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THE OBESITY EPIDEMIC

Why a Social
Justice Perspective
Matters

Monica M. Taylor



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Why a Social Justice Perspective Matters

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To Christian, Chase, and Taylor

INTRODUCTION

My motivation to write *The Obesity Epidemic: Why A Social Justice Perspective Matters* was to provide clarity on the reasons why this issue reached epidemic levels. The common discursive rhetoric faulting individual accountability permeated scholarly work at exhaustion. Public health initiatives worked diligently to develop intervention programs grounded in behavioral theories with the hope to reverse the obesity problem in America. Racial and ethnic populations were the main targets for these programs. Social expenditures continued to support these interventions, although time after time, some evaluations demonstrated evidence of behavioral changes in the targeted population, albeit such changes were not sustainable. Nevertheless, my colleagues and even I sought funding to participate in the development and execution of these types of interventions. The perception of who was burdened by the obesity problem and why it continued for decades without giving, at the very least, marginal acknowledgement to the source of the problem; that is, elitist ideology.

Most scholarly work re-emphasizes statistical information about obesity, includes research on the populations most impacted, and acknowledges common health determinants. While I will reiterate (and update) similar relevant data in this book, my goal is to depreciate the common discourse and divert attention to the ways in which elite ideologies bolstered the epidemic. Essentially, I wish to add substantive dialogue to the obesity-related research agenda.

This book argues that adding a social justice perspective brings a dialogue to the obesity epidemic that is more accurate and far more progressive than

earlier discourse. It advocates for a policy agenda that embraces the ideology of equity versus protections for private interests. Social justice assigns the concept of equity in health outcomes (aborting disparities) and equitable resource distribution, where the most indigent populations benefit, and opportunities for all to pursue a healthy lifestyle. Generations are impacted by obesity and childhood obesity affects student achievement and obesity-related chronic diseases are on the rise resulting in excess morbidity and mortality. Society can not afford more loss. A social justice perspective forces policymakers, interest groups and especially national elitist to place human rights, humanitarianism, equality and to some degree, paternalistic ideals at the forefront of obesity related policy agendas.

WHAT TO EXPECT

I begin this book describing the magnitude of the obesity problem on a global scale. I include global statistics on the adults and children impacted by obesity in various countries and articulate issues that are both unique and common across various nations with respect to this problem.

Chapter 2 describes the contribution of individual risk factors linked to the obesity epidemic. These factors include discourse on race and ethnicity, culture and lifestyle choices and public health's responses to such factors. While these causal factors are paramount to rising obesity prevalence, some limitations are acknowledged to justify the need for a broader understanding of contextual factors that influence individual choices. Therefore, the Social Determinants of Health is also introduced to describe the elements in the environment that determine the extent in which individuals have access to opportunities and resources that permit them to make better choices.

Chapter 3 focuses on social justice theories. Using John Rawls' theories of justice, the obesity epidemic is re-articulated and provides a greater explanation on why insufficiency in critical social determinants of health persists.

Chapter 4 describes the role of the political economy. Simply put, the wealthy few have access to resources to pay for healthier lifestyles. Consequently, vulnerable groups are at an economic disadvantage. The political economy is applied to the obesity epidemic in this chapter to describe: (1) The politics of food availability and food distribution; (2) Political choices to distribute resources according to a socioeconomic arrangement; and (3) The pursuit to maintain the interests of elitist ideologies.

Chapter 5 is devoted to the acknowledgment of the many policy solutions implemented (and proposed) to alleviate the obesity problem in the

U.S. This chapter consists of an overview of existing policies and programs, which were proposed, enacted or implemented at the national levels, in an effort to lessen the burden of obesity prevalence. While not exhaustive, a range of policies at the state and local levels are also discussed.

