

# MALNUTRITION AND POVERTY

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**Key Words** health and development, inequities and health, obesity and poverty

■ **Abstract** This paper is an attempt to discuss the problem of malnutrition within the framework of the global need for development and the challenges posed by the trends of neoliberalism and globalization. We argue that there is a two-way link between poverty and health in which nutrition plays an important role both as an active and as a mediating factor. Key concepts are exposed and expanded: (a) Development per se does not ensure better health; (b) unequal distribution of income has an independent effect on health indicators after adjusting for total income; (c) improving health can make an important contribution to reducing poverty; (d) improving nutrition throughout the whole life course is an indispensable strategy for better health; (e) obesity has to be included amongst the most critical health problems, has different traits, and presents with different challenges in the developing world and in the industrialized countries.

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## POVERTY AND ITS HEALTH IMPLICATIONS: CONCEPTUAL ISSUES

It has long been recognized that poverty cannot be defined solely in terms of income. A person, a family, or a nation is not deemed poor only because of low income. Little or no access to health services, little or no access to safe water, illiteracy or low education level and a distorted perception of rights and needs are also among the essential components of poverty (50).

There is a two-way link between poverty and health. Poverty is one of the most influential risk factors for ill health, and ill health can lead to poverty. Illness impairs learning ability and quality of life, has a great impact on productivity, and

drains family savings. Poor people are more exposed to environmental risks (poor sanitation, unhealthy food, violence, and natural disasters) and less prepared to cope with them, are less informed about the benefits of healthy lifestyles, and have less access to quality health care. They are therefore more at risk of illness and disability (50).

Not so well recognized and understood is the fact that good health can make an important contribution to getting people out of poverty. A healthier child can learn better and healthier adults are more able to work and are more productive. Health is a basic component of human capital and can thus contribute to greater and more equitably distributed wealth.

Close to 1.5 billion people live in extreme poverty. The problem is particularly stark in the developing world (1, 50), where 80% of them live (Figure 1). Poor people have little or no access to qualified health services and education and do not participate in the decisions that affect their day-to-day lives. Those who live in extreme poverty are five times more likely to die before 5 years of age, and two and a half times more likely to die between 15 and 59, than those in higher-income groups (48). The same dramatic differences can be found with respect to maternal mortality and preventable diseases.

Poor people are not only more exposed to health-impairing factors but are less resistant or more vulnerable to comparable levels of those factors. The unequal distribution of wealth entails many other inequalities with a direct impact on health: a poorer level of education and knowledge, less access to information, a lower capability to cope with the effects of risk factors, reduced access to health services, and a reduced possibility of engaging in healthy activities (44, 47).

Common and current strategies aimed at improving economic growth rates and per capita incomes may perform very poorly in improving the overall health status of the population. This would happen if they do not focus on reducing the gaps between the poor and the rich, particularly in the face of the growing evidence that social inequalities play a crucial role in health inequalities, even after adjusting for total income.<sup>1</sup> Empowering the poor—which is the only effective and sustainable strategy to reduce social inequalities—implies both reducing their level of environmental exposure and enhancing their ability to cope with exposure.

The experience of almost a decade of globalization and neoliberal recipes shows that economic growth per se has little impact on poverty. In countries where income inequality is low, growth is much more effective in reducing poverty than in countries with high inequality. There is evidence that reducing inequality in people's assets, including land and education, can improve the efficiency of growth and particularly its impact on health (18, 19, 21, 30).

The association between inequality in the distribution of wealth and health indicators is not a methodological artifact (14, 17, 51). It is a fact, suggested by

<sup>1</sup>Throughout this text we talk about inequalities, because only inequalities are observed and measurable. However, practical interventions can only reduce inequities, which are unfair and avoidable inequalities.

common sense and established by indisputable scientific evidence. The efforts to explain the distribution of health indicators should be oriented toward the identification of appropriate measures of inequality rather than indicators of overall or average wealth. The practical implications of these facts are that actions that increase mean income without reducing the gaps between the poor and the rich may have a null or even a negative impact upon health indicators. In western affluent societies, increasing income inequality is linked with increasing health disparities between the rich and poor despite sustained economic growth.

Health systems should be designed to balance economic criteria with health objectives and social values. Together with a technical component, they should be community- or family-based and should attract other sectors to work in close cooperation with them. They should respond primarily to the needs of the poor, should be built on solidarity between different social groups, and should function from a human rights perspective rather than economic motivation.

