

THE ROLE OF HEALTH IN DEVELOPMENT

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Abstract—The basic needs strategy of development is directed toward helping poor nations meet requirements for adequate food, shelter, sanitation, health, and education; thus, health becomes an objective of development. At the same time, a basic needs strategy is most effective when viewed as a means to increase individual and national productivity, not merely as a welfare services program. Expenditures on health are considered as an investment in human resources, contributing to productive capacity, but empirical studies on the contribution of health to per capita economic growth are largely anecdotal, marred by poor design and insufficient data. A similarly perplexing problem is the extent to which improved health is the result of specific health program interventions as compared to improved economic and social conditions. Both are important, but their relative importance differs from country to country and from era to era. Better data and analysis are necessary, not only to elucidate the interrelationships between health and development, but to measure the costs and benefits of specific health interventions.

WHAT IS DEVELOPMENT?

Not very many years ago a discussion of the role of health and development would be concerned with demonstrating whether or not changes in the health of populations would exert a significant enough impact on the growth of per capita income in a country to justify investments in its promotion relative to competing investment opportunities.

Today we have changed our views as to what development is, how it is to be measured and evaluated, how it is to be brought about, and indeed, sometimes whether we want it or not.

Dudley Seers was an early and influential critic of the concept of defining development in terms of national income. He suggested it was more pertinent to the evaluation of social progress to ask what has been happening to poverty, to unemployment, and to inequality. "If all three of them have declined from high levels then, beyond doubt," he asserted, "this has been a period of development for the countries concerned. If one or two of these central problems have been growing worse, especially if all three have, it would be strange to call the result 'development' even if per capita income doubled" [1].

It is becoming clearer that the economic, social, and political ills of the world are not being dissipated simply by increasing the total flow of goods and services in poor countries. National income growth is a useful measure of potential for development. It is not development of human potential in itself, nor is there a close correspondence between income growth per capita and the improvement of the human condition.

The "basic needs" strategy of development, formally articulated in the ILO World Employment Conference of 1976, evolves from this point of view. In accordance with this strategy, the international development community is now directing much of its effort toward helping poor nations meet minimum consumption requirements of families for adequate food, shelter, clothing and essential community ser-

vices such as safe drinking water, sanitation, public transport, and health and educational facilities. If community health services are included as one of the objectives of development, the need to justify such services by their contribution to productivity and, thus, to an increase of per capita income, is obviated. Attention can be turned to the most cost-effective ways of achieving health.

The basic needs strategy, however, is most effective when viewed as a means to increase individual and national productivity, not merely as a welfare services program. Cassen asserts:

While individual well being is the aim of any basic needs strategy, a central feature of any such strategy is a generation of productive and remunerative employment, which is worthwhile—indeed essential—in its own right. And the satisfaction of basic needs need not be regarded as a pure consumption effect—on the contrary, it can have considerable productive value, contributing to economic growth rather than subtracting from it [2].

Many countries will require acceleration of present average rates of growth, accompanied by measures aimed at changing the pattern of growth and the use of productive resources by various income groups in order to meet basic needs by the year 2000 [3]. Acceptance of a basic needs strategy, therefore, does not eliminate the need to understand more clearly what is known and not known about the interrelationships of health and economic growth.

Changes in rates of population growth due to decreased levels of mortality and morbidity would have profound implications for economic development. As yet, however, there is no clear picture of the exact relationship of decreased early mortality and societal responses in terms of overall growth rates. The population literature stresses how dramatic decreases in mortality in the developing world in the post-war period was the major cause of the "population explosion" and its deleterious effect on economic develop-

ment. The health literature, on the other hand, argues that reduced child mortality is a necessary precondition for fertility reduction.