Chapter 6 concludes with a summary of the various perspectives that contributed to ways in which the obesity problem was defined over time. This chapter also describes the action-oriented responses by public health practitioners and policymakers, the shortcomings associated with each and how this hindered potential progress in reversing the obesity crisis. A new model to redefine this epidemic is proposed to provide greater accountability to the macro level forces that impede progressive movements. These forces can potentially reverse the trajectory of this epidemic.

Finally, this book is dedicated to Christian, Chase and Taylor, my three beautiful children who continuously bring humor to my life and to three extraordinary women who inspire and support my endeavors – Mom, Tinequa and Anita. (*Psalms 118:5*)

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The Globesity Epidemic

Abstract Obesity is pervasive at international and national levels. Globally, 2.8 million adults die from obesity and this condition is considered the 5th leading cause of global mortality. According to the World Health Organization (Commission on ending childhood obesity: facts and figures on childhood obesity, 2017. Retrieved from <http://www.who.int/end-childhood-obesity/facts/en/>), one third of the population is obese. Worldwide obesity doubled over the past few decades and concomitantly, by 2014, approximately 1.9 billion people over the age of 18 were considered overweight. People who are overweight experience higher mortality compared to individuals who are underweight. In 2014, children under the age of five were impacted, with 5 million experiencing obesity or pronounced overweight. Given these statistics, this chapter examines the prevalence and causal factors for adult and childhood obesity in various countries.

Keywords Globesity • Childhood obesity • Obesogenic environments • Urbanization

THE OBESITY PROBLEM: THE AMERICAS

The economic costs of obesity in America reached 147 billion dollars annually in 2008 (Centers for Disease Control and Prevention 2016a). With nearly one third of the U.S. adult population diagnosed as obese, this affects both indirect and direct costs to society. Obesity impacts labor

markets and job prospects (Devaux and Sassi 2015). Hence, the indirect economic cost of obesity has been associated with decreased work productivity, additional sick days, fewer working hours and less pay.

Compared to international peers, the U.S. has the shortest life expectancy rates. While there are various factors that affect longevity in the U.S., such as tobacco use, income inequality, quality health care, obesity and inadequate levels of physical activity, cardiovascular disease is still the primary cause of mortality for both men and women (Crimmins et al. 2010; Centers for Disease Control and Prevention and National Center for Health Statistics 2015). Obesity, alone, exacerbates a range of comorbidities that accelerate mortality. The direct economic burden of obesity has been linked to a range of treatments for such comorbid conditions including cardiovascular disease, cancer, gynecologic complications, sleep apnea, osteoarthritis and type 2 diabetes (DM2) (CDC 2016a; Mokdad et al. 2003; Must et al. 1999; Akil and Ahmad 2011). The American Society for Metabolic and Bariatric Surgery (ASMBS 2017) dubbed obesity and type 2 diabetes as twin epidemics. Diabetes type 2 incidence rates have increased with rising obesity levels. Obesity was noted as an independent risk factor for type 2 diabetes and 90% of people with this disease were diagnosed as overweight or obese (ASMBS 2017). Diabetes increases the risk of heart disease and stroke. The costs to treat people diagnosed with this disease increased by 41% in a five-year period from \$174 billion in 2007 to \$245 billion in 2012. Consequently, one in every four deaths in the U.S. occurs as a result of heart disease and obesity further escalates cardiovascular events such as high blood pressure, persistent hypertension and heart failure (CDC 2015; Akil and Ahmad 2011).

Obesity is measured according to Body Mass Index (BMI) and is defined as excess body fat (Sahoo et al. 2015). In the U.S., obesity is diagnosed in persons with BMI levels at 30 or higher and persons classified as overweight have BMI levels greater than 25 (World Health Organization 2017). None of the states in the U.S. had obesity levels less than 20% (CDC 2017). Southern states had the highest obesity levels compared to other states, followed by the Midwest, Northeast and the West at 31.2%, 30.7%, 26.4% and 25.2%, respectively. Obesity prevalence was 35% or higher in Alabama, Louisiana, Mississippi and West Virginia. Puerto Rico and 19 states had obesity levels between 25% and 30%. California, Colorado, Massachusetts, Montana and Utah and the District of Columbia had the lowest obesity levels, which ranged from 20% to 25%.

