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Obesity and Food Economics in the Caribbean

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Abstract

The obesity tsunami in the Caribbean is fuelled by poor lifestyle choices, particularly unhealthy food consumption. For the lower income families, with limited resources, those choices are more significant. This study estimated the vulnerability of low-income households if they attempted to consume a healthy diet. The costs of 158 food items were averaged from supermarkets, municipal markets and wholesale outlets in six parishes across Jamaica. A nutrient cost analysis program was used to select nutritious foods with low cost. The cheapest daily cost of a nutritionally balance diet varied considerably by parish but was on average J$266. For a family of three this translates approximately to the total minimum wage per week. This study emphasizes that purchasing power is a critical factor in meal choices and must be central to public policy actions to combat obesity and improve public health.

Keywords: Food cost; Healthy diet; Poverty; Caribbean

Introduction

The relationship between poverty and obesity is complex and varies according to context. Studies reveal that the prevalence of obesity increases as socio-economic status (SES) decreases among women in industrialized countries, while the relationships for men and children are inconsistent [1]. In less developed countries, however, obesity prevalence increases as SES increases among all age-sex groups [2]. In the Caribbean, high obesity prevalence is not confined to the upper social classes [3].

These observations on SES are critical and imply that the costs of food in the Caribbean may play a crucial part in the genesis or consequence of obesity. What is not often pointed out is that the cost factor plays a central role in food consumption patterns. Food prices, manipulated by multinational companies, have a major effect on purchasing habits with fats and sugars being heavily subsidized. These calorie-laden foods become the cheapest and most appealing to the low income consumer. For children, the promotion and marketing of these energy-dense foods lead to adverse health consequences [4]. Further, the increasing rates of obesity in the lower social and educational groups also suggest that behavioural patterns of people living in poverty are more likely to promote obesity than those of their higher-income counter parts. Poverty and food insecurity are associated with lower food expenditures, low fruit and vegetable consumption and lower quality diets. In practical terms therefore, diets composed of refined grains, added sugars and added fats are more affordable than the diets based on lean meats, fish, fresh vegetables and fruit. These behaviours are embedded within environmental and social contexts that may be well beyond individual control. This aspect of the obesity problem is not well recognized, however, there is a critical and compelling issue with regard to obesity, low SES and food economics which will challenge the traditional recommended strategies to combat obesity. This issue relates to energy density and energy cost.

Studies show that energy dense diets usually represent the lowest–cost option to the consumer. [5]. High energy diets are associated with lower expense than less energy dense but more nutrient rich diets [6]. In 2013 an analysis of 27 studies from 10 countries (none Caribbean) showed that the healthiest diets cost US$1.47 more per day than the less healthy options [7]. This observation that healthier diets may indeed cost more has one glaring policy implication-our standard advice to consume "healthier" diets may be hollow to the poor if these diets are unaffordable. Therefore, to change dietary practices with an educational focus on nutrient content is unlikely to succeed if the cost of the recommended foods is not considered, particularly for the low income families. In the Caribbean, consumers have anecdotally noted the comparatively high cost of healthy foods to less healthy foods as one of the major factors influencing their food choices. The present study was conducted to determine the lowest possible cost to obtain a balanced diet in Jamaica. Further, the study wanted to determine what proportion of the minimum wage is required to obtain that low-cost nutritionally balanced diet.

Methods

A pilot survey was carried out during May 2014 using prices collected from the Jamaica Consumer Affairs Commission. This pilot survey indicated that prices varied across parishes and there were no parishes with consistently highest or lowest prices for foods. Food price data were therefore collected from six parishes across Jamaica -Portland; St. Elizabeth; St. James; St. Ann; Manchester and Kingston & St. Andrew (KSA). In order to increase the applicability of the results, prices were obtained from densely populated areas and from vendors which were most popular among consumers in each parish. The prices of one hundred and fifty eight food commodities were sought during the month of June 2014. These prices were collected from popular supermarkets, wholesale and open markets in each of the six selected parishes. Trained data collectors were used for price collection and data entry.