HEALTH AND PRODUCTIVITY

Health, rejected as a priority in early development planning because it was viewed as a consumption rather than investment good, has made a revival of sorts under the banner of "human capital". Human factors, such as the level of education of the labor force, have been shown of great importance relative to the accumulation of physical capital in explaining growth in industrial countries as well as in the developing world. Expenditures on health, as well as on education, are considered as an investment in human resources contributing to productive capacity. But empirical studies on the contributions of health to per capita economic growth are largely anecdotal, marred by poor design and insufficient data. A review of the health and development literature concludes:

A number of studies have asserted dramatic benefits of improved health in LDCs. Hard evidence and careful analyses are however scarce. Some investigators understandably wish to dramatize the potential benefits that disease eradication programs can yield and thereby generate support for devoting additional resources to programs of sanitation and public health. However, an absence in these studies of carefully constructed models and/or proper specification of all the costs and all the benefits renders most of them of only limited scientific use [4].

It would seem "obvious" that a healthier labor force will suffer less debility and disability and will work more effectively and more steadily resulting in increased productivity and rising per capita income. In fact, however, the literature is filled with contradictory findings. According to one study, reduction of malaria in a Malaysian rubber estate caused output per worker to rise 17-fold. An investigation of schistosomiasis in Tanzania, on the other hand, found no significant difference between the output of cane cutters and irrigators with and without schistosomal infections. Characterized as "perhaps the most sophisticated piece of field research yet undertaken in the area of health and development" a major study of the effects of schistosomiasis in St Lucia showed that banana plantation workers suffering from schistosomiasis had lower daily earnings (but tended to work more days a week in order to compensate) while a survey of women factory workers in St Lucia failed to reveal an association between schistosomiasis and productivity. There are clearly substantial differences from disease to disease and from place to place [5].

A major difficulty in many studies relating health and productivity has been the failure of the data or the analysis to distinguish carefully between infection and disease. Many infections and parasitic diseases have "gradients of infection" which range from no symptoms through mild to severe disease or disability. The amount of disability associated with diseases such as schistosomiasis or onchocerciasis is related to the worm load in the body, rather than to a state of being infected or not infected. While the relationship of infection to disease may be high, as in measles, it is very low indeed in ailments such as

tuberculosis and poliomyelitis, where infection without disease may run well over 90%.

Because data on morbidity and wages are available in institutionalized settings such as plantations, almost all empirical studies have been carried out in these special situations. There is little if any systematic information on the effect of disease on productivity in the traditional agricultural sector in which the major share of the labor force of the poor nations is employed.

Efforts to measure the relationship of health to productive output without considering other relevant characteristics are of dubious validity. If underemployment is chronic in most poor nations, and the marginal value of an additional hour of labor approaches zero, overall production will not necessarily rise as workers become more healthy. On the other hand, agricultural labor is subject to widely fluctuating seasonal demand. A labor force that is redundant much of the year may be strained during peak seasonal demands, and improved health should effect a net addition to production. Furthermore, much of a given labor force in the developing world, while beset by illness, may suffer a degree of debility that does not keep them from the job. These "working sick" not only produce less than they would if healthy, but also may diminish the productivity of other inputs to the productive process, such as capital and the "working well" [6].

In the longer run, organizational and technical changes induced by improved health levels may be the most significant impact of health on development. Stevens argues that "tilling methods, sowing patterns, water management technique, and the like, may all be adapted for a yield that has a high probability of not overstressing an uncertain labor supply during the peak labor demand period of harvesting, threshing, etc." If health of the labor force improves, innovative, more effective methods of production may be adopted. Because chronic ill health saps energies and creates subjective attitudes, which militate against innovation, improved health may not only improve physical vigor, but also "affect the farmer's ability to marshal the attention necessary for forward planning and willingness to assume the risks which are entailed by departures from accepted modes" [7].

In the nonagricultural sector, Stevens suggests that production processes are selected to minimize interdependence among workers, a large fraction of whom may be absent due to illness at any given time. A more dependable work force could permit adoption of more interdependent processes that may be more productive.

The health and development literature contains a variety of such plausible speculations as to the beneficial effects of improved levels of health on productivity, but little in the way of rigorous empirical evidence. The specifics of diseases in a given area combined with a particular set of behavior patterns and socio economic conditions have inhibited the development of generalizations about the direct impact of health on total production.

