

## Poverty as a cause and consequence of ill health

Kanchan Mukherjee

*Centre for Health Policy, Planning and Management, School of Health Systems Studies,  
Institute of Social Sciences (TISS), Deonar, Mumbai- 40088.*

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### ABSTRACT

**Background and aims:** Poverty is a multidimensional phenomenon that can be defined in both economic and social terms. The paper attempts to review the existing evidence to understand the relation between poverty and ill health in the context of the limited conceptual and operational definitions of these terms. The paper uses two of Hills criteria- reversibility and dose response relationship to understand the association between poverty and health.

**Methods:** This study is based on review of literature from secondary sources retrieved using key words like poverty, health and economic growth. Relevant studies were identified capturing theoretical and empirical evidence on this issue.

**Results:** The relationship between poverty and health is a complex one. There is evidence that poverty and income inequality may be the cause of ill health. However, the association does not stop there. Ill health can drive households into more poverty by creating a vicious cycle between poverty and ill health.

**Conclusion:** The relationship between health and wealth is heterogeneous and does not operate in isolation. Providing income may not always improve health. Appropriate redistribution of income may be helpful. However, without taking into context the socio-cultural, educational and social support structures, income redistribution by itself may not be meaningful. With the MDG targets on poverty and health not being met by most countries, it is to be seen if the SDG focus on poverty and health translates into meaningful action.

**Keywords:** Poverty, Health, Sustainable development goals.

Review article

### INTRODUCTION

Poverty is a multidimensional phenomenon that can be defined in both economic and social terms. An economic measure of poverty identifies a sufficient income to provide a minimum level of consumption of goods and services. A sociologic measurement of poverty is concerned not with consumption, but with social participation.<sup>1</sup> A growing body of

research confirms the existence of a powerful connection between socio-economic status and health. This area of research has implications for public policy and deserves to be more widely understood. While absolute poverty is self-evidently associated with poor health, particularly in less developed countries; strong evidence now indicates that relative poverty is also

\* **Corresponding author:** Kanchan Mukherjee, Centre for Health Policy, Planning and Management, School of Health Systems Studies, Institute of Social Sciences (TISS), Deonar, Mumbai- 40088, Tel: 00912225525533, E-mail: kanch@tiss.edu

a major determinant of health in industrialized countries.<sup>2</sup>

In 1978, the World Health Organization (WHO) in the Alma Ata Declaration spelled out the dependence of human health on social and economic development.<sup>3</sup> However, governments and major development organizations have largely continued to view health narrowly as a responsibility of the medical sector, outside the scope of economic development efforts. Consequently, governments have narrowly focused on economic development efforts, ignoring the connection between poverty and health.<sup>4</sup>

There have been significant health improvements across the globe since the Alma Ata declaration. However, there are massive disparities in the health status of rich and poor countries and the goal of “health for all” has clearly not been met. In addition, standards of health have declined in some countries. In some republics of the former Soviet Union, for example, life expectancies have been in long-term decline since the 1950s.<sup>5</sup> With the widespread poverty that accompanied with the transition from the former Soviet Union, life expectancy of women stagnated from the late 1980’s and life expectancy of men plummeted, particularly for those lacking education and job security.<sup>6</sup> Across the continent, in Sub Saharan Africa HIV/AIDS is having a devastating effect on health in many countries.<sup>7</sup>

The conceptual framework by Wagstaff, suggests a vicious cycle between poverty and ill health.<sup>8</sup> It is in this context that the paper uses an epidemiological approach based on two of Hills criteria to assess the cause-effect relationship between ill health and poverty.<sup>9</sup> The two criteria considered are: reversibility and dose response relationship. Applying this in the context of the above conceptual framework, two hypotheses emerge: 1. Interventions for

economic improvement will lead to improved health and more the economic growth, better the health status of the population. 2. Interventions to improve health will boost economic growth and healthier the population, the better is the economic growth.