This study used the Nutrient Cost Analysis program [8] developed by the Caribbean Food and Nutrition Institute (CFNI). The program calculates the cost of food energy and protein from different food sources. The following procedure was used to enter the data and generate the food basket:

- Food prices collected in June 2014 used corresponding codes for the food items in the CFNI Caribbean Food Composition Tables.
- These prices were entered into the program which does a conversion into amounts of energy and protein per dollar spent
- The program ranks foods within specified food groups in ascending order based on cost of energy and protein. The Food Groups are for the most part aligned with the 6 Caribbean Food Groups, i.e.
    a. Staples (cereals, starchy fruits, roots and tubers);
    b. Legumes (including peas, beans and nuts);
    c. Fruits;
    d. Vegetables;
    e. Food from Animals and
    f. Fats and Oils.

Because sugars and syrups contribute much energy to the diet this grouping was also built into the program.

1. With the exception of 'Food from Animals' food items are selected from the food group based on the cost of Kcal from the particular items. In the 'Food from Animals' group items are selected based on the cost of Protein from the relevant food items.
2. In keeping with the goal of providing variety-the program did not select certain items that are very similar from one food group. For example only one type of cornmeal will be selected from the Staple group
3. The program computed a diet/basket of foods which provides 2400 Kcal under given parameters based on the contribution of food groups to total energy(K cals) and number of items selected from each food group.
4. The caloric distribution and the number of items selected were determined based on nutrition and health considerations and attempted to provide a relatively low-cost food basket that will be consistent with dietary guidelines which will provide a reasonable variety of foods from the food groups (Table 1).
5. The program listed the ingredients for the diet and associated cost based on the prices entered and the parameters above.

Results

Table 2 sets out the composition of the food basket generated by the Nutrient Cost Analysis program using the average prices collected from the 6 parishes across Jamaica. The table shows that the cheapest commodities by food grouping from which a 2400 calorie balanced diet can be chosen. The table also shows that the cheapest cost, on average, of the diet is J$266. The variations by parish are: Portland-J$308: St. Elizabeth-J$307: St James-J$259; St Ann-J$253; Manchester J$253 and Kingston & St Andrew- J$215.

Food Group	Percentage of Energy Contribution	No. of Items in Diet
Cereals	30	3
Starchy Fruits, Roots, Tubers	15	3
Sugar & Syrups	10	1
Legumes	10	3
Vegetables	4	4
Fruits	6	4
Foods from Animals	15	8
Fats & Oils	10	3

Table 1: Nutrient Cost Program parameters

Average cost of basket for 6 parishes =J$ 265.95
STAPLES
Cornmeal, enriched, dry
Wheat flour, counter
Rice, enriched (long grain)
Banana, green (fig)
Yam (yellow)
Tannia, fresh
Breadfruit, fresh
SUGAR
Sugar, dark brown, crude
LEGUMES
Red peas, with seeds, dryBroad bean, with seeds, dry
Pigeon (gungo) pea, whole seed, dry
VEGETABLES
Avocado pear
Mixed vegetables, frozen
Callaloo
Corn, immature, raw, sweet
FRUITS
Grapefruit, fresh
Banana
Raisins, golden, seedless
Orange, all varieties
FOOD FROM ANIMALS
Liver, beef
Kidney, beef
Chicken, neck
Mackerel, canned, solid & liquid
Beef steak, lean & fat
Codfish, salted
Pork feet, trotters,
Herring, smoked
FATS & OILS
Shortening, vegetable
Margarine, hard, animal & vegetable fat
Oil, coconut

Table 2: Average composition of low-cost nutritionally balanced food basket

In terms of composition by food group and items, the cereal sub-group within Staples was the most consistent across parishes for items selected in the baskets, with cornmeal, rice and flour appearing in all areas. In the Starchy foods/tubers group-yam and green banana featured in all areas with plantain being the next most frequently appearing item, followed by dasheen and breadfruit.

