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Consequences of the African Diaspora on Nutrition

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## Introduction

11-13 million Africans were transported from various African regions and carried into the diaspora in the 400 years following Columbus' landing on the island of Hispanola. The New World colonies were under production, and a tremendous workforce was necessary to provide the primary productive work force. The Africans unwillingly chosen to carry out such a colossal burden were carried into diaspora by the European slave trade where they have grown into large populations in "North America, the Caribbean, Brazil and northern South America, and, via more recent secondary migration, the United Kingdom" (1). The result of such a vast disbursement of people is a social and economic environment that varies more than that recognized for any other "macro-population group" (1). One finds economies ranging from traditional subsistence agriculture in much of West Africa and parts of the Caribbean, to urban and peri-urban small-market economies in other parts of the Caribbean, to post-industrialized societies in the United States and the United Kingdom. It has been observed that the differences in economic conditions between these populations parallel health and nutrition disparities. What can account for such disparate outcomes from one people found in a variety of places? Luke et al. offers the explanation that the answer lays in the historical experience of other populations. The answer is two-fold. When a population of people are involved in a movement from traditional agriculture to industrialization, and as national and individual wealth increases, nutrition-related concerns shift from privation, that is deprivation (e.g. childhood stunting) to surfeit, or excess (e.g. obesity). Thus according to Luke et al., the African diaspora offers a "unique opportunity to observe the nutrition transitions among contemporary populations sharing a common historical and genetic origin" (1).

## Exchanges and Introduction of Foods during the African Diaspora

What are some of the nutritional adaptations and foods introduced to the New World and Africa as a result of the exchanges of the African diaspora? The diaspora transferred cultural, agricultural, and dietary practices from Africa to the New World and back again. Crops such as sorghum, pearl millet, African rice, cowpea (black-eyed peas), African yams, okra, watermelon, bottle gourd, and fluted pumpkin were indigenous to Africa (3,4). Yams were cultivated as early as 17,000-18,000 years ago on the African continent. Conversely, crops carried to Africa from the Americas by the Portuguese that became crucial to African agriculture include peanuts, sweet potatoes, and manioc (cassava). Additional foods carried to Africa by Europeans include maize, guavas, lima beans, pumpkins and squash, avocados, tomatoes, pineapples, papayas, and cashew nuts (4).

## Diet in the African Diaspora

Studies list cassavas, yams, maize, or millet and sorghum as the top contributors of energy in the African diet (5, 6). Furthermore it has been noted that there is a tremendous amount of monotony found in a typical African diet. As someone of Nigerian descent, I can attest to a diet that consists of many of the same foods. Data has been found to indicate that 20%-25% of kilocalories in both rural and urban African diets is supplied by fat (1, 7, 8), most of which is found in the form of palm, peanut, and corn oil. Food-frequency questionnaire data collected in Spanish Town, Jamaica, indicate a higher percentage of kilocalories derived from fat (1, 10), than was observed in West Africa, 27%-30% versus 20%-25%. The primary energy sources

listed in Jamaica were rice and peas (10). Consistent with trends in industrialized nations, it was estimated that the diet of African-Caribbeans living in Manchester, England, had a fat content between 32% and 35% (11). The chief energy contributors for this population were meat, rice, and peas. In our very own country, the second National Health and Nutrition Examination Survey (NHANES II), resulted in data, which indicate the primary sources of kilocalories for all people in the United States, were white breads, cookies and donuts, and meat (1, 12, 13). Furthermore the diet of African-Americans is characterized as high in fat and salt and low in fruits and vegetables (14).

In general, a very distinct dietary trend exists in which the percentage of energy derived from fat and a marked increase in the presence of refined foods and meat products increases as one moves from West Africa, to the Caribbean, to the United States and United Kingdom. "For the great majority of West Africans, certainly for the 75% of the population living on subsistence farms, every day brings a meal much like the one the day before, and the ones of centuries before." (1). Today however, this is not the case for African Americans who live in a country that relies more than ever before on unnaturally processed foods, and packaged goods. A people who were once dependent on foods cultivated from the land are now able to access a wealth of foreign fat and cholesterol filled goodies that have been demonstrated to contribute negatively to health outcomes. In more impoverished areas of our city (where most African Americans reside), there is a distinct increase in the prevalence of fast food chain stores offering a broad variety of cheap, unhealthy foods. In contrast, more wealthy communities enjoy the benefits of health food stores such as Whole Foods Markets and Trader Joes. Such markets do not exist in an average African-American community. Thus, it is not a coincidence that African Americans have less exposure to more healthy food options and suffer the consequences of poor nutrition more than other Americans.

### Adult Anthropometrics and Obesity

Using adult anthropometrics values as a tool, one can interpret the long-term, impact of diet and nutrition, on overall health status. Comparisons of heights and weights of adults within the African diaspora over time provided an indication of changes in the availability of energy and nutrient sources, balanced against the requirement for physical activity (1). In the late 1950s, anthropometric and dietary data were collected in seven villages in Nigeria (19) and in urban and rural sites in Jamaica (20). One of the first databases in the United States in which race was identified was the first National Health and Nutrition Examination Survey (NHANES I) (21). Mean height, weight, and body mass index (BMI) from these early studies were compared with data from more recent population-based surveys conducted by the International Collaborative Study on Hypertension in Blacks (79).