This paper attempts to review existing evidence to understand the relation between poverty and ill health in the context of the limited conceptual and operational definitions of these terms.

## METHODS

The study is based on review of literature from secondary sources. Literature from internet and other sources has been retrieved using key words like poverty, health and economic growth. Databases used include Pubmed, Scopus, Google scholar and Web of science. Synthesis of evidence is based on existing published theoretical and empirical literature in this topic. The study uses an exploratory approach to search databases for literature on relationship between poverty and health. This included reports, articles in journals, books and online data. The guiding principle behind the search was to gather evidence to support both sides of the hypothesis. The end point was based on the criteria of exhaustion of new arguments for either side of the hypothesis. Biases presented in the methodology adapted by various authors whose evidence has been cited and remained and is considered as a limitation of this study.

## RESULTS

The first section describes the evidences related to poverty as a cause of ill health followed by the section on poverty as a consequence of ill health.

There is a vast division in health between the poor and the rich.<sup>10,11</sup> The poor

are hit much harder than the rich from communicable diseases, child mortality, maternal mortality and malnutrition. The burden of disease is not only much higher among the poor nations than rich nations, but also among the poor individuals than the rich individuals within one nation.<sup>10</sup> Also, within the same city, health status is worse in poorer areas.<sup>12</sup> However, the rich are suffering from disease of affluence like obesity, diabetes, cardiac diseases and also mental conditions. Hence, being rich does not necessarily means being in good health. It has been estimated that if developing countries enjoyed the same health and social conditions as the most developed nations. The current annual toll of more than 12 million deaths in children younger than 5 years of age could be reduced to less than 400,000.

2. Widening income inequality is reflected in increasing disparities between the least and most healthy.<sup>13</sup> Between the mid 1970's and 2005, the difference in life expectancy between high income countries and countries in Sub Saharan Africa and fragile states has widened by 3.8 and 2.1 years, respectively.<sup>14</sup>

The strong and pervasive relation between an individual's place in the structure of a society and his/her health status has been clearly shown by research.<sup>15-18</sup> Kitagawa and Hauser, published convincing evidence of an increase in the differential mortality rates according to socio-economic level in the United States between 1930 and 1960.<sup>19</sup> They found that rates of death from most major causes were higher for persons in lower social classes. In Britain, the Blacks' report concluded that "there are marked inequalities in health between the social classes in Britain".<sup>20</sup> Whitehall's studies of British civil servants begun in 1967 showed that mortality rates are three times greater for the lowest employment grades (porters) than for the highest grades (administrators) and that no improvement occurred between

1968 and 1988.<sup>21-23</sup> A second observation of the Whitehall's investigations confirmed by the Multiple Risk Factor Intervention Trial (MRFIT) studies in the United States, is that conventional risk factors such as smoking, obesity, low levels of physical activity, high blood pressure, and high plasma cholesterol levels, explain only about 25-35% of the differences in mortality rates among persons of different incomes.<sup>24</sup> An equally striking finding is Wilkinson's observations of the relation between income distribution and mortality.<sup>25,26</sup> First, he found no clear relation between income or wealth and health when comparisons were drawn between developed countries at similar levels of industrialization, but Wilkinson showed a strong relation between income inequality and mortality within countries. The countries with the longest life expectancy are not necessarily the wealthiest, but rather are those with the smallest spread of incomes and the smallest proportion of the population living in relative poverty. These countries such as Sweden and Japan generally have a longer life expectancy at a given level of economic development than less equitable nations such as the United States.

2. Similarly, Japan and UK had similar life expectancies and income distributions in 1970, but they have diverged since then due to the difference in distribution of income in these two countries.<sup>12</sup> The association between health inequalities and per capita income is probably due to technological change going hand-in-hand with economic growth, coupled with a tendency for the better-off to assimilate new technology ahead of the poor.<sup>27</sup>

Analysis of U.S data supports earlier observations that the distribution of wealth within societies is associated with all causes of mortality and suggests that the relative socio-economic position of the individual in U.S society may be associated with health.

