Chapter 4. Childhood Obesity
**Executive summary**

**Childhood Obesity**

Childhood obesity (CO) is important as a risk factor for adult NCDs. It is also associated with a range of physical, emotional and social problems for children, and thus can affect their development and social prospects for life.

In the Caribbean, unprocessed food has been gradually replaced by processed foods, that have been imported and marketed in the region. Consistent with global trends, there has been an increase in dietary energy availability in the Caribbean, and a shift from malnutrition to an over-abundance of food, consistent with the notion of nutritional transition. By 2013, all CARICOM Member States, except Haiti, had met and exceeded their Population Food Goal (PFG) for energy (2250Kcal/caput/day), protein (56.3g/caput/day), fat (62.5g/caput/day) and sugar (45g/caput/day). Guyana was the only other country that did not meet the fat PFG by 2013.

The worldwide prevalence of childhood overweight and obesity increased from 4.2% in 1990 to 6.7% in 2010 and was expected to increase to 9.1% in 2020. Projections were made by De Onis et al (2010) to estimate prevalence rates of young children (0-5 years old), based on modelling from 28 Caribbean surveys. These overweight and obesity rates demonstrated a growing trend from 4.6% prevalence in overweight and obesity in 1990, to 6.9% in 2010, with a predicted prevalence of 8.3% in 2020. For school aged children and adolescents aged 6 to 20, independent studies conducted in nine different Caribbean countries and territories demonstrated an overweight prevalence between 10.6% and 21.2% and an obesity prevalence between 7.1% and 25.4%.

Overweight and obesity pose significant health complications for the younger Caribbean population. Obese children suffer from complications of dyslipidaemia, hypertension, fatty liver, early sexual maturation, orthopaedic problems, respiratory problems such as asthma, sleep apnoea and psychological consequences of stigmatisation, low self-esteem, depression and discrimination. There is also the risk of chronic NCD health problems into adulthood as obese children have a greater risk of becoming obese in adulthood. Risk factors for hypertension, diabetes and cardiovascular diseases have already started to emerge in school-aged Caribbean children.

**Social determinants of health as applied to childhood obesity**

The ecological model demonstrates that the individual interacts with the immediate environment or settings such as schools, workplaces, homes, restaurants and fast food outlets. These settings are in turn influenced by more distal environments or sectors such as the food industry and government. These sectors are controlled by national, regional and international policies and frameworks such as trade policies as well as issues of food security and economics.

Individual level factors are concerned with biology and demographics, psychosocial and health behaviours, attitudes, and practices including healthy eating and physical activity. Biological factors include age, sex, genetics, and body mass index, among others. Caribbean people are mainly of African and Indian descent, and these ethnicities are known to be at risk of obesity and specific chronic diseases. Overweight or obese women are more likely to deliver babies who have a predisposition to
store excessive amounts of fat very early in life, and so become overweight or obese themselves. However, the dramatic rise in obesity has occurred within a short time frame, implying that it is not biological factors alone that account for the escalating problem of obesity, but rather the obesogenic environments in which people of African and Indian descent live in the Caribbean.

There have been Caribbean studies that suggest that eating breakfast is associated with a lower BMI in children and adults. However, there are also other studies that suggest this association is not statistically significant and emphasis needs to be placed on the consistent eating of breakfast, the components of breakfast and stressing the importance of physical activity.

WHO recommends that sugar consumption be limited; fruits and vegetables, whole grains and legumes increased, and energy derived from fats should be unsaturated fats rather than saturated fats. Children and adolescents consume a large amount of fast foods which are usually high in fat and salt, and carbonated soft drinks, high in sugar.

WHO recommends that children between 5 and 17 years old take at least 60 minutes of moderate to vigorous-intensive physical exercise daily. The shift in today’s recreational activities for children to the inside of living accommodation, rather than outside could be attributed to increased screen time using electronic media. This has been shown to play a significant role in increasing the likelihood of being overweight and obese. Global Health School Surveys have demonstrated low levels of physical activity among Caribbean adolescents. Here the percentage of children involved in at least 60 minutes of physical activity on five or more days during the seven days before the survey ranged only between 21.3% in Guyana and 31.8% in Antigua and Barbuda.

The environment in which people live influence their dietary behaviours and food choices. Swinburn and Egger (2002) indicated that the obesogenic environment is the sum of influences that the surroundings, opportunities, or conditions of life have on promoting obesity in individuals or populations. It is this obesogenic environment that is fuelling the obesity and NCD-related epidemic.

Parents, communities, and schools are among the social groups that may be targeted with information regarding nutrition and physical activity, to facilitate healthy choices among their children. To promote local availability of healthy foods and places to be physically active, policies and programmes addressing communities may be developed and implemented at the local level. Aggressive advertising and marketing of energy dense foods and those high in fat, salt and sugar are also among societal factors that influence childhood obesity.

Part of the parental role is to also monitor children’s screen time, as too much screen time promotes sedentary behaviour and is positively associated with increased levels of inactivity and BMI. Social media plays an increasingly important role in the lives of children and adolescents. Caribbean children and adolescents have not been immune to advances in electronic technologies and the use of social media, and screen time has increased dramatically among them.

A growing number of caregivers have access to motor vehicles, and many are concerned about threats to their children’s security if they walk or take public transport. As a result, many Caribbean children are driven to school. Additionally, children are under increasing pressure to perform academically, with greater amounts of homework than in previous eras. School time previously
allocated to sport and physical education is often replaced by further academic study. After school, many children go to “extra lessons”, generally requiring them to be sedentary for even longer periods.

Globally and within the Caribbean, aggressive and creative marketing of energy dense foods and beverages is common. Advertisements for fast food meals accompanied by toys and other promotional material are directed at children and adolescents through electronic media, billboards and posters. Hours of screen time also allow for exposure to aggressive dietary advertising. Young persons who are impressionable and highly influenced by their peers are particularly susceptible to these types of strategies.

Caribbean studies demonstrate that the media and especially cable television has had much impact on dietary perceptions, attitudes, values and lifestyles of the Caribbean people, particularly among women, youth, unemployed, nursing mothers, housewives and the overweight.

Finally, it is important to consider the school environment. Obesity in school aged children is influenced by the meals and snacks they have at school. Some government schools provide free or subsidised meals in efforts to provide adequate nutrition to children from low income backgrounds. These generally consist of a protein and starch, such as chicken and rice, with little vegetable content except what may be mixed with the rice (e.g. vegetable rice or rice and peas). Many children choose other options if they can afford them. Private individuals often run school canteens and shops to make a profit. They sell goods that they believe children will buy, which are usually similar to what is available in fast food restaurants, e.g. pizza or fried chicken and fries, with soft drinks. Some schools have vending machines, generally filled with mostly high-sugar, high-fat items. Assessment of school meal options in several CMS over a period of years indicate that many children are consuming a diet high in saturated fats and sugars and low in iron and calcium. Fruit, vegetables and to a lesser extent, legumes were not adequately available in school meals and, as such, the children were not receiving their recommended daily allowance of five servings of fruit and vegetables. A study in the inner-city areas of Kingston, Jamaica, found over 75% of the students chose fast food or snack items for lunch.

Structural level factors are those concerned with international, regional, and national economic status and cycles, legislation, policies and frameworks. Government action to prevent and control childhood obesity must include the non-health sector. For example, policies in trade, agriculture, sanitation and food security affect the quantity and quality of foodstuffs available and consumed. Socioeconomic status also influences the ability to purchase healthy foods.

Global increases in obesity can be attributed to trade liberalisation of food systems and consumer culture. In the Caribbean, trade liberalisation has been linked to an increased dependence on export crops and food imports thus creating challenges for food security, nutritional quality, and food prices in the region. Most CARICOM countries import more than 60% of the food they consume, with half of them importing more than 80%. Trade liberalisation and increased foreign investment has led to the proliferation of multinational food corporations – the “Coca-Colonisation” and “McDonaldisation” in the 1980s and 1990s – creating fast and cheap food and drinks that are high in sugar, fat, and salt.
Examples of Regional Initiatives

The Farm to Fork project ran between 2011 and 2014 and was implemented chiefly in St Kitts and Nevis and Trinidad and Tobago. It attempts to modify environmental factors by increasing food security by facilitating local agricultural production, adapting school menus and offering healthy school lunches. The project aimed to improve children’s diets by increasing the quantity of fruit, vegetables, and animal sourced products in school meals; increase procurement of produce from local farmers for the school meals; and equip small farmers to produce local fruits and vegetables throughout the year. Also, individual level factors are adapted as children and parents’ nutritional knowledge increased.

In Bermuda, the Healthy Schools Nutrition Policy, including the School Vending Machine and Cafeteria Policy, targets social determinants at all levels. The Vending Machine and Cafeteria Policy required that government schools ban sodas and snacks from vending machines on the schools’ premises and offer only plain unsweetened water and/or 100% juice and healthy snacks. Within one year of introducing the Vending Machine and Cafeteria Policy, all government schools had implemented it; private schools became compliant within two years.

The Core Youth Movement Programme, in Trinidad, targets youth (male and female aged 13-16 years old) and focuses on changing individual level behaviour by using education to improve participants’ concept of physical activity, self-confidence and self-worth and acceptance of the idea of food as a fuel. Youth involved in the programme are engaged in diet, exercise and self-esteem programmes that are monitored for success with respect to defined targets.

Frameworks and Guidelines

The Caribbean has a long history of public health cooperation. Regional frameworks and guidelines for addressing NCDs and childhood obesity include the 2007 Port of Spain Declaration; the Strategic Plan of Action for the Prevention and Control of NCDs in Countries in the Caribbean Community (2011-2015); and the CARPHA Plan of Action for Promoting Healthy Weights in the Caribbean: Prevention and Control of Childhood Obesity (2014-2019).

