Obesity Versus Malnutrition: Opposites or Two Peas from the Same Pod

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The existence of obesity in areas of extreme poverty seems a paradox as having excess mutually excludes being deficient. Traditionally, obesity has been associated with overabundance and affluence. After all, the cause of obesity consists merely of surplus in caloric intake and not enough exercise to burn it off. However, recent studies have shown the relationship between malnutrition and obesity to be much more complicated. Although 800 million individuals worldwide are suffering from malnutrition and over 1 billion people live on less than one U.S. dollar a day, obesity coexists with undernourishment all over the world, even within the same households (Sawaya, 2004). Moreover, studies are showing obesity to be more prevalent in socioeconomically depressed areas and the developing world than with the more affluent areas and numbers are increasing at an alarming rate.

The causes for the current obesity/malnutrition trend are multifaceted and the implications for the health of future populations are alarming. Finding solutions for dealing with the issues of obesity and malnutrition in the same instance pose a particular challenge to public health workers. Malnutrition works both as a cause and a result of poverty. Without health, individuals do not make productive members of a society, and without proper nutrition one cannot maintain health. Indeed UNICEF has stated, “the devastation caused by malnutrition afflicts millions of people, who are chronically susceptible to disease and endure all sorts of disabilities…It places women and families in danger, thus threatening the viability of entire societies” (Sawaya, 2004).

Social Inequality and Obesity

The role poverty has played globally in undernourishment is well known. Countless articles and studies have documented the need for food in impoverished areas. However, recent studies have also shown the economically disadvantaged to be at greater risk for both malnutrition and obesity. A study in the United Kingdom, Coexistence of social inequalities in undernutrition and obesity in preschool children: population based cross sectional study (Armstrong, et.al., 2003), showed children 3-4 years of age in impoverished areas to be at a 30% higher risk of obesity when compared to children of a higher socioeconomic status. Thus, a significant link was found between obesity and social deprivation.

In Starr County, one of the poorest communities in Texas, with 59% of the population living below the poverty line, 24% of the children are overweight or obese by age 4. Moreover, the trend continues with 28% overweight or obese by Kindergarten, and 50% of boys and 35% of girls by elementary school. In addition, 50% of Adults in the county have type 2 diabetes and almost every child is at risk because of relations to an adult with type 2 diabetes (Winterfeld, 2005). The above studies represent the current
situation in two developed nations and the populations most affected are those under the influence of poverty not the more affluent as would be expected.

**Obesity and Poverty in the Developing World**

The developing world has experienced a similar increase in obesity alongside undernutrition. In Sao Paulo, Brazil for instance, 60% of households with underweight children also have overweight family members (Caballero, 2005). Overweight mothers’ bringing undernourished infants into the clinic is a common occurrence. Brazil numbers among many developing countries experiencing the process of nutritional transition. Nutritional transition is defined as “the change of diet, food availability, and lifestyle that occur in countries experiencing a socioeconomic and demographic transition” (Caballero, 2005).

A number of changes have initiated the dual problem of obesity and undernourishment. Malnutrition used to be characterized in the developing world by scarcity of food and hard physical labor leading to malnutrition in the inability to get enough calories to sustain an individual. Now, cheap energy dense foods have replaced scarcity in many growing urbanizing developing countries. With the price of food sometimes exceeding 50% of a family’s income, people are forced to be selective about what they buy (Caballero, 2005). In addition to the above, adults being unable to spend time at home preparing meals because of the need to work and the sedentary lifestyle attributed to world wide access to television have also been linked with the obesity epidemic. Moreover, while providing excess calories for adults, cheap foods may not provide enough nutrients for a child to grow. Therefore, the high-fat nutrient deficient foods cause obesity in adults and undernourishment in children.

Wealthy populations have had the same exposure to calorie dense foods and television, but have not experienced the sharp increases in obesity seen among the impoverished. Reasons for this difference have been attributed to protective factors in affluent populations including access to adequate healthcare with information and education about health and nutrition. Moreover, the affluent possess sufficient income and transportation to buy good quality foods. Also, the ability to claim leisure time for recreational physical activity is thought to make a difference (Caballero, 2005).

**Impact of Poverty on Physiological Function**

More than just increased access to nutrient deficient, calorie dense foods, the effects of poverty on the body itself have been explored as a major cause in contributing to obesity among the malnourished. It has been proposed that nutrition, from the time of conception into the postnatal period, have effects significant effects on the individual throughout life (Sawaya, 2004; Caballero, 2005). Poor intrauterine and postnatal diet can cause irreversible differentiation of metabolic system. (Caballero, 2005). Thus, adult risk for obesity increases because genes are programmed to optimize energy conservation, increasing ability to store and accumulate fat.

