Healthy Eating in Jamaica: The Cost Factor

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ABSTRACT

Objective: *This study was conducted to determine the importance of food cost in securing a healthy diet to combat non-communicable diseases. Several studies have evaluated whether healthier foods or diets cost more but a full range of health criteria has rarely been explored. Rather than merely comparing high and low energy dense foods, this study also included type of fat, vitamin, mineral and fibre content of foods in classifying them as healthy and less healthy.*

Method: *Both 'commonly consumed' and 'all available' foods were ranked according to their nutritional value and potential positive or negative contribution to the development of major health problems in Jamaica such as obesity and chronic diseases. The costs of 158 food items were averaged from supermarkets, municipal markets and wholesale outlets in six parishes across Jamaica. Cost differentials were then assessed in comparing healthy and less healthy foods.*

Results: *The study found that among the commonly consumed foods in Jamaica, healthy options cost J$88 (US$0.78) more than less healthy ones. However, when all the available food items were considered, the less healthy options cost more. The cheapest daily cost of a nutritionally balanced diet in Jamaica varied considerably by parish but was on average J$269 (US$2.40) per person. For a family of three, this translates approximately to the total minimum wage per week.*

Conclusion: *Eating healthy in Jamaica can be achieved at low cost if appropriate information on nutrient content/value for money is provided to consumers. Effective promotions by public and private sector agencies are essential for consumer choice to be optimal.*

Keywords: Food cost, healthy eating, Jamaica, vulnerability

Comer Saludable en Jamaica: El Factor de Costo

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RESUMEN

Objetivo: *Este estudio se realizó para determinar la importancia del costo de los alimentos en cuanto a asegurar una dieta saludable que permita combatir las enfermedades no transmisibles. Varios estudios han evaluado si las dietas o los alimentos más saludables cuestan más, pero apenas se han explorado los criterios de salud en toda su amplia gama. En lugar de simplemente comparar los alimentos ricos y pobres en contenido energético, este estudio también incluyó el tipo de grasa, vitaminas, contenido mineral, y fibra de los alimentos a la hora de clasificarlos como saludables y menos saludables.*

Método: *Tanto los alimentos "comúnmente consumidos" como todos aquellos "a disposición", fueron clasificados según su valor nutricional y su potencial contribución positiva o negativa al desarrollo de los principales problemas de salud en Jamaica, tales como la obesidad y las enfermedades crónicas. Se calculó el promedio de los costos de 158 productos alimenticios de supermercados, mercados municipales, y puntos de venta al por mayor en seis parroquias en toda Jamaica. Entonces las diferencias de costos fueron evaluadas comparando los alimentos sanos y menos sanos.*

Resultados: *El estudio halló que entre los alimentos comúnmente consumidos en Jamaica, las opciones saludables cuestan 88 JMD (0.78 USD) más que las menos saludables. Sin embargo, cuando se consideraron todos los alimentos disponibles, se halló que las opciones menos saludables cuestan más. El costo diario más barato de una dieta nutricionalmente balanceada en Jamaica varió considerablemente*

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por parroquia, pero promedió 269 JMD (2.40 USD) por persona. Para una familia de tres, esto se traduce aproximadamente en el salario mínimo total por semana.
Conclusión: *Es posible comer saludable en Jamaica a bajo costo, si se proporciona a los consumidores información apropiada sobre el contenido de nutrientes frente al valor por dinero. Las promociones efectivas por los organismos del sector público y privado son esenciales para que los consumidores puedan realizar una elección óptima.*

Palabras claves: Costo de los alimentos, comer saludable, Jamaica, vulnerabilidad

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INTRODUCTION

Consumption of a healthy diet is vital to reduce obesity and its consequences such as diabetes, cardiovascular diseases and some cancers. Obesity was once believed to be a problem of abundance, but now it is recognized that even the poor are facing problems of obesity and its consequences (1). In addition to poverty, it has been shown that globalization, spread of supermarkets and urbanization are key factors in the changing structure and nature of diets and eating patterns (2). High energy diets are often associated with lower expense than less energy dense but more nutrient rich diets (3). In Jamaica and 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. But no empirical evidence is available to support this view. More importantly, if so, how much more does healthy eating cost? 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 (4). The present study was conducted to determine whether similar price differentials exist in Jamaica. Low income households already spend a high proportion of their earnings on food. This study also wanted to determine what proportion of the minimum wage is required to obtain a low-cost nutritionally balanced diet.

METHODS

Data collection

Based on the results of a pilot survey, data were collected from six parishes across Jamaica – Portland, St Elizabeth, St James, St Ann, Manchester, and Kingston and St Andrew (KSA). For increased applicability, prices were obtained from densely populated areas and from vendors that were most popular among consumers in each parish. The prices of 158 commodities were sought during the month of June 2014. These prices were collected from popular supermarkets, wholesale and open markets. Trained data collectors were used for price collection and data entry.