In 2006, the Body Mass Index (BMI) of both men and women in the U.S. far exceeded their international counterparts in Europe, North

America and East Asia (World Health Organization 2005). Obesity prevalence was significantly higher and more severe among younger age groups compared to their international counterparts. Hence, the burden of obesity prevalence in the U.S. caused elevated risks for mortality and ultimately contributed to lower life expectancy rates (Whitlock et al. 2009; Preston and Stokes 2011). Obesity reduced longevity by 29% in U.S. women and 32% for men. According to Preston and Stokes (2011) eliminating the obesity problem in the U.S. would increase life expectancy by 25–40% in the U.S. U.S. life expectancy would then increase to a much higher rate than Canada and England, which also have obesity levels nearer to U.S. rates.

The neighborhood environment impacts overweight and obesity prevalence, particularly in low-income communities. Food deserts are defined as limited access to healthy foods in low income communities (Alviola et al. 2013). Constrained food choices affect consumer purchasing opportunities. With limited sources, low-income consumers paid higher costs for food and therefore were less likely to purchase fruits and vegetables compared to consumers who lived in non-food desert communities (Alviola et al. 2013; Pearson et al. 2005). Convenience stores were more prevalent in food deserts and often sold energy-dense foods. Corner stores were omnipresent in low-income communities and these venues were noted for maintaining unhealthy food supplies (Mui et al. 2015). Comparably, U.S. counties that experienced an increase in grocery stores or supercenters showed a marked decrease in obesity prevalence over a five-year period (Myers et al. 2016).

The Obesity Problem: Children

In the U.S., nearly one in six children were diagnosed as overweight or obese and childhood obesity rates tripled over the past three decades (Ogden et al. 2012). There have been significant declines in obesity levels among preschool children; however, their rates are still relatively high. Childhood obesity impacts social and physical inequalities (World Health Organization 2017; Sahoo et al. 2015; Centers for Disease Control and Prevention 2016b). For example, obese and overweight children were reported to have inadequate academic performance, experienced comorbid conditions such as insulin resistance, cardiovascular disease, musculoskeletal disorders, renal challenges, asthma, psychological problems (anxiety and depression), sleep disorders and type 2 diabetes. Researchers implicated the following underlying causes for increasing obesity levels in children:

Maternal Disposition

Researchers found a link between the etiology of childhood obesity to prenatal life. This implicates an association between maternal weight prior to birth, weight gain during pregnancy and persistent overweight and obesity throughout childhood, adolescence and adulthood (Hollis and Robinson 2015; Pérez-Escamilla and Meyers 2014). This maternal life course approach to the obesity epidemic in children is likely to repeat in the next generation. Fetal overnutrition, which is defined as excess concentrations of maternal glucose and free fatty acids intake, has been implicated in lack of appetite control and energy balance in children (Hollis and Robinson 2015). Mothers who gained excessive weight during their pregnancy were 1.3 times as likely to have children diagnosed as overweight. In addition, childhood obesity was likely to be present by the time their children reached nine years old.

The scientific literature appears divided on the association between breastfeeding and the risk of childhood obesity. Authors from twenty-five different research studies suggested that breastfeeding, reduced the risk of childhood obesity by 22% among children followed in 12 different countries compared to non-breastfed children (Yan et al. 2014). In fact, these results were more prominent among infants breastfed for greater than seven months. Other researchers argued there was any association between breastfed children and childhood obesity levels given the moderate amounts of sugar, protein, and fat contained in breast milk and potential fluctuations in the mother's diet over time (Burdette et al. 2006; Kwok et al. 2010). Consequently, baby formulas contain higher concentrations of these same ingredients, all of which were linked to adiposity.

