

## Obesity in the Caribbean: A Case for Public Policies

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### Abstract

The silent escalating epidemic of obesity is the underlying cause of most deaths in the Caribbean. If action is not taken to curb our increasingly overweight populations the resultant burden of chronic diseases will overwhelm our health systems and ultimately retard our overall health and economic development. To effectively combat obesity, the driving forces as well as the obstacles need to be clearly identified and acted upon. This paper argues that substantial reductions in the prevalence of obesity are more likely to come from structural and policy related changes to the environment than from medical interventions targeted at the individual. The complexity of the obesity problem in the Caribbean is elaborated in five dimensions and for each one the case is made for strong public policy measures which can create the conducive environment necessary for individual behaviour change regarding healthy eating and increased physical activity. The paper presents policy options that could substantially reduce obesity in Caribbean countries individually, or collectively.

**Keywords:** Obesity; Chronic disease; Prevention; Public policy; Caribbean

### Introduction

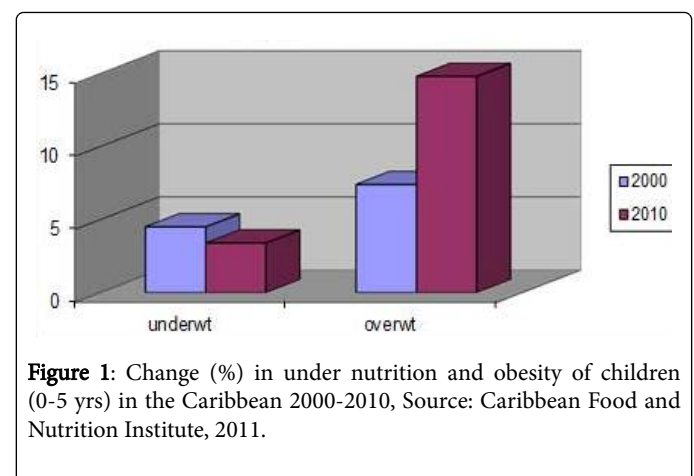
Obesity is a complex problem and while it requires a multifaceted solution it is imperative that the key aspects be analysed to develop an integrated approach to the solution. This paper articulates the need for policy measures to address these key aspects (dimensions) of the obesity problem in the Caribbean. Empirical data show that the region is in an epidemiological transition whereby non-communicable nutrition-related chronic diseases as the major causes of death have replaced infectious and communicable diseases [1]. These diseases cut across socio-economic, spatial and demographic lines, and are associated with a sedentary life style, and changes in diets which can be linked to domestic and import food policies. These nutritional and epidemiological linkages provide strong arguments for a conceptualization of policy options that combine epidemiology, economics, culture and cost. These multi-dimensional aspects of obesity remain to be fully appreciated and exploited by regional policy makers. This is an urgent task in light of the globalization process that has taken deeper root in agriculture, trade and health in several Caribbean countries.

### Dimensions of the obesity problem

In the Caribbean context the challenge to combat obesity has five major dimensions:

1. Obesity epidemiology: trends, age and gender relationships
2. Obesity and co-morbid consequences
3. Poverty, obesity and food economics
4. Genetics and Caribbean culture
5. The cost of obesity to economic development

