

Adult Health: A Legitimate Concern for Developing Countries

ABSTRACT

Adults, defined here as people between 15 and 59 years of age, in developing countries have a high risk of premature death and suffer from frequent morbidity and high rates of chronic impairment. Their ill health imposes a major burden on health services and large negative consequences on families, communities, and societies. This paper describes the level and impact of adult mortality and morbidity, and highlights some of its characteristics and causes, which in some cases contradict commonly held beliefs. It concludes that "adult health" is a legitimate public health concern for developing countries that is not being addressed. An agenda for remedial research and action is proposed. (*Am J Public Health*. 1993;83:1527-1530)

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Introduction

In recent years, children have been the principal focus of public health research and policy formulation in developing countries. This attention has been easy to justify, particularly in environments of high infant mortality from preventable causes, and it has led to major advances in the case management and prevention of the communicable diseases of childhood. Nearly 90% of children born in developing countries now survive to be 15 years old owing to substantial reductions in child mortality.¹ However, many of the health problems of adults, including most non-communicable diseases and injuries, have been neglected.

Adults, defined here as those individuals between 15 and 59 years of age, currently comprise 56% of the total population in developing countries, and this proportion is growing.² Adults include most of those in society who are economically productive, biologically reproductive, and responsible for the support of children and elderly dependents. Yet we remain ignorant about the nature and extent of health problems of this group. Adult health in developing countries receives scant attention in public health forums, in journals devoted to epidemiology and health services, and in international policy making. This paper, drawing substantially on work supported by the World Bank,³ argues that such neglect is inappropriate.

The Level of Adult Ill Health

It is a common misperception that, once the hurdle of childhood is surmounted, the survival disadvantage of liv-

ing in a developing country is small. Indeed, it is sometimes suggested that adult mortality is higher among the rich. In fact, the risk of a 15-year-old dying before reaching 60 years of age is 25% for men and 22% for women in developing countries, more than double that in the industrialized market economies, where the respective figures are 12% and 5%.⁴ In some African countries (e.g. Sierra Leone), the adult mortality risk is more than 50%. Regional estimates of the risk of death between 15 and 60 years of age, together with the risk of death between birth and 5 years of age, are given in Table 1.

Death rates in children are higher than in adults and so, too, is the proportion of child deaths that could be classified as "avoidable" on the basis of comparisons with mortality rates in Japan, the country with the world's highest life expectancy. Nevertheless, more than one quarter of all deaths in developing countries occur in the adult age group, and about three quarters of these 10 million deaths are avoidable. Adults account for about 21% of all

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Note. The views expressed here are the authors' and do not necessarily represent those of the World Bank or its staff.

Editor's Note. See related articles in this issue's Public Health Policy Forum (p 1531).

TABLE 1—Model-Based Estimates of Regional Adult and Child Mortality Risk, by Region, 1988

Region	Risk of Death between 15 and 60 Years of Age, %		Risk of Death between Birth and 5 Years of Age, %	
	Male	Female	Male	Female
Developing world				
Asia	24	20	10	8
Latin America/Caribbean	23	15	8	6
Middle East/North Africa	27	23	13	11
Sub-Saharan Africa	38	32	18	16
Total	25	22	12	10
Industrialized world				
Market economy	12	5	1	1
Nonmarket economy	21	11	2	1

Note. Countries included in the industrialized nonmarket region are Albania, Bulgaria, Czechoslovakia (as was), East Germany (as was), Hungary, Poland, Romania, the Soviet Union (as was), and Yugoslavia (as was). The countries included in the industrialized market region are the rest of Europe, Australia, Canada, Japan, New Zealand, and the United States.
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the avoidable years of life lost in developing countries, and for more than that if years are weighted for their productivity and discounted.⁴

The relationship between child and adult mortality is not particularly close: correlating the risk of death between birth and age 5 with that between ages 15 and 60, using data from all populations having recent mortality data, gives a multiple correlation coefficient of .77 for women and of .50 for men.⁴ This has two important implications. First, it suggests that modeling adult mortality on patterns of childhood mortality is unlikely to generate accurate estimates. Second, it implies that policymakers cannot necessarily improve adult health by expanding policies that have been effective in controlling childhood illness.

Comparisons with Japan indicate that developing country women have an avoidable excess risk of death between 15 and 59 years of age of 16%, compared with 13% for men; this justifies the special attention given to the health problems of these women.⁴ However, total adult mortality risk is actually higher in men than in women in nearly all developing countries and is strikingly so for several southern African countries, a situation that some have attributed to migrant work in South African mines.⁵ In Latin America, absolute differences of more than 10 percentage points in the risk of death between ages 15 and 60 between the genders are common. These higher mortality risks in men can even be observed in the reproductive years despite the risks to women associated with childbearing.⁴