Nutrition, Physical Activity and Environment

Nutrition and metabolic aspects contributed to the obesity problem in children (WHO 2017). In addition, obesogenic environments exacerbated childhood obesity in the U.S. Obesogenic pollutants occurred in the home and/or built environment. In the home, the BMI of parents was associated with parental monitoring of their children's diet and physical activities (Williams et al. 2017). Families with parents who were not overweight or obese parent were likely to expose their children to a healthier home environment. This healthy environment, as defined by Williams et al. (2017) included higher levels of diet monitoring and greater promotion of physical activity. Families with at least one overweight or obese parent

were more than twice as likely to promote unhealthier home environments, i.e. sedentary lifestyles and less diet control. The causes of sedentary lifestyles included television viewing and video gaming. Television viewing impacted BMI levels in children. According to Cunningham and Jackson (2017), as grade level increased, screen time and weight patterns also increased, resulting in higher BMI levels among children. Video games were responsible for half of the children in the U.S. experiencing excess weight gain and the inability to meet global physical activity guidelines (Zhang et al. 2016). The appeal and influence of some traditional video games resulted in insufficient energy expenditure and less motivation in children to engage in exercise based physical activities.

In the built environment, fast food consumption was also implicated in worsening childhood obesity levels. Parents who work outside of the home were more likely to select fast food options, which were high in dietary fat and calories, as a convenient and inexpensive choice (Sahoo et al. 2015). However, lean parents often compensated for excess caloric intake either prior to or after fast food consumption. Scientific evidence showed that fast food outlets were disproportionately located in low income communities. The built environment was inundated with advertisements of high caloric foods and beverages (Ustjanauskas et al. 2013). Food and beverage marketing contributed to fast food intake (including sugary beverages) and childhood obesity. Overall, approximately 3 billion advertisements appeared on children's websites in one year and 84% of those products contained unhealthy ingredients. Advertisements for cereals were displayed the most, followed by fast food restaurants, prepared meals and fruits and vegetables at 45%, 19%, 8% and 0.01%, respectively.

In addition, Howlett et al. (2016), found a positive association between obesity in preschool aged children and the proliferation of convenience stores in low income communities. In addition, these researchers found that an increase in the supply of grocery stores and supercenters in such communities resulted in decreases in obesity prevalence among the same cohort. In Alabama's low income, Black Belt region, similar conclusions were discovered. The BMIs of children were influenced by inadequate food environments; more specifically, higher BMIs were associated with their limited ability to access healthy foods within a certain block radius within their communities and schools (Li et al. 2015). In addition, Frndak (2014) found an association between 4th grade achievement scores and food deserts. In New York's urban and suburban school districts, poorer 4th grade achievement scores were associated with the proportion of children

who lived in food deserts. However, evidence from other research studies did not find a substantive link between food deserts and childhood obesity prevalence in low income school districts in rural and urban areas in Arkansas (Alviola et al. 2013).

INTERNATIONAL OBESITY EPIDEMIC

Globesity is a term that describes the worldwide obesity crisis. In 2008, the obesity pandemic spread to more than 1.4 billion adults worldwide and more than half a billion adults were considered obese (Stevens 2009). By 2015, 19.5% of adults were obese and nearly one in six children were either overweight or obese among all OECD nations (OECD 2017). Obesity prevalence in OECD countries ranged from 6% (Korea and Japan) to 38.2% in the U.S. in 2015. The United States, Mexico, New Zealand, Hungary and Australia represent the top five nations with the highest obesity prevalence. Women had higher obesity levels compared to men in most OECD countries; however, obesity rates in men have been increasing steadily. Obesity accounts for 16% of the global burden of disease and, consequently, 10% of total healthcare costs globally in developed countries (Hossain et al. 2007). Among the OECD nations, obesity resulted in premature mortality, morbidity and comorbidity, and temporary and permanent disabling complications (Arredondo and Zuñiga 2012).