### Dimension 1-Obesity Epidemiology: Trends, Age and Gender Relationships

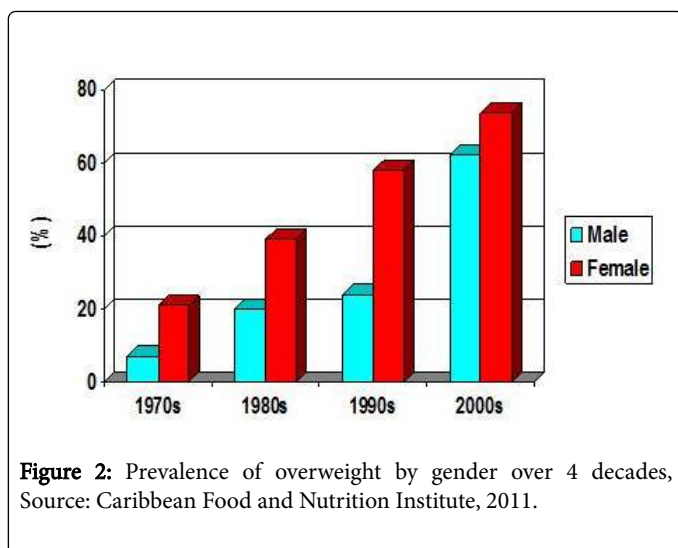


**Figure 1:** Change (%) in under nutrition and obesity of children (0-5 yrs) in the Caribbean 2000-2010, Source: Caribbean Food and Nutrition Institute, 2011.

	Boys	Girls
	%	%
Thin < 2 SD+	6	4
Normal	67	63
Overweight > 1 SD	14	19
Obese > 2 SD	13	14

+ SD = Standard Deviations of the WHO standards median

**Table 1:** Nutritional status of Caribbean children 11-13 years old (2008), Source: Caribbean Food and Nutrition Institute, 2011.



**Figure 2:** Prevalence of overweight by gender over 4 decades, Source: Caribbean Food and Nutrition Institute, 2011.

The dramatic shift in early childhood nutritional status over a ten year period is revealed in Figure 1. The decline in under-nutrition is notable with most Caribbean countries now having less than 4% children undernourished. The remarkable finding is the rapid increase in overweight and obesity where rates changed from 6% to 14% during one decade. Although the global prevalence of overweight amongst preschool children is estimated at 3.3%, these data showed that Caribbean children are much higher than the global average [2]. Even more worrisome is the observation that the risk of adult obesity is 2.0-2.6 times greater in obese pre-school children than in non-obese pre-school children [3].

Table 1 shows that in early adolescence there is a high prevalence of overweight and obesity of 27% among boys and 33% for girls. Figure 2 indicates that the gender difference is maintained in adulthood, even though this difference is less in the last decade. Most striking, however, is that during the last few decades obesity has risen to epidemic proportions in the Caribbean.

This dimension implies that the age and gender divide has clear implications for intervention strategies, however, it is the high prevalence of obesity in both males and females that is of major concern. The gravity of the obesity problem has implications beyond the clinical impact at the individual level and more towards a population and public-health approach to prevention. The observation that more than 60% of the adult Caribbean population is overweight and many children are at increased risk of obesity, strengthens the case for a population approach for obesity control rather than a strategy merely targeting at-risk individuals and groups.

Because the Caribbean trend is so alarming it should be instructive to examine the patterns of the two major causes of obesity - food intake and physical activity. Empirical food consumption data over many time periods are not available for Caribbean countries, but crude estimates of energy intake can be gleaned from ecological analysis of food disappearance data from the Food and Agriculture Organization (FAO). There has been an increasing availability of calories per person in the Caribbean and over the years this showed an over-supply of energy to meet nutritional needs. Using a recommended daily allowance of 2250 kcal in 12 countries, it was noted that during the decade of 1960 there was an overall insufficiency of calories and this was reflected in the high rates of under-nutrition that existed at that

time. From the 1970s onwards the average availability of calories per person increased rapidly [4].

The excess availability of calories which was critical for the rapid decline in under-nutrition, also contributed to the indiscriminate consumption of high-energy foods in large sections of the Caribbean population. This consumption pattern is a major contributing factor to the increasing rates of obesity in the region. Two major contributors to this over supply of calories are fats and sugars [4]. For fats the region now has available more than 160% of average requirement (population goal). For sugars, the excess is 250%. Both global and local forces drive these excesses in fat and sugar consumption. It is noted that although the WHO's global strategy on diet, physical activity and health was adopted [5] compromises on the limits of sugar, salt and fats had to be made [6]. So this is not just a public health issue, the economic and political ramifications are profound [7,8]. In view of the huge excess of fats and sugars available and consumed in the Caribbean, this paper points policy makers to the strong, scientifically sound evidence, based on longitudinal data, that excess calories from soft drinks, for example, are directly contributing to the epidemics of obesity. Although some controversy surrounds the role of fat much research has linked growing obesity rates with a growing consumption of snacks, fat foods and soft drinks and also with the consumption of high energy diets [9,10]. The difficulties of changing food policies cannot be underestimated but the opportunities to alter dietary intake are great [8,11]. Disaggregated analysis of the dietary trends will give each Caribbean country clear options to introduce food policies that can reduce obesity and improve public health. The protective effect of physical activity against obesity is substantial and well known [12]. There is little trend analyses of physical activity in the Caribbean; however, there has been an increase in sedentary job-related activities in Jamaica [13].