A physiological origin of obesity was supported in study conducted by Sawaya, et. al. (2004) in the article *Long-term effects of early malnutrition on body weight regulation*. The study examined the impact of stunting on the physiological functions of
the body in females from the slums of Brazil. Stunting, identified as the most prevalent indicator of malnutrition and socioeconomic status, affects 33% of the world’s children. The main causes of stunting are poor maternal nutrition at conception, intrauterine nutrition, inadequate breast feeding, delaying the addition of complimentary feeding in addition to quality and quantity of food, and poor absorption of nutrients due to disease or parasites (Sawaya, 2004).

Many have purported obesity exists in developing countries for the same reasons it exists in the developed countries, high fat and refined sugar intake, and decreased physical activity, not physiological differences. However, Sawaya found obesity and malnutrition to be tied to the same physiological mechanisms and determined obesity may develop due to exposure to hunger early in life causing low birth weight and stunting. When compared, stunted girls were determined to be more susceptible to high fat diets when compared to non-stunted girls. The control and stunted girls picked for similar living environment, were tested, and it was determined that the stunted girls had lower fasting fat oxidation than non-stunted control girls, a significant risk factor for obesity. Therefore, not high-energy intake, but different physiologic function could play a deciding role whether the girls became obese or not.

**Implications the Obesity Trend on Society**

The rise in obesity among the poor in both the developed and the developing world has fostered many explanations for why this trend is occurring. Poor diet quality due to the increase in calorie dense, nutrient deficient foods and lack of access to affordable healthy foods are among the most accepted. Lack of availability to good foods has in turn lead to nutritional deformities, as in the case with stunting, which increases the likelihood of obesity in later life. Action needs to be taken quickly to remedy the current situation because of the effects the obesity epidemic on the future. Obesity places enormous stresses on society. For instance, medical costs due to obesity in 2003 totaled around 75 billion in the U.S., most shouldered by taxpayers through Medicare (Winterfeld, 2005). All over the country obesity eats up millions of dollars that could go to better use elsewhere.

Obesity impairs productivity and economic growth in afflicted populations. Sick individuals cannot function normally in society and society loses. Obesity has been linked to many other ailments including heart disease and type 2 diabetes. The incidence of type 2 diabetes among children has increased dramatically, with children developing symptoms as early as eight years of age (Winterfeld, 2005). Diabetes in turn has its own side effects, blindness, impotence and amputations to name a few. Associations have been drawn between obesity and problems with the gallbladder, cancer and arthritis. Moreover, the psychosocial consequences obesity has on children and adults needs to be included.

Predictions say the current generation may be the first generation of children to die younger and live sicker than their parents (Winterfeld, 2005). The great challenge to health care workers will be to develop programs to address both the issues of under-nutrition and obesity concurrently. Clinically, each nutritional disorder needs to be dealt with individually to fulfill specific needs. However, poverty remains the underlying cause of both conditions and both will benefit from education and increased access to resources.
Solutions

As the most susceptible populations mothers, infants, and children should be of central focus to education and outreach plans. The consequences of poor maternal nutrition and the impact on the child have been illustrated above. Intrauterine and postnatal development in the child dictates the child’s future health as an adult. Therefore, good nutrition for women of childbearing age cannot be emphasized enough. Education plays a key role in health. In fact, a study in Brazil showed education of mothers to have more significance on maternal nutrition than socioeconomic status (Sawaya, 2004). Promotion of breast-feeding in low-income areas continues to be an important issue.

Another important target for intervention should be schools. Restrictions need to be placed on competitive foods in schools. For many children in low-income areas school meals may be the most nutritious meals they get all day. Development of programs offering children a variety of healthy nutritious foods should become a fundamental priority. The challenge lies in creating a program that can rival the financial benefits offered by the processed food corporations. Increased opportunities for exercise are also important.

Nutritious foods need to be available to low income communities at a fair price. Compare the cost of buying fresh produce at many U.S. grocery stores today and the dollar menus at many fast food restaurants. Moreover, drive through a low income community and compare the numbers of liquor stores and fast food restaurants you pass to grocery stores. Programs encouraging development to increase access to good foods should be expanded. For instance, Pennsylvania instituted a program to foster supermarket support, which offered companies 150 million dollars in grants, loans and loan guarantees (Winterfeld, 2005).

In a world where a surplus of food is produced, well over the amount needed to feed the population as a whole, there should be little worries about people going hungry. The Malthusian Barrier has been effectively broken. However, inequality, whether social or political, remains rife within the world’s population and communities continue to feel the afflictions of malnutrition: hunger, starvation, and obesity. All of the solutions addressed above need to be coupled with an additional act, that of poverty elimination. Until the underlying cause of poverty is remedied, no program can hope for a permanent solution. Indeed, the roots of poverty run deep, connected to crime, health, and the world environment as a whole. While worried about basic needs and survival, no human being can extend their consciousness much further or beyond the immediate.
References