Special mention must be made of CARPHA’s 6-Point Policy Package. Realising that a societal approach was necessary to reduce the burden of obesity and diet-related NCDs, in 2015, CARPHA developed a Technical Brief: Promoting Healthy Diets, Food Security, and Sustainable Development in the Caribbean Through Joint Policy Action. This Technical Brief promoted and described six policy areas – food labelling; nutrition standards and guidelines for schools and other institutions; food marketing; nutritional quality of food supply; trade and fiscal policies; and food chain incentives - which become known as the CARPHA’s 6-Point Policy Package.
Conclusion

In the Caribbean, the social and structural determinants of NCD and obesity are not only affecting adults, but also affecting children. While there are promising interventions at the levels of schools and important regional policy initiatives, such as the Port of Spain Declaration, childhood obesity is not receiving the attention it deserves. More active efforts need be made to increase levels of activity among Caribbean young people in outdoor sporting and recreational activity. These efforts are likely to pay off in terms of economic prosperity by enabling productivity and avoiding unnecessary costs of health and psycho-social care for people who were obese when they were children.
Introduction

The traditional epidemiological transition model attributes much of the rise in NCDs to the ageing of the population. However, as seen in section 2.2.1, NCDs appear to be occurring at younger and younger ages, with risk factors, including obesity, occurring as early as childhood. Childhood obesity (CO) is not only important as a risk factor for adult NCDs, but because it is associated with a range of physical, emotional and social problems for children, it can thus affect their development and social prospects for life.

There have been two major factors contributing to the global rise in obesity – the increase in food processing and trade liberalisation – which have made cheap, highly processed foods readily available. The nutritional transition of increased consumption of energy dense foods, high in fat and sugars, together with a reduction in the availability of plant-based fibres, have contributed to the global rise in obesity. There has also been a decline in activity energy expenditure largely due to motorised transport and less demanding manual tasks in the workplace (CARPHA, n.d.-b). In the Caribbean, this nutritional transition has been taking place over the last several decades, as unprocessed food from the land has been replaced by processed foods, that have been imported and marketed in these countries (Yearwood & Samuels, 2016).

According to a report by the Caribbean Food and Nutrition Institute (2011), within a decade from 2000 to 2010, there was a dramatic change among children 0-5 years old, where overweight and obesity rates moved from 6% to 14%. Global prevalence estimates for pre-school children range from 3-7%. However, those for Caribbean children can be seen to be much higher (See Figure 68) (De Onis, Blossner, & Borghi, 2010; Henry, 2016a, 2016b), thus indicating that CO is a significant challenge in the Caribbean.

Figure 29: Changes in underweight and overweight status of Caribbean children aged 0-5 yrs 2000 and 2010

Source CFNI, 2011
4.1 Overconsumption and obesity

The rise in the obesity epidemic in the Caribbean is linked to the economic development of the region. Since the 1970s, the urban population has grown more rapidly than the rural population, and this has affected people's ability to pursue active lifestyles. Additionally, consistent with global trends, there has been an increase in dietary energy availability in the Caribbean. Since the 1970s, the average daily energy supply per caput in the Caribbean has been exceeding the Recommended Daily Allowance (RDA) and by 2000, this excess was about 17%. (CARPHA, n.d.-b). By 2013 all CMS except Haiti had achieved the Population Food Goal (PFG) for energy (2250Kcal/caput/day). The energy availability for Barbados, Dominica, St Vincent and the Grenadines and Trinidad and Tobago were well above the target PFG with Trinidad and Tobago having the largest daily energy consumption of over 3000kCal (See Figure 69) (Bocage & Salandy, 2017).

![Figure 69: Energy Availability in Selected CARPHA Member States, 2013](image)

The PFG for protein, fats and sugars contribute significantly to the excess caloric intake. In 2013, the PFG for protein availability used was 56.3g/caput/day. All Caribbean countries except Haiti had met and passed this target (see Figure 70) (Bocage & Salandy, 2017).

Source: Bocage and Salandy, 2017
Bermuda had the highest fat availability for 2013, with 62.1% over the target of 62.5g/caput/day. Guyana and Haiti were the only countries that did not meet the PFG for 2013 (see Figure 71) (Bocage & Salandy, 2017).

Source: (Bocage & Salandy, 2017)
The latest sugar availability data was for 2013, when all the selected Caribbean countries except Haiti surpassed the target of 45g/caput/day (See Figure 72) (Bocage & Salandy, 2017).

**Figure 72: Sugar Availability in Selected CARPHA Member States, 2013**

It is important, however, to acknowledge that overconsumption is not the only nutritional challenge in the Caribbean. In this region, as in many developing countries, there exists a double burden of overnutrition and undernutrition (Kapoor & Anand, 2002). In nearly all CMS, even though the greater challenge is one of over-nutrition, nutritional deficiencies have also been observed. These occurrences of undernutrition tend to be in children whose families are at the economic margins of society and cannot meet their basic food needs (CARPHA, n.d.-b; Gaskin, Nielsen, Willie, & Durant, 2014; Henry, 2016a).
4.2 Nutritional status (obesity) in infants, young children, school aged children and adolescents

4.2.1 Overweight and obesity in infants and young children

De Onis et al conducted a cross-sectional study of 450 nationally representative surveys from 144 countries globally to quantify the worldwide prevalence and trends of overweight and obesity among pre-school children (0-5 years old) based on WHO standards. It was found that in 2010, there were 43 million children (35 million from developing countries) who were overweight and obese and 92 million at risk of becoming overweight. The worldwide prevalence of childhood overweight and obesity increased from 4.2% in 1990 to 6.7% in 2010 and was expected to increase to 9.1% (or approximately 60 million children) in 2020. See Figure 73 (De Onis et al., 2010).

Figure 73: Trends in Global Prevalence of Overweight and Obesity Among Children 0-5 yrs, 1990-2020

In addition to the increasing trends in children 0-5 years old as reported by CFNI (see Figure 68), De Onis et al made projections to estimate prevalence rates of children (0-5 years old) based on modelling from 28 surveys of regional Caribbean data. These overweight and obesity rates also demonstrated a growing trend from 4.6% prevalence in overweight and obesity in 1990, to 6.9% in 2010, with a predicted prevalence of 8.3% in 2020 (see Table 17) (De Onis et al., 2010).

---

4 The World Health Organisation defines overweight and obesity as "abnormal or excessive fat accumulation that presents a risk to health" (WHO, 2017b). For adults, this is usually measured by the Body Mass Index (BMI) defined as the weight in kilograms divided by the square of the height in meters (kg/m²). For children and adolescents there is no one simple index of measurement as their bodies undergo numerous physiological changes as they grow. For separate definitions of children under 5 years of age and children between 5 and 19 years of age see: http://www.who.int/mediacentre/factsheets/fs311/en/
Table 17: Trend in prevalence of overweight and obesity among children 0-5 years old, Caribbean region, 1990 – 2020

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Overweight and Obesity Rates</td>
<td>4.6%</td>
<td>5.1%</td>
<td>5.6%</td>
<td>6.2%</td>
<td>6.9%</td>
<td>7.6%</td>
<td>8.3%</td>
</tr>
</tbody>
</table>

Source: (De Onis et al., 2010)

The United Nations Children's Fund (UNICEF) Multi-Indicator Cluster Survey (MICS) have recently started to collect data on overweight prevalence in children 0-5 years old. Belize (data collected in 2015) reported overweight prevalence to be 7.3% (Statistical Institute of Belize Government of Belize & UNICEF, 2016) and Guyana (data collected in 2014) reported overweight prevalence to be 5.3% (Bureau of Statistics Ministry of Health Government of Guyana & UNICEF, 2015).

4.2.2 Overweight and obesity in school age children and adolescents

Independent studies conducted in nine different Caribbean countries and territories demonstrated an overweight prevalence between 10.6% and 37% and an obesity prevalence between 7.1% and 25.4% in school aged children and adolescents (see Table 18) (Batson, Teelucksingh, Maharaj, & Cockburn, 2014; Blake-Scarlett et al., 2013; Conliffe, Frankson, Smith, Hanna-Mahase, & Oriakhi, 2015; Gardner, Bird, Canning, Frizzell, & Smith, 2011; Gaskin et al., 2012; T. Maitland & Handfield, 2016; Radix et al., 2015; Schwiebbe et al., 2012; Visser, 2008)
Table 18: Prevalence of overweight and obesity among children and adolescents aged 5 to 19, from selected Caribbean studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Year of study</th>
<th>No of participants</th>
<th>Age range (years)</th>
<th>Overweight prevalence (%)</th>
<th>Obesity prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visser 2008</td>
<td>Aruba</td>
<td>2004-2005</td>
<td>3952</td>
<td>6-11</td>
<td>37</td>
<td>Included in 37% overweight prevalence</td>
</tr>
<tr>
<td>Conliffe et al 2015</td>
<td>Bahamas</td>
<td>2011-2012</td>
<td>382</td>
<td>12-19</td>
<td>14.4</td>
<td>17.8</td>
</tr>
<tr>
<td>Gaskin et al 2012</td>
<td>Barbados</td>
<td>Not stated</td>
<td>62</td>
<td>9-11</td>
<td>37.1</td>
<td>Not stated</td>
</tr>
<tr>
<td>Schwiebbe et al 2012</td>
<td>Bonaire</td>
<td>2008</td>
<td>2023</td>
<td>5-16</td>
<td>17</td>
<td>12</td>
</tr>
<tr>
<td>Radix et al 2015</td>
<td>Grenada</td>
<td>Not stated</td>
<td>689</td>
<td>11-14</td>
<td>17.6</td>
<td>7.6</td>
</tr>
<tr>
<td>Blake-Scarlett et al 2013</td>
<td>Jamaica</td>
<td>2008-2009</td>
<td>5710</td>
<td>6-10</td>
<td>10.6</td>
<td>7.1</td>
</tr>
<tr>
<td>Gardner et al 2010</td>
<td>St Lucia</td>
<td>2006-2007</td>
<td>425</td>
<td>5-6</td>
<td>14.4</td>
<td>9.2</td>
</tr>
<tr>
<td>Batson et al 2014</td>
<td>Trinidad</td>
<td>2009-2010</td>
<td>2130</td>
<td>7-18</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>T Maitland &amp; Handfield 2016</td>
<td>Turks and Caicos Islands</td>
<td>Not stated</td>
<td>2319</td>
<td>10-15</td>
<td>21.2</td>
<td>25.4</td>
</tr>
</tbody>
</table>

The Caribbean Food and Nutrition Institute (2011) report presented the prevalence for overweight and obesity in early adolescence (boys and girls 11-13 years old) in the Caribbean at 27% for boys and 33% for girls (see Table 29) (Henry, 2016b).