This dimension shows that an increase in energy consumption has been associated with an increase in the availability of foods rich in fats and sugar. In the last few decades there has also been a proliferation of fast food restaurants, where the major offerings were fatty foods and refined carbohydrates. Additionally, there was increased mechanization and decreased manual labour, improvement in transportation and low levels of physical exercise [14]. Caribbean people are clearly eating too much for their level of activity. This suggests that behaviours that will increase the consumption of healthy foods and increase physical activity can reverse this trend in obesity.

## Two crucial questions arise

1. Are there sufficient healthy foods available and affordable?
2. Are there sufficient recreation sites that are safe and attractive?

The answer to both of these questions is - no. But these questions are just as important as those that focus on the motivation and willingness of the individual to change behaviour. The reality is that major physical and economic obstacles lie in the way of the desired practices we seek. The need for policy measures to create the environment to encourage healthy behaviours is real and urgent.

## Dimension 2-Co-morbid Consequences

### The co-morbidities

The rapid increase in obesity in the Caribbean (Figure 2) has been accompanied by increasing mortality in diabetes (Figure 3) and

hypertension (Figure 4). Strikingly also, the gender difference is maintained in all the trends. This link between obesity, diabetes and hypertension is a global phenomenon [15]. For the Caribbean our higher prevalence rates make the problem more urgent. There is little doubt that the increase in diabetes and hypertension deaths is related to the increases in obesity [16]. The effect of obesity on the risk of developing type 2 diabetes is probably mediated by its effect of worsening insulin resistance. Component factors of insulin resistance such as increased blood pressure, raised triglyceride and low high-density lipoprotein concentrations also predict the development of type 2 diabetes [17,18].

Although we use cut-off points such as BMI=25 and BMI=30 to assess and compare overweight and obesity, there is no threshold effect of these cut-off points in relation to diabetes [19]. Clearly, the risk of developing diabetes increases dramatically as BMI rises, even from low BMI levels without regard to cut-off points. For disease control purposes, it is therefore not appropriate to consider the increased risk in the population within these distinct BMI categories, but rather as a continuum. This argues for a population approach, rather than risk approach to control obesity because all will benefit from a lower BMI. Public policies should therefore be the option of choice to control obesity, and consequently diabetes.

But this burgeoning prevalence of Caribbean obesity has devastating effects beyond diabetes and hypertension as obesity plays an important etiologic role in several major chronic diseases such as coronary heart disease, gall bladder disease, colon cancer, breast cancer and stroke. And the disease burden increases with increasing obesity [18]. Despite these grim consequences, the most positive aspect of the obesity epidemic is that these debilitating effects are largely reversible. While these potential gains exist, in practice, we note that weight loss programs have not been very successful. Surprisingly, there is relatively little attention given to developing strategies aimed at preventing obesity. This dimension showing trends in obesity and co-morbidities suggests that investing in obesity prevention, using a population approach, is the most sustainable option.