States with equitable income distributions have longer life expectancies than do those in less egalitarian states, even when average per capita income is taken into account.<sup>28,29</sup> Authors of the studies that revealed these findings introduced the notion of 'social capital,' as an important variable intervening between income inequality and health status.<sup>30</sup> Evans and et al suggested that one's control of the work environment is an important connection between social and occupational class and mortality.<sup>15</sup> The strong correlation between income distribution and mortality rates shows that income disparity, in addition to absolute income level, is a powerful indicator of overall mortality. Pritchett and Summers found that 40% of differential

mortality improvements between countries can be accounted for by differences in their income growth rates.<sup>31</sup> Again, a significant proportion of health gains are left unaccounted for.

According to the World Health Organization, if those living in absolute poverty (less than one dollar a day) are compared with those who are not poor, the poor are estimated to have a five times higher probability of death between birth and age five years and two and half times higher probability of death between the ages of 15-59.<sup>32</sup> Evidence suggests that higher a country's average per capita income; the more likely their people are to live long and healthy lives (Table 1).

**Table 1:** Population, economic indicators and progress in health by demographic region, 1975-90 (World Development Report 1993)

Region	Deaths 1990 (millions)	Income per capita: Growth rate 1975-90 (percent per year)	Income per capita \$ 1990	Child mortality 1975-90	Life expectancy at birth 1975-90
Sub-Saharan Africa	7.9	-1.0	510	212	1 48 52
India	9.3	2.5	360	195	1 53 58
China	8.9	7.4	370	85	4 56 69
E.M.E countries	7.1	2.2	19900	21	1 73 76

In developing countries, the number of people in poverty is an especially important reason for differences in health.<sup>12</sup> However; this is not always the case. Countries like Sri Lanka and Cuba have good health status as measured by indicators like life expectancy and IMR, but have low per capita income levels.<sup>33</sup> In the Indian context, Table 2 seems to suggest that

improvements in economy have resulted in improvements in health indicators. However, interstate variations are huge and the state of Punjab in India which has the highest per capita income in the country has IMR34/1000 live births in urban area and ranks lower than the rural IMR of 12/1000 live births in Kerala,<sup>34</sup> which has a lower per capita income.

**Table 2:** India–Selected socio-economic indicators (2005)

Item of Information	Reference Period and data		
	1973-1974	1993-1994	1999-2000
Population below Poverty Line (%)			
Combined	54.9	36.0	26.1
Rural	56.4	37.3	27.1
Urban	49.0	32.4	23.6
	1941-1951	1991	2002
Crude Birth rate per thousand (SRS)	39.9	29.5	25.0
Crude Death Rate per thousand (SRS)	27.4	9.8	8.1
Natural Growth Rate per thousand (SRS)	12.5	19.7	16.9
	1946-1950	1991	2002
Infant Mortality Rate (SRS)	134	80	63
Expectation of Life at Birth (years)	1947	1986-1991	2001-2006
Persons	31.7	58.6	64.8
Male	32.0	58.1	64.1
Female	31.4	59.1	65.8

It is often implicitly assumed that the direction of causality is from wealth (or poverty) to health (or disease). However, the possibility that either at the individual or population level there can also be a causal link running from health to wealth needs to be considered.

The view that poor health contributes to impoverishment was a central part of the outlook of Edwin Chadwick, the 19th century public health pioneer. The view that poor health contributes to impoverishment and sustained investment in health of the poor could provide a policy lever for alleviating persistent poverty was a view favoured by the WHO and World Bank. Health is seen as a form of human capital and therefore an input into the growth process, as well as an output, with countries with educated, healthy populations in a better position to prosper, especially in a favourable policy environment.<sup>7</sup>

