with a virgin will cure AIDS remains to blame for part of the increase in child rape. In addition, a very high incidence of violence at the hands of husbands or boyfriends occurs. Women can be beaten if they refuse to have sex with their partners. Women often remain in abusive relationships for financial dependency reasons. No matter why it occurs, violence against women increases the risk of HIV and STI infections (UNAIDS, 2013).

In South Africa, 30% of women are heads of households. These women are often poor, have no financial aid from men, and consequently have a very unfavorable economic position and little power. Selling sex can often be a survival strategy for these women, albeit one that makes them even more vulnerable to HIV. Young girls may trade sex for money, clothes, or food.

Another problem in South Africa is the increasing number of orphans who are left behind when both of their parents die of AIDS. Some grandparents are trying to provide care for as many as 10 to 20 grandchildren after they have lost their children. Other AIDS orphans are left alone to care for themselves. There is a lost generation of street children who have no education and have few economic resources. Some sell themselves for sex to keep themselves and siblings fed. Some are HIV infected and some are not, but many will die regardless of their situation (Sowell, 2000).

Tuberculosis

South Africa is one of the countries with the highest burden of TB. WHO estimates the incidence of 500,000 cases of active TB in 2011. About 1% of the population (about 50 million people) develops active TB disease each year. This is the third-highest incidence of any country worldwide, after India and China, and the incidence has increased by 400% over the past 15 years. Out of the 500,000 incident cases in South Africa it is estimated by WHO that about 330,000 (66%) people with HIV/AIDS also have a TB infection (TBFacts.org, 2014). The high rate also reflects South Africa's poor standard of living, which is characterized by poverty and overcrowding. Other factors include the increase and extent of drug resistance, particularly multidrug resistance (MDR).

Cholera

South Africa last experienced an upsurge in the incidence of cholera where more than 6,000 reported cases of cholera were reported in February 2009. More than 50 people died from this disease. Most of the victims were from Mpumalanga and Limpopo. Cholera is an intestinal illness caused by the *Vibrio cholerae* organism. Cholera results in the loss of large volumes of watery stool (excrement), leading to rapid dehydration and shock, and often resulting in death without treatment. The fatality rate for untreated cholera is 50%. Persons with cholera develop rapid breathing, vomiting, and painless diarrhea, and they go into metabolic acidosis. Appropriate oral or intravenous rehydration therapy is needed to replace lost fluids and electrolytes. In South Africa, cholera represents a significant burden. Approximately 200,000 cases are reported to the World Health Organization every year. However, WHO believes the true number of cases annually is between 3 to 5 million, with 100,000 to 120,000 deaths. Cholera is contracted by consuming food or water contaminated with the fecal bacteria *Vibrio cholerae*.

The symptoms are usually mild, but about 20% of cases include symptoms of watery diarrhea. Cholera deaths result from poor sanitation and poor-quality water supplies and an estimated 18 million South Africans have no basic sanitation. Across the continent of Africa, more than 38% of all people have no access to safe water—a percentage higher than that found in any other place in the world. In South Africa, some 12 million people lack safe water and 20 million lack sanitation facilities. By 2020, South Africa's population demands will exceed its water supply by 6%. Health maintenance is dependent on an adequate water supply and adequate sanitation facilities (toilets). It is vital in hospitals and healthcare clinics to have adequate clean water and sanitation for prevention and treatment of diseases and illnesses. A clean and adequate supply is necessary for simple handwashing in patient care. In short supply areas, it is necessary for healthcare workers to disinfect water if unclear and teach similar techniques to patients. Techniques of disinfection include boiling, use of chlorine tablets, filtration, and clean storage (WHO, 2012b).

Malaria

Malaria is a serious disease transmitted to humans by the bite of the *Anopheles* mosquito. Symptoms include fever and a flulike illness characterized by chills, headache, muscle aches, and fatigue. Malaria can also cause anemia and jaundice. If not treated promptly, this infection can lead to kidney failure, coma, and death. Malaria can be prevented by antimalarial drugs, such as atovaquone/proguanil, doxycycline, and mefloquine. Chloroquine is not effective for malaria prevention in South Africa. Protection from mosquito bites is also very important (WHO, 2013).