## POVERTY AND UNDERNUTRITION

Poverty used to be linked to those severe forms of undernutrition, particularly in children, that were frequently seen in times and places of famine and hunger. Today we know that poverty also affects nutrition throughout the whole life-span and in a broad spectrum of manifestations, such as an increased propensity to many diseases, both infectious and noncommunicable, a reduced physical work capacity, a lower learning and intellectual capacity, an increased exposure and vulnerability to lifestyle-related and environmental risks, a reduced participation in social decisions, and a negligible capacity of resolution in the face of environmental challenges.

Poor nutrition starts in utero and its adverse consequences become apparent in early postnatal life and track through adolescence into adulthood in terms of higher risk, lower endurance to disease, and reduced work capacity (10, 27, 38). This fact both increases individual risk and has transgenerational implications owing to a handicapped ability to cope with environmental challenges, to attend to familial needs, and to provide adequate childcare.

The girls who survive and reach reproductive ages have higher risks of bearing low birth weight babies, who in turn have a lower chance of survival than normal weight babies. Undernutrition is one of the most common causes or contributing factors to illness and is the basic cause for suboptimal physical and mental development (10), which is the most important endogenous factor contributing to the restricted development of nations.

Young women who have not completed their development are at higher risk of bearing a low-birth-weight child. The risk is still higher if they have low height for age or low preconceptional weight (15). Pregnancy in adolescence and protein-energy malnutrition are more frequent in poor countries and particularly in low-income, low-education groups. During pregnancy, poor nutrition is a common cause of intrauterine retarded growth and low birth weight (15). Newborns with low birth weight have greater mortality risk, are more frequently affected and less

resistant to infectious diseases during early postnatal life, and are candidates for future diabetes mellitus, hypertension, and other chronic illnesses according to the process of early programming or Barker's hypothesis (6, 7, 16). Insufficient weight gain caused by poor nutrition is very frequent among poor pregnant women.

Poor nutrition during the first year has important consequences from which recovery is difficult and often incomplete. Poor children have higher rates of infections and less access to adequate nutrition and are more exposed to the consequences of carelessness and lack of information that are common in their family settings. Together with the strictly biological factors, the lack of stimuli is critical to growth and development—physical, emotional, and intellectual. Poor families, confronted with the permanent stress of the struggle for survival, do not have either the awareness or the opportunity to provide these stimuli (13). The results of the inadequate nutrition in this first year usually compromise the intellectual capacity and do not manifest themselves until 2 or 3 years later at school age. Infections and lack of nutrients in preschool children exacerbate the adverse effects of intrauterine growth retardation. The problem is particularly important in girls because they represent the intergenerational link that perpetuates the consequences of poor nutrition. Undernourished children suffer from more severe illnesses and have higher risks of mortality. Fifty-four percent of mortality in children under 5 in the whole world is attributed to small weight for age. The vast majority of these deaths were due to the added effect of mild to moderate undernutrition. Infections during preschool ages tend to subsist or reappear at school ages and affect school attendance and performance (3, 9, 28, 29).

Low height for age ("stunting") is the most frequent anthropometric manifestation of malnutrition worldwide. De Onis et al. (12) applied a multilevel model to estimate regional and global trends from 1980 to 2005 (Table 1). Despite the fact that the prevalence of stunting has fallen in many countries, more than 30% of preschool children suffer from it.

Adolescence is a period of rapid growth during which many important physical, intellectual, and psychological events take place. There is a sharp increase in the nutritional demand rarely satisfied in the poor, who carry the cumulative burden of past deprivation and lack of access to adequate nutrition and sanitation. Better-nourished girls have earlier menarche and faster premenarcheal growth velocity. Even in the unlikely event that they attain the same final height, poor girls grow for a longer period and are usually still growing during their first pregnancy and "competing" for nutrients with the developing fetus (37).

Family welfare is heavily dependent on the health, the nutritional status, and the physical and intellectual capacity of the adults. The increasing phenomenon of family disruption that plagues poor countries and poor strata within poor and affluent countries undermines the capacity of families to survive and to ensure basic nutritional and health needs (2).