One reason for this is the complexity of the relationships involved. To illustrate, Barlow [8] has worked out a model of health and development (see Fig. 1) with 5 interacting variables: income, educa-

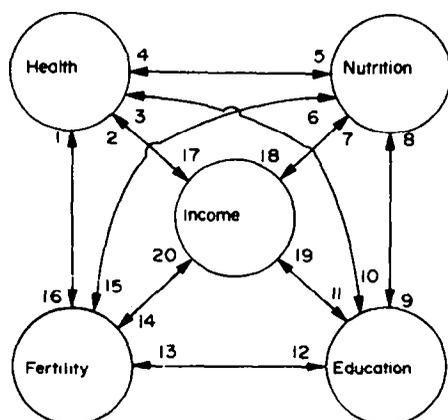


Fig. 1. A general model of health and development.

Taken from Barlow R. *Health and economic development: A theoretical and empirical review*, p. 12. University of Michigan, 1977.

tion, nutrition, health, and fertility. These 5 variables are linked in 20 ways, as numbered in the diagram. For example, if external factors cause an improvement in health, the effect of this on income will be the sum of the direct effect (no. 17 in the model) and the

indirect effects arising from the fact that changes in health affect nutrition, education, and fertility. For illustrative purposes, Barlow lists one of many possible hypotheses for each of the 20 linkages.* There do not seem to be any empirical studies that attempt to account for these 5 interacting variables in a single geographic area.

HEALTH OF INFANTS AND CHILDREN

Most of the discussions of the effect of health on development have been concerned with the health of the labor force, but most discussions of health, including the effects of economic development on health, have centered on infants and young children. To some extent, this has been because infant mortality was used as a proxy for the health status of a population. But more than that, it is in the children that mortality is most concentrated. Research is beginning to show that infant and child mortality may be a good proxy for infant and child health [9] and that in turn may be the most significant long-term problem in development of human potential. Many of the children of poverty who manage to survive the triad of malnutrition, diarrheas, and infections may be damaged for life, with respect to adaptability, mental and physical capacity, and the ability to bear children with a good chance at life in all its dimensions [10]. There is, however, some hopeful evidence that such damage may be reversible under special circumstances, but the generalization remains unhappily valid.

Health, then, is an essential component of development both as an input and as a goal. Operational models do not yet exist, however, to permit calculation of its marginal impact in any specific country's development [11].

"DEVELOPMENT" VS SPECIFIC HEALTH INTERVENTIONS

The other side of the coin needs examination. To what extent is improved health, as measured by a decline in mortality, the result of specific health program interventions, and to what extent the result of improved economic and social conditions? The historical record shows that both are important but their relative importance differs from country to country and from era to era.

In 19th century England, for example, McKeown [12] has demonstrated that there was so little medical knowledge about causes of death that health interventions could not have been effective. Those preventive or curative measures that were known were not widely enough employed to make a difference. Mortality decline was therefore conjectured to be due to improvements in living standards, particularly in nutrition. Similarly, from the 19th century through the 1930s improvement in mortality levels in Latin America was closely associated with improved levels of economic development.

According to Preston's analysis of historical data, the situation changed radically by the 1940s because of the introduction of such effective health measures as antibiotics and sulfa drugs, vaccines, and the use of insecticides to diminish the spread of insect-borne tropical disease. Examination of cross-national data for

- *1. Fertility → health. Later marriages and lower fertility mean fewer of the high-risk pregnancies and deliveries associated with very young mothers.
2. Income → health. Higher incomes lead to higher expenditures on medical care.
3. Education → health. Better educated persons tend to have stricter standards of personal hygiene.
4. Nutrition → health. Malnutrition causes rickets.
5. Health → nutrition. Diarrhea involves a rapid loss of nutrients.
6. Fertility → nutrition. The larger the number of children in the family, the less care is devoted to the proper feeding of each one.
7. Income → nutrition. Higher incomes tend to lead to better diets.
8. Education → nutrition. Educated persons are better informed about nutritional requirements.
9. Nutrition → education. Well-nourished students are better able to concentrate on their work in school, and perform better academically.
10. Health → education. Sick children are often absent from school, and have inferior academic records.
11. Income → education. High-income parents place their children in high-quality schools.
12. Fertility → education. Pregnancies interrupt schooling.
13. Education → fertility. Educated women desire smaller families.
14. Income → fertility. High-income persons want to have large families, regarding children as a form of consumption.
15. Nutrition → fertility. Maternal malnutrition increases the likelihood of miscarriage.
16. Health → fertility. Malaria causes miscarriages.
17. Health → income. Healthy persons work longer and harder.
18. Nutrition → income. Well-nourished workers produce more.
19. Education → income. Educated persons get better paying jobs.
20. Fertility → income. Women with several children are less likely to work outside the home.

the developing world showed that increases in adult literacy, in caloric intake, and in national income per capita accounted for about half the reduction in mortality occurring between 1940 and 1970 [13].