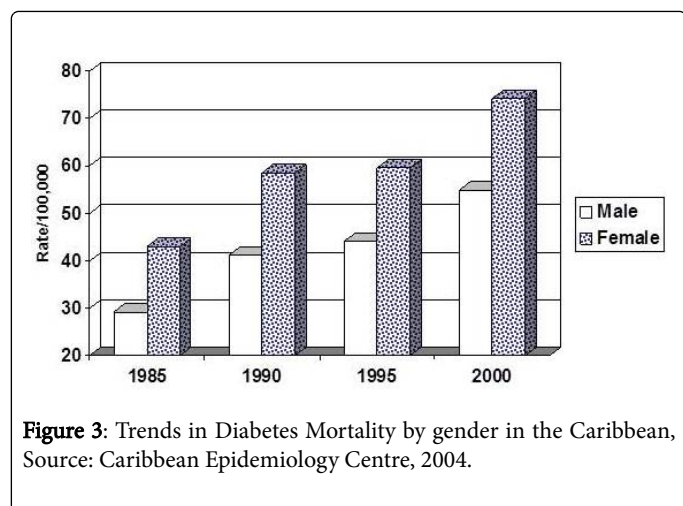


Figure 3: Trends in Diabetes Mortality by gender in the Caribbean, Source: Caribbean Epidemiology Centre, 2004.

### Dimension 3-Poverty, Obesity and Food Economics

The obesity-related chronic diseases are not only the biggest killers, they also reflect socioeconomic inequalities. These chronic diseases tend to cluster heavily among the poorest communities in all countries [20,21]. In less developed countries, however, obesity prevalence

increases as socio-economic status (SES) increases among all age-sex groups [22]. In the Caribbean, high obesity prevalence is not confined to the upper social classes [23]. Further, obesity-related deaths cut across socio-economic classes and age groups [14,24].

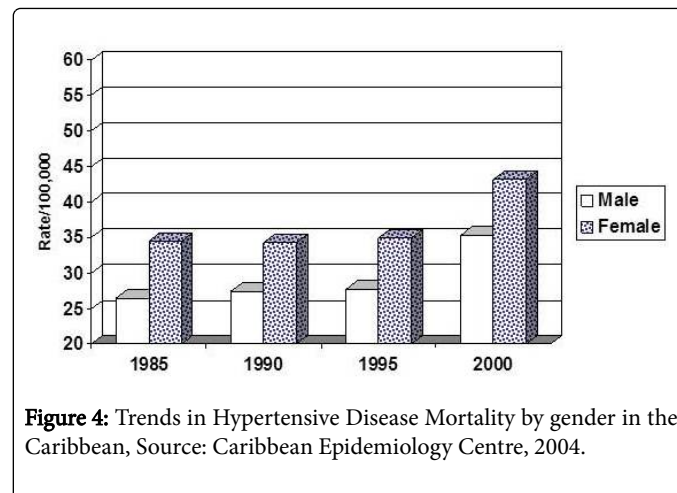


Figure 4: Trends in Hypertensive Disease Mortality by gender in the Caribbean, Source: Caribbean Epidemiology Centre, 2004.

These observations on SES are critical and imply that the costs of food and services in these populations play a crucial part in the genesis or consequence of obesity. 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 counterparts. These behaviours are embedded within environmental and social contexts that may be well beyond individual control. This dimension of the obesity problem is not well recognized, but it is compelling enough to challenge the traditional recommended strategies to combat obesity. Efforts to change dietary practices with an educational focus on nutrient content are unlikely to succeed if the cost of the recommended foods is not considered. 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. In the Caribbean a recent study found that among the commonly consumed foods in Jamaica healthy options cost J\$88 (US\$0.78) more than less healthy ones [25]. Clearly, obesity has a critical socio-economic dimension that cannot be ignored in control strategies. It has become a public health and societal problem requiring public policy actions.

### Dimension 4-Genetics and Caribbean Culture

#### Genetics

Obesity would not be possible if the human genome did not have genes for it. But humans are not biologically destined to become obese [19]. Genes make obesity possible, but positive energy balance over time is necessary to realize that potential. The contribution of genetics to body weight and composition varies widely within a population and across populations [12,26]. The major causes of Caribbean obesity and the high rates of chronic diseases can sometimes be confused by individual research studies which do not consider attributable risk in their conclusions. The Caribbean peoples are mainly of African and Indian origin and genetic predisposition may well be a factor contributing to obesity and chronic diseases [27]. However, the recent dramatic rises in the rates of obesity (Figure 2) have occurred in a short time frame and within the same genetic pool. This suggests that biological factors are not the basis for the escalating problem of obesity

in the Caribbean, because our biology has just not changed sufficiently to explain this rapid weight gain over a relatively short time. Our population weight gain is more likely due to factors within the environment that have influenced our behaviours in such a way as to “overwhelm” our physiological regulation of body weight [14,24,28]. The World Health Organization emphasizes that the obesity epidemic stems from an environment that promotes sedentary lifestyles and the consumption of high fat, energy dense diets. This paper subscribes to that view and argues that obesity in the Caribbean is an environmental problem that requires public policy solutions.