---

5 There have been several papers published on nutritional studies in the Turks and Caicos Islands. The results from this particular paper were chosen due to the high number of participants.
Table 19: Prevalence of overweight and obesity in Children in the Caribbean, 11-13 years old

<table>
<thead>
<tr>
<th></th>
<th>Boys</th>
<th>Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Thin &lt; 2 SD+</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Normal</td>
<td>67</td>
<td>63</td>
</tr>
<tr>
<td>Overweight &gt; 1 SD</td>
<td>14</td>
<td>19</td>
</tr>
<tr>
<td>Obese &gt; 2 SD</td>
<td>13</td>
<td>14</td>
</tr>
</tbody>
</table>

+ SD = Standard Deviations of the WHO standards median

Source: (Henry, 2016b)

Studies in Tobago (12-15 years old) (Nichols & Cadogan, 2007), Bonaire (4-16 years old) (Schwiebbe et al., 2011), Jamaica (6-10 years old) (Blake-Scarlett et al., 2013), Grenada (11-14 years old) (Radix et al., 2015), the Turks and Caicos Islands (9-11 years old) (McCartney et al., 2015), and the Bahamas (12-19 years old) (Conliffe et al., 2015) demonstrated that girls tended to be significantly more overweight/obese than the boys. However in a study in Trinidad boys had a higher proportion of overweight and obesity than girls (7-18 years old) (Batson et al., 2014). Additionally in Barbados, in a study amongst 9-11 year olds, boys were heavier with higher BMI but this finding was not statistically significant (Gaskin et al., 2012).

4.3 Social Determinants of Health as applied to childhood obesity

Using the ecological model developed earlier in this report (see Section 1.4), the individual interacts with the immediate environment or settings such as schools, workplaces, homes, restaurants and fast food outlets. These settings are in turn influenced by more distal environments or sectors such as the food industry and government (Becker, Silvi, Ma Fat, L’Hours, & Laurenti, 2006). These sectors are controlled by national, regional and international policies and frameworks such as trade policies as well as issues of food security and economics (See Figure 74).
Overweight and obesity are caused by energy intake from food consumption being in excess of what is required for normal growth, body functioning and physical activity levels. There are several interrelated factors that influence and affect childhood obesity. The ecological model described in Section 1.4 uses three different levels – individual and behavioural, environmental, and social, and structural.

Generally, the structural factors are thought of as influencing the environmental and social factors, which in their turn influence the individual and behavioural factors and thereby health outcomes. The dotted lines between each level indicate that the borders between each level are porous and that the various factors may move between the different levels depending on the priority population, the context and the health issue being examined. For example, even though unhealthy eating and lack of physical activities are direct “individual and behavioural” level factors, the activities may be strongly influenced by parents, advertising and other community practices at the “environmental and social” level.
4.3.1 Individual and behavioural level factors

Individual level factors are concerned with biology and demographics, psychosocial and health behaviours, attitudes, and practices including healthy eating and physical activity. Biological factors include age, sex, race, genetics, and body mass index, among others. Obesity would not be possible if the human genome did not have genes for it but the human being only becomes obese under particular circumstances.

Caribbean people are mainly of African and Indian descent, and these ethnicities are known to be at risk of obesity and chronic diseases (Henry, 2016b; Higgins, 2008). Overweight or obese women are more likely to deliver new-borns who have a predisposition to store excessive amounts of fat very early in life, and so become overweight or obese themselves. Evidence suggests that gene expression is affected through environmental exposures (e.g. nutritional and endocrinological) during pregnancy and infancy. These environmental-genomic interactions are known as epigenetic mechanisms and are complex, since body weight and composition vary within a population (Perez-Escamilla & Kac, 2013). However the dramatic rise in obesity has occurred within a short time frame thus encouraging one to believe that it is not biological factors alone that account for the escalating problem of obesity, but rather the obesogenic environments in which people of African and Indian descent live in the Caribbean (Henry, 2016b; Hill, Wyatt, & Melanson, 2000).

There have been studies that suggest that eating breakfast is associated with a lower BMI in children and adults. For example, in a study in the Turks and Caicos Islands with students of mean age 11 years old, the 297 primary school children who were breakfast eaters were 54% less likely to be obese than non-breakfast eaters (T. E. Maitland, Malcolm, & Handfield, 2015). The 2004 Aruban Childhood Obesity Study demonstrated that close to three-quarters (71.9%) of children between 6-11 years did not eat breakfast and 37% of them were overweight (Visser, 2008). There are also other studies that suggest this association is not statistically significant and emphasis needs to be placed on the consistent eating of breakfast, the components of breakfast and stressing the importance of physical activity (International Food Information Council Foundation, n.d.).

WHO recommends that sugar consumption be limited; fruits and vegetables, whole grains and legumes increased, and energy derived from fats should be unsaturated fats rather than saturated fats (WHO, 2000). Children and adolescents consume a large amount of fast foods which are usually high in fat and high in salt, and carbonated soft drinks, high in sugar. In Trinidad and Tobago, Mungrue et al (2013) found that in a survey of 1896 adolescents (13-18 years old), where 30.4% of the study population was overweight and obese, 79.8% consumed fast foods (Mungrue, Fyzul, Ramroop, Persad, & Asgarali, 2013). In a study in Turks and Caicos Islands, primary school children who “ate out” less than twice a day (including lunch) were less likely to be overweight (T. E. Maitland et al., 2015). The Global Health School Surveys (GHSS) from 13 Caribbean states demonstrated that at least 55% school aged children (13-15 years old) drank carbonated soft drinks, at least once per day during the 30 days prior to the survey (see Table 20). (WHO, 2017a).
Table 19: Percentage of students aged 13-15 who usually drank carbonated soft drinks once or more times per day over the past 30 days, in selected Caribbean countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>No of students</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anguilla</td>
<td>2016</td>
<td>813</td>
<td>55.2</td>
</tr>
<tr>
<td>Antigua and Barbuda</td>
<td>2009</td>
<td>1266</td>
<td>58.8</td>
</tr>
<tr>
<td>Bahamas</td>
<td>2013</td>
<td>1357</td>
<td>69.0</td>
</tr>
<tr>
<td>Barbados</td>
<td>2011</td>
<td>1629</td>
<td>73.3</td>
</tr>
<tr>
<td>Belize</td>
<td>2011</td>
<td>2112</td>
<td>66.9</td>
</tr>
<tr>
<td>British Virgin Islands</td>
<td>2009</td>
<td>1664</td>
<td>63.9</td>
</tr>
<tr>
<td>Curacao</td>
<td>2015</td>
<td>2765</td>
<td>62.4</td>
</tr>
<tr>
<td>Dominica</td>
<td>2009</td>
<td>1642</td>
<td>55.8</td>
</tr>
<tr>
<td>Guyana</td>
<td>2010</td>
<td>2392</td>
<td>70.9</td>
</tr>
<tr>
<td>Jamaica</td>
<td>2010</td>
<td>1623</td>
<td>72.5</td>
</tr>
<tr>
<td>St Kitts and Nevis</td>
<td>2011</td>
<td>1740</td>
<td>61.6</td>
</tr>
<tr>
<td>Suriname</td>
<td>2016</td>
<td>2126</td>
<td>79.1</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>2011</td>
<td>2811</td>
<td>74.6</td>
</tr>
</tbody>
</table>

Source: Global Health School Surveys

The WHO recommends that children between 5 and 17 years old take at least 60 minutes of moderate to vigorous-intensive physical exercise daily (Henry, 2016a). The shift in today’s recreational activities for children to the inside of living accommodation, rather than outside could be attributed to increased screen time using electronic media. This has been shown to play a significant role in increasing the likelihood of being overweight and obese (J. K. O’Hara & L. Haynes-Maslow, 2015; Strasburger, Mulligan, & Altmann, 2011). The move to crowded urban areas which lack outdoor space and parental concerns for security will have also contributed to the move indoors (CARPHA, n.d.-b; Henry, 2016a). The GHSS demonstrated low levels of physical activity among Caribbean adolescents (see Table 21). Here the percentage of children involved in at least 60 minutes of physical activity on five or more days during the seven days before the survey ranged only between 21.3% in Guyana and 31.8% in Antigua and Barbuda (WHO, 2017a). In a National Youth Physical Activity and Nutritional Survey in Guyana 54% of the students reported participating in physical activity that raised their heart beat for at least 20 minutes on three or more of the days previous to the survey. 48.7% admitted to playing video or computer games for one or more hours on a school day and 56.3% reported not attending physical education classes at all in school (Stephanas, 2017). In Barbados in a study of 9-11-year-old boys and girls, Gaskin et al found that those of normal weight were 3.9% more likely to engage in active activities than overweight children. In this same study, it was noted that screen time constituted 21% of the children’s activities (Gaskin et al., 2012).