In the vegetable group, frozen mixed vegetables appeared in the baskets for all parishes except for KSA while callaloo was seen in all the parishes outside of KSA. Green pigeon peas were only seen in the KSA basket. In the Fruit group, there was a fair amount of variability across parishes with ripe bananas being the most consistently appearing item except for St. James. Oranges and grapefruit juice were the next most common items in the parishes surveyed.

The greatest variability was seen in the Food from Animals group although a few items within this group appeared frequently: e.g. beef liver and salted codfish which appeared in all parishes and chicken neck and back which were seen in 5 of the parishes. Of note is the frequency with which different types of offals featured in the baskets, no doubt reflecting the relatively cheaper prices for these items which are for the most part imported.

In the Fats and Oils group the items were fairly consistent across parishes, and included coconut oil in all areas.

Nutrient cost analysis can be used to assess trends in the purchasing power of the minimum wage with respect to the low cost basket. The cost of the basket is expressed as a percentage of the prevailing minimum wage as a means of tracking the ability of households to meet basic nutritional needs. Figure 1 below shows the differences by region when costs of the baskets are expressed in this manner.

On average, approximately 24% of the daily minimum wage would be required to purchase a nutritionally balanced basket of foods for an adult for one day. However, the data suggests that in areas such as Portland and St. Elizabeth some 27% would be required. In the Kingston and St. Andrew area, about 19% of the minimum wage is required.

Discussion

The results show that the cheapest cost of a nutritionally balanced diet (food basket) in Jamaica is on average-J$266. The latest available poverty prevalence [9] shows an overall rate for Jamaica of 19.9%. By parish, the comparable figures are: Portland-food basket [J$308] *vs* poverty [21.5%]; St. Elizabeth food basket [J$307] *vs* poverty [23.8%]; St James-food basket [J$259] *vs* poverty [11.2%]; St Ann-food basket [J$254] *vs* poverty [18.4%]; Manchester-food basket [J$253] *vs* poverty [22.5%]; and Kingston & St Andrew (KSA)-food basket [J$215] *vs* poverty [28.6%].

The data indicate that KSA with the highest poverty rate had the cheapest basket. However, Portland and St. Elizabeth with relatively high poverty rates had the most expensive baskets. The KSA food basket figures reflect relatively lower prices in the Food from Animals, Vegetables and Fruit groups-which are the food groups of greatest concern to consumers and the groups that drive the overall food prices. These results warrant further investigation especially as it relates to St. Elizabeth which is traditionally considered the "bread basket of Jamaica". It is unclear how much the number of food outlets, and the resulting competition among them, affects the difference in prices among the parishes. This may well have some influence on the relatively lower prices in KSA compared to Portland and St. Elizabeth.

Although this study revealed the cheapest food items from which a balanced diet can be selected, it should be noted that the low income families do not necessarily select from this list. Lack of knowledge, tradition and taste preferences often determine food choice, particularly among the poor. The poverty rates in the different parishes are therefore instructive because it is possible to spend less and eat more when the extra energy comes from added sugar and added fat. The association between poverty and obesity may be mediated, in part, by the low cost and high palatability of energy dense foods. It has been shown that consumer food choices are driven by taste, cost and convenience and to a lesser extent by health and variety [10]. The high energy density and palatability of sweets and fats are associated with higher energy intakes. The lower cost diets tend to be higher in refined grains, added sugars and fats. Energy dense foods are not only palatable, but satisfy hunger at the lowest cost. This simply means that diets consumed by poorer sections of populations have concentrated energy from fat, sugar, cereals, potatoes and meat products but very little intake of vegetables, fruit and whole grain [11,12].

