



## International Section

# Recognizing global disparities in health and in health transitions in the 21st century: what can nurses do?



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## ABSTRACT

**Purpose:** To examine changes in patterns of health and disease in global context between rich countries (USA, Korea, South Africa) and poor countries (Cambodia, Malawi) by using the framework of epidemiology theory developed by Orman (1971, 2005), and to raise awareness of global health disparities thereby prompting actions to reduce such disparities.

**Findings:** 1) Life expectancy has increased across all selected countries except South Africa; 2) Korea and the USA have substantially lower mortality rates than other countries; 3) Infant and maternal mortality are still high in the poor countries; 4) The major cause of mortality in the poor countries is still communicable disease with evidence of the onset of non-communicable disease; and 5) The health transition theory provides a description and explanation of the differences in progress in economic development between countries but fails to explain differences in health status within and between countries.

**Conclusions:** Life expectancy and mortality are enormously different among the five selected countries. This excessive health disparity is primarily due to the higher risk of communicable diseases in low-income countries. Social determinants of health are mainly responsible for the health disparities observed within and between countries.

**Clinical relevance:** Future health care development and global research priorities will not be the same for all countries because the pattern of health transitions in the developing countries is not the same as the developed countries. Actions to reduce global health disparities need to recognize the conditions and social context in which persons live. An effective strategic approach to global health equality should develop a shared system of values, priorities, and delivery infrastructures with the populations who are targeted, aligning delivery within the local social contexts.

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## 1. Introduction

Overall, the population of the developed countries including the USA has enjoyed rising life expectancy (LE) and improving health (United Nations, 2012a, 2012b; WHO, 2011a). However, the gap in health and health transition (epidemiologic transition, hereafter the terms will be used interchangeably) between the developed and developing countries is widening (United Nations, 2012a, 2012b; WHO, 2011b, 2013). Health equity globally has increasingly been on the agenda of national and international organizations. According to WHO (2011b), the social determinants of health are mostly responsible for health inequities. WHO defines the

social determinants of health as the conditions in which persons are born, grow, live, work, and age. This includes health care systems.

Omran's theory of epidemiologic transition (1971, 2005) links patterns of health and diseases and levels of mortality to stages of economic and social development. According to Omran, all societies experience three "ages" of epidemiological change in the process of modernization. He uses the evolution of Europe as the basis for his model. In stage 1, the Age of Pestilence and Famine (from prehistory to about the 1750s) is characterized by the high prevalence of endemic diseases and under nutrition, high mortality, little population growth and very low LE. It was a period of war, famine, epidemic of infectious disease, and unsanitary conditions. Average LE was low, varying from 20 to 40 years with infants and women dying at a greater rate than men. In stage 2, the Age of Receding Pandemics (from the 1750s to the early 1920s) epidemics of tuberculosis, plague, malaria, etc. begin to subside. It was a time of rapid

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population growth, with high rates of fertility. Lower mortality rates are assumed to be linked to improved nutrition, sanitation, and health care systems. During this time, heart disease and cancer begin to appear and become more significant. The LE increased to 45 years. Stage 3, The Age of Degenerative (the early 1920s to the 1960s) is known as the modern urban industrial era. During this time, there was a dramatic rise in cardiovascular disease (CVD), cancer, and stroke as the leading causes of death. The mortality rate remained low and LE rose to 70 years or higher. Omran further postulated three models of development: a “classic or Western” model in which the transition from the second to the third stage occurred gradually, an “accelerated” model such as experienced in Japan, and finally a “delayed” model characteristic of most developing countries.

There is growing interest within the nursing profession in global health and health trends across countries. In an era of global health, nurses need to recognize and understand the challenges and complexities of global health disparities and the different health transitions between countries. The article presents an integrated analysis of historical health transitions across countries and across times by applying the framework of the epidemiologic transition theory (Omran, 1971, 2005).

## 2. Methods

We examined health transitions by analyzing changing patterns of LE (Table 1), infant mortality (IM) (Table 2), and maternal mortality (MM) (Table 3) as well as the current top causes of death (Table 4) within the five selected countries. Global health is defined as the health of the population in a global context and its measures include LE, mortality rate, and disease (Etches, Frank, Ruggiero, & Manuel, 2006). To examine the impact of economic development on health transitions in a global context, two countries with the highest-income and lowest income in Asia (South Korea [from now forward called Korea] and Cambodia) and in sub-Saharan Africa (South Africa and Malawi) have been selected. The USA was selected for the purpose of comparison. The aim of this paper is to compare a developed country in Asia and Africa to a less developed country in the same region and to position these countries alongside trends in the USA. Data from published sources were utilized for the report on IM and MM including reports from the WHO, United Nations, and government reports from the selected countries. Unfortunately, data on causes of mortality are scarce in most developing countries, and this includes Korea.