Malaria is a major health problem in Sub-Saharan Africa and affects great numbers of young children and pregnant women. It is the main cause of 20% of all deaths of young children in Africa. Approximately 95% of the infections in South Africa are due to *Plasmodium falciparum*, a microbe that lives in the gut of the *Anopheles* mosquito. Transmission is seasonal, with the largest number of cases occurring October to February. Use of drugs for treatment and vector control by spraying has proved effective in deterring infection. South Africa, along with five other countries, was given permission by the United Nations Environmental Programme to use DDT for public health use only. The application of DDT in 2000 led to significant improvements in the mortality and morbidity associated with this disease. It should be noted, however, that DDT is a banned pesticide in the United States and in most developed and developing countries (SouthAfrica.info, 2014; WHO, 2012b).

Violence and Injury

South Africa has many disturbing social issues that have proved challenging to manage. It is estimated that 500,000 women are raped each year in the country. Approximately 28% of men state that they have committed rape. Gender-based violence is especially high, with South African female homicide rates six times the global average; 50% of the female victims are killed by their spouses or partners. In addition, this country is ranked by the United Nations as second in the world for murder and first for assaults and rape. Violence and injury are the second leading

cause of death, and the injury rate is almost twice the global average. Approximately 16,000 road-related (motor vehicle collision) deaths occur yearly. Children also are subject to very high rates of sexual, physical, and emotional abuse and neglect (Coovadia, Jewkes, Barron, Sanders, & McIntyre, 2009).

Maternal and Infant Health

South Africa has a major problem with maternal and infant health. The infant mortality rate is 42.5 per 1,000 live births. Each year approximately 75,000 children die, and 23 die within their first month of life. In addition, 23,000 babies are stillborn, a factor closely associated with the 1,660 maternal deaths that occur annually. The major causes of maternal deaths are HIV/AIDS infections. Strengthening HIV/AIDS health care will require at least a 2.4% increase in funding for HIV prevention and treatment programs (Coovadia, Jewkes, Barron, Sanders, & McIntyre, 2009).

Since 1978, the country has had a decentralized basic primary healthcare system, instead focusing on a district healthcare system run by local governments. Disparities exist between municipalities, depending on the funding from the local area. Poor municipalities with little funding have little allocated for their healthcare budgets. Rural areas are poorly funded as compared to urban areas. Poor women, especially in rural areas, are often seen by a nurse or nurse-midwife for prenatal care and delivery, whereas urban women more often receive prenatal care and delivery from a physician. The poorest women had antepartal healthcare coverage yet in 2013 only 39.6% received care before 20 weeks' gestation. In addition there are considerable differences in the quality of maternal health care in rural as compared to urban sites (Wabiri, Chersich, Khangelani, Blaauw, & Ntabozuko, 2013).

South Africa is one of the most inequitable countries worldwide. The wealthiest 10% of the population account for greater than 50% of the county's income. Child mortality is double in the rural Eastern Cape, and four times higher for black than for white residents. Maternal mortality rates are as high as 84.9 deaths per 100,000 live births in the Western Cape to 289.1 maternal deaths per 100,000 live births in the Free State Province. These deaths are mainly due to HIV and other nonpregnancy-related infections (41%), obstetrical hemorrhage (14%), and hypertension (14%). There are huge deficiencies in the knowledge and skills of healthcare providers in these impoverished areas.

Adverse nutrition and health conditions continue to be deficient in the Kwa Zulu-Natal, and those in the Eastern Cape provinces of South Africa households reported to have tap water are 50%, and toilets, 82%; wood is the main energy source for cooking. Diarrhea rates are high at 35% for Umkanyakude and Zululand, and 55% for Tambo. The prevalence of stunting for children older than 12 months was 22 to 26%. Interestingly, the prevalence of overweight and obesity in adults in these same districts was 42 to 60% (Shoeman et al., 2010).

Smoking and Diet

There is a significant increase in the use of tobacco in South Africa, which in turn is causing more lung diseases, especially lung cancer. Campaigns to deter youth from smoking and encourage smokers to stop are being led by healthcare organizations in increasing numbers.