Social and economic grounds underlie this phenomenon: In rural areas men abandon home and migrate to peripheral urban areas in search of better economic opportunities. In urban areas of poor countries men are often involved in illicit

**TABLE 1** Prevalence of stunting in preschool children, by UN regions and subregions, from 1980 to 2005 (12)

UN regions and subregions	Prevalence of stunting (%)					
	1980	1985	1990	1995	2000	2005
Africa	40.5 (36.2–44.8) <sup>a</sup>	39.2 (35.4–43.0)	37.8 (34.2–41.4)	36.5 (32.8–40.2)	35.2 (31.1–39.3)	33.8 (29.1–38.5)
Eastern Africa	46.5 (39.0–53.9)	46.9 (40.4–53.4)	47.3 (41.2–53.4)	47.7 (41.3–54.1)	48.1 (40.7–55.4)	48.5 (39.8–57.2)
Northern Africa	32.7 (25.1–40.3)	29.6 (23.1–36.1)	26.5 (20.4–32.5)	23.3 (16.9–29.7)	20.2 (12.8–27.6)	17.0 (8.2–25.9)
Western Africa	36.2 (29.9–42.4)	35.8 (30.9–40.8)	35.5 (31.2–39.9)	35.2 (30.6–39.8)	34.9 (29.2–40.6)	34.6 (27.4–41.7)
Asia	52.2 (47.6–56.8)	47.7 (43.3–52.2)	43.3 (38.8–47.7)	38.8 (34.4–43.3)	34.4 (29.8–39.0)	29.9 (25.2–34.7)
South-central Asia	60.8 (54.0–67.6)	56.5 (49.8–63.3)	52.2 (45.5–59.0)	48.0 (41.1–4.8)	43.7 (36.7–50.6)	39.4 (32.3–46.5)
South-eastern Asia	52.4 (42.6–62.2)	47.5 (38.0–57.1)	42.6 (33.2–52.1)	37.7 (28.2–47.2)	32.8 (23.1–42.6)	27.9 (17.8–38.0)
Latin America and The Caribbean	25.6 (21.4–29.7)	22.3 (18.4–26.3)	19.1 (15.1–23.1)	15.8 (11.6–20.1)	12.6 (7.9–17.3)	9.3 (4.1–14.6)
Caribbean	27.1 (15.8–38.3)	24.4 (13.3–35.5)	21.7 (10.6–32.8)	19.0 (7.8–30.2)	16.3 (5.0–27.7)	13.7 (2.0–25.4)
Central America	26.1 (15.9–36.2)	25.6 (15.7–35.4)	25.0 (14.5–35.5)	24.5 (12.5–36.5)	24.0 (9.9–98.0)	23.5 (7.0–39.9)
South America	25.1 (20.3–29.9)	21.1 (16.5–25.7)	17.2 (12.6–21.8)	13.2 (8.4–18.0)	9.3 (4.1–14.4)	5.3 (0.0–11.0)
All developing countries	47.1 (42.7–51.6)	43.4 (39.1–47.7)	39.8 (35.6–44.1)	36.0 (31.7–40.3)	32.5 (28.0–37.0)	29.0 (24.2–33.7)

<sup>a</sup>Figures in parentheses are 95% confidence intervals.

activities and are forced to indulge in a variety of social behaviors that tend to break family values and structure. Owing to threats of violence and other factors, many homes are deprived of the presence of a masculine figure. Women are left alone to take care of children and are subjected to the overburden of gender roles (2, 10).

Even in populations with high mortality rates for infectious diseases, populations are aging. Most old people are deprived of the benefits of social security and suffer the consequences of a long history of poor nutrition, frequent illness, and little or no access to health services. Moreover, they have to keep working to compensate for the migration of younger members of the family. Many old people find themselves abandoned, with no one to prepare food and take care of them.

The impact of poverty upon health is largely mediated by nutrition and is expressed throughout the whole life course. However, nutrition as well as health are barely responsive to mere economic growth. When income distribution is unequal, economic growth usually does not reach the undernourished, and nutrition may stagnate or even deteriorate (10). Increased income by itself cannot guarantee maximal nutritional benefit, because key nonfood factors such as environmental hygiene and adequate health care are not purchasable with increased income. Empowerment of the poor and of the women within households in terms of knowledge and education is essential for resources to be used rationally. Poor families usually use money to buy more energy (calories) in the form of foodstuffs with low nutritional quality; this practice has no impact on nutritional status but promotes obesity and overweight (1, 4).

The impact of poverty on health can be modeled structurally (20), both for a better understanding of the underlying mechanisms and for the design of a cost-efficient strategy to tackle the problem. This structural model emphasizes the direct and the indirect effects of poverty on health, nutrition, education, and productivity (Figure 2).

