

National Mortality Rates: The Impact of Inequality?

ABSTRACT

Although health is closely associated with income differences within each country there is, at best, only a weak link between national mortality rates and average income among the developed countries. On the other hand, there is evidence of a strong relationship between national mortality rates and the scale of income differences within each society. These three elements are coherent if health is affected less by changes in absolute material standards across affluent populations than it is by relative income or the scale of income differences and the resulting sense of disadvantage within each society. Rather than socioeconomic mortality differentials representing a distribution around given national average mortality rates, it is likely that the degree of income inequality indicates the burden of relative deprivation on national mortality rates. (*Am J Public Health*. 1992;82:1082-1084)

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Income and Health: An Inconsistency?

There is increasing evidence of a strong association between income and various measures of health within the advanced developed countries.¹⁻³ Elsewhere in this issue Nelson⁴ reports mortality rates among American children in families eligible to receive Aid to Families with Dependent Children almost three times as high as among other children. Cross-sectional associations within countries are strengthened by the results of several studies suggesting that mortality rates of population subgroups will respond to changes in income, particularly among the least well off.^{5,6}

However, although mortality is strongly related to the differences in socioeconomic status between classes within the developed countries, the relationship between national mortality rates and the average standard of living in developed countries is very much weaker. Among the 23 countries belonging to the Organization for Economic Cooperation and Development (OECD) the cross-sectional correlation in 1986/87 between gross national product (GNP) per capita and national life expectancy for males and females at birth was just 0.38 ($P < .05$). When the relationship between increases in GNP per capita and in life expectancy is scrutinized for the 16-year period from 1970/71 to 1986/87, one notices a further weakening of this correlation to an almost nonexistent 0.07 (ns). (These figures are based on GNP per capita converted at purchasing power parities.)⁷

Among the less developed countries life expectancy rises rapidly with increasing GNP per capita. This relationship appears to hold until countries pass a threshold level of absolute income of around

\$4000 to \$5000 (1984 US dollars) per capita, after which further increases in GNP have much less impact on life expectancy.^{8,9} Hence average longevity in some of the richest countries, including the United States, is shorter than in many of the less well off developed countries. The international picture in the developed world stands in marked contrast to the clear rank ordering of health by socioeconomic status found among social classes within countries.

If health in the developed world is so unresponsive to two- or even threefold differences in the average standard of living among developed countries, does this imply that the association between socioeconomic status and health within countries is spurious? The same question is raised by the widespread failure of social class differences in health to narrow under the impact of the unprecedented rise in living standards during the second half of this century. That in some countries these differences have actually widened¹⁰⁻¹² suggests either that they are related to relative rather than absolute poverty or, once again, that the apparent relationship with socioeconomic factors is spurious.

This dilemma comes at a time when researchers on both sides of the Atlantic have become increasingly confident that health inequalities within their societies really are a reflection of the impact of differing socioeconomic circumstances on

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Editor's Note. See related articles by Nelson (p 1131), Keil et al. (p 1133), and Fingerhut and Makuc (p 1168) and editorial by Davey Smith and Egger (p 1079) in this issue.

health. In the United States work like that of Keil et al.¹³ has established that the bogey of racial differences in health is an expression of the underlying differences in socioeconomic status.

In Europe, where upper and lower social classes are predominantly of the same color, the controversy focused on almost the mirror image of the American issue: could class differences in health be the result of selective social mobility? Instead of people having poor health because of their being in lower social classes, do they end up in lower classes because of their poor health? A number of cohort studies have now been used to check the relationship between health and social mobility, and they have found that it makes only a minor contribution to class differences in health.¹⁴⁻¹⁶

Having excluded some of the possible sources of spurious associations between socioeconomic status and health, a resolution of this anomaly is now more urgent.

Income Distribution

Evidence has recently come to light which points to a coherent interpretation of the apparently disparate inter- and intranational relationships between income and health. Despite only weak associations with GNP per capita, national mortality rates turn out to be strongly related to societal measures of inequality of income within each country.¹⁷ Rather than the richest, it is the countries where income differentials between rich and poor are smallest which have the highest average life expectancy. In effect, these are the countries where relative deprivation is minimized.

Although internationally comparable data on income distribution is scarce, what little there is appears to show that for members of the OECD, the correlation between life expectancy and income distribution is as high as 0.8, which suggests that almost two thirds of the variation in national mortality rates may be accounted for by differences in income distribution alone.¹⁷ What is even more surprising is that the association seems to hold up as income distribution and mortality rates change over time. For instance, from 1975 to 1985, the annual rate of change in the proportion of the population living on less than half the national average income in each of the 12 member countries of the European Community is closely correlated with the average rate of increase in life expectancy at birth ($r = -0.73$,

$P < .01$).¹⁷ Nor does the evidence suggest that such associations can be attributed either to the reverse effects of health on income (sick people lose earnings) or to the possible health benefits of associated variables such as expenditures on public services (countries with a more egalitarian income distribution may also have better health services).