South Africans are undergoing a major change in diet in types and quantity of foods consumed, moving away from traditional plant foods to high-fat and high-sugar foods with low fiber. As a result of this change, overweight and obesity are now chronic problems among South African people. Urban people are more likely to be obese than rural people, and those older than 65 years are less likely to be obese. South Africans are now more sedentary than they previously were as well (WHO, 2012b).

Racial/Ethnic Inequalities

Racial inequalities continue to exist in the wake of the policy of Apartheid. Significant disparities in standards of living persist, with most blacks continuing to lack adequate public health services, such as clean water, a proper sewage system, and access to health care, making them much more vulnerable to disease. Unemployment is much higher within the black or African populations compared to other ethnic groups. Whites are the most employed group. Half of all Africans live in formal housing (solid structures with indoor plumbing and electricity), compared with 95% of whites. Poverty-related health problems such as infectious diseases, maternal and infant deaths, and malnutrition remain widespread (Coovadia, Jewkes, Barron, Sanders, & McIntyre, 2009; Kon, 2008).

Healthcare Personnel

There is a shortage of nursing and other healthcare personnel in South Africa, as well as a problem of maldistribution of resources. The majority of trained nursing and allied health professionals work in the private sector, which serves much less of the general population than does the public sector. In addition, more trained health personnel work in urban areas than in rural areas. Doctors, especially those with more subspecialty training, are more likely to work in the private sector and in urban areas (79%) as well. Moreover, there has been a trend of skilled health personnel leaving South Africa for other countries, such as the United States, Canada, New Zealand, the United Kingdom, and Australia. South Africa is actively trying to recruit nurses and doctors, especially to work in the underserved areas. In addition to healthcare personnel trained in Western medicine, there are 200,000 traditional healers who practice in South Africa (Coovadia, Jewkes, Barron, Sanders, & McIntyre, 2009).

Chronic Diseases

South Africa, a developing country, currently is experiencing a vast increase in the prevalence of chronic diseases, which historically were more associated with developed countries. Health problems such as hypertension, elevated cholesterol, alcohol and tobacco use, and obesity are now being observed in South Africa in greater frequencies. Risks for chronic diseases reflect individuals' age, gender, tobacco and alcohol use, diet, and physical activity. Other risk factors include family history and genetic background. Most chronic diseases are preventable with modification of lifestyle behaviors, and changes in activity and diet can greatly influence the risk for numerous chronic diseases. The leading causes of deaths in South Africa include the following:

- HIV/AIDS
- Heart disease

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- Homicide and violence
- Stroke
- Tuberculosis
- Lower respiratory infections
- Road traffic accidents
- Diarrhea diseases
- Hypertension
- Diabetes

All of these conditions are chronic diseases, with the exceptions of homicide, violence, and traffic accidents (Coovadia, Jewkes, Barron, Sanders, & McIntyre, 2009).

SUMMARY

This chapter has addressed the health and health care of four developing countries. Although Egypt, China, India, and South Africa are located in different regions of the world, and they have a variety of languages, customs, values, health practices, types of government, and health care per capita allocations; they also share some commonalities and similar health challenges. Although the data presented here can be used for cross-country comparisons, the definitions of health problems and data collection methodology may greatly differ, so that these comparisons, at best, may be only a good estimate for a certain time and geographical location.

Study Questions

1. How are the health issues of infant mortality and nutrition similar for the countries of Egypt, China, India, and South Africa?
2. Compare and contrast the health beliefs and practices of traditional medicine in China with those in India. How do cultural influences affect health and health care differently? What are some basic commonalities?
3. What are some contributory factors leading to the exceptionally high rate of HIV/AIDS in South Africa?

Case Study: Smoking and Health Concerns Versus Tobacco Production in China

“As the health impact of smoking, including rising heart disease and lung cancer, gradually emerges, unless there is effective government intervention, it will affect China’s overall economic growth due to lost productivity,” said Yang Gonghuan, deputy director of the Chinese Center for Disease Control and Prevention. Lost productivity from smoking-related health problems will hamper China’s economic growth, and related costs incurred by smoking far exceed the tobacco industry’s contribution in terms of profits and jobs it generates. China’s addiction to huge revenues from the state-owned tobacco monopoly is hindering antismoking measures, potentially costing millions of lives in the country with the world’s largest number