In Figure 2, low productivity, low education, poor health, and poor nutrition are represented as intersecting areas that reflect the interaction among these four factors and the degree to which they explain the others. Nonintersecting areas represent the fact that "poor health" and "health of the poor" or "poor education" and "education of the poor" and so on, are not synonyms. Poverty is represented by arrows influencing all these expressions.

Nutritional status depends both on food and nonfood factors. Nonfood factors such as education and hygiene are not privately consumed goods but socially provided basic needs. One could argue that, in that sense, poverty may not be the only factor affecting the level of nutrition, but socially provided basic needs are outcomes of the interplay between income and poverty at national scale. Once again, low education, poor health, low productivity, and poor nutrition can be seen among the nonpoor, but as an isolated phenomenon associated with different factors, most often genetic ones (1).

Nutritional improvement can be achieved before major economic advances. There are recent experiences in Africa, the Caribbean, and Latin America. Some

countries have demonstrated that improved nutrition can coexist with economic stagnation (10).

It is important to reemphasize the notion that poverty is not viewed in terms of the average income or average wealth of a society but as the lower tail of a multivariate distribution that encompasses income, education, nutrition, productivity, access, participation in decisions, health, and many other factors. Economic growth can lead to substantial improvements in nutrition only if the results of expansion are rationally used and equitably distributed. Countries that have developed equitable strategies have generally experienced more economic growth (46). Therefore, the efforts to reduce malnutrition should be accompanied by a policy of greater equity, both as a matter of human rights and as an economically appropriate strategy.

## POVERTY AND OBESITY

Obesity is an excess of body fat caused by an imbalance which occurs whenever energy intake surpasses energy expenditure for a long enough period of time. No single factor can be identified as having a determinant causal role in this energy imbalance. Rather, a complex pattern of factors and their interactions are thought to be responsible.

Obesity is considered a disease because of its organic, functional, and psychological effects on the individual and its social impact. Furthermore, obesity is also important as a health problem because of its implications as a risk factor in many lifestyle-related noncommunicable diseases such as hypertension, diabetes mellitus, coronary heart disease, dyslipidemias, gallbladder disease, and certain types of cancer (49).

In children and adolescents, obesity is related with important psychosocial consequences and with its tracking and persistence into adulthood (5). Humans have developed very effective physiological mechanisms against body weight loss, but no such mechanisms exist to prevent body weight gain when food is abundant and/or inappropriate. As with most human health problems, individual factors of biological susceptibility interact with environmental and social influences to produce overweight and ultimately obesity. These environmental and social influences are expressed as inappropriate dietary and physical activity patterns.

There are behaviors that promote obesity and environmental factors that foster those behaviors. The environment that prevails in all affluent countries and in most urban overpopulated sites of poor countries is characterized by an abundant supply of relatively inexpensive, highly palatable and energy-dense foods combined with a lifestyle that demands low levels of physical activity (31, 42). Such an environment promotes high energy intake and lower energy expenditure to which metabolism has limited capacities to respond in order to maintain energy balance. Thus, obesity should be regarded, in most cases, not as an expression of a defective physiology but as an adapted response to the environment because the body fat increases as a regulatory mechanism designed to restore energy balance. The environmental

**TABLE 2** Prevalence of overweight and obesity in women aged 15–49 in Latin American countries (31)

Country (year)	n	Body mass index x/sd*	Pre-obese (%) (25–29.9 kg/m <sup>2</sup> )	Obese (%) (≥30 kg/m <sup>2</sup> )
Bolivia (1994)	2,347	24.3/3.7	26.2	7.6
Brazil (1996)	3,158	24.0/4.3	25.0	9.7
Colombia (1995)	3,319	24.5/4.0	31.4	9.2
Dominican Republic (1996)	7,356	24.3/4.9	26.0	12.1
Guatemala (1995)	4,978	24.2/3.9	26.2	8.0
Haiti (1994–1995)	1,896	21.2/3.4	8.9	2.6
Honduras (1996)	885	23.5/4.7	23.8	7.8
Jamaica (1998)	442	—	33.2	29.3
Mexico (1987)	3,681	23.7/4.3	23.1	10.4
Peru (1996)	10,747	25.1/3.6	35.5	9.4

\*x, mean; sd, standard deviation; n, number of persons studied.

contribution to obesity should be envisaged as an increment in the frequency or intensity of behaviors that increase the risk of a positive energy balance.