---

6 Active activities included engaging in sports such as football and cricket, walking, weekly physical education class, hand games, dancing, ball games, tag, hide and seek, hop scotch, and household chores (Gaskin et al., 2012).
Table 20: Percentage of students aged 15-17 who were physically active at least 60 minutes per day on 5 or more days during the 7 days before the survey, in selected Caribbean countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>No of students</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antigua and Barbuda</td>
<td>2009</td>
<td>1266</td>
<td>31.8</td>
</tr>
<tr>
<td>Barbados</td>
<td>2011</td>
<td>1629</td>
<td>29.1</td>
</tr>
<tr>
<td>Belize</td>
<td>2011</td>
<td>2112</td>
<td>29.0</td>
</tr>
<tr>
<td>British Virgin Islands</td>
<td>2009</td>
<td>1664</td>
<td>27.4</td>
</tr>
<tr>
<td>Dominica</td>
<td>2009</td>
<td>1642</td>
<td>23.7</td>
</tr>
<tr>
<td>Guyana</td>
<td>2010</td>
<td>2392</td>
<td>21.3</td>
</tr>
<tr>
<td>St Kitts and Nevis</td>
<td>2011</td>
<td>1740</td>
<td>25.6</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>2011</td>
<td>2811</td>
<td>29.2</td>
</tr>
</tbody>
</table>

Source: Global School Health Surveys

Perceptions and beliefs can influence behaviour change in eating and physical activity habits. Some of these, such as norms about the ideal body shape and size of women and men, can be regarded as cultural, since they vary around the world. Regional studies by CFNI revealed the following (Higgins, 2008):

- Body size was important in perceived beauty, social adequacy, functioning and responsiveness;
- The “triggers” that resulted in immediate action regarding diet and physical activity were doctor’s advice and the need to change, likely loss of love from a spouse, vanity, and diagnosis of ill-health of spouse;
- For women, “having size” and “being solid” were the preferred state and men’s perceptions were very important in achieving this state. Men seemed relatively unconcerned about their own size, build, dietary intake or exercise regime;
- Fruit and vegetable intake were restricted and varied, yet influenced by cost;
- Regular physical activity was deemed “work” and difficult, even though the benefits were well known.
4.3.2 Environmental and social level factors

Environments in which people live, develop their dietary behaviours and make food choices, while having a profound influence on what they eat, are very complex. Swinburn and Egger (2002) indicated that the obesogenic environment is the sum of influences that the surroundings, opportunities or conditions of life have on promoting obesity in individuals or populations. It is this obesogenic environment that is fuelling the obesity and NCD-related epidemic. A broad definition of the food environment includes the physical, economic, policy and sociocultural surroundings and conditions that influence people’s food and beverage choices and subsequent nutritional status. This entails the food supply, food retail mix and food advertising and marketing environments (CARPHA, 2015).

Parents, communities and schools are among the social groups that may be targeted with information regarding nutrition and physical activity, to facilitate healthy choices among their children. In order to promote local availability of healthy foods and places to be physically active, policies and programmes addressing communities may be developed and implemented at the local level (Brown, 2011; Henry, 2016a). Aggressive advertising and marketing of energy dense foods and those high in fat, salt and sugar are also among societal factors that influence childhood obesity.

Poor nutritional choices associated with overweight and obesity in children and adolescents result from practices related to food supply (including breastfeeding), food processing, food marketing and transport.

Inadequate breastfeeding practices can lead to overweight infants which can in turn lead to overweight children. WHO recommends that for the first six months of his/her life an infant should be exclusively breastfed. Breastfeeding should continue until two years of age and beyond, where possible but can be supplemented with safe and appropriately nutritious foods. Sugars and salts should not be added to these complementary foods (WHO, 2015).

In the Caribbean, the majority of mothers breastfeed at birth (average 88%) (CARPHA, n.d.-b). In Jamaica, only 15% of mothers were still breastfeeding at six months. Between six and eleven months, 85% of mothers who were still breastfeeding had introduced complementary foods. The authors of the Jamaican study noted that that women who do not breastfeed spend more than they need to on infant formula (Statistical Institute of Jamaica Government of Jamaica & UNICEF, 2005).

In the 2004-2005 Aruban Childhood Obesity Study it was demonstrated that 50% of the children who were not breastfed or breastfed for less than four months were overweight and obese as compared to 28.2% who were breastfed for four or more months (Grêaux et al., 2013).

Children whose parents are overweight or obese tend to be overweight or obese themselves. At the environmental level, this may be because such parents tend to feed their children the same types of food that they themselves eat. Parents need to support their children by being an example and providing suitable nutritional food and drink, as deemed appropriate by national dietary guidelines. Parents are also influential in encouraging their children to evaluate their physical activity habits and again lead by example by having physically active lifestyles themselves (Henry, 2016a; J. K. O’Hara & L. Haynes-Maslow, 2015).
Part of the parental role is to also monitor children’s screen time, as too much screen time promotes sedentary behaviour and is positively associated with increased levels of inactivity and BMI (J. K. O’Hara & L. Haynes-Maslow, 2015; Reid Chassiakos, Radesky, Christakis, Moreno, & Cross, 2016; Strasburger et al., 2011). Screen time activities include viewing cable television, or videos and games on computer, tablets, or smart phones. Sufficient time must be allowed both during school hours (through physical education classes and regular breaks) as well as after school hours (by not overloading the children with after school academics) for children to participate in sufficient physical activities (Henry, 2016a; J. K. O’Hara & L. Haynes-Maslow, 2015; Strasburger et al., 2011). Box 1 provides recommendations for screen time from the American Paediatric Association (American Pediatric Association, 2016).

Box 1: American Paediatric Association Guidelines for Screen Time for Children

- For children younger than 18 months, avoid use of screen media other than video-chatting. Parents of children 18 to 24 months of age who want to introduce digital media should choose high-quality programming and watch it with their children to help them understand what they’re seeing.
- For children ages 2 to 5 years, limit screen use to 1 hour per day of high-quality programs. Parents should co-view media with children to help them understand what they are seeing and apply it to the world around them.
- For children ages 6 and older, place consistent limits on the time spent using media, and the types of media, and make sure media does not take the place of adequate sleep, physical activity and other behaviors essential to health.
- Designate media-free times together, such as dinner or driving, as well as media-free locations at home, such as bedrooms.
- Have ongoing communication about online citizenship and safety, including treating others with respect online and offline.

Source: (American Pediatric Association, 2016)

Social media plays an increasingly important role in the lives of children and adolescents. Social media sites include those for social networking (e.g. Snapchat, Instagram, Facebook, Twitter), gaming and video (e.g. YouTube), virtual worlds, texting (e.g. WhatsApp) and blogs. There are both positive and negative sides to social media. Positive dimensions include increased social interaction, enhanced learning opportunities and access to health information. Negatives include cyber bullying, depression⁷ and lack of exercise and communication with people “offline”.

---

⁷ O’Keefe and Clarke-Pearson speak of “Facebook depression”, defined as, “depression that develops when preteens and teens spend a great deal of time on social media sites, and then begin to exhibit classic symptoms of depression” (O’Keefe & Clarke-Pearson, 2011, p. 802). Being accepted by their peers is very important to adolescents and they will spend a great deal of their time trying to be “liked” and “part of the crowd”. This, coupled with the high stress of the online world, has been known to trigger anxiety and depression.
The number of pre-adolescents and adolescents using social media sites has increased dramatically. According to a recent poll, in the US, 22% of teenagers log onto a social media site more than ten times a day and more than half of the adolescents log onto a social media site more than once a day. Seventy-five percent of teenagers own a phone; 25% of teens are reported to use phones for social media; 54% for texting and 24% for instant messaging (O’Keeffe & Clarke-Pearson, 2011). In the Caribbean, children and adolescents have not been immune to advances in electronic technologies and the use of social media is also increasingly a part of their daily lives.

Communities include geographical areas arranged administratively and/or socially and usually have their own social institutions such as churches and schools. There are also “communities of interest”, such as people interested in swimming or women’s rights. In some communities, churches, youth clubs and community centres have formed groups which teach and promote healthy eating and physical activity. Some of these are supported by funding from regional or international organisations; for example, the CORE Youth Movement Program by Population Services International-Caribbean, which is described below (see Section 4.4) (Population Services International Caribbean, 2017). City and county councils can play important roles in community action for healthy living by ensuring that there are enough green spaces for young people to be involved in recreational activities, especially in urban areas. This promotes community cohesion as well as healthy lifestyles, as people come together in these spaces (Henry, 2016a).

Sedentary lifestyles appear to be substantially higher in countries with greater incomes. The WHO STEPS methodology was used to compare physical activity around the world among persons 15-21 years old in high income countries compared to middle income countries. In high income countries, low levels of physical activity were found among 45% of participants, whereas in middle income countries, 28% had low levels of physical activity (PAHO, 2016). We see that the amount of exercise among adolescents in the Caribbean conforms roughly with that for middle income countries globally and it is believed that physical activity may decrease if economic prosperity improves.