## Culture

The role of culture must always be considered in designing interventions aimed at addressing body image and size. The major behaviour change indicators - eating and physical activity patterns - are firmly rooted in culture. Further, perceptions and beliefs in a society can profoundly influence behaviour change and resistance to it. Studies in Belize et al., [23] revealed the following:

- Body size was found to be a very important determinant of perceived beauty, social adequacy, functioning and responsiveness. Body size was used for cultural typecasting, but there was no clearly identified cultural ‘norms’ or ‘ideals’.
- In no country was slimness or thin bodies described as ‘ideal’ or culturally normative even though there were individuals who aspired to attain or maintain slimness for themselves.
- The genesis of the overweight condition was perceived by women to be related to factors such as: childbearing, late-night eating, water consumption, contraceptive usage, among others. Men were far less concerned about their personal size than women, and regardless of size they seemed to care very little.
- The “triggers” which seemed to result in immediate action with respect to diet and exercise were: doctor’s verdict on own health and need for change, likely loss of love from their spouse, vanity and/or extreme interest in personal image and development, diagnosis of extreme ill-health of spouse, among others.
- For women “having size” and “being solid” were preferred states in all countries. Males’ perceptions were very important in determining ideal weight and shape, and many women indicated that they strived to achieve this, however it was defined. Yet, the men seemed rarely concerned themselves about such, including their own size, build, exercise regime or dietary intake. Men seemed almost infallible.
- Fruit and vegetable intake was restricted in most meals and by most persons, for many and varied reasons. Concerns of costs and value-for-money together restricted purchase and consumption. The adoption of any regular physical activity was a decidedly difficult task, often referred to as “work”, even though they required very little if any, external reiteration or justification of the benefits that could be so ascribed.
- Caribbean peoples seem to be in the process of adopting both the good and bad from Western cultures. The media, and especially cable television, has had much impact on perceptions, attitudes, values, and lifestyles of the region’s consumers, with special reference to females, youth, the unemployed, nursing mothers, housewives, and the overweight.

These selected findings point not only to the resistance factors but importantly to several opportunities which exist to develop appropriate and effective public health strategies for obesity control. Unfortunately, obesity remains a socially acceptable form of prejudice. More fundamentally there is a need to alter our thinking and attitude towards the overweight person and overcome the negative stereotypes of the obese. Body weight should be de-linked from moral and psychological status, and persons should be regarded for who they are and not for what they weigh. The growing size acceptance movement certainly provides valuable insights into non-stigmatization counselling strategies for the obese [29]. However, this paper contends that the “health at every size” paradigm Robison [30] also needs to embrace the fact that weight loss can significantly reduce comorbidities for obese persons [31]. Rather than targeting the severely obese we advocate here a public policy approach aimed at the population control of obesity.

## Dimension 5-The Cost of Obesity to Economic Development

When the cost of obesity is added to the other dimensions it presents a more complete picture of the burden to health and economic development. Obesity incurs costs at the individual and societal levels. Direct costs arise as a result of treatment interventions. Indirect costs are the opportunity costs of work not being done due to illness and results in lost production to the individual and society. Most studies on the economic cost of obesity are conservative estimates because only the direct costs are included.

