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Obesity, Food Swamps, and the Youth of Guatemala City.

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Abstract

This essay will explore obesity, body mass and nutrition transition as health concerns in Guatemala and Guatemala City's youth population. Obesity can be caused by consuming more calories than are exerted, resulting in a high Body Mass Index. The proximate cause of an extreme weight gain can be linked to the overconsumption of energy-dense, nutrient-poor food, which marketing, urbanization, food deserts and food swamps have a direct correlation to influence. Although obesity is a global health concern, this essay will outline contributing factors which have led to a population facing severe nutritional changes, and will focus on Guatemala's youth, being one of the most vulnerable populations to this form of malnutrition. Guatemala is in a period of nutritional transition through changes in the food environment, which will be analyzed by examining the excessive marketing of energy-dense, nutrient-poor foods that affects young people in Guatemala City.

Author's Note

Research for this essay began with the ambitious intention to address obesity as a global health condition. As a case study, Guatemala provides a scalable and practical approach to uncovering associated central themes; however, I am sensitive to the social implications of focusing on obesity in Guatemala. In this essay, I am attempting to create a distinction between individual experiences of obesity or increased BMI with the features (such as colonization) that shape diets and health trends in a larger population.

Guatemala, Map No. 3834 Rev.3, May 2004,
UNITED NATIONS

Figure 1 *Map of Guatemala*

Introduction

Obesity, excessive body mass and nutrition transitions are global public health concerns. Obesity is defined as the excessive amount of fat accumulation that may lead to chronic and negative health outcomes (WHO, 2018). Typically, obesity is calculated using the Body Mass Index (BMI), a weight and height measurement that indicates a person's amount of body fat. Obesity can be caused by consuming more calories than are exerted, resulting in a high BMI. The proximate cause of an extreme weight gain can be linked to the overconsumption of energy-dense, nutrient-poor food, upon which marketing, urbanization, food deserts and food swamps have a direct influence. In the past, obesity was considered a problem solely for developed countries; now the problem is rising in developing countries, an effect often called a nutrition(al) transition (WHO, 2018). In Guatemala, this health and societal issue has increased with urbanization and population growth; therefore a focused case study will draw attention

to the effects of a global pattern of colonized diets. I am sensitive to the social implications of focusing on obesity and increased BMI in Guatemala. In this essay, I am attempting to create a distinction between individual experiences of obesity with the social justice barriers that shape diets and health trends in a larger population.

Undernutrition is a common form of malnutrition, an imbalanced intake of nutrients. In Guatemala, changes in urbanization and economic development are impacting the nutritional health of Guatemalans (Yates-Doerr, 2015, 12). While Guatemala does still have areas where undernutrition is the main nutritional problem, the urbanized region of Guatemala City is facing an increasing problem of obesity and high BMI in youth. This form of malnutrition is increasing and has yet to receive policy action by the Guatemalan Ministry of Health. The World Bank reported in 2010 that rates of chronic malnutrition in Guatemala were the third highest in the world (Yates-Doerr, 2015, 12). With almost 17 million inhabitants, Guatemala is the largest country in Central America. The capital, Guatemala City, has a population of approximately three million people (CIA, 2018). As of 2017, 52.5% of Guatemala's population lives in urban areas, and is increasing at a rate of 3.23% per year (CIA, 2018). This is a significant increase from the mid-to-late twentieth century when only 31.1% of its people lived in cities (World Bank, 2018), and this places Guatemala and Guatemala City at risk of a nutritional transition.

One of the leading proximate causes of obesity for the youth in Guatemala City is attributed to the presence of food swamps, and the marketing of energy-dense, nutrient-poor foods. Food swamps are described as places where populations rely on food options that are energy-dense and nutrient-poor, or are ultra-processed, such as fast-food (Hager, 2017). Youth are among the populations most vulnerable to long-term health concerns from childhood and adolescent obesity. Food deserts exist within cities or neighborhoods where there is limited access to healthy foods from grocery stores, due to location or affordability (Whitacre, 2009). Significantly, Guatemala's population is young, with 40% of inhabitants under 15 years old (WHO, 2019). Youth and children who live in proximity to food swamps experience this nutrition transition and thus will be studied at a micro level to account for the larger trends of malnutrition. Focusing on youth in Guatemala City will highlight nutrition transition as a larger theme and will emphasize the effects of positioned marketing on the increased consumption of energy-dense, nutrient-poor foods.