In this context, keeping the ethical imperatives in perspective causality seems to run in both directions (poverty ill health) generating a mutually reinforcing vicious cycle. Increasingly, research is showing that a healthy population is an engine for economic growth. The road from health to

wealth operates through a number of distinct mechanisms as described by Bloom.<sup>35</sup>

Demography: Improvements in health sets off a demographic transition from high to low fertility and mortality. However, the time lag between declines in mortality and fertility results in a ‘baby-boom’ generation, which can kick-start a period of economic growth as it enters the workforce. This effect is called the demographic dividend and its realization is heavily reliant on policies that allow extra workers to be absorbed into the work force.<sup>35</sup> East Asia provides an example of how improvements in public health contributed to economic growth via demographic change. IMR in this region dropped from 175 per thousand in 1950 to 52 per thousand in 1995. This was attributed largely to improved public health measures in East Asia in the late 1940s.<sup>36</sup> Between 1965 and 1990, annual per capita income rose by over 6%, and one-third of East Asia’s ‘economic miracle’ has been attributed to its capturing of the demographic dividend.<sup>37</sup>

Education: As fertility falls, parents are likely to invest more in educating their children to a higher level. Healthy children attend school more and are better able to

learn at school. Nutritional deficiencies, infectious diseases, disabilities, reproductive problems, injury, poisoning, and substance abuse all have measurable effects on learning.<sup>38</sup> By themselves, the educational benefits of tackling these problems greatly exceed the costs.<sup>39</sup> Lower mortality provides greater security that investment in a child's education will not go to waste, and rising life expectancies offers a longer horizon over which to recoup the benefits of investments in education. Thus, acting as a fundamental driver of economic growth and human development, healthy children are able to learn better and become better educated (and higher earning) adults.<sup>40</sup>

**The labour market:** Healthier workers are physically and mentally more energetic and robust. They are more productive and earn higher wages.<sup>7</sup> They are also less likely to be absent from work due to illness (or illness in their family). Illness and disability reduce hourly wages substantially, with the strong effect especially on developing countries where a higher proportion of the workforce is involved in manual labour.<sup>38</sup> Furthermore; improvements in public health can lead, as we have seen, to lower fertility and smaller families. Women are therefore freer to work and contribute to a country's economic productivity.

**Investment:** Healthy people expect to live longer and are more likely to save for retirement, increasing the amount of investment available to the domestic economy.<sup>7</sup> These increases in longevity can set off a savings boom; workers save more for retirement and if a healthy banking infrastructure is in place, poorer countries can capitalize. This type of savings boom has already been seen in Taiwan, Japan, and South Korea. Healthy populations are also magnets for foreign direct investment, offering external investors the labour-market strengths discussed earlier. Tourism, which is among the world's biggest industries, is

also affected by poor health. Perceptions of a country are vitally important for tourism and if a country's image is tarnished by health problems, its tourism industry inevitably suffer.

## DISCUSSION

The argument that economic conditions influence both stress and health has been made in other contexts. For example, unemployment is associated with reduced psychological well-being and higher mortality.<sup>41,42</sup> However, the income inequality hypothesis asserts that it is not the incidence or the level of economic distress that affects health. It is instead of the variation in economic circumstances in one's community that results in stress and poor health. In other words, communities that exhibit more heterogeneity in income levels have worse health outcomes. Kimberley, Kawachi and Kennedy posited a more indirect causal connection between income inequality and health; based on the concept of social capital.<sup>43</sup> The primary evidence for this argument is that state-level measures of inequality are negatively associated with state-level measures of social capital, while the latter is positively associated with aggregate health measures.

If the relationship between individual income and health outcomes shows diminishing marginal returns, then, measures of variance in incomes across regions will be negatively correlated with health outcomes.<sup>44</sup> Several cross-sectional studies support the existence of a concave relationship between individual income and overall individual health outcomes.<sup>45</sup>

Consequently, there is some reason to expect that measures of population health will be negatively associated with the variance in individual incomes. However, some inequalities in risk of disease between populations may be unrelated to income, but

they reflect long-term differences in the way in which societies have grown and developed.