As expected, BMI displayed an increasing gradient in mean values from West Africa to the Caribbean to the United States for both men and women (1, 23,24). Among men, the lowest BMIs were from Nigeria (mean = 21.7) in which cassavas and yams were the primary sources of energy, and rural Cameroon (mean = 23.5). BMI values were slightly higher among men in the Caribbean, Jamaica (mean = 23.8), St. Lucia (mean = 24.3), and Barbados (mean = 25.9), and highest in the United States (mean = 27.1). For women, the results are similar. A dramatic increase in mean values between West Africa and the Caribbean and the United State existed as it does for men. In Nigeria and rural Cameroon, mean BMI of women was 22.6 and 23.5, respectively, whereas in Jamaica it was 27.9, in St. Lucia 27.3, in Barbados 29.4, and in the

United States 30.8. Thus, a clear east-to-west increasing gradient in the prevalence of obesity, defined as a BMI 30.0 exists (25, 26). The prevalence of obesity was lowest for Nigerian men (5%) and highest for African-American women (49%). Today, obesity among African American women is still a very serious public health concern. Mean percentages of body fat levels were 11%, 19%, and 25% for men and 25%, 36%, and 40% for women in Nigeria, Jamaica, and the United States, respectively. This is why one can classify the United States and United Kingdom as representing the late stage of the epidemiologic and nutrition transitions. These poor results of anthropometrics and level of obesity attest to the reasons why chronic, degenerative diseases of nutrition excess are the leading causes of ill health among both African-Americans and the black populations of the United Kingdom.

### Diabetes and Hypertension in the Diaspora

A very strong correlation has been made between obesity, total body/abdominal fat, and the incidence of NIDDM. Because there is a distinct east-to-west gradient in the prevalence of obesity among adults of the diaspora, the incidence of NIDDM also follows this relationship (1). Not only is NIDDM more prevalent among blacks in the western hemisphere relative to West Africa, it is also more prevalent among blacks than whites in both the United States and the United Kingdom. Not only is the prevalence and incidence of NIDDM greater, health outcomes such as end-stage renal disease, retinopathy, and lower-extremity amputations tend to be more frequent and severe among African-Americans (1). Perhaps however this is influenced by the poor quality of health care and access to preventive health education African Americans tend to receive in the United States. Hypertension has been termed the "silent killer" and severely affects cardiovascular health. It has been found to be the most common cardiovascular condition in the world with lifetime risk approaching 50% in most populations (1). Nutritional aspects of lifestyle figure prominently in the known risks for hypertension, including obesity, a low intake of fruits and vegetables, and a high intake of sodium. As early as the 1930s persons of African descent in the United States have been recognized to have a higher incidence of this condition than do whites (1). Yet, this condition is not common in Africa (27). Recent large-scale surveys have in fact demonstrated low prevalence in rural Africa, with the expected gradient to urban areas, the Caribbean, and the United States paralleling trends in obesity and sodium intake.

### Summary

Historically, as a country becomes more industrialized, and as personal and community resources improve, the nutrition transition involved in these changes tend to go from traditional, agriculturally based low-fat, high-fiber diets, to diets abundant in animal fats, rich in refined and processed foods, and relatively low in fiber (15). Furthermore, with all the advantages of urbanization, come the perils of decreased physical activity which, in combination with increased consumption of dietary fat and refined foods (16), can become catastrophic to any community. The descendants of the African slaves in diaspora now represent populations at varying stages of the nutrition transition. West Africans, in the early stages of the transition, consume diets relatively low in fat and containing few highly processed foods. Under nutrition among children exists, and obesity and its adverse health consequences, e.g. NIDDM, hypertension, and CHD, are uncommon in most West African countries. Under nutrition among children has declined sharply in the past few decades, but the prevalence of obesity and its consequences are much higher in most Caribbean countries than in West Africa. Diets of Caribbean populations tend to have somewhat higher levels of fat, between 25% and 30% of total kilocalories. The United

States and the United Kingdom represent the last stages of the transition, in which public health concerns have shifted almost completely from under nutrition and deficiency diseases to those of excess, as illustrated by the very high prevalence of obesity and chronic diseases among black adults in these countries.

The prevalence of NIDDM increases in parallel with obesity among populations of the African diaspora, and blacks in the West currently have higher rates and suffer more comorbidities than do whites. It is therefore going to be essential that we make every effort as physicians to assist our patients in minimizing the increase in obesity that occurs as populations undergo the nutrition transition. Nutritional status accounts for the majority of the increase in hypertension risk comparing Africans to African-Americans (23). Not only are black populations in the west more overweight, they also consume much more sodium and have differing dietary patterns than do West Africans. The opportunities for prevention are therefore substantial. In fact, a simple direction towards progress can include programs to reduce sodium in the food supply, maintain normal body weight, and increase intake of fruits and vegetables.

Millions of Africans were sacrificed through the trans-Atlantic slave trade. This terrible event provides us with the unique opportunity for the investigation of the nutrition transition and drastically illustrates the need for public health measures to be implemented in the Caribbean and West Africa to eradicate under nutrition while preventing obesity and its consequences in the United States and the United Kingdom.

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