A growing number of caregivers have access to motor vehicles, and many are concerned about threats to their children’s security if they walk or take public transport. As a result, many Caribbean children are driven to school. Additionally, children are under increasing pressure to perform academically, with greater amounts of homework than in previous eras. School time previously allocated to sport and physical education is often replaced by further academic study. After school, many children go to “extra lessons”, generally requiring them to be sedentary for even longer periods (Henry, 2016a).

The food environment consists of the overall food supply (what foods are available and at what cost), the food retail mix (the location of the food retail stores, the foods that are available for sale, the cost of the foods, the promotional strategies that are used, and the nutrition-related activities that are implemented) and the food advertising and marketing environment designed to encourage consumers to adopt a particular dietary behaviour (CARPHA, 2015). Evidence is emerging that there are “urban food deserts” where there is insufficient availability of fresh fruits, vegetables and unprocessed protein, and which are inhabited mostly by poor and at-risk populations. In food deserts, the only available foods, at least at prices affordable to people in lower income brackets, may be highly processed, with sources including supermarkets and fast food restaurants. The cheaper,
more accessible food may be calorie-dense, high in fat and high in salt (Yearwood & Samuels, 2016). It has also been demonstrated that living in close proximity to fast-food restaurants results in higher BMI and lower fruit and vegetable consumption (Kruger, Greenberg, Murphy, DiFazio, & Youra, 2014).

Globally and within the Caribbean, aggressive and creative marketing of energy dense foods and beverages is common. Here, advertisements for fast food meals accompanied by toys and other promotional material are directed at children and adolescents through electronic media, billboards, and posters. Hours of screen time also allow for exposure to unsuitable advertising. Young persons who are impressionable and highly influenced by their peers are particularly susceptible to these types of strategies.

Hastings et al (2006) conducted a review on the extent, nature and effects of food promotion on children. In both developed and developing countries it was found that children can easily remember those foods that were advertised, and that marketing and promotional activities influence their food preferences, consumption and diet-related behaviours. Television advertising promotes what is known as the Big Five: pre-sugared breakfast cereals, soft-drinks, confectionary, savoury snacks, and food from fast food outlets. Food advertisements that were among the children’s favourites were for chocolate, sweets, soft drinks and other foods high in fat, sugar and salt. Survey results found that children were often very open to trying the advertised foods or drinks and would often ask their parents to buy them. Parents of disadvantaged backgrounds may be especially likely to yield to this pressure, since often the snacks and processed foods are priced affordably, making it possible to grant their children a “treat”. Lack of parental education on the dangers of fast food may contribute to this. There is also evidence that there is a positive association between children’s exposure to television commercials promoting fast food toy meals and more frequent visits to fast food restaurants (Hastings, McDermott, Angus, Stead, & Thompson, 2006). Studies by CFNI demonstrate that the media and especially cable television has had much impact on perceptions, attitudes, values and lifestyles of the Caribbean people particularly the women, youth, unemployed, nursing mothers, housewives and the overweight (Higgins, 2008).

Finally, it is important to consider the school environment. Children and adolescents spend the majority of the day at school. Obesity in school aged children is influenced by the meals and snacks they have at school. Some government schools provide free or subsidised meals in efforts to provide adequate nutrition to children from low income backgrounds. These generally consist of a protein and starch, such as chicken and rice, with little vegetable content except what may be mixed with the rice (e.g. vegetable rice or rice and peas). Many children choose other options if they can afford them. Private individuals often run school canteens and shops to make a profit. They sell goods that they believe children will buy, which are usually similar to what is available in fast food restaurants, e.g. pizza or fried chicken and fries, with soft drinks. Some schools have vending machines, generally filled with mostly high-sugar, high-fat items. Mobile food vendors operate outside schools. They may sell freshly-made items such as pies, cakes and juice alongside commercial products such as packaged cakes and chips. Generally, these are all high in sugar or fat. Some sell prepared fresh fruit, such as peeled oranges or seasoned mango, which provide relatively healthy options.
Researchers have found a positive association between children’s BMI and the number of food vendors around schools, with more mobile food vendors around public schools (where access to healthy food options is generally lower) than private schools (Barrera, Rothenberg, Barquera, & Cifuentes, 2016). Vending machine availability has been found to have a positive association with BMI among children (J. O’Hara & L. Haynes-Maslow, 2015). These and other studies demonstrate a positive correlation between money given to children to buy food at school and overweight and obesity. In a study in the inner-city areas of Kingston, Jamaica, it was found that the percentage of obesity was twice as high in those children given US$2.50 for lunch, as compared to those only given US$0.80. It was also found over 75% of the students chose fast food or snack items for lunch (Ross, 2013).

Ideally, children should be able to take a nutritious lunch together with snacks and beverages to school. However, this is not always the case due largely to time constraints and possibly even a lack of knowledge by the caregiver. Shifts in labour market conditions may be behind some of the challenges, with care givers, especially women, increasingly engaged in full-time employment, making it difficult for them to prepare and pack food for their children to take to school every day. Rises in overall costs of living relative to incomes have forced many care givers into working increasing numbers of hours. Therefore, increasing onus is on the school to provide a healthy environment for the child by offering healthy eating choices and sufficient recreational time and space for physical activity. Assessment of school meal options in several CMS over a period of years indicate that many children are consuming a diet high in saturated fats and sugars and low in iron and calcium. Fruit, vegetables and to a lesser extent, legumes were not adequately available in school meals and, as such, the children were not receiving their recommended daily allowance of five servings of fruit and vegetables (CARPHA, n.d.-b).

Several Ministries of Education around the Caribbean have developed or are developing policies around enhancing exercise and food facilities to improve child health and reduce obesity. Some countries have national food and nutrition policies, including consideration of NCDs. As part of the 2015 data collection for the evaluation of the implementation of the 2007 Port of Spain Declaration on NCDs, stakeholders involved in such initiatives were interviewed. The Port of Spain Declaration was generally acknowledged to have provided an important impetus to the development of initiatives to improve the food and exercise environments in schools. Meetings had been held with Ministry of Health officials to develop strategies. In Trinidad and Tobago, for example, officials from both Ministries had met with private operators of school canteens along with dieticians and the national school feeding programme. The Ministry of Education official interviewed noted that it was challenging to persuade the private operators to provide healthy food options as they were concerned that the children would not buy them. This highlights that the success of health promotion efforts is conditioned by changes in food culture. The Ministry of Education representative and a representative of National Schools Dietary Services Ltd. (NSDS) noted that contracting out school meals on a mass basis to NSDS was more successful, as the company was able to minimise costs through economies of scale and develop options using fresh produce and ingredients with less fat, salt and sugar content while taking account of the evolving tastes of children. However, it was noted that at the time there was no legislation regarding mandatory labelling of nutritional content of foods (Samuels & Unwin, 2016a, 2016b).
4.3.3 Structural level factors

Structural level factors are those concerned with international, regional and national economic status and cycles, legislation, policies and frameworks. Government action to prevent and control childhood obesity must include the non-health sector. For example, policies in trade, agriculture, sanitation and food security affect the quantity and quality of foodstuffs available and consumed. Socioeconomic status also influences the ability to purchase healthy foods (Brown, 2011). Caribbean countries have a limited range of locally produced foodstuffs, for historical reasons and as functions of their small size and vulnerability to natural disasters. They are therefore especially vulnerable to international economic cycles that determine prices and production, and to consuming large quantities of processed food since they are often cheaper than fresh alternatives. Larger countries have the benefit of economies of scale in food production and processing; these are scarcely available in the small countries of the Caribbean.

Global increases in obesity can also be attributed to trade liberalisation of food systems and consumer culture. Trade and investment agreements have found to affect availability, nutritional quality, price and promotion of foods. Even though trade liberalisation has global economic benefits, there are some negative effects such as homogenisation, with a fall in the variety of foods available and in the amount produced locally. At the regional and national level, trade liberalisation has been linked to increased food imports, increased consumption of high fat and high sugar beverages and foods, expansion of food markets and promotion of domestic meat production. For example, the introduction of the North America Free Trade Agreement (NAFTA) led to an increase in exports of corn, sugar, snack foods, and dairy and meat products from the US into Mexico. This has been accompanied by a large amount of direct foreign investment in the food and manufacturing sector thus causing the food systems in Mexico to look more like that of the industrialised US (Chavez, 2002; Clark, Hawkes, Murphy, Hansen-Kuhn, & Wallinga, 2012). These changes were associated with a 12% rise in overweight and obesity rates.

In the Caribbean, trade liberalisation has also been linked to an increased dependence on export crops and food imports thus creating challenges for food security, nutritional quality and food prices in the region. Most of CARICOM countries import more than 60% of the food they consume with half of them importing more than 80%. Belize, Guyana and Haiti are the only countries which produce more than 50% of their food, and it is notable that these three countries have lower (or negative) rates of overconsumption than those countries with higher rates of importation (See Section 4.1.0). Trade liberalisation and increased foreign investment has led to the proliferation of multinational food corporations – the “Coca-Colonisation” and “McDonaldisation” in the 1980s and 1990s – creating fast and cheap food and drinks that are high in sugar, fat and salt (Blouin, Hawkes, Henson, Drager, & Dube, 2010; FAO, 2015).

It is necessary to have a whole of government and whole of community approach and create polices and strategies aimed at creating an environment conducive to healthy eating and exercise. In order to create such an environment, public sector agencies concerned with food and agriculture, trade and education must come together to develop strategies that will shift the obesogenic environment in which we live to one which encourages more physical activity, better healthy eating and decreased sedentary lifestyle. When designing such strategies and action plans one must be mindful of the
Caribbean region’s small and fragile economies within the ever-increasing global food trade. Public policies must target those individual, social and structural determinants of obesity – food security and safety, access and availability to healthy foods, information and spaces for recreational physical activity. (Henry, 2016b). Advantages to a multi-sectoral approach, outside of direct health impacts include poverty reduction, employment opportunities, increased food security, reduced food imports and preservation of culture and culinary heritage (CARPHA, 2015).