Literature Review

Every national population is affected by at least one form of malnutrition (WHO, 2017). Increased BMI is a growing health concern in today's global community with over 1.9 billion overweight adults and 650 million obese people. The BMI is calculated by dividing weight by the square of height. A BMI over 30 is considered obese and over 25 is considered overweight (WHO, 2018). An increased BMI is linked to health problems such as cardiovascular diseases, diabetes, musculoskeletal diseases, and some cancers including prostate, ovarian, and kidney cancer (which are among the leading causes of death worldwide). According to the World Health Organization (WHO), about 13% of the world's adult population is obese and 340 million young people under the age of 19 are overweight or obese. The root cause of an increased BMI is the intake of energy-dense and nutrient-poor foods compounded by physical inactivity (WHO, 2017). Fried foods, which contain a high amount of sugar or sodium, and sugar-sweetened beverages with a high caloric content and little or no nutritional value (Delpeuch, 2010) are defined as energy-dense and nutrient-poor. Globally, there are 41 million children under the age of five who are overweight or obese (WHO, 2018).

In Latin America, more people die each year from being overweight than underweight (WHO, 2018), women are more obese than men, and approximately four million Latin American children under the age of five are obese. Since the 1990s the largest increase in obesity has occurred in Mesoamerica, which includes the countries of Mexico, Guatemala, El Salvador, Belize and Honduras (FAO, 2017, UTA, 2018). Mesoamerica's nutrition transition is linked to its economies' reliance on imported processed foods, which have replaced indigenous foods (Jeppesen, 2013). Urbanization is linked to societal changes, including increased access to processed and fast-food, more sedentary jobs, fewer outdoor or recreational spaces, and amplified marketing or advertising of non-traditional foods (Harvard, 2018). Food deserts and food swamps are theoretical concepts that describe nutrition environments which negatively impact communities with the abundance of energy-dense, nutrient-poor foods. Urbanized areas that have experienced shifts in food trade policies are considered food swamps (Harvard, 2018).

Food deserts are areas that have little or no access to grocery stores that sell quality, nutritious, or affordable foods (Whitacre, National, & Tsai, 2009). Food swamps describe areas that offer many unhealthy food options, such as fast-food chains and small stores with energy-dense, nutrient-poor, and processed foods (Hager et al., 2017). While exact definitions of food deserts and food swamps differ among researchers, one definition is areas which contain four or more corner or convenient stores within a quarter-mile radius. Another uses the Retail Food Environment Index (RFEI) to quantify the food system of a neighborhood. Food deserts and food swamps can co-exist in the same neighborhood and are typically associated with

economically vulnerable and primarily non-white communities (Hager et al., 2017). People's individual dietary decisions within food deserts and food swamps are influenced by access, availability, and cost.

While this concept is being researched in the public health sector in the United States, Europe, and Australia, it has yet to be applied in countries like Guatemala. Research conducted in the United States confirms that marketing and increased access affect youth's decisions on food. In a quantitative study conducted with 634 African American adolescent girls in Baltimore, Maryland, researchers found a link between neighborhoods in food swamps and youth food decisions. It showed that when youth have access to energy-dense, nutrient-poor foods, they are more likely to consume it in excessive amounts (Hager et al., 2017). Another qualitative study, conducted in Washington DC, focused on Central American immigrant mothers living in a food swamp, (where 71% of the restaurants were fast-food establishments). Researchers found that the children of these women preferred foods like pizza and soda instead of foods traditional to their region of origin (Colón-Ramos, Monge-Rojas, Cremm, Rivera, Andrade, & Edberg, 2017). These studies may be applied to Guatemala to indicate that youth's decisions about food are influenced by their caretakers, access, and location.

Youth and Food Swamps in Guatemala and Guatemala City

Nutritional Health in Guatemala and Guatemala City Youth

The WHO defines "stunting" as the lack of linear growth development due to malnourishment or repeated disease (UNICEF, 2018). Stunting is prevalent in Guatemala's youth and poses a risk for negative health outcomes, such as cognitive and developmental delays, obesity, and chronic health disorders like diabetes and heart disease (UNICEF, 2018). With 46.5% of its children under the age of five recognized as stunted, there are 972,000 stunted children in Guatemala (GNR, 2017). Guatemala is among the countries with the highest rates of stunting in the world (WHO, 2015). This is important considering the young population existing in Latin America, as 56% of the population is under the age of 24 (CIA, 2018), (WHO, 2018). The majority of Guatemala's population is young and especially susceptible to nutritional transition, including obesity and increased BMI.