Education was correlated with obesity among OECD nations, with less educated women being two to three times more likely to be overweight or obese compared to women with higher education levels. In Australia, Canada, Chile, South Africa and the United Kingdom, more than one in four adults were obese in 2015. The OECD expects these trends in obesity prevalence to continue to rise by 2030, especially in the United States, Mexico and England at 47%, 39% and 35%, respectively (OECD 2017). Consequently, OECD nations such as France and Spain are projected to show increases of 21% by 2030 and Italy and Korea will demonstrate the weakest increases at 13% and 9%, respectively.

Childhood obesity is a serious public health problem globally. Both developed and developing nations reached epidemic levels of obese and overweight children in the past few decades (World Health Organization 2017; Sahoo et al. 2015). Globally, childhood obesity increased by 10 million among young children between the ages of 0 and five years during the period 1990–2013 (32 million and 42 million, respectively). These children were likely to remain obese during childhood, adolescence and adulthood.

Children who resided in urban environments in developing countries were also disproportionately affected by obesity prevalence. Low and middle-income countries experienced 76% of the burden of obesity in children younger than five years old (Black et al. 2013).

EUROPEAN NATIONS

European countries demonstrated an increase in obesity incidence over the past two decades. Geographically, obesity prevalence ranges across the following 18 European countries: Albania, Austria, Bulgaria, the Czech Republic, Croatia, England, Finland, France, Greece, Hungary, Ireland, Italy, Latvia, Poland, Portugal, Romania, Spain, and Sweden (Gallus et al. 2015). Western/Southern (France, Italy, and Spain), and Central/Eastern European (Albania, Austria, Bulgaria, Croatia, Czech Republic, Hungary, Latvia, Poland, and Romania) were less frequently obese compared to Northern European countries (England, Finland, Ireland, and Sweden). Croatia, England and Finland were among the top three countries with the highest obesity prevalence among the European nations at 21.5%, 20.1%, 18.9%, respectively. Italy, Hungary and Poland had the lowest obesity levels at 7.6%, 9.8% and 10.3% respectively. However, overall, European obesity prevalence rates were substantially lower than in the U.S.

Obesity and overweight was one of the three major causes for premature mortality in Europe (WHO 2015). In 2014, 59% of the European region were obese or overweight. Recent European studies showed that nearly 30–70% of adults were overweight and 10–30% of adults were obese in the region (WHO-Europe 2017). Childhood obesity remains a significant public health problem in Europe. One in three 11-year-olds were considered obese or overweight in Europe. Physical inactivity, unhealthy diet and maternal education exacerbated childhood obesity levels. Studies showed that physical inactivity was problematic among teens and preteens. Girls were less active than boys. Consequently, girls had higher overweight prevalence compared to boys at, 21.1% and 18.6%, respectively (Ahrens et al. 2014). Affluence impacted overweight and obesity levels, such that children in wealthier families were less likely to have these health conditions. Children in affluent families reported higher levels of fruit consumption, daily breakfast and healthier eating habits (WHO-Europe 2017). In addition, mothers with little education posed a greater risk for early childhood adiposity (Ruiz et al. 2016). Adults in Europe, overall, also demonstrated insufficient physical activity. More than one third of adults were considered

inactive, but, in higher income European nations, men engaged in more advanced physical activity compared to women (WHO-Europe 2017). However, studies still report that European men were still more obese than European women (14.0 men vs. 11.5 women) (Gallus et al. 2015). Parallel to childhood obesity characteristics, European adults with lower education had higher levels of obesity/overweight compared to persons with intermediate and higher education.