Documenting the overall nature of adult morbidity is much more difficult. Although specific disease studies are relatively common (and show high rates in adults for several important diseases), it is not easy to combine these to produce a balanced picture of the burden of morbidity. Household surveys of general morbidity point to high (although highly variable) levels of acute morbidity in developing country adults.⁶ In large-scale World Bank surveys in Côte d'Ivoire, Peru, and Ghana, 33% to 45% of adults claimed to have been ill in the past month, with adults accounting for more than 50% of days ill and in the hospital. In Côte d'Ivoire, 20% of all adults claimed to be ill for at least 1 week in the past month, and 7% of them reported being ill for the whole month. Although revealing, these attempts to explore overall morbidity in a single survey also face problems: morbidity can only partly (and expensively) be measured using objective tests, and reliance on self-perceived morbidity introduces a subjectivity that is difficult to interpret. Much of the variation in reported morbidity reflects differences in illness perception and reporting, which may explain the counterintuitive result that reported morbidity is often higher in wealthier communities.⁶

Determinants and Causes of Adult Ill Health

Poverty is clearly associated with adult mortality. Adult mortality risks have been falling over time in most developing countries as overall conditions have im-

proved, and cross-sectional analyses show an inverse relationship between the risk of adult death and gross domestic product per capita.⁴ However, the exceptions are provocative. Why have Sri Lankan men, for example, not experienced a decline in mortality in the past 3 decades? Why do some countries (e.g., Costa Rica and Spain) have much lower adult mortality risk than would be predicted by their income, while others (e.g., the Seychelles and the United States) show the opposite?⁷⁴

Some determinants appear to be particularly important in the early stages of development and are closely associated with general conditions in which individuals live.⁷ Having a baby is risky in poor countries. Malnutrition and microdeficiency diseases (particularly of vitamin A, iodine, and iron) are important direct causes of some conditions and may indirectly increase susceptibility to many infections. Unhealthy domestic environments are associated with a variety of important communicable diseases, especially diarrhea and pneumonia. Communicable diseases, especially tuberculosis, which causes more than 25% of all preventable adults deaths,⁴ explain a substantial part of the mortality differences between developed and developing countries.

These conditions are expected to decline with overall economic development, but this has not been the expectation for many noncommunicable diseases. Many unhealthy behaviors such as tobacco and alcohol consumption are becoming more prevalent with development.^{8,9} Development also brings a variety of new environmental hazards.¹⁰ Developing country cities generally have the worst pollution from suspended particulates and sulphur dioxide. Toxic wastes and poorly managed pesticide use are important sources of poisonings in developing countries. Deaths from workplace injuries are about 10 times more common in developing than in developed countries; the risk of dying from injury while working in agriculture in some developing countries is substantial (a risk of death between ages 15 and 60 of 2.4%).⁷ Vehicle collisions cause about 0.5 million deaths a year and a similar number of victims with permanent impairment.

In fact, noncommunicable diseases, rather than "tropical" or other communicable diseases, are the leading causes of adult death in developing countries. This is even true in very poor countries like Bangladesh, where the burden of communicable diseases remains high.¹¹ In those countries possessing adequate data, about 72% of the mortality risk for men between 15 and 59 years (and 82% of that for

women) is from noncommunicable causes, and 23% for men (and 11% for women) is from injuries. Cardiovascular diseases rank first for both men and women, neoplasms rank second for women, and neoplasms and unintentional injuries rank in the top five for men.⁴

Noncommunicable diseases, commonly thought of as diseases of the rich, actually cause higher rates of death in poor countries and among poorer people within a country. For example, a recent study in Brazil shows that groups with lower income and less education have higher mortality rates from cancer, cardiovascular diseases, and other noncommunicable diseases and injuries.¹² Data from China illustrate the same phenomenon (Table 2). Age-specific mortality rates from noncommunicable diseases in general (and cardiovascular diseases in particular) are declining in many developing countries. For the few countries with cause-specific time series data, reductions in noncommunicable diseases explain about 50% of the overall decline in the risk of death between the ages of 15 and 60 for both men and women.⁴ In other words, development does not appear to be provoking "epidemics" of noncommunicable disease, although it is true that both the absolute number of cases and the relative importance of these diseases are increasing largely because of the changing age structure of the population.

The failure to observe increases in mortality rates from noncommunicable diseases in adults as countries progress economically remains a puzzle. Westernization and concomitant changes in diet, smoking, and life-style are thought to increase noncommunicable disease rates. The apparently inverse association between the rates of noncommunicable diseases and their putative risk factors might be explained by previously unknown or underestimated etiologies, or perhaps by improvements in medical services postponing death until after 60 years. Some risk factors may be ameliorated by the adoption of protective measures such as pollution controls; occupational safety improvements; and better roads, cars, and drivers. In addition, the lag between unhealthy behavior and subsequent mortality may mean that the negative health consequences are still to come.