### 4.3.4 Impact of childhood obesity

Overweight and obesity pose significant health complications for the younger Caribbean population. Obese children suffer from complications of dyslipidaemia, hypertension, fatty liver, early sexual maturation, orthopaedic problems, respiratory problems such as asthma, sleep apnoea and psychological consequences of stigmatisation, low self-esteem, depression and discrimination. Studies have demonstrated that obese children have been ranked as the least likely to be desired as friends by their peers. There is also the risk of chronic NCD health problems into adulthood as obese children have a greater risk of becoming obese in adulthood. (Brown, 2011; Henry, 2016a; International Labour Organization, 2014; Yearwood & Samuels, 2016). WHO has listed some of these problems as cardiovascular disease, insulin resistance (often an early sign of diabetes), musculoskeletal disorders (in particular osteoarthritis), some cancers (endometrial, breast and colon) and generalised disability (WHO, 2014). In cohort study, after 20 years of follow-up, adolescents over 18 years old were found to die younger if they had a BMI greater than 25kg/m² as compared to those with a BMI less than 25kg/m² (Hoffmans, Kromhout, & de Lezenne Coulander, 1988).

4.4 Examples of Regional Initiatives

In 2014 CARPHA undertook a literature search to determine, inter alia, the characteristics of interventions for preventing obesity in children and adolescents that have proven to be effective. Interventions with the following features were found to be the most effective (Yearwood, 2014):

1. Targeted behaviours – interventions designed to address health education or promotion, in general were more effective than those targeting weight management alone.
2. Multicomponent strategies – education in combination with environmental changes is more successful than either strategy being used alone.
3. Thorough theoretical basis – social cognitive theory in combination with social learning theory is found to be a most successful behaviour change model.
4. Duration and intensity of intervention – for an effective intervention, it should be at least 1-2 years duration with an average of 1-2 hours contact time per week.
5. Location or setting of intervention – schools, home, primary health care facility and community. Schools are ideal and should involve family, the community and other interest groups.
6. Whole of the community strategy – involves targeting the entire community in a specific geographic area with a multiple component prevention intervention, and possibly in multiple settings.

Following are three Caribbean examples of initiatives to reduce overweight and obesity in children and adolescents.

- The Farm to Fork project attempts to modify environmental factors by increasing food security, adapting school menus and offering healthy school lunches. Also, individual level factors are adapted as children and parents’ nutritional knowledge increased.
- The Healthy Schools Nutrition Policy including the School Vending Machine and Cafeteria Policy targets social determinants at all levels. By the government introducing a structural level policy (the Healthy Schools Nutrition Policy), the environment of the school changed to offer healthier school meals and snacks. By creating such an environment, the individual level behaviours of the children changed to that of healthy eating.
- The Core Youth Movement Program, in Trinidad, focuses on changing individual level behaviour by using education to improve participants’ concept of physical activity, self-confidence and self-worth and acceptance of the idea of food as a fuel.

4.4.1 Farm to Fork

The Farm to Fork project is a collaboration between the International Development Research Centre (IDRC), in Canada and the University of the West Indies which uses a “farm to fork” approach to support the production of healthy fruits and vegetables and improve nutrition and health outcomes.
in the Caribbean. The project focusses chiefly on St Kitts and Nevis and Trinidad and Tobago with some work in Guyana and Saint Lucia. The project ran between 2011 to 2014 and involved ministries responsible for food production, education and health.

The model used for this project incorporated social science research about innovation and collective action and was based on three fundamental pillars: improving children’s diets by increasing the quantity of fruit, vegetables, and animal sourced products in school meals; procurement of produce from local farmers for the school meals; and equipping small farmers to produce local fruits and vegetables throughout the year. This model takes an integrated approach involving industrial changes, capacity building, promotion of new agricultural technologies and changes in school feeding while also targeting women as innovators of technology (see Figure 75) (Granderson, Gray-Donald, Patterson-Andrews, Webb, & Johnston, 2014; Phillip, Johnston, & Granderson, 2014).

In St Kitts and Nevis, non-health Ministries responsible for agriculture and education worked with the Ministry responsible for health to prevent and control childhood obesity. A joint communications committee to enhance public awareness of this project was also established by the government. In Trinidad and Tobago, a system of tracking the use of local produce in schools was introduced by NSDS. After the introduction of this project a primary school in Trinidad and Tobago banned the sale of carbonated drinks in its cafeteria (Phillip et al., 2014).
It was believed that by offering a healthy lunchtime meal to children in schools, this could reduce consumption of high-energy unhealthy foods while teaching children about healthy eating. Interventions aimed at primary school children (ages 5-9) and their parents were implemented in St Kitts and Nevis and Trinidad and Tobago. Schools not involved in the intervention were also monitored to provide a comparison. School meal menus were revised and tested for nutritional quality and acceptability by the children, and local farmers were included to increase the quantity and variety of fruits and vegetables used in school lunches and at school meal centres. Over a 15-month period, menu changes integrated approximately 20,000 kg of fruit and vegetables into the School Meals Centre in St Kitts and Nevis which feeds approximately 800 children (See Figure 76).

**Figure 76: Produce purchased from local farmers for school lunches for 800 children in St Kitts and Nevis**

![Bar chart showing produce purchased from local farmers](image)

*Source: International Development Resource Centre & Global Affairs Canada, Government of Canada*

In Trinidad and Tobago, children in the intervention consumed 55% more fruit in a day than the control schools. In St Kitts and Nevis, children in the intervention schools consumed 75% more vegetables in a day than those in non-intervention schools (see Figure 77) (Granderson et al., 2014).
In St Kitts and Nevis, the project began with only offering three imported vegetables – carrots, onions, and Irish potatoes. As the project was implemented local fruit and vegetables, such as, tomatoes, cucumbers, string beans, sweet potatoes, cabbage and watermelon, became available. In Trinidad and Tobago, there was an increase in vegetable serving sizes (typically by an additional half a cup of vegetables per child), the addition of local fruits such as watermelon, bananas, tangerines, and oranges (typically half a large fruit or one whole small fruit per child, per day), and a serving of fish once per week. Menus with an improved nutritional value were tested for acceptability, notably by taste, to determine if the children would eat the foods and the results were used to inform the development of the menus. Plate waste measured acceptance. For example, watermelon demonstrated a waste of only 15% while only 50% of the children ate carrots. Overall plate waste decreased from 29% to 12% after revising the menus in Trinidad and Tobago (Granderson et al., 2014).

In Trinidad and Tobago, the nutritional education aspect of the project was geared towards both children and parents. Registered dieticians or teachers who were trained by dieticians conducted classroom activities with approximately 290 children. The children were taught about serving sizes from the six major food groups, healthy snacking, how to read and interpret nutrition labels, physical activity, home gardening, food safety and hygiene and cooking methods. One school revived its school...
garden, allowing children to grow their own food, and prepare and eat it (see Figure 78). Approximately 135 parents were taught about balanced diets and portion control, healthy snacks for children and how to manage food costs. An analysis of changes in nutritional knowledge demonstrated an improved level among those children who received the nutrition education compared to those who did not, suggesting that changes to school menus alone does not improve nutrition (Phillip et al., 2014).

**Figure 32: Children growing their own fruit and vegetables in a school in Trinidad**

![Children growing their own fruit and vegetables in a school in Trinidad](image)

Small local farmers were connected to the school feeding programmes in both St Kitts and Nevis and Trinidad and Tobago (see Figure 79). Agricultural technologies, such as drip irrigation on selected crops, were introduced to the farmers. This new expertise increased tomato yields from 18 to 32 metric tonnes/hectare, string beans from 3 to 10 metric tonnes/hectare and pumpkin from 17 to 25 metric tonnes/hectare. This technology also allowed a consistent supply of local crops for the school meals as the farmers could now produce crops throughout the year. A water balance model was also introduced to farmers allowing them to irrigate crops according to their specific requirements. This prevented the over-watering of fruits and vegetables, the reduction of production costs and the conservation of water. Other technologies included in the project introduced improved varieties of vegetables such as tomatoes, use of locally-made greenhouses, and the establishment and cultivation of specialised feed such as drought-tolerant mulato grass and sorghum forages for small ruminants such as sheep. Particular attention was paid to the role of women in how farmers made decisions, for
example, on whether or not to adopt a certain technology. An interesting outcome of this project was the formation of the Small Ruminant Farmers’ Association which enables the stimulation and growth of the agricultural sector (Phillip et al., 2014).

**Figure 79: Local farmer involved in the production of ingredients for school meals**

Positive spin-offs of this project included the capacity-building of over two thousand participants in farming techniques such as drip irrigation, protected agriculture, and forage conservation. This increased the cropping area by 32% and the area for cultivating fodder crops by six times the original amount at the start of the project. Also included in the capacity-building exercises was skills training in food hygiene and service practices for catering staff. This addition of increased capacity and new technologies resulted in a thousand lunch meals with improved nutritional quality being delivered daily (Phillip et al., 2014).