Ill health not only affects the poor disproportionately, it also causes poverty. The World Bank reports that in an analysis of case studies of people and households that have become poorer, the most common reason was illness, injury, or death.<sup>46</sup> A health crisis can quickly reverse any progress the poor have made in moving up from subsistence. In one study from northwest Bangladesh, eight out of twenty one TB patients had been forced to sell land or livestock to meet the costs of their treatment and to compensate for loss of income.<sup>47</sup> In Uganda, eight out of ten TB patients involved in paid work had either lost their job or closed their businesses, while five out of thirty four had been forced to remove their children from school.<sup>48</sup>

Rises in out-of-pocket costs for public and private health-care services are driving many families into poverty and are increasing the poverty of those who were already poor. The magnitude of this situation—known as “the medical poverty trap”—has been shown by national household surveys and participatory poverty alleviation studies.<sup>49-53</sup> One of the effects of this is long-term impoverishment. The economic effect of ill health has long been a cause of bankruptcies in the USA,<sup>54</sup> but in the 1990s, ill health became a leading cause of household impoverishment in transitional economies, such as rural China,<sup>50</sup> and some of the Asiatic republics of the former USSR.<sup>52</sup> Travel costs, waiting times, drug charges all contribute to families selling their livestock and property to get health care. Poor households reporting illness in a rural area in northern Vietnam spent an average 22 % of their household budget on health-care costs, whereas rich households spent 8%.<sup>49</sup> Moreover, poor people tend to pay more than rich people at a health centre,

and poor communes are charged more than rich communes.<sup>55</sup> In Thailand, poor people also pay proportionally more for health care than rich people.<sup>56</sup> So-called free maternity services in Dhaka, Bangladesh, have hidden and unofficial payments that necessitate more than a fifth of families spending the equivalent of 50–100 % of their monthly income on maternity care.<sup>53</sup> In Vietnam, the average cost of hospital admission is the equivalent of 2 months wages 51 and in rural China, hospital care costs up to seven times the net monthly income of a poor household.<sup>57</sup> Loans and debt are common consequences of such expenses leading to long term effect on household income. In rural North Vietnam, 60 % of poor households were in debt, with a third citing payment for health care as the main reason.<sup>55</sup> In India, on average, hospitalization accounted for almost 25% of the cases of the poverty while in some states like Bihar and Uttar Pradesh; this proportion reached almost 35%.<sup>58</sup> Similar patterns of debt occur in parts of Africa, China, and Cambodia. Many times patients raise money for health-care not only by borrowing, but also by working for others, or selling off assets such as land or cattle. Withdrawal of children from school is another common coping strategy—to save on school fees and so that children can help out on the farm while parents seek temporary jobs to pay off loans for hospital bills.<sup>49</sup> In traditional economic analyses, poorer groups' payment for health care is typically used as evidence of willingness to pay. However, this is not the same as ability to pay.<sup>59</sup> 6% of people in low- and middle-income countries are pushed into extreme poverty because of health spending.

Poverty also encourages poor people to make sub-optimal choices that have damaging effects on their health.<sup>60</sup> Low income and poor health, therefore, combine to form a poverty trap. Poverty traps happen