The populations disproportionately affected by excess weight gain were male ex-smokers compared to female ex-smokers and current smokers. Older persons were likely to be obese or overweight. Among the European nations, obesity and being overweight increased significantly with age. Obesity and associated comorbid conditions, (CVD and DM2), also increased substantially with rising obesity levels (Han et al. 2011). Some European nations experienced a 50% rise in diabetes mellitus prevalence. In addition, sociopolitical transformations that occurred in Europe in the early 2000s showed evidence of an association (Bodzsar and Zsakai 2014). The shift from totalitarianism, which reflected restrained social mobility and political access, to a democratic order in the early 2000s, dominant in social welfare provisions and a free market system, created a range of social problems. These social issues included increased unemployment, increased poverty, lifestyle, nutritional and health changes. Particularly in Hungary, childhood obesity and overweight rose during this period—consistent with the epidemic found in Central and Eastern European nations.

LATIN AMERICA

In Latin America, approximately one quarter of the population is considered obese and in Mexico, Argentina and Chile, this issue is magnified (Rivera et al. 2014). Other scientists reported that half of the adults in Latin America were obese (Rueda-Clausen et al. 2008). Nearly 25% of children under the age of 18 were overweight or obese. Women had higher BMIs compared to men (Finucane et al. 2011). Concomitantly, poorer women who lived in urban areas suffered the greatest. While Honduras, Bolivia and Haiti had lower BMIs compared to other Latin American regions, the BMI levels of women increased steadily, and at the same pace as their respective Latin American counterparts. Overall, Latin America experienced a nutritional transition; that is, the shift from declining malnutrition rates towards overnutrition, which complicated overweight and obesity prevalence (Rivera et al. 2004). Contributing factors for obesity prevalence in this

region include unequal socioeconomic development, education, diet, physical inactivity and urbanization. However, both overweight and obesity occurred simultaneously in households that experienced nutritional transition (Lopez-Jaramillo et al. 2015; Kain et al. 2003).

Limitations in the built environment restricted physical activity in Latin American children. In Argentina, parental perception on the safety of open spaces and parks influenced limited outdoor activities (Fueyo et al. 2016). In addition, the frequency of park visits was dependent upon the distance from the home and recreational public spaces. Scientists attributed urbanization to the increasing obesity levels in Latin American populations. Many rural populations in Latin America migrated to urban cities to improve their economic circumstances; however, the new populace had less time and opportunity to exercise in their new urban habitat (Fraser 2005).

Socioeconomic inequalities were considered one of the prominent drivers of obesity prevalence in Latin America (Lopez-Jaramillo et al. 2015). Mothers who were pregnant and poor in Latin America had less access to maternal health care and experienced maternal undernutrition. Scientists suggested that this resulted in low birth weight and a genetic disorder in their fetus, called intrauterine growth restriction (IUGR). Certain nutritional deficits during the gestation period caused susceptibility to chronic diseases such as obesity, CVD and diabetes (Gluckman et al. 2008). The genome expresses a certain set of genes at different points in a person's lifetime and this can be dependent on the genetic-environment interaction (López-Jaramillo 2009). These environmental interactions include stress and food deficiency (Henikoff and Matzke 1997). When the rapid nutritional transition occurred, poorer Latin Americans adopted Westernized habits, that is, dietary changes with high-energy intake and less physical activity. This was in sharp contrast to fetal (poor nutritional) programming. When the fetus was exposed to western lifestyle diets later in life, this contributed to substantial increases in DM2 and excessive obesity in the Latin American region (Lopez-Jaramillo et al. 2015). For example, DM2 is projected to increase by 150% in Latin America, from 15 million in 1995 to 39 million in 2025, with the highest increases expected in Puerto Rico (43.3%) and the lowest prevalence in Peru (5%) (King et al. 1998).

In contrast, higher income Latin Americans did not experience the same fate. Different from the U.S., wealthier Latin Americans had unhealthy diets and higher levels of obesity at the start of the nutrition transition period; however, this changed with time. As education on health and diet increased, wealthier Latin Americans became leaner and this led to an inverse

relationship between high socioeconomic status (SES) and obesity prevalence—consistent with other developed countries (Lopez-Jaramillo et al. 2015).