TABLE 3-16 Healthcare Statistics for Egypt, China, India, and South Africa

Indicator	Date/Date Range	Data Type	Data			
			China	Egypt	India	South Africa
HIV/AIDS						
People living with HIV/AIDS	Data from most recent year available	Number	740,000	11,000	2,400,000	5,600,000
Adults living with HIV/AIDS	2009	Number	730,000	10,000	2,300,000	5,300,000
Adult HIV/AIDS prevalence rate	2009	%	0.1%	<0.1%	0.3%	17.8%
Women living with HIV/AIDS	Number of women living with HIV/AIDS and women as a percentage of adults living with HIV/AIDS, 2009	%	32%	24%	38%	62%
Men living with HIV/AIDS	Number of men living with HIV/AIDS and men as a percentage of adults living with HIV/AIDS, 2009	%	NA	81%	61%	38%
Tuberculosis						
Children living with HIV/AIDS	2009	Number	NA	NA	NA	330,000
AIDS deaths	2009	Number	26,000	<500	170,000	310,000
AIDS orphans	2009	Number	NA	NA	NA	1,900,000
ARV need	2009	Number	NA	3,300	NA	2,600,000
ARV treatment	2009	Number	65,481	359	320,074	971,556
ARV coverage Rate	2009	%	NA	11%	NA	37%
Tuberculosis						
Tuberculosis HBCs	2010	Text	Yes	No	Yes	Yes
New TB cases	2009	Number	1,300,000	15,000	2,000,000	490,000
New TB smear-positive cases	2008	Number	640,000	6,500	890,000	200,000
New TB case rate	2009	Rate per 100,000	96	19	168	971

(continues)

TABLE 3-16 Healthcare Statistics for Egypt, China, India, and South Africa (Continued)

People living with TB	2009	Number	1,900,000	25,000	3,000,000	400,000
TB prevalence rate	2009	Rate per 100,000	138	30	249	808
TB death rate	2009	Rate per 100,000	12	1	23	52
TB prevalence in HIV-positive people per 100,000 population	2007	Rate per 100,000	1	0	4	345
Malaria						
Malaria cases	2009	Number	14,491	94	1,563,344	6,072
Malaria deaths	2009	Number	12	2	1,133	45
Other Diseases, Conditions, and Risk Indicators						
Yellow fever cases	2009	Number	NA	NA	NA	0
Yellow fever deaths	2004	Number	0	0	0	0
Diphtheria cases	2009	Number	0	0	NA	1
Measles cases	2009	Number	52,461	608	NA	5,857
Polio cases	2009	Number	0	0	752	0
DTP3 immunization coverage rate	2009	%	97%	97%	66%	69%
Vitamin A supplementation coverage rate	2009	%	NA	NA	66%	NA
Percentage with water	2008	%	89%	99%	88%	91%
Access to sanitation	2008	%	55%	94%	31%	77%
Population undernourished	2005–2007	%	10%	NA	21%	NA
Low-birth-weight babies	2000–2009	%	3%	13%	28%	NA

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Child malnutrition	2000–2009	%	6.8%	6.8%	43.5%	NA
Female prevalence of obesity	2005	%	2%	46%	1%	35%
Male prevalence of obesity	2005	%	2%	22%	1%	7%
Female prevalence of smoking	2006	%	4%	1%	4%	9%
Male prevalence of smoking	2006	%	59.5%	27.6%	33.2%	29.5%
Programs, Funding, and Financing						
Financial development assistance for health per capita	2007	U.S. dollars	\$0.18	\$1.23	\$0.50	\$6.60
USAID NTD program countries	Fiscal year 2010	Text	No	No	Yes	No
USAID maternal assistance	Fiscal year 2010	Text	No	Yes	Yes	No
U.S. food assistance program countries	Fiscal year 2008	Text	No	No	Non-emergency	No
USAID Nutrition program countries	Fiscal year 2010	Text	No	Yes	Yes	No
Health expenditure per capita	2008	U.S. dollars	\$265	\$261	\$122	\$843
Total expenditure on health	2008	%	4.3%	4.8%	4.2%	8.2%
Government health expenditures as a percentage of total government expenditures	2008	%	10.3%	5.9%	4.4%	10.4%
Government health expenditures as a percentage of total health expenditures	2008	%	47.3%	42.2%	32.4%	39.7%