Youth living in Guatemala City are becoming more obese and overweight, which, as previously discussed, can indicate a nutrition transition. The WHO collected a Student Health Survey in Guatemala in 2015; it had a response rate of 96% among the chosen schools in Guatemala and included 4,374 students ranging from 13 to 17 years of age (Brathwaite, 2015). Three quarters of the students surveyed were from suburbs or neighborhoods of Guatemala City (3,344 students), while one quarter were from other regions of Guatemala (1,030 students).

The answers were all self-reported and the survey was optional. According to the survey responses, 28.8% of students were overweight and 8% were obese. Both indicators have increased since a previous (2009) survey, when 27.1% of students were overweight and 7.5% were obese (Fischer, 2009). In the 2015 survey, 60.4% of students responded that they drank sugar-sweetened beverages one or more times a day, showing an increase from 54.8% in 2009 (Brathwaite, 2015). This survey illustrates the correlation between increased sugar intake and resulting obesity in Guatemala City youth.

In a separate study conducted on six-to-10-year-old children in Guatemala City in 2005, 363 youths were measured for BMI; compared with the WHO and Center for Disease Control (CDC) standards almost 40% of the children in the sample were overweight or obese (Alvarado, Mayorga, Molina, & Solomons, 2009). The sample determined 36.9% to be at risk for weight-related illnesses based on their waist-to-height circumference measurement and BMI. In a separate study on adolescent obesity, 212 youth in Guatemala City were chosen along with 200 youth from six other capitals of Latin American countries. The sample analyzed a variety of socio-economic levels of youth to determine whether obesity was related to their economic and financial means. Referring to the sample from Guatemala City, 13.7% of 13-14-year-olds were obese or overweight (McArthur, Peña, & Holbert, 2001). These studies were some of the first to identify a nutrition transition in Guatemala, a country that had previously been identified as undernourished by the global health community (Alvarado et al., 2009, 189). Rather than the issue of undernourishment, the most prevalent contemporary nutrition problem, especially in urban areas of Guatemala, is dietary patterns that lead to increased BMI; this should be the primary focus for the Guatemalan government to address.

Guatemala City and Food Swamps

In many areas of Guatemala City there exists an abundance of foods that are high in fat, sugar, and salt with the majority being energy-dense, nutrient-poor foods and sugar-sweetened beverages. Many food options in Guatemala City are fast-food and small convenience stores called "tiendas" and food stands or stalls called "casetas." Tiendas offer a variety of food options such as eggs, milk, and bread, in addition to energy-dense, nutrient-poor foods. Casetas are food stands or kiosks that provide energy-dense, nutrient-poor options, though some sell fresh fruit. These small stores are prevalent in Latin America and are the cornerstone of neighborhoods and daily life (Pehlke, Letona, Hurley, & Gittelsohn, 2016).

While there are supermarkets in Guatemala City, the availability of fast-food restaurants exceeds the number of grocery stores. In Guatemala City, there are numerous fast-food options available to people, brands such as Pizza Hut, McDonalds, Pollo Campero, Taco Bell, and Domino's Pizza (Google Maps, 2018). One indicator of a food swamp is cities and

neighborhoods which contain more fast-food options than supermarkets. As previously identified, this accessibility to food known to increase the BMI when combined with inactivity is a concern for the youth population (Cooksey-Stowers, Schwartz, & Brownell, 2017). The number of tiendas and casetas are difficult to estimate due to their informal nature; it is plausible they outnumber the supermarkets in Guatemala City (Mazariegos et al., 2016). Most beverage and processed food suppliers are similar among Guatemala City neighborhoods (Perry et al., 2017). The small convenience stores such as tiendas, vendors of casetas, and supermarkets provide similar processed food and sugar-sweetened beverage options. Even though there are grocery stores and farmers market options that have fresh, non-processed foods, supermarkets and markets also carry nutrient-dense, energy-poor foods and sugar-sweetened beverages like those of the tiendas and casetas. There are plenty of local restaurants and small businesses that sell non-fast-food but the attraction to fast-food establishments is gaining popularity in Guatemala (Cooksey-Stowers et al., 2017).