Perhaps the most striking illustration of this relationship is the contrast between the experience of Britain and Japan over the last 2 decades. In 1970 these two countries were much like each other in terms of average life expectancy and income distribution, and in both respects they were close to the center of the field of OECD countries.¹⁸ Since then Japan's income distribution has narrowed dramatically and is now the narrowest of any recorded in the United Nations Human Development Report.¹⁹ Over the same period, Japan's life expectancy has increased at an unprecedented rate and is now the highest on record.²⁰ No explanation of this achievement could be found in changes in Japanese nutrition, health services, or preventive policies.²⁰ In contrast, Britain's income distribution has widened and her position in the international life expectancy league table has slipped. When British income differentials widened most rapidly in the late 1980s, national mortality rates among both men and women aged 15 to 44 years actually increased.²¹ As if to confirm the link between national mortality trends and income differentials, social class mortality differentials narrowed in Japan and widened in Britain.

If the link between income differentials and national standards of health is accounted for by social class differences in health, we would expect to find that wider income distributions went with wider health inequalities. Unfortunately, the lack of internationally comparable social classifications of mortality means that it is not possible simply to tabulate measures of socioeconomic differences in health within countries. However, among Britain, France, and Sweden, where comparable measures have been produced, the rank ordering of income distribution and the size of class differences in health does appear to be consistent.²² Other international comparisons will have to await comparable data on mortality by income within countries.

One other piece of evidence related to this issue is derived from the official records of class differences in mortality in England and Wales, which have been available throughout most of this century.

The periods when social class mortality differentials have widened or narrowed seem to coincide with the periods when relative poverty has increased or decreased.²³

To some extent these links are not new. Among Third World countries income distribution as well as GNP per capita have been found to exert powerful independent effects on mortality.^{24,25} In the developed world, one finding is new: here, the weakness of the link between mortality and GNP per capita implies that if income distribution does exert the powerful influence on health suggested by recent data, it must do so as an effect of relative income. Previously it was possible to interpret the influence of income distribution on health in poorer countries as an indication of a more health-effective allocation of absolute income. But now the inter- and intranational evidence among developed countries suggests otherwise.

If income distribution is a measure of the scale of the experience of relative deprivation and disadvantage in each society, the relationship between income distribution and national mortality rates does more than emphasize the importance of relative over absolute income; it suggests that the extent of health inequalities in each society may be an important determinant of national average mortality rates.

The Size of the Effect

The poverty lobby has long emphasized that the important issue in Western societies is relative rather than absolute poverty. But the apparent effect of income distribution on health is too large to be explained by changes in the mortality of a poor minority alone.¹⁷ If the United States or Britain were to adopt an income distribution more like that of Japan, Sweden, or Norway, the indications are that it might add 2 years to average life expectancy. That is considerably more than would be gained even if the health detriment suffered by disadvantaged minorities were wholly overcome. But there are signs that the health of the majority of the population might benefit from a more egalitarian income distribution.

For a few countries comparable data are available on the share of income going to the least well-off, to the 10%, 20%, 30%, and 40% of the population with the lowest income and so on up. If the relationship between national mortality and income distribution resulted from health gains to the relatively poor alone, the association would be at its strongest with the bottom

20% or 30% of people who live in relative poverty. But, in fact, the association builds up to reach a maximum at the share received by the least well-off, at 60% or 70%.¹⁷ (Given the skewed distribution of income caused by the very rich, usually between 60% and 65% of the population live on less than the average income.) Thus, not only the size of the possible effect of income distribution on health but also the pattern of the association across deciles of the income distribution suggests that the health of the majority of the population may be affected.

Additional circumstantial evidence that the benefits of income redistribution may extend to most of the population comes from Sweden, where even the lowest social classes, semi- and unskilled manual workers, have lower mortality rates than the highest social classes in Britain.²⁶

Conclusion

Inequalities in health in the developed countries testify to the continued sensitivity of health to socioeconomic factors. At the same time, given the unprecedented levels of absolute income and wealth enjoyed in the affluent industrial societies, the evidence indicating that further increases in the absolute standard of living no longer have a major impact on mortality, is not surprising. This implies that health inequalities result from the extent of relative deprivation in each society.

However, the fact that there is a strong association between income distribution and national mortality rates, both at a point in time and as the mortality rates change over time, does more than confirm this view. First, it suggests that the extent of relative deprivation in each society, as measured by its income distribution, is a major determinant of national mortality rates. Second, it suggests that health in the developed world may now be less a matter of people's absolute material circum-

stances than of how their circumstances compare with those of other members of their society.

If the picture which has been outlined is broadly correct, it places the study of health inequalities at the top of the public health agenda and demands that health is treated as a genuinely social phenomenon. The point, after all, is not to identify each separate risk factor in an attempt to account for the myriad of separate contributions to the lower class health disadvantage (see the article by Fingerhut and Makuc²⁷ on p 1168 of this issue), but to identify points at which it is possible to intervene in the social processes which make almost all the common causes of mortality and morbidity more common in the lower social classes. □

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