Based on the positive outcomes of this project, which addresses improved healthy meals for school children and food security through equipping local farmers with the appropriate technology, the “farm to fork” project can now be scaled up regionally in a long term, sustainable fashion (Phillip et al., 2014).
4.4.2 Healthy Schools Nutrition Policy including the Vending Machine and Cafeteria Policy

In 1997, Bermuda introduced its mandatory Healthy Schools Nutrition Policy. School food guidelines addressed:

- the provision of whole fruits and vegetables in food service cafeteria menus and all school events that provide food;
- limitations on the use of food high in salt and sugar;
- provision of low-fat dairy products, leaner meats and whole grains, and
- the use of lower-fat cooking methods.

School lunches had to be consistent with recommendations from Bermuda's Daily Dietary Guidelines Eat Well Plate. Since 2008, the Healthy Schools programme of Bermuda has partnered with a charity to provide a healthy breakfast to vulnerable school-age children whilst ensuring the provision of low fat milk (Healthy Caribbean Coalition, 2017; Ministry of Education and Department of Health Partnership, 2006; World Cancer Research Fund International, 2017).

After consultation with the schools' Principals and the companies supplying the schools' vending machines, the Ministry of Health and Seniors and the Ministry of Education approved a Vending Machine and Cafeteria Policy, in 2006. This policy required that government schools ban sodas and snacks from vending machines on the schools' premises and offer only plain unsweetened water and/or 100% juice and healthy snacks. Within one year of introducing the Vending Machine and Cafeteria Policy, all government schools had implemented it; private schools became compliant within two years (Healthy Caribbean Coalition, 2017; Ministry of Education and Department of Health Partnership, 2006; World Cancer Research Fund International, 2017).

In 2009, a government primary school (St George's Preparatory) became the first school to adopt a Water-only Policy, which allows only water on the school premises, including in lunches being sent from home. Since the introduction of the Vending Machine and Cafeteria Policy in 2006, over fifteen private and public schools, including preschools, have introduced a Water-only Policy. A further four have promoted water-only behaviours during school hours. In 2016, the Ministry of Education installed filtered water fountains in all government schools and installed reusable water fountains in five schools. Students are encouraged to re-fill their reusable water containers throughout the day and sip water while at their desks or make frequent trips to the water fountains (Bernews, 2017; Healthy Caribbean Coalition, 2017; Ministry of Education and Department of Health Partnership, 2006; World Cancer Research Fund International, 2017).
4.4.3 Core Youth Movement Programme

With financial support from JB Fernandes Memorial Trust 1, Population Services International Caribbean (PSI-C) developed and implemented a youth-focussed programme which addressed behavioural risk factors associated with the four major NCDs in Trinidad and Tobago – cardiovascular disease, diabetes, cancer and chronic respiratory disease. In 2015, a landscape analysis was undertaken to better understand the determinants of unhealthy lifestyle behaviours within the country, identify any previous research conducted, and locate any organisations with which PSI-C could collaborate.

The landscape analysis showed that, at that time, there was a Regional (PAHO-CARICOM) Strategic Plan of Action on NCDs for the Caribbean (2011-2015) but no nationally approved multi-sectoral plan for the prevention and control of NCDs in Trinidad and Tobago. There were initiatives, strategies and programmes that did exist, but few operated in tandem with the broader strategic Plan of Action. Additionally, even though some research had been conducted, much of it was not readily available and shared and therefore had little impact on programming. Components of an intervention were recommended to include healthy lifestyle behaviours, self-concept, practical and cognitive tools, take home materials, a focus away from weight management, and involvement of families, peers, and professionals (West, 2016).

Subsequent to the 2015 landscape analysis a National Strategic Plan for the Prevention and Control of Non-Communicable Diseases: Trinidad and Tobago 2017 – 2021 was developed.
The Core Youth Movement Programme (CYMP) was developed and implemented in collaboration with a local organization – Movement Mechanics – which specializes in the improvement of physical performance, athletic development and healthy lifestyles. The overall aim of the CYMP was to prevent NCDs by developing healthy lifestyles habits among the youth. This included improving the mindset of the youth around physical activity; increasing movement and physical activity; improving self-confidence and self-worth; and embracing the idea of food as fuel. The first round (CYMP) (January-April 2017) targeted males and females (13-16 years old) who were not currently active and may be overweight, and who were willing to commit to the full eight-week Programme. Fifteen youths (eight males and seven females) between 11-17 years old (average age 14-15 years old) took part. Three youths did not complete, citing medical issues, school priorities and family commitments.

The Programme consisted of four sessions per week for eight weeks. Three of the sessions were focused on physical activity and were conducted by performance specialists. One session per week was conducted by a psychologist and covered topics that included healthy eating (e.g. portion size, sugar content) and psychological issues (e.g. self-confidence). The following photos show aspects of the physical, psychological and nutritional components of the Programme (see Figures 81, 82 and 83 respectively) (Population Services International Caribbean, 2017).
Figure 81: Physical Component of the Core Youth Movement Programme

Source: Population Services International-Caribbean
Baseline and end-line monitoring and evaluation indicators for functional movement, body composition analysis, strength tests, psychological assessment, and knowledge improvement regarding diet and exercise were collected and analysed for this first round. The following picture (Figure 84) shows a member of the professional team taking measurements to determine body fat composition. (Population Services International Caribbean, 2017).
Figure 33: Taking measurements for the Core Youth Movement Programme

Source: Population Services International-Caribbean

Figure 85 shows examples of end-line body composition analysis for a female aged 14. Here the female participant’s weight went from being “overweight” to “healthy”. Her body fat decreased by 5% (from 28% to 23%); from being “acceptable” to being “fit”. (Population Services International Caribbean, 2017).
Feedback from the participants was positive:

On body image

“I have lost weight, and because of that I am more confident of my body image. I drink more water, I eat more often, and I watch what I eat and how healthy it is.” – Girl age 15 years

On self-confidence

“I found the Friday evening sessions helpful because I learned to believe in myself.” – Boy age 16 years

On nutritional habits

“I learnt that it is important to eat balanced and not to eat too much dairy and starch. I changed the portion size of my meals and eat fruits daily” – Boy age 13 years

“I’ve started eating fruits on a regular basis and I’ve stopped drinking soda. I’ve lost a lot of weight, so I feel good about my body.” – Girl age 14 years

From the physical activity coaches:

“I think it’s very important that this programme continues. There is an epidemic in Trinidad right now in regard to lifestyle diseases- such as diabetes, heart diseases,
hypertension etc. A lot of it comes from poor eating and it needs to be taught from the ground up. And from the ground up I mean, from the youths- upward.”

“A programme such as this is important because there are lots of kids who are inactive; who would like to become active; and just don’t know how to do it. And are afraid to inquire, as to how to do it. So, this is a very good stepping stone for them.”

Two challenges were identified in the implementation process: finding the right partners to execute the CYMP with the correct mix of physical, nutritional and psychological skills together with recruiting the youth participants. Two rounds of tendering were conducted to find a suitable partner. The first potential partner had the correct technical expertise but did not fall within budget. A local NGO involved in NCD prevention and control was willing to collaborate but were only interested in the nutritional component of the CYMP. After the second round of tenders Movement Mechanics was identified and was also willing to offer their services at a reduced rate because they recognized the value of the CYMP and wanted to positively contribute to society. In order to qualify for the CYMP, youth had to commit to four days per week; fit the target criteria; and be motivated to make a lifestyle change. A variety of recruitment strategies were used – circulation of flyers on social media (see Figure 86); speaking and using advertisements on local radio stations; advertisements in the local newspapers; visits to local high schools; and presentations at parent teacher association meetings. It was found that even though families were interested, potential participants could not make the commitment or were living or going to school too far away from the Programme’s venue. (Population Services International Caribbean, 2017).
Population Services International-Caribbean has understood the importance of taking these programmatic challenges on board for future rounds, the second of which started in July 2017. For the CYMP to have continuity throughout the different rounds and continue the motivation, participants from the first round will be involved with the second cohort of youths. The long term vision of the CYMP is to offer the CYMP to a wider cadre of youths; include more outreach activities in communities to promote NCD prevention; offer movement and nutrition support in the workplaces; ensure alignment with national policy and trends; and advocate for greater investment in NCDs, particularly among youth (Population Services International Caribbean, 2017).
4.5 Frameworks and Guidelines

The Caribbean has a long history of public health cooperation. Regional frameworks and guidelines for addressing NCDs and childhood obesity include (CARPHA, 2015):

- 2001: The Nassau Declaration on Health: the health of the Region is the wealth of the Region was signed by CARICOM Heads of Government.
- 2007: The Declaration of Port of Spain: Uniting to stop the epidemic of chronic non-communicable diseases was signed by CARICOM Heads of Government at the world’s first high-level summit on NCDs.
- 2007: The Declaration of St Ann’s: Implementing Agriculture and Food Policies to prevent Obesity and NCDs was signed by CARICOM Ministers of Agriculture. They committed to exploring and supporting the use of agricultural and trade policy to ensure the availability and affordability of healthy foods, promoting greater use of indigenous and regionally-produced agricultural products and foods, and to strongly supporting the elimination of trans-fats from our food supply and mandatory labelling of food.
- 2008: The Bridgetown Declaration for Tackling the Epidemic of Chronic Diseases was released by a regional civil society umbrella organisation, the Healthy Caribbean Cooperation.
- 2008: Georgetown Declaration on Building a Region Fit for Children was focussed for the education and social sectors and committed to by the CARICOM Ministers with the responsibility for children.
- 2010: Regional Food and Nutrition Strategy (RFNSP) (2011-2025) and Action Plan. The RFNSP highlights the importance of trade policy, and the need to address the disconnect between food production, processing, health and nutrition and trade and investment policies.
- 2011: Strategic Plan of Action for the Prevention and Control of NCDs in Countries in the Caribbean Community (2011-2015) which was borne out of the POS Declaration.
- 2012: OECS Regional Plan of Action for Agriculture (2012-2022) and Growth and Development Strategy also identify NCDs as priorities for action.