Patterns can be observed in Guatemala where youth living in Guatemala City are affected by marketing, schools, and key figures in their lives, which affect their food choices. In Mixco, a municipality of Guatemala City, four elementary public schools were studied in relation to the food options available within walking distance of the campus. Convenience stores or tiendas were visited by researchers to identify the type of store, their products, and any child-oriented marketing techniques that were being used. Of 55 stores surveyed, 29% of all advertisements were identified as child-oriented, while atoles (a fortified cereal drink) was 100% child-oriented, cereals were 94.1% child-oriented, ice cream 71.4% child-oriented, and savory snacks 36% child-oriented. The study concluded that child-oriented packaging and advertising increased in proximity to the public schools (Chacon et al., 2015). Based on the number of fast-food restaurants in Guatemala City and abundance of energy-dense, nutrient-poor foods around schools, I would conclude that portions of the city meet the criteria of a food swamp (Hager et al., 2016).

Nutritional Transition and Food Swamps in Guatemala City

The causes of obesity in Guatemala City are related to the shift from traditional foods to fast-foods and energy-dense, nutrient-poor foods; this is a micro-level example of the nutrition transition present throughout Guatemala. Through targeted fast-food combo meals and toys, child and youth-oriented marketing, health claims, and vendors outside schools, youth are consuming foods that can lead to increased BMI. One marketing technique directed at families and youth are combo meals, a fast-food option that includes a main dish, side dish or dessert, and a beverage, and is incentivized with cheap prices or a toy. Six fast-food restaurants in Guatemala City that sell combo meals were studied during a two-week period. Researchers

went to the restaurants, assessed youth-directed marketing, and found that combo meals with toys included were significantly less expensive than other meal options at the six restaurant chains. Furthermore, of the 21 combo meals researched, all were classified as unhealthy based on the UK Nutrient Profile model (UKNP) (Mazariegos et al., 2016).

Another form of child and youth-oriented marketing is through cartoons or spokespeople, health claims, and endorsements from health organizations. Convenience stores and supermarkets in Guatemala City were surveyed by purchasing beverages that were identified as child-oriented (Letona et al., 2014). Researchers collected and coded 89 beverages, and found that the most common forms of marketing were images related to health claims (64%) and celebrities or cartoons (51%). Only nine beverages, most of which were milk-based, were classified as healthy using the UKNP for nutritional quality. Every fruit drink and juice was rated as being less healthy than advertised, even if there was a health claim on the packaging. Only one of eight products that received an endorsement from a reputable health organization, such as the Guatemalan Pediatric Association or the Institute of Nutrition of Central America and Panama, was regarded as healthy (Letona et al., 2014). When youth-oriented foods make health claims endorsed by professional organizations it is likely that youth and parents will purchase and potentially overeat these products (Perry, 2017). When a licensed character appears on packaging, youth are more likely to choose that food even if it is a fruit or vegetable (Letona, 2014). Health claims and cartoon characters or spokespeople influence both youth and their families' tastes and preferences for energy-dense, nutrient-poor foods.

In a similar study, researchers conducted three activity-based focus groups with 37 children and young teenagers to gather qualitative data on youth's food preferences. The activities were conducted in a group of four to nine participants for 60 to 90 minutes and included making a list of their favorite snacks, selecting images of favorite products, and drawing new packaging for a snack. The most popular snacks were salty chips and sugar-sweetened beverages, both of which are considered energy-dense, nutrient-poor. Most participants reported that fruit images on packaging meant a product was healthy or that it was "full of vitamins" (Letona et al., 2014). This study supports other findings that indicate a shift in youth's preferences and knowledge towards energy-dense, nutrient-poor foods based on outside packaging and marketing.

In Guatemala City, schools are located in areas where undernutrition and obesity co-exist and which can be considered food swamps. Researchers conducted a qualitative survey which transcribed and coded data from in-depth interviews and focus groups of 58 street vendors, principals, and students. The results showed that the diets of students from two elementary and middle schools relied heavily on energy-dense, nutrient-poor snacks. The vendors at street kiosks or casetas were aware of their role in contributing to unhealthy eating

options for students, and principals acknowledged that access to energy-dense, nutrient-poor snacks were negatively impacting the health of their students (Pehlke et al., 2015). However, while many interviewees agreed that increasing obesity and processed foods were part of the problem, many were more concerned about the undernutrition problem of schoolchildren. This research conclusion recognizes the underlying problem of a nutrition transition from undernutrition and stunting to obesity and increased BMI. While Guatemala does still have areas where undernutrition is the main nutritional problem, the urbanized region of Guatemala City is facing an increasing problem of obesity and high BMI in youth coupled with stunting (Letona et al., 2014).