Ranking of commodities

Unlike other studies that merely compared high and low energy dense foods (5), this study used a wide range of criteria including type of fat, vitamin, mineral and fibre content in classifying foods as healthy and less healthy (6). This approach also avoided the methodological weakness of comparing energy density with energy cost (5). Food composition data were used to determine the quantities of the relevant nutrients contained in foods. Scores were then allocated for key nutrients and then totalled to develop a cumulative rank score (CRS) for the food item.

Data analysis

The cost was calculated and recorded for each food with known food composition data. The average cost per 100 g, average cost per kilocalorie (Kcal) and average cost per gram of protein for each food item was calculated. To obtain a functional cost, the study computed the cost of one day's requirement, using population nutrient goals based on a 2250 Kcal diet (6). To estimate the cost of healthy and less healthy food consumed in Jamaica, the food commodities were arranged according to their CRS, with the highest score being first and the lowest score being last. The most commonly consumed foods in Jamaica (7) were then analysed. A similar method was used to analyse all the food items collected in the study. To estimate the cheapest way to obtain a balanced diet, this study used a nutrient cost analysis programme (6) which selects the cheapest but varied food item from each food group. It then calculates the cost of food energy and protein to formulate a healthy standard diet.

Ethical clearance was obtained from the Ethics Committee of the University of Technology, Jamaica.

RESULTS

Commonly consumed foods

Table 1 shows the highest and lowest ranked foods commonly consumed in Jamaica. The average rank (CRS) by food group is also presented. To achieve the population nutrient goals using these foods, it would cost J$88 more for the highest ranked foods than if the lowest ranked foods were purchased (Table 2).

The most significant food groups were 'vegetables' and 'foods from animals' which showed the largest cost differences (Table 2).

All foods surveyed

In a similar way, all the foods surveyed were organized according to the CRS and therefore in order of health promoting characteristics. The analysis also showed that if consumers chose to eat some uncommon less healthy foods, it would cost

Table 1: Commonly consumed foods arranged according to health rank

Highest ranked foods		Lowest ranked foods
Average rank (CRS) = 38	**Staples**	Average rank (CRS) = 17
Corn flakes		Sweet potato – yellow
Green plantain/yam		Bread – whole wheat, hard dough
Green banana		Spiced bun
Rolled oats		Bread – white hard dough
Irish potato		Bulla
White rice – long grain		Crackers – water crackers
Average rank (CRS) = 43	**Vegetables**	Average rank (CRS) = 31
Callaloo		Pumpkin
Cabbage		Chayote (cho-cho, christophene)
Pak choi		Mixed vegetables, canned
Sweet pepper		Cucumber
Average rank (CRS) = 20	**Food from animals**	Average rank (CRS) = 5
Salt codfish		Chicken back
Liver, beef		Pork stew
Snapper		Egg, hen
Goat, meat		Frankfurters, chicken
Chicken, dressed whole		Beef stew
Salt mackerel		Corned beef
Sardine in oil		Mackerel in tomato sauce, canned
Average rank (CRS) = 55	**Legumes and nuts**	Average rank (CRS) = 16
Gungo/pigeon peas, green		Peanut – roasted, salted
Red beans		Soy beverage mix – vanilla, powder
Average rank (CRS) = 30	**Fats and oils**	Average rank (CRS) = 5
Avocado		Ackee
Corn oil		Margarine, vegetable
Coconut cream		Margarine, animal and vegetable fats
Average rank (CRS) = 37	**Fruits**	Average rank (CRS) = 27
Orange		Soursop
Papaya		Watermelon
Banana – ripe		Grapefruit
Mango		Otaheite apple

CRS – cumulative rank score

Table 2: Cost (J$) of obtaining daily population nutrient goals using commonly consumed foods

Food group	Highest ranked	Lowest ranked	Cost difference
Staples	122.98	122.57	0.42
Vegetables	111.34	89.59	21.75
Food from animals	157.83	106.18	51.65
Legumes and nuts	48.46	41.00	7.46
Fats and oils	23.00	15.57	7.43
Fruits	26.42	27.43	-1.02
Total	**490.03**	**402.34**	**87.69**

them more. The exception is 'foods from animals' where the healthy options are consistently and substantially more expensive. Statistically, there were no significant differences between the average costs of highest ranked and lowest ranked foods. Pearson correlation analysis was also conducted and yielded the following results:

correlation between cost per gram of protein and CRS: r = -0.07; correlation between cost per Kcal and CRS: r = 0.09.

Little to no correlation was evident, except for a weak correlation between the cost per 100 g and the CRS. In this case, as the CRS increased, the cost per 100 g decreased, which meant that for all the foods surveyed, healthier foods tended to cost less than less healthy foods on a weight-for-weight comparison.