Unfortunately no comprehensive study on the cost of obesity has been done in the Caribbean. But obesity-related diabetes is a major co-morbid condition and some estimates were done on five Caribbean countries - Bahamas, Barbados, Guyana, Jamaica and Trinidad and Tobago [32]. The report shows that for direct costs: Medication i.e. insulin and drugs - the cost is US\$153 million; Hospitalization - \$8.5 million; Consultations - \$11 million, and complications - \$46 million totalling over \$200 million. For Indirect costs, there are over 320,000 persons with diabetes in these countries which translates to some 17,000 years of productive life lost at a cost of about US\$50 million. For the permanently disabled there are over 15,000 of them which accumulate to 263,000 years of productive life lost costing over \$750 million. So for the Caribbean countries studied the direct cost is over US\$200 million and the indirect cost is over US\$800 million totalling over US\$1 billion. Phenomenal indeed, for one disease! The economists will debate what should be included and excluded from these costs but the central point is that either way it is exorbitant and our meagre health and national budgets cannot withstand these costs which are increasing annually. Because these estimates are for obesity-related diabetes only, it can be concluded that the total cost of obesity and its co-morbidities must be enormous in a Caribbean context. Further, given the increasing prevalence of obesity in the Caribbean and the negative impact that this condition has on the health of the population, the total cumulated cost of obesity presents a formidable obstacle to the financial and economic viability of the region.

In addition to its impact on public health, the total cost of obesity to the Caribbean makes a compelling case for prevention-prevention of new obese cases and prevention of the destructive co-morbid conditions resulting from obesity. The costs arise from both the mild and severe states of obesity - which now encompass most of the population. These rising costs of health care underscore the need for policies that support healthful lifestyles. A population approach which



comprises clear public policy measures therefore seems to be the most effective long-term strategy to control obesity in the Caribbean.

### The public policy approach

The five dimensions above highlight the powerful influences that can shape public policy on obesity. These dimensions point to obesity as a serious condition which is associated with several debilitating diseases with high medical, psychological and social costs [33,34]. Obesity in the Caribbean therefore needs to be controlled now, lest it further erode the spectacular health and social gains achieved in recent decades. These dimensions of obesity collectively make a strong case for urgently developing public policy options to enhance prevention strategies in the region.

Treatment and prevention are the major strategies to effectively control obesity. Both are necessary and both are expensive to implement. With the limited resources available in the Caribbean an approach must be formulated where key strategies can reflect the most effective returns on investment. The management of obesity is difficult and complex because obesity develops over time and once it has done so, is difficult to treat. There are few successful treatment options; drug treatments are hazardous and treatment guidelines are complex. An editorial in a respected medical journal openly questioned the usefulness of obesity treatments and flatly stated that in the United States up to \$50 billion is wasted on such programs every year [35] - strong language indeed! These major treatment problems stress the need for aggressive preventive approaches to control obesity. A review of the epidemic in Europe concludes that prevention of weight gain offers the only truly effective and sustainable means of controlling obesity [19]. Sadly, obesity prevention strategies which have been developed in the past, do not seem to have been effective [36]. These strategies have tended to be non-holistic in their approach. The World Health Organization collated the interventions in various settings that produced successful results [37].

### The policy challenge

If prevention is to be the major strategy for the long-term control of obesity, we must find a new approach. This new approach must be cognizant not only of the individual and family perspectives but also of the national and global trends and influences. The worldwide epidemic of obesity is more than a set of independent national occurrences. It has been shown that these global increases in obesity are grounded in the globalization of food systems and consumer culture and have increasingly penetrated all societies of the world [38]. Global corporations are establishing systems to ensure relatively inexpensive calorie-dense foods to all people in all places at all times [39]. Other global processes such as increasingly inexpensive transportation and activity-sparing systems are the underlying causes of increase in global obesity.

Unlike communicable diseases, it is not feasible to remove totally the cause of obesity. Unlike some non-communicable diseases, it is not easy to isolate and manage exposure to a single major obesity - promoting factor. Obesity is complex. The biological, social and economic determinants of obesity are all embedded within a global environment. Any attempt to link obesity to a single cause or a particular food is inherently simplistic and contributes to a reductionist approach and will not lead to sustained obesity control. To effectively combat obesity we need to move beyond biology and beyond behaviours to understand collective social, economic and

political structures and cultural changes rather than focusing only on individual physiology and personal characteristics. Prevention programs, which need to have a multi-sectoral approach, are essential to help stem the obesity epidemic. These have been found to be more efficient than individual weight-loss programs, but in the Caribbean only a few prevention programs have been developed and implemented. These programs should be high on the scientific and political agenda of the region. Globally the approaches taken have not been very successful. Among those launched, very few have actually fulfilled all their targets [40]. However, insights into the interventions that work are instructive [37].