(continues)

TABLE 3-16 Health care Statistics for Egypt, China, India, and South Africa (Continued)

Social Security expenditures on health	2008	%	66.3%	21.6%	17.2%	3.0%
Out-of-pocket expenditures on health	2008	%	82.6%	97.7%	74.4%	29.7%
Health Workforce and Capacity						
Physicians	2000–2010	Rate per 10,000	14	28	6	8
Nurses and midwives	2000–2010	Rate per 10,000	14	35	13	41
Community health workers	2000–2010	Rate per 10,000	8	NA	1	NA
Births attended by skilled health personnel	2000–2010	%	96%	79%	47%	91%
Hospital beds	2000–2009	Rate per 10,000	30	21	9	28
Demography and Population						
Population	2011	Number	1,336,718,015	82,079,636	1,189,172,906	49,004,031
Adult sex ratio	2011	Number	1.17	1.03	1.07	1.02
Median age	2011	Number	35.5	24.3	26.2	25.0
Population younger than age 15	2010	%	18%	33%	32%	31%
Urban population	2010	%	47%	43%	29%	52%
Land area	2009	Number	9,560,981	1,001,449	3,287,263	1,221,037
Population density	2010	Number	140	80	362	41
Birth rate	2011	Rate per 1000	12.29	24.63	20.97	19.48
Total fertility rate	2011	Number	1.54	2.97	2.62	2.30
Adolescent fertility rate	2000–2008	Rate per 1000	5	50	45	54

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Contraceptive prevalence rate	2000–2010	%	84.6%	60.3%	56.3%	59.9%
Death rate	2011	Rate per 1000	703	4.82	7.48	1709
Infant mortality rate	2011	Rate per 1000	16.06	25.20	47.57	43.20
Female infant mortality rate	2011	Rate per 1000	16.57	23.52	49.14	39.14
Male infant mortality rate	2011	Rate per 1000	15.61	26.80	46.18	47.19
Under-five mortality rate	2009	Rate per 1000	19	21	66	62
Maternal mortality ratio	2008	Rate per 100,000	38	82	230	410
Life expectancy: female	2009	Number	76	73	66	55
Life expectancy: male	2009	Number	72	69	63	54
Population growth rate	2011	%	0.49%	1.96%	1.34%	−0.38%
Income and the Economy						
GDP per capita	2009	\$	\$6828	\$5673	\$3296	\$10,278
GNI per capita	2009	\$	\$6890	\$5680	\$3280	\$10,050
Population living on less than \$1.25 per day	Data from most recent year available	%	4.0% (2005)	0.4% (2005)	10.5% (2005)	3.3% (2006)
Unemployment rate	Data from most recent year available	%	4.3% (2005)	9.7% (2010)	10.8% (2010)	23.3% (2010)
Country income classification	As of July 2011	Text	Upper middle income	Lower middle income	Lower middle income	Upper middle income
External country debt	2009	U.S. dollars	\$428,442	\$33,257	\$237,692	\$42,101
ARV: antiretroviral therapy.						
Data from Kaiser Family Foundation. (n.d.). Customized data sheet. Retrieved from http://www.globalhealthfacts.org/data/factsheet.aspx?loc=59,76,105,195&ind=1,2						

of smokers. The warnings, issued in a report prepared by a group of prominent public health experts and economists, came amidst growing calls for the government to give stronger support to tobacco-control measures. China is the world's largest tobacco producing and consuming country, with more than 300 million smokers on the mainland. Each year, about 1.2 million people die from smoking-related diseases on the mainland and the figure will increase to 3.5 million by 2030, according to estimates from the World Health Organization (WHO). The report underscores increasing concern that the country's economic potential will be jeopardized due to escalating medical costs and lost productivity if the government fails to take serious action to combat smoking.

Case Study Questions

1. What are some major health risks related to smoking and what is the impact on health for the Chinese people?
2. Why do you think that government owned tobacco production in China continues in spite of knowledge about health risks?
3. How would you suggest that smoking in China be decreased?

Condensed from Shan, J. (2012). Report: Smoking industry harming economic health. *China Daily*. Retrieved from http://www.chinadaily.com.cn/china/2011-01/07/content_11805846.htm

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