All four phases of the Caribbean Cooperation in Health have recognised NCDs as a regional priority. CCH1 was adopted in 1986; CCHII covered the years 1999-2003; CCHIII from 2010 to 2015 and finally CCHIV from 2016 to 2025. Special mention must be made of CARPHA’s 6-Point Policy Package and the recommendations from the Evaluation of the Port of Spain Declaration that will mould the region’s action to reduce childhood obesity and map the way forward to assist in the prevention and reduction of childhood obesity.
4.5.1 CARPHA’s 6-Point Policy Package

As noted above there have been many regional strategies relating to reducing and preventing NCDs and childhood obesity, with the 2007 POS Declaration having the potential to be the most influential. Despite several successes with the implementation of the Declaration (see Section 2) by 2014, it was apparent that progress with regard to achieving the goals set for the area of food and nutrition was too slow. These include, but not limited to, the fact that none of the English-speaking Caribbean states had yet put into place legislation to prevent and control obesity, diabetes and cardiovascular diseases; there was no legislation to prevent advertising of unhealthy foods to children, and compulsory nutrition labelling of food and drinks had yet to be enacted (CARPHA, 2015).

Realising that a whole of society approach was necessary to reduce the burden of obesity and diet-related NCDs, in 2015, CARPHA developed a Technical Brief: Promoting Healthy Diets, Food Security, and Sustainable Development in the Caribbean Through Joint Policy Action. This Technical Brief promoted and described six policy areas – food labelling; nutrition standards and guidelines for schools and other institutions; food marketing; nutritional quality of food supply; trade and fiscal policies; and food chain incentives – which became known as the CARPHA’s 6-Point Policy Package (CARPHA, 2015). Table 22 describes this 6-Point Policy Package and the policy options offered.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Policy Options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Food labelling:</strong> product packaging and appeal.</td>
<td>1.1. Mandatory uniform Nutrition Facts Panels (NFP) on all packaged retail grocery foods and beverages sold within the region, to support informed consumer choice 1.2. Standardised, interpretative/graphical nutrition labels on all packaged retail grocery foods and beverages, for use in conjunction with nutrition facts panel 1.3. Regulate all on pack marketing, including nutrient content, nutrient function, and health claims, and promotional offers and characters, on all packaged retail grocery foods and beverages sold within the region 1.4. Mandatory nutrition labelling on menus and menu boards in chain restaurants, vending machines, movie theatres, and other entertainment venues.</td>
</tr>
<tr>
<td><strong>2. Nutrition standards and guideline for schools and other institutions:</strong> what is provided at school and work.</td>
<td>2.1. Mandatory national nutrition standards for all foods provided and sold in schools and early childhood services, based on generic regional guidelines.</td>
</tr>
<tr>
<td>Objective</td>
<td>Policy Options</td>
</tr>
<tr>
<td>-----------</td>
<td>---------------</td>
</tr>
<tr>
<td><strong>3. Food marketing:</strong> advertising, promotion, product appeal and presentation. Objective: to minimise the impact (exposure and power) of unhealthy food and beverage advertising on children.</td>
<td>3.1. Reduce children’s overall exposure to unhealthy food advertising through all channels.</td>
</tr>
<tr>
<td><strong>4. Nutritional quality of food supply (levels of harmful ingredients):</strong> taste. Objective: to minimise the energy density and unhealthy consumption (i.e., foods with high levels of salt, sugar, saturated and trans fats) of processed foods and foods prepared for sale.</td>
<td>4.1. Mandatory removal of artificial trans-fats in all food products. 4.2. Set regional standards and time-bound salt and sugar reduction targets for specific food product categories. 4.3. Improve nutritional quality of ingredients and foods sold by food service outlets and street vendors.</td>
</tr>
<tr>
<td><strong>5. Trade and fiscal policies:</strong> price, domestic availability and affordability. Objective: to protect national and regional food sovereignty and to promote demand for healthy domestic food.</td>
<td>5.1. Selectively adjust sales taxes to align with the nutritional value of foods. 5.2. Align tariff schedules with the healthfulness of foods by selectively adjusting import duties on foods and beverages NOT originating outside CSME. 5.3. Tailor public assistance, such as subsidies and welfare payments, to incentivise healthy food consumption.</td>
</tr>
<tr>
<td><strong>6. Food chain incentives:</strong> availability of fruit and vegetables. Objective: to ensure agricultural and food systems policies are in coherence with healthy eating.</td>
<td>6.1. Preferentially target agricultural supports and incentives towards nutrient-rich commodities, especially fruits and vegetables. 6.2. Promote demand-side incentives for healthy domestic food chains. 6.3. Identify and address bottlenecks in domestic healthy food chains. 6.4. Work with food processors/suppliers to promote use of healthier ingredients. 6.5. Promote and support community food production.</td>
</tr>
</tbody>
</table>
In November 2015, at the 41st Meeting of Council of Trade and Economic Development (COTED), upon consideration of the Technical Brief, COTED agreed that review and further consideration on adopting CARPHA’s 6-Point Policy Package for healthier food environments was necessary. The following year at the 43rd Meeting of COTED (November 2016) it was decided that national multi-sectoral action and interagency collaboration be taken to advance the agenda on the reduction of childhood obesity in the region (CARPHA, n.d.-a).

In order to prevent childhood obesity, the policy options and recommendations for the implementation of CARPHA’s 6-Point Policy Package can be presented under the categories structural, environmental and social, and individual and behavioural as described in the ecological framework outlined above. At the structural level, the policy options and recommendations focus on regional guidelines which offer clear strategies for the advertising and marketing of healthy foods and drink including the development of a regional toolkit for healthy food advertising. The recommendations offered at the environmental level focus on the obesogenic environments of the schools and communities and attempt to ensure that the school children are offered healthy meals and snacks, both within the school premises as well as the school environs. These recommendations also focus on the farmers and providers of food to ensure that fresh, wholesome and local food is readily available and accessible throughout the year. At the individual and behavioural level, the recommendations attempt to create an environment in which it is easy for adults and children to eat well. An objective is that all artificial trans-fats will be removed from food products and there will be a reduction in the salt and sugar added to food. Recommendations include use of education to raise awareness and regulate food content labelling and food marketing to achieve these goals. The CARPHA 6-Point Policy Package will also hopefully lead to other indirect health benefits such as improved incomes, greater food availability and affordability together with reduced food imports.
**Evaluation of Port of Spain Declaration**

The 2014-16 evaluation of the Port of Spain Declaration on NCDs included recommendations specific to childhood obesity and to ensure that children live in a non-obesogenic environment (Port of Spain Declaration Evaluation Secretariat, 2017). These included:

At the structural level:
- Ban advertising, promotion and sponsorship related to unhealthy foods that target children.
- Review, update and standardize the Health and Family Life Education curriculum to include NCD risks.
- Make physical activity mandatory from pre-primary to tertiary level.
- Promote a wider range of physical activities in school programmes.
- Develop an overarching regional school nutrition policy; introducing school feeding programmes and encouraging more water consumption.
- Conduct an evaluation of the nutritional value of typical school meals.

At the environmental and social level (in schools):
- Develop school health programmes that encourage healthy eating, physical activity and zero tolerance for tobacco and alcohol. Involve parents and the wider community.
- Caribbean Wellness Day (the second Saturday in September) can be used as a launch pad for many of the suggested interventions and activities below.

At the individual and behavioural level:
To promote healthy diets
- Introduce healthy food options in school canteens/among vendors.
- Educate food vendors, parents and students on healthy (and tasty) food options. Let students have a say in what they want to eat and drink.
- Train school canteen staff in child nutrition.
- Introduce a wider range of foods at school and at home, including ground provisions, fruit and vegetables.
- Organise healthy eating challenges/competitions for the children to complete.
- Ensure students have access to water throughout the day.
- Plant vegetable/kitchen gardens in schools and let the children look after them.
- Use ‘creative’ and home economics classes to teach children how to make healthy snacks and easy meals.

To promote physical activity
- Organize physical activity challenges for students that are inclusive and fun, involving children irrespective of their physical abilities. (And allow sweaty children back into the classroom!).
- Promote sixty minutes of activity a day.
- Hold after-school exercise clubs (aerobics, line dancing, etc.)
- Organize debates/song competitions on healthy lifestyle topics.
- Ask approved and relevant private sector companies to donate branded sports equipment.

Note that although the promotion of healthy diets and physical activities are intended to occur in the schools (at the environmental level) they involve elements of behaviour change and therefore overlap with individual and behaviour level factors.
4.6 Conclusion

In the Caribbean, the social and structural determinants of NCD and obesity are not only affecting adults but are now affecting children. While there are promising interventions at the levels of schools and important regional policy initiatives, CO is not receiving the attention it deserves. Important aspects of the Port of Spain declaration relating to trade and the importation of unhealthy food and advertising have not been implemented as well as they should (see chapter 2, section 2.5.2). There is a need to address home, retail and recreational environments and not just school environments in attempting to tackle CO. More active efforts should be made to re-engage Caribbean young people in outdoor sporting and recreational activity. These efforts are likely to pay off in terms of economic prosperity by enabling productivity and avoiding unnecessary costs of health and psycho-social care for people who were obese when they were children.
References


Brown, S. (2011). Using a social-ecological model to examine obesity interventions. (PhD), Iowa State University,


CARPHA. (n.d.-a). Multisectoral Action to Prevent and Control Childhood Obesity PPT. In. Port of Spain, Trinidad and Tobago: Caribbean Public Health Agency.