In the Caribbean, there has been an on-going call for a multi-sectoral approach with strategies and actions aimed at creating an environment conducive to healthy diet and exercise behaviour [24]. The objective is to implement systematic, comprehensive and coordinated actions to inform, encourage and enable the entire population to eat healthily and exercise regularly. The approach is holistic and includes a range of actions for key sectors and settings. This paper continues to advocate a public policy approach to obesity where the focus is shifted away from the factors influencing body fatness of individuals towards strategies dealing with the weight status of the population as a whole. The focus of outcome is on more healthy eating, increasing physical activity and decreased sedentary living. Implementation of such environment-based strategies will require a range of integrated public policies encompassing environmental, educational, economic, technical and legislative measures together with a health care system geared to the prevention of obesity. This position is different from those who believe that the problem of obesity is simply a consequence of poor personal behaviors - the product of gluttony and laziness. This bias against obese people and an over-emphasis of personal responsibility has resulted in the key role of the environment in the development of obesity being largely ignored. Exalting people to change their behaviors to improve the quality of their diet and their physical activity level is unlikely to succeed in an environment in which there are many inducements to engage in opposing behaviors that lead to a chronic positive energy imbalance. How can an individual change behavior when powerful forces in the Caribbean environment are obesogenic? For example:

- We build communities without recreational facilities that are safe and attractive and this discourages physical activity.
- We establish housing schemes without sidewalks and parks, further discouraging walking.
- Our local and cable networks heavily advertise fast food and sugar-laden beverages, especially on children's programs.
- Many school canteens and vendors promote high energy-dense foods with little nutrient value.
- Our food import policy encourages the consumption of high energy-dense, manufactured foods.
- Our domestic agriculture policy lacks incentives for the production of fruits and vegetable which are affordable.
- Our school policies have allowed for the drastic reduction of physical education.
- Our transportation policies have favoured the use of personal automobiles which discourages physical activity.

These examples imply that efforts at individual behavior change will achieve little in the absence of more supportive policy approaches

which will create the environment that can enhance individual behavior change.

The Caribbean today is experiencing massive changes ranging from the proliferation of fast-food outlets to the almost total reliance on cars. This parallels the global trend which promotes excessive food intake and discourages physical activity [12,39]. Because the environment in which we live facilitates weight gain and obesity, it is imperative that we focus on the environment to develop strategies to curb it. The contention here is that given a suitable environment many people will be able to control their weight successfully over long periods of time. Reversing the current obesity trends will require a new multifaceted public policy approach to support healthy lifestyle behaviours. If the Caribbean environment continues to present barriers to healthy lifestyles behaviours, we will fast lose the opportunity to prevent obesity as Figure 2 projects.

In the past we have employed largely educational approaches to combat obesity in the Caribbean. A more effective strategy for dealing with this public health problem would appear to be one that goes beyond the educational dimension and deals with those environmental and societal factors that induce the obesity promoting behaviour. In this way we may reduce the exposure of the whole population to obesity - promoting forces. If Caribbean people are serious about obesity control, and believe that obesity retards our development, then we need to be bold enough to introduce the public policies that can influence environmental factors such as our food, health, education, the built environment, transportation among others. These public policy recommendations need to give special attention to our Caribbean reality - small economies with related high transaction costs in an environment of rapidly expanding liberalization of trade in food and services [40]. The establishment of public policies therefore needs to target the driving forces of obesity in both the physical, psychosocial and economic environment. These include food security and safety; access to healthy food; access to information; recreation and physical activity spaces and facilities. Further, public policies on obesity will need to be translated into legislation that safeguards the necessary conditions to develop healthy lifestyles. Policies should be implemented so that at the local level, regulations provide the instruments for putting into practice concrete aspects of the major national policies. The public policy approach advocated here is consistent with the Caribbean Charter on Health Promotion in that it can help to organize strategies that work both to support healthy lifestyles among individuals and influence policy that will create opportunities for social and cultural change [41]. Here the emphasis will be on environmental and population strategies, not in opposition to individual strategies, but in support of them.