### 2.1. Findings

#### 2.1.1. The USA

The USA began health transition in the 19th century and by the mid-20th century had advanced to the 3rd stage of an epidemiologic transition where total fertility rates were close to or below the replacement level of 2.1 children per woman, on average, and LE at birth exceeded 70 years (United Nations, 2012a). In this transition as fertility rates fall and survival improves, the size of each successive birth cohort will shrink relative to the size of the parental generations such that, over time, an increasing proportion of the population will be concentrated in older ages.

**Table 1**  
Changes in life expectancy since 1950.

	USA	Cambodia	Korea	Malawi	South Africa
1950	69	40	48	36	45
1960	70	41	55	38	50
1970	71	38	63	42	54
1980	74	48	67	43	58
1990	76	56	73	45	62
2000	77	64	77	47	53
2010	78	63	80	53	49

Source: United Nations (2012a). Data, Life expectance at birth; both sexes combined.

**Table 2**  
Changes in infant mortality (infant deaths per 1000 live births) since 1950: both sexes combined.

	USA	Cambodia	Korea	Malawi	South Africa
1950	30	143	138	198	110
1960	25	134	90	186	91
1970	18	139	38	169	77
1980	12	108	25	151	61
1990	9	88	10	133	48
2000	7	67	5	107	57
2010	6	53	4	77	42

Source: United Nations (2012b). Data, Infant mortality rate.

There has been a tremendous improvement of the MM in the U.S.: In 1915, the MM was 607 per 100,000; it has dropped to 21 in 2010 (CDC, 2007; WHO, 2013). Most births from 1900 to 1930 occurred at home with the assistance of midwives or general practitioners and deliveries were performed without following the principle of asepsis which resulted in sepsis. However, historical data show that low MM began to be achieved during the 1920s and 1930s in the USA by rural nurse midwives. Trained and supervised midwives, educated in the Kentucky Frontier Nursing Service, traveled on horseback to assist with deliveries, which took place at home in poor, rural farming communities with low living standards. Despite this poverty, MM rates were more than ten times lower in these communities than those of women delivered by a physician in the hospital as well as in the rest of the USA (Loudon, 2000). Omran’s theory cannot explain this improvement which occurred in the poor, rural farming context.

Unfortunately, since 1982, MM in the USA has not declined though more than half of the maternal deaths can be prevented with existing interventions (CDC, 2013b; Tucker, Berg, Callaghan, & Hsia, 2007). The USA had the highest MM rate of any industrialized country in 2010 and is one of 23 countries where MM is steadily on the rise. One reason behind this low rank is a significant disparity between Black and White women: Black women consistently experience almost four times greater risk of death from pregnancy complications, independent of age, parity, or education (Tucker et al., 2007).

The top five causes of death in the USA are heart disease, cancer, chronic lower respiratory disease, stroke, and unintentional injuries. The first two leading causes of death, heart disease and cancer, accounted for nearly 50% of all deaths (CDC, 2013b; Murphy et al., 2013). For more than 30 years, CVD has been the single greatest cause of death. This combination of high LE at birth, low fertility rates, and the pattern of deaths by degenerative diseases will result in the USA moving to the advanced stage of epidemiologic transition.

Numerous studies both old and new have documented that there are widening health disparities in the US population and that these are related to race/ethnicity, income, education, and geographic location (CDC, 2013a; Institute of Medicine, 2001; Lee, Fitzpatrick, & Baik, 2013; Olshansky et al., 2012; Tucker et al., 2007). The CDC (2013a) reported that the average LE in 2009 was 79 years improved from 68 in 1950 and 57 in 1929. However, adult men and women with fewer than twelve years of education had LEs not much better than those of all adults in 1950s and 1960s. These trends worsened when race and education were combined, White men with 16 or more years education can expect to live an average 14 years longer than Black men with fewer than 12 years of education. Though the annual per capita expenditure

**Table 3**  
Changes in maternal mortality (maternal deaths per 100,000 live births) Since 1990.

	USA	Cambodia	Korea	Malawi	South Africa
1990	12	409	18	743	121
2000	13	511	14	1662	155
2010	21	250	16	460	300

Source: WHO (2013). Maternal mortality country profiles.

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