During the past decade, the rate of mortality reduction appears to be decelerating. There is some evidence that development factors may once again be the dominant force in health improvement.

Analysis of the changes in levels of life expectancy at birth among developing countries in the 1970-1975 period shows close association with social factors, such as literacy and school enrollment, and also with water supply and sanitation. These two groups of factors explain statistically, almost 90% of the change. Levels of health expenditure, investment in health facilities and personnel, and average income per capita add little to the statistical explanation.

Among children under 5 years, who account for almost half of the deaths in developing countries, malnutrition, diarrheas, tetanus, and respiratory infections account for the overwhelming bulk of mortality. Wide distribution of known and relatively low-cost interventions, including immunizations, rehydration, diarrhea therapy, and nutrition education might make substantial differences in mortality in this youngest age group [14].

There is substantial interest in determining the kind of economic development that is most efficient in reducing mortality. Recent studies of mortality differentials in Latin America undertaken by CELADE are among those that emphasize the preeminent influence of education, particularly the level of mother's schooling, on reduction of mortality (as well as fertility). An increase in per capita income, by itself, has little effect on changes in overall mortality; redistributing income for expenditures on education and preventive health measures effectively reduces levels of mortality. The experiences of Kerala, Sri Lanka, and Cuba are cases in point.

A BASIC NEEDS STRATEGY TO MAXIMIZE HEALTH OBJECTIVES

A report to the World Bank recommends priorities for structuring a basic needs strategy to maximize health objectives [15]. Based on estimates of the 20 year costs of a basic needs strategy for 1980-2000, the authors of this report recommend a minimum package to include

(1) adult education programs directed toward parents of young children emphasizing information on improved food production, proper diet, importance of proper breast feeding and weaning, health care for infants and young children, personal hygiene.

(2) provision of primary health care and disease control with priority for pregnant or lactating women, children under five, and working men, and

(3) nutrition policies and programs targeted at improving diets of all family members.

NEEDED DATA AND ANALYSIS

According to Andrew Kamarck, Director of the World Bank's Economic Development Institute:

Governments and international development agencies had agreed that action against disease in the less developed

countries is an important component of any program to help economic development. A number of experiments were initiated. What has been done so far is a promising beginning, but only a beginning. Practically nothing has been done in the way of systematic economic analysis of the various specific obstacles to economic development posed by disease, and of the economic and social costs and benefits of projects to remove them. Without this basic information, it is impossible for a government or aid agency to allocate investment optimally between disease control as such and other more conventional investment projects. In the meantime, it is highly improbable that the existing distribution of resources is anywhere near optimal [16].

Generally speaking, the availability of data on the basis of which to make optimal resource allocation decisions is meager. There is need for measures of health conditions that would include indices of morbidity and debility, as well as mortality. This is extraordinarily difficult to achieve. It is far easier to obtain measures of health inputs, such as hospital beds or physicians per capita, than of outputs in terms of decreases in morbidity or mortality. Given the concentration of physicians and hospitals in the large cities, statistics on physicians and hospital beds per capita are poor measures of health status for general populations. Data on morbidity and debility can be derived only from household surveys. A worldwide effort to obtain such data would require a continuing effort on the scale of the World Fertility Survey. Health data gathered by the WHO Statistical Unit, the United Nations Population Division, and from special surveys by the Pan American Health Organization are invaluable but fall short of optimum. United Nations agencies must report official data as provided to them by their member states.

Better data and analysis are necessary not only to elucidate the interrelationships between health and development, but, of even more importance, to measure the costs and benefits of specific health interventions [17].

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