The prevalence of overweight and obesity<sup>2</sup> is very high in many countries (40). There are about 250 million obese adults and many of them live in developing countries where obesity is as dominating as other traditional public health concerns, such as infectious diseases and undernutrition (23, 34). The view that obesity has to be approached on an equal footing with other nutritional problems is supported by the fact that it is frequently associated with early fetal and childhood undernutrition (16, 35).

Table 2 shows the prevalence of pre-obese and obese women aged 15–49 years in several Caribbean and Latin American countries. With the exception of Haiti, more than one third of the population is pre-obese or obese. The highest figures correspond to Jamaica, which could be representative of practically the whole anglophone Caribbean. Data in this table correspond to a majority of poor countries (22, 31). There is a lack of reliable longitudinal studies; however, some diachronic studies allow us to surmise that there is an increasing trend in obesity.

<sup>2</sup>Overweight is commonly referred to as mild obesity. However, for a proper use of the term one has to bear in mind that obesity is defined as excess fat, whereas overweight simply reflects excess weight with no reference to body composition. The World Health Organization proposes the following classification based on body mass index (BMI) [weight (kg)/height (m)<sup>2</sup>]: underweight: BMI < 18.5; normal weight: 18.5 ≤ BMI ≤ 24.9; pre-obese: 25.0 ≤ BMI ≤ 29.9; obeseI: 30.0 ≤ BMI ≤ 34.9; obeseII: 35.0 ≤ BMI ≤ 39.9; obeseIII: BMI ≥ 40.0.



A study conducted in the United States (24) has shown a sharp increase in the proportion of obese individuals and in the number of states affected by these nationwide epidemics. The highest prevalence as well as the highest absolute increment occurred in Hispanics (9.2%) and African-Americans (7.6%) (24), the poorest groups in the American population.

Three household surveys conducted in Brazil from 1974 to 1975, 1989, and 1996 (25, 26, 39) showed a dramatic increase in pre-obesity and obesity in all age groups between 18 and 65 years, for both women and men. Figure 3 shows these trends. Several Latin American countries have also reported increments in the prevalence of obesity, although the methodologies employed and the subpopulations covered are not the same (11, 22, 32).

Immigrant groups throughout the world, both between countries and between regions, have a poor diet, are exposed to violence, and have higher rates of obesity and its associated comorbidities. Thus, in industrialized societies as well as in developing countries, the poor are affected by dietary deficiency but also by obesity and its associated chronic adult diseases. Health and food policies have to be approached from a different perspective, one that ensures healthy diets at affordable prices for all communities and for all societal strata.

Economic development has often entailed reduced physical activity. Advances in modern architecture, town planning and transportation, electronic and computational development, use of sophisticated devices, and increased opportunities of passive entertainment have encouraged a dramatic reduction of physical activity and exertion during the past 30 years. These changes in societal behavior have promoted a significant raise in public health problems associated with parallel rising rates of obesity (8, 31, 41). However, this decreasing trend in physical activity is also the result of the migration of rural populations to peripheral urban areas. The dramatic changes in lifestyle of these migrant populations include greater exposure to violence, drastic reduction in physical activity, increased consumption of high-energy, low-quality food, increased exposure to alcohol and other toxic habits, and increased prevalence of HIV/AIDS and infectious and noncommunicable diseases.

Many countries have undergone a process of acculturation throughout the twentieth century by the assimilation and incorporation of inappropriate habits and lifestyles from western industrialized societies. This has been very skillfully manipulated and exploited by the consumer industry to promote body archetypes that tend to perpetuate those habits. This process is not uniform throughout social strata and groups. Studies of Mexican-American and Salvadoran populations showed the differential influence of acculturation in men and women (30, 31, 36, 43) and the greater susceptibility of the latter to increase obesity.

Better-off groups manage to adapt more easily to these changes. In contrast, poorer groups must face the conflict between their capacities and the ideal images with which they tend to identify. As a result, those who have more limited cultural and social opportunities are more exposed to all health risks, including obesity, and are less able to cope with them.

## SOME POSSIBLE LINES OF ACTION

The key question seems to be how to face the problem of nutrition and health within the constraints imposed by economic growth and development. The neoliberal formulas that postulate the improvement of health and nutrition conditions as a necessary consequence of the “leaking down” process of economic growth seems to have been belied both by countries in which the macroeconomic conditions have improved and the health indicators have stagnated or worsened and by poor countries with no economic progress that have managed to maintain or improve their health and nutritional conditions (33, 42).