The obesity tsunami shown in Figure 2 is massive and requires an equally massive response. The extent to which this obesity/chronic disease threat can be averted is directly related to how bold and how urgent the response/actions by national governments can be mounted. The policy options are in fact investments in public health and human capital with enormous short and long term gains. Some require little direct funding. All require political commitment.

### Policies for immediate action

1. Make compulsory - daily physical education and sports programs in primary and secondary schools. Introduce competitions as incentives for all categories of students, not only the athletically gifted.

2. Discontinue the excessive use of sugar- and fat-containing foods offered at school cafeterias, lunch programs or school vendors and encourage students to make healthy diet and lifestyle choices.

3. Provide tax incentives to encourage employers to introduce weight management and other wellness programs.

4. Provide direct funding and/or create tax deductible incentives for private companies to establish or develop safe and attractive recreation centers, swimming pools, parks and other facilities to promote physical activity in urban and rural areas.

5. Establish regulations which require the food service establishments (hotels, restaurants, fast food outlets and vendors) to provide information about calorie and fat content on menus or menu boards, place mats and food wrappers. Further, print advertisements must disclose the caloric content of the foods being marketed.

6. Within the framework of the World Trade Organization, provide incentives (subsidies) for low-calorie nutritious foods (e.g. grains and other cereals) and disincentives (taxes) on high-calorie and fatty foods (e.g. milk, meat, soft drinks) whether produced locally or imported.

### Policies for medium-long term action

1. Forge private and public initiatives to fund outreach programmes that will facilitate increase availability and affordability of fruits, vegetables, legumes and ground provisions and foster development of healthy lifestyle programs.

2. Make compulsory - nutrition and weight management modules as part of health education for teachers.

3. Require all health related curricula to include the principles and counselling techniques on healthful diets and physical activity.

4. Create a national fund with contributions for donor, development agencies and government to support obesity prevention initiatives.

5. Provide incentives and introduce competitions which challenge the public to obtain skills in food preparation and healthy eating and to seek and obtain information on healthy lifestyle behaviours.

These policy options are presented separately for clarity but far from being mutually exclusive, they are inherently complementary. Individual Caribbean countries will have to decide which group of policies is feasible - politically, practically and economically. The subsequent strategies to support each respective policy will then be placed in context.

There is need for the support of a research component which will not only inform the proposed actions but will also serve to evaluate this public policy approach. Research is also needed to assess competing risks and to help decide on policy options. The central theme of this paper is that in obesity control much is at stake-market share, profit, health expenditure and life itself.

### Conclusions

Unchecked, obesity in the Caribbean will soon reach proportions which are uncontrollable. The result will be social devastation to the individual and the cost of treating its co-morbidities will be unsustainable for our national budgets. Rolling back this rapid increase in obesity in the Caribbean requires much more than the traditional passive approach that relied almost entirely on education for individual behavioral change. The traditional models of obesity control have

generally failed globally and a new public policy approach needs to be instituted to attack this epidemic in a multisectoral way. Effective obesity control will require a shift away from the traditional focus on clinical management and individual behavior change towards strategies which deal with the environment in which such behaviors occur. The obesity challenge is formidable but the success with other health challenges e.g. tobacco, seatbelts and breastfeeding [42], gives confidence that similar strategies using models which target environment and population policies can generate social change. The global food market is controlled by a small number of companies who operate a system that delivers cheap food to countries. This cheap food comes with a hidden price in terms of the health consequences. Food policy must be applied upstream and cannot ignore issues about food supply because this influences the food chain and the food choices of the individual and communities. Vital to the success of this approach will be the participation of health officials, educators, legislators, businesses and planners in various health promoting actions. The prevention of obesity will need a concerted effort on the part of policy makers, the private sector, health care workers and the public themselves. Good nutrition is a powerful public health tool and it is also good politics. If we fail to invest in good nutrition we will fail large portions of Caribbean people today and well into the future.

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