There is abundant evidence of direct advertising and marketing towards youth in Guatemala City. From health endorsements by seemingly reputable organizations to licensed cartoons and combo meals at fast-food restaurants, youth and their families are being targeted through marketing to buy nutrient-dense, energy-poor foods. Qualitative research reveals that youth are attracted to such foods; teachers and vendors acknowledge that this is a problem students face. Since Guatemala experiences undernutrition, stunting, and obesity it is essential that this problem be addressed by government and education policy.

Current Policies

Guatemala experienced a 36-year Civil War from 1960 to 1996 where a government-backed military movement attempted to decimate Guatemala's population (Menchú R. & Burgos-Debray, 2010). This historical context is important to recognize because social trauma and governmental instability are related to health outcomes; during this period of war, undernutrition was the form of malnutrition most prevalent in Guatemala (Prera, 2012). Currently, Guatemala experiences corruption, lack of enforcement of policy, and graft within its government that can lead to problems enforcing health codes and programs (Menchú S., Murray, & Baum, 2018). While there is currently little movement on the part of Guatemala and Guatemala City's governments to address the nutritional transition of the country towards obesity, there are government-funded projects in rural states of Guatemala for food security and undernutrition (USAID, 2018).

It is mandated by trade liberalization policies that the Guatemalan Health Ministry monitor and regulate packaged food advertisements and labeled health claims for consistency and clarity (Chancon et al., 2015). Still, there is no apparent action on the part of the Guatemalan Health Ministry to control nutritional quality, marketing or advertising (USAID, 2018). Moreover, there are no regulations or laws governing child-oriented marketing techniques or direct advertising of processed foods and drinks (Washington University, 2017). At public schools in Guatemala, there is a school food program that attempts to address the

undernutrition problem in adolescents and children. Since 1959, the Guatemalan Ministry of Education and the Ministry of Health have been providing a free program called "Refacción" or snack (Pehlke et al., 2015). In 2015, the program provided a snack worth 1.11 Quetzales ($0.15) at urban schools, which typically included a sugar-sweetened beverage and a fortified cookie or bread (Pehlke et al., 2015). Since this program focused on undernutrition, the nutritional content of the food is fortified so that youth can receive more calories. But because this food is energy-dense and nutrient-poor, the Refacción program may be contributing to obesity, BMI issues, and nutritional transition. Yet other than Refacción there are few policies in Guatemala and Guatemala City that address youth nutrition problems at all.

Policy Recommendations

The Guatemalan Ministry of Health, the government of Guatemala City, and its municipalities need to address the problem of changing dietary and nutritional patterns in youth through policy action and community changes. First, the Refacción program should be updated and changed for urban areas in Guatemala, and should join forces with the Guatemalan Ministries of Health and Education (Pehlke et al., 2015). Guatemala City and other urban centers, such as Quetzaltenango, should receive new food options that address the nutritional problems of the region. The new snack could include a fresh food option such as fruit or vegetables and a non-fortified or unsweetened beverage such as fresh water or fruit juice. The price, packaging, and freshness would need to be standardized for a cost-effective alternative to the current program. However, due to changes in tastes and preferences, there should be research conducted on what healthy foods youth will most likely eat, in order to be most efficient and effective with government resources.

Second, food swamps appear when there is little regulation on restaurants and stores in regions with high urbanization (Hager et al., 2017). Guatemalan health officials should consider directing policy toward this increasing issue, especially urbanization surrounding schools. One possible policy option could include requiring casetas and tiendas within a certain distance of public schools to carry a variety of fresh foods at the same or equal price to energy-dense, nutrient-poor foods. Although nutritional education alone most likely would not be sufficient in deterring school children from purchasing products at nearby stores, providing formal nutrition classes or programs at public schools might prove beneficial to students food choices (Chacon et al., 2015).

Third, the Guatemalan Ministry of Health should require fast-food restaurants to provide nutritional and caloric information to customers. One possible method to create healthier options for youth would be to require that combo meals include a minimum number

of fruits and vegetables, and add beverage options that are lower in sugar. In addition, only allowing toys or prizes to be included with healthier meal options in combo meals could be an incentive for positive eating habits in youth (Mazariegos et al., 2016). On a macro level, the Guatemalan Ministry of Health could encourage this shift through offering incentives to large corporations such as tax breaks and exemptions.