Cheapest balanced meals

The nutrient cost analysis shows that the cheapest cost on average of a nutritionally balanced diet (food basket) in Jamaica is J$269. The latest available poverty prevalence shows an overall rate for Jamaica of 19.9% (8). By parish, the comparable basket and poverty 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$253] *vs* poverty [18.4%];

Manchester – food basket [J$253] *vs* poverty [22.5%] and KSA – food basket [J$215] *vs* poverty [28.6%].

DISCUSSION

This study is unique in six distinct ways.

- It utilized a method of ranking that went beyond the mere high *versus* low energy-dense foods and hence eliminated the methodological weakness of that approach (5). A wide range of health criteria, related to the major health problems in Jamaica, was used.
- It compared foods, not merely by selecting high and low ranked commodities, but by the proportions of those foods, in food groups, that will be required to meet the population nutrient goals of a standard diet of 2250 Kcals.
- It presented a numerical health rank (average CRS) for the different foods and food groups that were compared.
- It calculated the cheapest way to obtain a nutritionally balanced diet across six parishes and hence objectively estimated the vulnerability of low income groups in those communities.
- It showed the foods that can be selected to obtain a nutritionally balanced meal at low cost – a health promotion tool.
- It examined not only the cost of foods available, but, more importantly, the cost of foods commonly consumed by Jamaicans.

The results show that the cost of foods commonly consumed in Jamaica supports the anecdotal claims made by consumers that a healthier diet is more expensive. Using this list to achieve the population nutrient goals, they show the top ranked foods would require J$88 more than was required if the bottom ranked foods were selected. This translates to an extra cost of J$2640 per person per month. This difference of J$88 (approximately US$ 0.78) is less than the US$1.48 on average found in 27 studies in 10 countries (4). The widest cost variation was between the top and bottom ranked 'vegetables' and 'foods from animals'. Consumers in the Caribbean frequently contend that foods from animals (specifically meat, fish and poultry) and vegetables are the food groups which tend to increase the dietary cost most when attempting to practise balanced nutrition. This concern is also observed elsewhere (9). The correlation analysis for all foods did not show a consistent trend in relation to healthy foods and cost. Although no statistically different results were found, the observed price differences are, however, real and are experienced daily by consumers. Price differences in foods have led many to advocate for strategic taxes or other forms of price control which could help to motivate consumers to make healthier food purchases (10*)*. When the prices of foods are increased, consumers are expected to reduce their purchases of these items. But this may not necessarily translate into substitution with the less expensive item (11) as purchases also depend, among other things, on the income available for spending (12). In this study, it is instructive to observe that the widely available foods that are less healthy are in fact more expensive – hence the consideration of taxation and regulatory price controls is not warranted at this time. Nevertheless, incentives and disincentives for healthy and less healthy food items should always be encouraged.

The study further shows that the cost of healthy meals chosen by Jamaicans is J$490. But the cheapest possible options for a healthy meal is within the range of J$215 to J$308 across parishes, indicating that there is still scope for vulnerable families to choose healthy options at an even lower cost. This points to the need for an education/information programme that can be undertaken, perhaps by the Consumer Affairs Commission, to not merely publish the comparative food prices in various supermarkets, but to inform consumers about the combinations of foods which could comprise a tasty, culturally appropriate, nutritious diet at low cost.

The approach taken in this study escapes the criticism where the selected unit of comparison can alter the results (13). For example, healthy options of fat and dairy products cost less per serving but more per Kcal (4). This is because twice the amount of fat-free milk will be required to obtain the equivalent calories from whole milk. Similarly, healthier diets based on fibre will, by definition, have fewer calories so they will naturally cost more per calorie. The dangers of such circular reasoning were avoided in this study by using a wide range of criteria to categorize 'healthy' and also by using the population nutrient goals. Our approach is supported by others (14) who contend that single nutrients are less useful for distinguishing the effects on major chronic diseases than food types and diet patterns.

One conclusion from this study is that nutritionally balanced foods can be obtained in Jamaica within the range of J$215 to J$308 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 programmes 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$269 is used, it can be estimated that a family of three will require approximately J$5650 to secure balanced meals for one week. The minimum wage in Jamaica is J$5600 which means that a single income earning family will need to spend their entire income on (raw) food alone. This is clearly unsustainable and implies that such a family will opt to use less balanced options in relation to their purchasing power. In reality, many families are larger and have more than one income earner and often family income is supplemented by re-

mittances 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.

Limitations of the study

The real cost of meals could not be determined in this study because the cost of fuel, time, other ingredients *etc* were not collected. These additional costs could present a more dire but true scenario of the consequent risks to the vulnerable than this analysis did.

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