The following are but a few key elements of successful interventions:

**Multi-sectoral action:** Improvements in health cannot be conceived of as the exclusive responsibility of the health sector. Action must be taken in a wide range of government policy areas that recognize interactions with policy goals outside of the health sector. Building alliances is mandatory for multi-sectoral actions.

**Capacity building:** There are three components in this concept: (a) information and education of those who frequently have less access to it, (b) enabling and empowering people to participate in problem identification and solution, and (c) the creation of opportunities for applying education and exercising capacities.

**Targeted or general approaches:** Interventions may be targeted to vulnerable groups such as those with lower income or with less access to adequate food, to special strata such as pregnant women or school children, or to selected individuals identified through some kind of screening system. If low cost methods of identification do not exist, general interventions are more likely to yield the greatest benefit. This may be the case for obesity or other lifestyle related diseases such as cancer.

**Emphasis on prevention:** The most successful interventions are those aimed at handling the problem in the earliest stages of life. Strategies are required to improve maternal nutrition for the prevention of low birth weight and to improve the nutrition of 0–24-month-old infants. The effectiveness of these measures is based on their immediate and intergenerational effects.

**Promotion of healthy public policies oriented to improve health and nutrition determinants:** for instance, food production, food prices, import of food products, and regulatory measures to provide healthier foods at different expenditure settings (e.g., school and workplace cafeterias, fast-food restaurants).

**Reanalysis and eventual redesign of food supplementation programs to meet epidemiological and public health realities.**<sup>3</sup>

<sup>3</sup>In the past, food supplementation programs designed to tackle protein-energy malnutrition could have had a negative impact by increasing the prevalence of obesity and masking micronutrient deficiencies.

Reorientation of health services to meet the challenge of the aging of populations and other consequences of epidemiological and demographic transition.

Creation of healthier social and physical environments (e.g., access to safe water, better hygiene, and proper sanitation for all).

Moving to a regional approach for action: problems such as those posed by migration, emergent and re-emergent diseases, and physical, chemical, and biological contaminants require the strengthening of international links and concerted actions.

Although poverty and deprivation are at the very root of ill health and malnutrition, the battle against them has to be fought on several fronts: A better nourished society will be healthier, and a healthier society is more responsive to actions oriented at reducing poverty and inequalities, and a more equitable society will also be more responsive to measures aimed at reducing malnutrition and improving health and the quality of life.