Lastly, in terms of marketing directly to young children and adolescents, it is important that policy be created to limit targeted advertising and false health claims. One suggestion would be to advertise images which demonstrate the effects of consuming excessive energy-dense, nutrient-poor foods. A sticker label from the Guatemalan Health Ministry recommending that young people eat a certain number of fresh fruits or vegetables daily might be effective. Most researchers who study marketing aimed at youth agree that it is important to use licensed characters and targeted advertising towards healthy food options, rather than energy-dense, nutrient-poor processed foods (Letona, 2014). Shifting away from marketing energy-dense, nutrient-poor foods towards healthier food options might change youths' preferences.

Conclusion

Obesity is an increasing health concern in both developed and developing countries. Guatemala is experiencing a nutrition transition resulting in cases of obesity and increased BMI while less urbanized parts of the country still struggle with undernutrition. Importing agriculture, urbanization and increased access to fast-food exacerbates the issue of increased BMI. This nutritional transition in Guatemala City where food swamps are present illustrate that nutritional decisions are environmentally designated and not simply derived by individual choice.

Youth in Guatemala City continue to experience dietary and nutritional shifts evidenced by the percentage of children and adolescents becoming overweight and obese from consuming foods and beverages that can lead to malnourishment. Some of the possible causes of consuming more energy-dense, nutrient-poor foods and sugar-sweetened drinks include taste changes and preferences, marketing to youth through false health claims and packaging, and inadequate policy. The long-term consequences of this nutrition transition are especially dangerous considering youth that are stunted are more susceptible to become obese or overweight.

Although Guatemala City lacks policy to combat the problems concerning obesity, policies for undernutrition are still prevalent through the Refacción program in public

schools. I recommend that the Health Ministry of Guatemala and Guatemala City act on this problem through several approaches, such as marketing techniques, education programs, and nutritional policy to confront increased BMI and obesity. With urban centers expected to double by 2050 in Central America, nutritional transition will continue to affect youth in Guatemala City, as urbanization and development continue to expand (Hawkes, 2008).

Although obesity is a global health concern, I have highlighted the structural causes that have led to this nutritional change, using Guatemala as a case study. Based on my research, I believe action should take place in Guatemala and Guatemala City to address the nutritional transitions experienced by youth and the larger community. It is important that research continue to be conducted in Guatemala and Guatemala City in order to monitor nutritional transition, especially as policy is enacted. The health outcomes of Guatemalan youth rely on research, policy, and investment by the Guatemalan government, the Guatemala Ministry of Health, development organizations, and multinational corporations all working in unison to protect the health and future generations of Guatemalan citizens.

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Notes

[1] Health indicators such as obesity rates are used to measure the overall trends in populations and have been associated with higher rates of disease (WHO, Malnutrition, 2017).

[2] The term "youth" is broad due to the age range in available research. Youth is defined in this essay as those between the ages of three and 19 years old though the population most analyzed is young adolescents between 12 and 15 years old. While this broad category may be problematic, the limited research available determined the large age range.

[3] Non-communicable diseases, also known as chronic diseases, are non-infectious and usually a result of genetic, physiological, behavioral, and environmental factors (WHO, Malnutrition, 2017).

[4] Energy-dense means foods that are high in fats or sugars. Nutrient-poor means foods that lack macro or micro nutrients. The combination of foods being energy-dense, nutrient-poor is common in processed foods (WHO, 2017).

[5] Nutritional transition is the change in energy consumption and expenditure that is attributed to modernization, urbanization, and demographic changes (WHO, 2018).

[6] Sugar-sweetened beverages such as juices, sodas, and energy drinks are those that are sweetened with refined sugar and offer few or no health benefits. Sugar-sweetened beverages are considered energy-dense, nutrient-poor (Godin, 2017).

[7] Child- and youth-oriented packages and marketing include those that feature cartoons, bright colors, and popular characters to advertise their products to youth (Perry, 2017).

[8] "Health claims" refers to the practice of advertising through image, text, or figures that a macro- or micro-nutrient is included in a food's nutritional content (Mazariegos, 2016). Health claims are linked to the "halo effect" of consumers trusting brands and limiting their research into the true nutritional quality of foods (Chandon, 2007).