The Impact of Adult Ill Health

Both the relative and absolute importance of adults and their health problems are increasing, despite the fact that age-

Income Quartile	Communicable and Reproductive Diseases	Noncommunicable Diseases	Injuries	Total
I (highest)	0.4	6.7	1.2	8.3
II	0.4	7.9	2.0	10.3
III	0.6	7.6	2.4	10.6
IV (lowest)	1.4	8.9	2.7	13.0

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specific death rates from many diseases (including noncommunicable ones) are falling. The absolute increases arise because of a growing adult population fed by previous or current high fertility. The relative increases are the result of a combination of factors: the aging of the population (with adults forming an increasing percentage of the total population), more rapid declines in exposure to risk factors that affect childhood diseases than to risk factors contributing to adult diseases, and more substantial improvements in therapeutic and preventive strategies for communicable diseases of children than for noncommunicable diseases of adults.²

Adults comprise the great majority of the labor force, and it is to be expected that adult ill health would have deleterious effects on productivity. Some studies have indeed demonstrated this.¹³⁻¹⁶ In general, however, the evidence is surprisingly weak. There are good reasons to believe that many studies fail to detect productivity effects, not because such effects are not present or not substantial, but because they are obscured or delayed through compensatory reallocations of labor away from other income-generating activities, child care, or education, and that the study designs have not been sophisticated enough to capture these effects¹⁷: sick workers may do less work at home so as to maintain productivity on the job; family or friends may be drawn from other productive employment to substitute for the ill individual; children may be kept away from school to help; and employers who hire from a sickly work force may build slack into their production schedules and avoid labor specialization.

Illness in adults places considerable demands on health services. Most countries spend at least a half of their health budgets on hospitals, and in countries with data, at least 70% of hospital costs are for adults and the elderly. Adults suffer more from noncommunicable diseases than do younger age groups, and these diseases tend to be expensive to treat. Population-

based surveys of medical expenditures reveal that adults spend more on their own health care than on that of other age groups (e.g., 62% of total out-of-pocket medical expenditures in Côte d'Ivoire, according to a World Bank survey.⁶

In the poorest households, ill health of an adult can be catastrophic. Poor adults suffer more often from severe ill health, and are more likely than wealthier ones to depend on regular physical work and to have fewer resources with which to cope. The combination of lost income and the need for major medical expenses in such households can lead to asset sale, debt, and impoverishment. One study in Thailand found that 60% of involuntary land sales were owing to ill health.¹⁸ In Bangladesh, six out of seven households with an ill breadwinner had debts averaging more than four times their monthly income and five times the average level of household indebtedness in that urban slum.¹⁹ Adult illness can even kill other members of the family. Studies in Bangladesh have found that the mortality rates of infants whose mothers die can be as high as 95%,²⁰ with the death of a mother associated with up to a 10-fold increase in the risk of death in her children.¹¹

Countries and communities adopt a wide variety of measures either to cushion the effects of ill health, should it happen, or to reduce the chances of getting ill.¹⁷ Informal insurance mechanisms include alliances through marriage, reciprocal financial transfers that may never be recouped, and savings in relatively liquid forms (which may reduce the scope and hence productivity of investments). Both formal and informal insurance mechanisms are imperfect and involve costs that would not be incurred if individuals knew they were highly unlikely to get ill.

Implications for Research and Action

One response to data showing that adults in developing countries suffer from

serious health problems is to spend more on improving adult health. Since much of the current investment in adult health is inequitable or inefficient, more of the same is not desirable. However, some interventions to improve adult health have not received the attention they deserve, given the substantial health returns they promise per dollar invested.²¹ These include certain preventive strategies (notably, to reduce smoking; to promote safer travel, sex, and motherhood; and to reduce liver cancer through vaccination) as well as improved case management (particularly of tuberculosis and diabetes), screening against cervical cancer, and pain relief for cancer patients.

Just how appropriate particular investments will be for any given country depends on many factors, including the epidemiological context and the technical, economic, and political environment in which health policies are implemented. It is unlikely that shifting resources away from children to adults, or from communicable to chronic diseases, can be justified on efficiency or equity grounds; some of the best investments are still in the control of childhood communicable diseases.²¹ However, many countries devote substantial public resources to costly and marginally effective treatments of adult diseases, and governments should explore realistic options for withdrawing public funding from such services.

More information is needed on adult mortality and morbidity in the poorest countries, particularly those in sub-Saharan Africa and South Asia. The consequences of adult ill health also deserve closer study. Basic research in developing countries on the pathology of diseases or on the nature of associations between adult diseases and their risk factors is difficult to justify in most cases. What developing countries do need are data on the levels and determinants of exposure to major risk factors so that interventions can be appropriately designed and targeted.⁷ Finally, a large body of research remains to be done on the cost-effectiveness of curative and preventive interventions against adult diseases.

Because of ignorance concerning the nature of adult ill health and the cost-effectiveness of potential interventions, policy development in the area of adult

health is weak.²² There are no adult equivalents to the well-researched, thoughtfully developed, and enthusiastically promoted child health programs. The political pressures to respond to the health problems of adults will continue. Governments need the courage and the facts to redirect expenditures into more cost-effective treatment or prevention. "Adult health" must be firmly on the agenda of developing country health policymakers and researchers. □

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