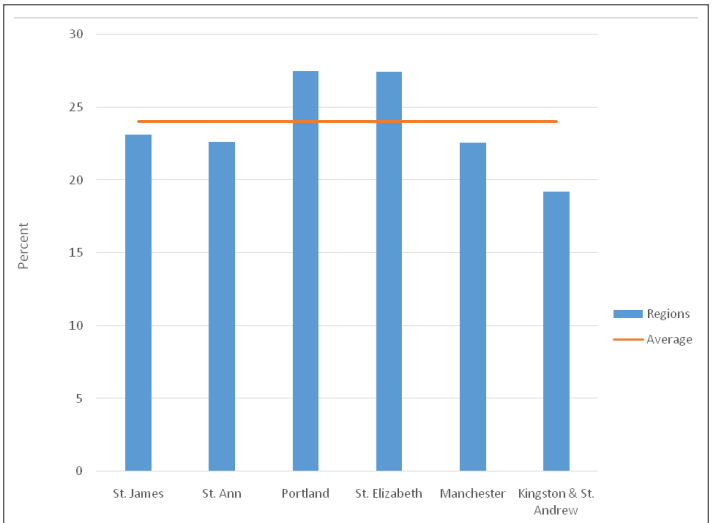

Figure 1: Cost of nutritionally balanced low cost basket as a percentage of minimum wage by region Jamaica - 2014

These points emphasize that for long-term compliance with recommended diets, particularly for persons with a limited food budget, there is need to ensure that the healthy foods recommended are not only affordable, but also palatable and acceptable. Further, they imply that obesity is the consequence of economic decisions that have much to do with social and economic resources, food prices and diet costs. With the wide range of food prices in the market consumer choices are limited by the economic realities of life. This study points the way towards linking low purchasing power with public health.

Conclusion

One conclusion from this study is that nutritionally balanced diets can be obtained in Jamaica within the range of J$215 to J$307 depending on location. Further, high food basket costs exist even in areas where poverty rates are also high. This shows the vulnerability of many families whether or not they get support from social safety net programs or from relatives. The method of analysis used in this study is clearly a powerful objective biological benchmark (unlike economic indicators) which can be used to quantitatively assess vulnerability of families particularly those in the lower income group.

It is critical to point out that this food basket cost does not include the cost of cooking (fuel, time and other ingredients). But just considering the raw foods, if the overall average cost of J$266 is used it can be estimated that a family of 3 will require approximately J$5,650 to secure balanced meals for one week. The minimum wage in Jamaica is J$5,600 which means that a single income earning family will need to spend their entire income on food (raw) alone. This is clearly unsustainable and implies that such a family will opt to use less balanced options to fit their purchasing power. In reality, many families are larger and have more than one income earner and often family income is supplemented by remittances in cash or kind from home and abroad. The results nevertheless show the vulnerability of many families particularly those who have little support from the state or relatives. These findings suggest that increasing the minimum wage will allow low income families to make better and healthier food choices if they use the additional cash for that purpose. It is recognized that a minimum wage increase will have ramifications for other sectors of the economy. This study nevertheless presents a compelling case for a minimum wage increase.

Price differences in foods have led many to theorize that strategic taxes or other forms of price control could help to motivate consumers to make healthier food purchases. When the prices of foods are increased, consumers will reduce their purchases of these items. When the price of a healthy food and an unhealthy food was adjusted so that one type was more expensive than the other, the more expensive food was purchased less. This may not necessarily translate into substitution with the less expensive item. Purchases also depend, among other things, on the income available for spending [13]. Nevertheless, incentives and disincentives for healthy and less healthy food items should be encouraged. Given the large grocery bills in Jamaica, this conclusion that the cheapest possible options for a healthy

meal is within the range of J$215 to J$307 might be surprising to many. The finding, however, points to the need for an education/information program to inform consumers about the combinations of foods which could comprise a tasty, culturally appropriate nutritious diet at low cost.

But how is this economic phenomenon situated within our traditional medical constructs of obesity? Clearly, these economic arguments are as strong as or even stronger than the others put forward to explain the food choices that lead to obesity. [5,14]. Obesity is often explained through cravings for fat and sweets; insulin resistance; an addictive personality; supersized portions; among others. While these might all play roles in this complex causation, it must be stressed here that obesity has a critical socio-economic dimension that cannot be ignored in control strategies. This food economics dimension is profound because it means that the relevant features of obesity-promoting diets may not be the percentage of energy from sugar or fat [15,16] but rather high palatability and low energy cost. These issues are inextricably linked to agricultural commodity prices, imports, tariffs and trade. No longer a purely medical issue, obesity should also be recognized as a food economics problem requiring public policy actions.

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