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SIERRA LEONE

*Little is known of Sierra Leone,
and how it connects to the diamonds we own
-Kanye West, "Diamonds From Sierra Leone*

Sierra Leone is a country of contrasts. For some, the only knowledge they have of Sierra Leone is of the conflict between the government and the RUF (Revolutionary United Front) that lasted from 1992 until 2001. One of the world's major producers of gem-quality diamonds (CIA World Factbook), the western Africa nation exports tens of millions of dollars worth of diamonds annually. Despite the wealth of natural resources it possesses, Sierra Leone has also been cited as one of the world's poorest countries (UN Human Development Report, 2005).

And although under-nutrition rates in Sierra Leone are among the highest in the world (Aguayo *et. al*), an emerging food policy issue for the nation may be prevention of obesity. Recent research by FAOSTAT indicates a link between wasting and stunting – current under-nutrition issues in Sierra Leone – and increased risk for future obesity, if improved access to quantity, but not quality, of food is addressed in developing countries.

Life in Sierra Leone

Sierra Leone, a country roughly half the size of Iowa with more than twice Iowa's population (6 million), is located on the Atlantic coast in the middle of Africa's western peninsula. Ten years of civil war, which formally ended in 2002, decimated the country's human and economic resources. The United Nation's Human Development Index (HDI) annually ranks nations according to citizens' quality of life, using criteria including life expectancy, educational attainment, and adjusted real income. Sierra Leone was the second-lowest ranked country on the United Nations' 2005 HDI (United Nations Human Development Index, 2005).

According to the CIA World Factbook, a typical family in Sierra Leone lives in a rural area and is engaged in subsistence agriculture, as are approximately two out of three of the nation's residents. The average household size is 6.2 members. Life is short in Sierra Leone, which has the world's highest child mortality rate and one of the lowest life expectancy rates. One in six children die in the first year of life, and one in four die before the age of five (American Journal of Clinical Nutrition). Data compiled from the United Nations Millennium Indicators Database ranks Sierra Leone's rate of under-five mortality the highest out of all countries. For men, average life expectancy is estimated at 40.13 years; women live slightly longer at 44.98. Almost half of Sierra Leone's population is under the age of 14 (CIA World Factbook). The country's median age is 17.53 years.

The local diet consists primarily of starchy staple foods such as rice, cassava roots, maize and millet. Malnutrition is a major factor in Sierra Leone's mortality rates, along with war and disease issues. According to a 2002 study by Victor M Aguayo et al, 46 percent of child deaths in Sierra Leone are due to malnutrition. That same study predicted malnutrition to be the underlying cause of the deaths of 74,000 children over the next five years. The Food and

Agriculture Organization of the United Nations estimated in 2000 that 33.8 percent of Sierra Leone's children's growth had been stunted and 9.9 percent of children could be classified as wasted. Just over 8 percent of children were estimated to be overweight.

Residents of Sierra Leone are at very high risk of many major infectious diseases, including food or waterborne diseases such as bacterial and protozoal diarrhea, hepatitis A, and typhoid fever; and other diseases including malaria, yellow fever, schistosomiasis, and Lassa fever. According to the CIA Factbook, 120,000 individuals (approximately 7 percent) of the adult population are estimated to be living with the HIV virus and/or AIDS.

Sierra Leone's literacy rate was estimated at 31.4 percent in 1995, including 45.4 percent of males and 18.2 percent of females (CIA World Factbook).

Food nutritional quality

On average, a Sierra Leonean consumes 1900 kcal/day (C). One of the contributing factors to this low total may be minimal consumption of foods of animal origin. Foods with sources of plants account for 96 percent of the total calories available (D) to the average Sierra Leonean. As a result, a disproportionately high amount (66%) of energy is obtained from carbohydrates, compared to xx% in the Western world. Sierra Leone has been shown to have a high dependence on starchy staple foods such as rice, cassava, maize and millet.

As a result of the Sierra Leone conflict, many Sierra Leoneans were forced to take refuge. This took them away from the lands that they had farmed and forced them to adapt an unbalanced diet.

How factor contributes to potential for increased future obesity risk

With the end of Sierra Leone's long civil war, it is hoped that political and economic stability are achieved, and quality of life improves in Sierra Leone. However, as work continues to address undernutrition issues in the nation, studies linking subsequent obesity problems in other transitional developing countries should be noted, to ensure that Sierra Leone's undernutrition problem does not transition into an obesity issue.

Much recent research has indicated the coexistence of undernutrition and obesity in developing countries. And as other countries have progressed on the development continuum, statistics have shown a rapid transition from undernourishment problems to obesity trends. A 2000 article published by Hoffman *et al.* studied stunted and nonstunted children from the shantytown of Sao Paulo, Brazil. The study tested the hypothesis that stunted children have a slower metabolism than nonstunted children, which can lead to accelerated fat deposition particularly quickly when a high-fat diet is consumed. The results indicated nutritionally stunted children have impaired fat oxidation compared to nonstunted control children from the same environment. These results suggest stunted children are at an increased risk of obesity when food supplies become sufficient.

A 2003 study by Sawaya and Roberts – “Stunting and Future Risk of Obesity: Principal Physiological Mechanisms” – noted the long-lasting impacts of undernutrition on a population with regard to future obesity risk: “Undernutrition in developing countries lasts throughout gestation, childhood, and from one generation to another, and the individuals who survive are

very likely the ones who have both the physiological adaptation mechanisms and environmental conditions to minimize the effects of undernutrition.”

Obesity is not currently an issue in Sierra Leone, but evidence does exist that indicates residents' possible predisposition for obesity. Subjects of a 1998 study on the effects of mutations on severe obesity and Type 2 diabetes included members of the Mende tribe of Sierra Leone and Gullah-speaking African Americans who are descendents of the Mende tribe. (Approximately 30 percent of Sierra Leone's population are members of the Mende tribe.) The study theorized that a genetic mutation could have arisen in the Mende tribe in a manner that promotes fat storage during food abundance and increases survivability during famine, and noted: “This ‘thrifty’ mechanism, however, may adversely lead to progressive obesity and diabetes in such a highly adapted population when members are chronically exposed to a high fat diet, as is the case for the Gullah African Americans.” As a result, as food security improves in Sierra Leone, precautions need to be taken to ensure that one malnutrition issue (stunting) does not lead to another (obesity).

Recommendations

In the future, national governments and international organizations must act in recognition of the fact that there are other variables in malnourishment besides lack of food. To ensure that Sierra Leone's undernourishment problem does not transition to an obesity issue, as it has in other developing nations, quality of diet must be addressed as much as quantity. To facilitate high average intake of fruit and vegetables, Sierra Leone policy makers need to look at where the large quantities needed would be produced, how the infrastructure can be developed to facilitate the sale and purchase of these perishable products, and whether large-scale production of fruits and vegetables would be sustainable within the country.

Improvements in biotechnology are coming along every day. They are necessary to feed not only Sierra Leone, but also the growing population of the world. Lack of food is not the only reason for malnutrition. Poverty had just as much, if not more, to do with it. Technology can provide even more enhanced versions of major crops such as rice and make them cheaper at the same time. More accessible vaccines must be available for the public. One of the main issues holding Sierra Leone down has been the corrupt government. Positive leadership must be taken, and with fair government, it is only a matter of time until Sierra Leone starts to develop.

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