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Abstract. The objective of this chapter is to investigate to what extent worldwide improvements in mortality over the past 50 years have been accompanied by convergence in the mortality experience of the world’s population. A novel approach to the objective measurement of global mortality convergence is adopted. The global mortality distribution at a point in time is quantified using a Dispersion Measure of Mortality (DMM). Trends in the DMM indicate global mortality convergence and divergence. The analysis uses United Nations data for 1950–2000 for all 152 countries with populations of at least 1 million in 2000 (99.7% of the world’s population in 2000). The DMM for life expectancy at birth declined until the late 1980s but has since increased, signalling a shift from global convergence to divergence in life expectancy at birth. In contrast, the DMM for infant mortality indicates continued convergence since 1950. The switch in the late 1980s from the global convergence of life expectancy at birth to divergence indicates that progress in reducing mortality differences between many populations is now more than offset by the scale of reversals in adult mortality in others. Global progress needs to be judged on whether mortality convergence can be re-established and indeed accelerated.

Introduction

The international community is paying increasing attention to the formulation and use of indicators and targets against which human development can be measured. The Millennium Development Goals, for example, have been widely adopted and provide a focus for the diverse attempts being made to improve the health and welfare of the world’s population (1). Mortality is included in these goals as well as being a component of the well established Human Development Indices used in the Human Development Report (2).

The 2003 Human Development Report focuses on the Millennium Development Goals and states: “The range of human development in the world is vast and uneven, with astounding progress in some areas amid stagnation and dismal decline in others. Balance and stability in the world will require the commitment of all nations, rich and poor, and a global development compact to extend the wealth of possibilities to all people.” Thus there is a central vision of reducing global inequities, and this vision is shared by the Director-General of the World Health Organization (3, 4). With respect to income, there is an established tradition of using measures such as the Gini coefficient to estimate trends in global inequities (5). However, with respect to health, there are no quantitative indicators being used to summarize the extent to which the mortality experience of the world’s population is converging over time. In this paper we present a novel measure, the Dispersion Measure of Mortality (DMM), that performs precisely this function. Before discussing this measure it is necessary to describe global trends in mortality.

Over the past 50 years major demographic changes have affected all regions and countries. As a result of changes in fertility and mortality the world’s population has increased from 2.5 billion to 6 billion. Declines in mortality rates, especially during childhood, have been particularly remarkable (Fig. 1). For the world as a whole life expectancy at birth has increased from 46.5 years during the period 1950–55 to 65.0 years during the period 1995 to 2000 (Fig. 2). However, over the past decade the belief that we were on a path of inexorable improvement in mortality that would benefit people all over the world has been undermined. In the 1990s the impact of the HIV/AIDS epidemic, particularly in sub-Saharan Africa (6), and the serious health crisis in the former Soviet Union (7) have shown that mortality reversals can no longer be regarded as rare and exceptional phenomena. The situation we find ourselves in is new. Before the 1970s there were almost no examples of long-term reversals in mortality, with the obvious exceptions of those caused by war and famine. Reflecting this, many of the classic analyses of the 1970s that examined long-term demographic and epidemiological trends considered that further significant gains in longevity in countries with low mortality were unlikely but that death rates in countries with high mortality would fall, resulting in a worldwide convergence in mortality (8, 9).

The recent reversals of mortality highlight an important question: that is, to what extent have the improvements in mortality over the past 50 years been accompanied by convergence in the mortality experience of the world’s population? Given the importance of this question it is striking that few researchers have attempted to explicitly address it. Mortality convergence is discussed by McMichael et al. who raise concerns about whether it can be sustained given recent setbacks (10). Similarly