at a regional as well as a household level. Widespread illness reduces the economic potential of an area.<sup>45</sup> The WHO estimates that the total indirect cost of lost productivity in Thailand as a result of morbidity associated with tuberculosis in 1995 amounted to \$57 million, while Gallup and Sachs state that, 'Controlling for factors such as tropical location, colonial history, and geographical isolation, countries with severe malaria had income levels in 1995 only 33% of countries without malaria, whether or not the countries were in Africa'.<sup>61,62</sup> Between 1965 and 1990, Africa's annual income growth was 4.3 percent lower than East and South East Asia's and almost all of this difference could be explained by differences in health, age structure and geography.<sup>63</sup> Russia provides an example of a downward spiral of ill health pushing a developed country into a poverty trap. The transition to a market economy, starting in the early 1990s, caused economic and political instability, as well as plummeting incomes. This occurred alongside a dramatic fall in life expectancy, accounting for 1.4–1.6 million premature deaths during 1990–1995. Russian male life expectancy in the mid-1990s was below the average for many developing countries, severely affecting the work force. Negative income growth affected public health care spending and overstressed the health system.<sup>5</sup> Poor health can thus negatively affect economy as well as the ability to create wealth. Ill health often leaves a person able to work, but reduces their productivity.<sup>12,32</sup> Harold Luft, in his study found that the overall loss of earnings due to disability among non-institutionalised adults aged 18–64 is substantial.<sup>64</sup> Observed values of earnings of sick individuals being less than that of well individuals suggests a clear 'health' effect. There is evidence that these effects are also felt at a macro level. Econometric simulations covering, counties suggest that

if life expectancy had been 10% higher in 1990, this would have had a strong positive effect on income growth and a modest negative effect on income inequality over the following 25 years.<sup>31</sup> Both effects serve to reduce poverty; with the estimates suggesting these health improvements alone would lead to a modest reduction in absolute poverty i.e. about 30 million people by 2015. Two thirds of these would have lived in India and a third in Africa, mirroring the huge importance of health for regions at an early stage of development.<sup>7</sup> Formal analysis suggests that, if two countries are compared, identical in every respect except one has a 5-year advantage in life expectancy, the healthier country will experience growth in income per capita that is 0.3–0.5 percentage points faster than its counterpart.<sup>7</sup> It is estimated that 30% of the estimated per capita growth in Britain between 1780 and 1979 can be attributed to improvements in health and nutritional status.<sup>65</sup> Anthony Giddens,<sup>66</sup> argues that risk can be a negative and uncontrollable force that inhibits action. Where there is insufficient insurance against future ill health or where health services are inadequate, individuals may be less likely to undertake the 'positive' risk associated with entrepreneurial activity. This may account for one-third of the variation in economic growth experienced by countries, and as Sen argues opportunity and security are the two facets of 'substantive freedom' whose lack results in 'capability deprivation', which characterizes poverty.<sup>67,68</sup> The health shock to a poor is likely to be catastrophic.<sup>52</sup>

## CONCLUSION

The interaction between wealth and health is heterogeneous.<sup>69</sup> There are interactions of other variables like education, fertility, culture, health system fairness and responsiveness, which affect the movement of this cycle. Evidence suggests

inadequacy of poor people's interaction with health systems.<sup>70</sup> This has important policy implications. The relation between health and wealth summarized in the Preston curve needs to be qualified.<sup>71</sup> Firstly, the curve continues to shift which suggests the role of other factors like nutrition, education, health technologies, institutional capacities and societal abilities to allow for greater production of health for the same level of wealth.<sup>14</sup> Secondly, there is considerable variation in achievement across countries with the same income especially poorer countries. Thus, the actual level of income per capita is not the absolute rate limiting factor the average curve seems to imply. Accessibility to health service is very important. The findings of the first global monitoring report on Universal Health Care that 6% of people in low- and middle-income countries are pushed into extreme poverty because of health spending speaks volumes of the challenges facing the healthcare system.<sup>72</sup>

Most studies reporting results in support of the income inequality hypothesis do so using cross-sectional area-level measures of population health and income inequality and at best can suggest association, but not causal relationship. They are prone to ecological fallacy. This suggests that the income inequality hypothesis must be tested using individual income stratified data and prospective studies controlling for the nonlinear relationship between individual income and health. Also, if poverty is defined in terms of income deprivation measured in terms of dollars per day, then clearly it is a short sighted view negating the multidimensional aspect inherent to it. Providing income is not always going to improve health. Redistribution of income appropriately may be helpful. However without taking in context the socio-cultural, educational and social support structures

income redistribution may not lead to better health.

## CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

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