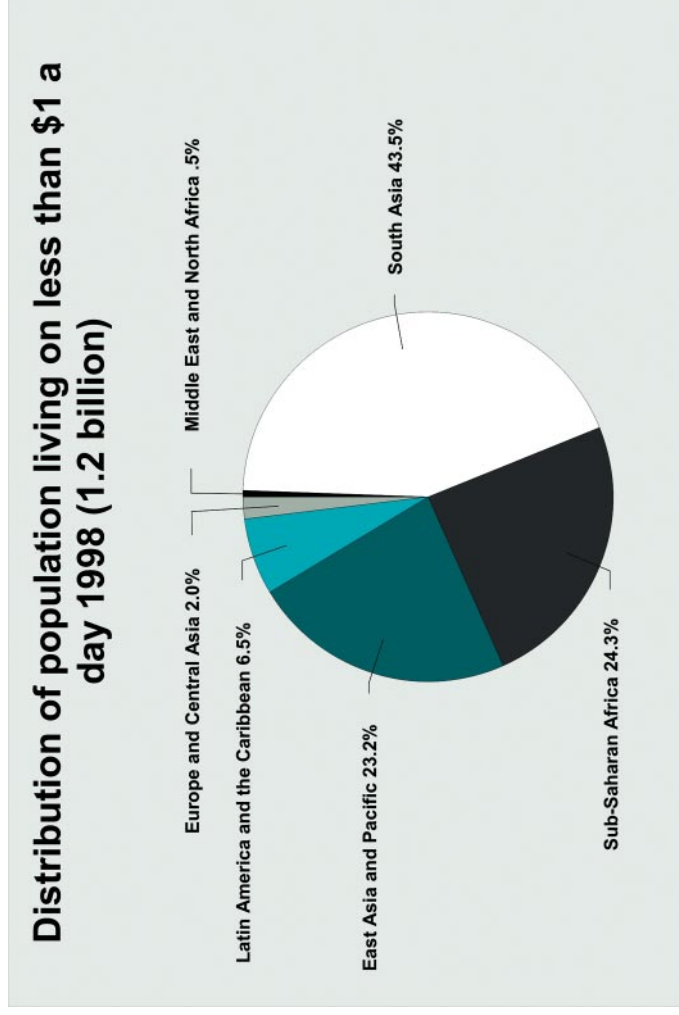
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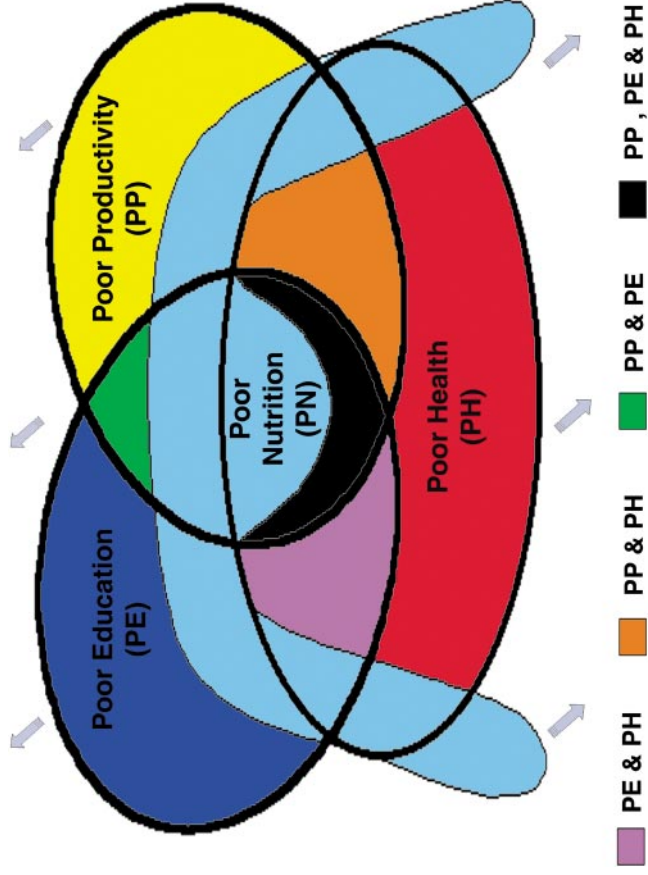
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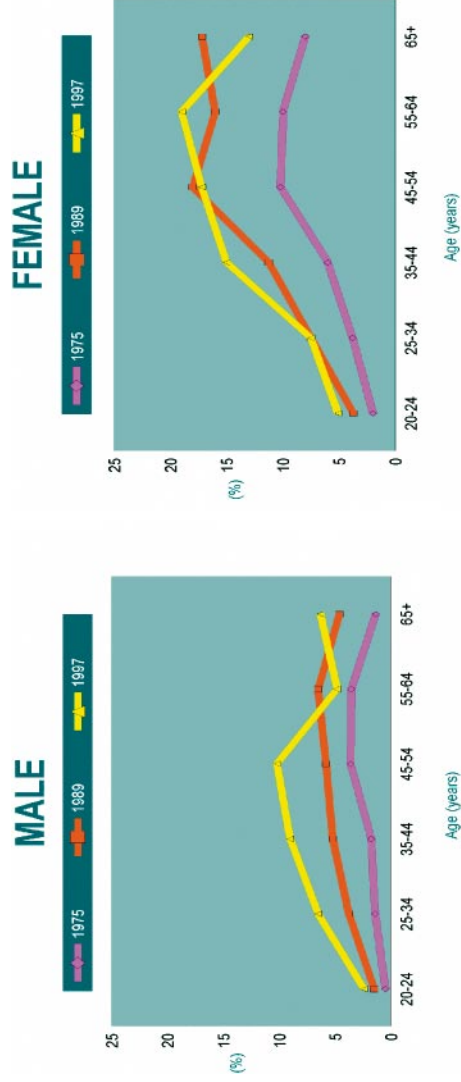
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**Figure 1** Where the developing world's poor live. Source: Reference (45).



**Figure 2** Venn diagram showing the influence of poverty upon education, productivity, nutrition, and health and their interactions.



**Figure 3** Secular changes in obesity 1975, 1989, and 1997, in Northeast and Southeast Brazil. Source: Reference (26).