Compared to all other Latin American countries, Mexico ranked 2nd in the world in obesity prevalence (OECD 2017). Mexico also has substantially high rates of obesity, particularly among youths between the ages of 5 and 19 (Aceves-Martins et al. 2016). Similar to the U.S., younger and economically disadvantaged children suffer the greatest (Elder and Arredondo 2013). In fact, people in the lower socioeconomic strata had higher obesity prevalence compared to middle income and wealthier adults at 17.3%, 16.5% and 9.2%, respectively (Bhattacharya et al. 2004; Dixon et al. 2001). Women had particularly higher rates of obesity compared to men at 73% and 69.4%, respectively (Morales-Rouen et al. 2014). Latino acculturation demonstrated a negative impact on obesity rates (Baquero et al. 2016). Mexicans who reported crossing the U.S.–California border often were more likely to adapt to western culture and show higher levels of obesity prevalence compared to those who did not cross as often.

Food insecurity was identified as a cause for increasing obesity levels in Mexico (Morales-Rouen et al. 2014). By 2010, approximately 50 million people were affected by Mexico's insufficient food supply (National Council for the Evaluation of Social Development Policy 2012; Morales-Rouen et al. 2014). Approximately 70.6% of the population reported experiencing some level of food insecurity. This was reported mostly among people living in rural areas, people who lacked education and indigenous populations. Food insecure environments in Mexico resulted in nutrition-deficient diets, depression, and higher risk of overweight and obesity. The latter was particularly more pronounced in Mexican women who resided in rural areas and had a basic level of education. Consequently, the distress from food insecurity created an overconsumption of foods high in calories especially because these meals were economically feasible.

Childhood obesity remains a significant public health challenge in Mexico. Slightly lagging behind U.S. statistics, one in three Mexican children between the ages of 5 and 19 years were considered overweight (Gutierrez et al. 2012). Mexico ranked fourth, internationally, in childhood obesity (OECD 2012). Scientists attributed obesogenic environments as a primary cause for the increase in youth obesity. Studies showed that while governmental efforts were made to reduce unhealthy foods in schools, the surrounding school environment continued to expose kids to nutrient-deficient foods. Mobile vendors, which sold unhealthy food products,

were disproportionately located in short proximity of public compared to private schools. Fast food establishments were mostly found near private schools, while public schools had more mobile vendors. Barrera et al.'s (2016) research showed a direct correlation between the proximity and number of mobile vendors and the BMIs of children near those school facilities. Higher BMI levels were associated with a larger number of mobile vendors. In addition, obesity and overweight prevalence was significantly higher among children who attended private school. These results illustrate that obesity impacted children across all socioeconomic levels.

AFRICA

Obesity prevalence in North Africa has grown at unprecedented rates (Beltaïfa et al. 2009). Primarily, females in urban North African areas demonstrated higher overweight and obesity prevalence compared to males and rural populations (Toselli et al. 2014). Physical inactivity ranged among adults from 21.6% in Algeria to 86.8% in Sudan. However, Egyptian women and men experienced the highest disparity in obesity levels. A range of factors contributed to this public health crisis which included nutritional transition, urbanization and cultural identity. Similar to other developing nations, North Africa experienced a dietary change, adapting to Westernized culture, which placed this region at risk for nutritional disorder. Urbanization was a primary factor in this epidemic, even though this region was considered the least urbanized. Poverty rates increased in urban North African areas and consequently, nutrient-deficient foods were easily accessible compared to rural areas (Ziraba et al. 2009). While caloric intake was high in both urban and rural areas in North Africa, urban populations were at a disadvantage compared to their rural counterparts, simply because rural populations expended more energy from agricultural work as their urban counterparts exercised less physical activity and utilized industrial modes of transportation (bus, cars, etc.). (Fahed et al. 2012). Hence, heightened urbanization augmented a range of diseases including CVD, obesity, hypertension and diabetes (Mokhtar et al. 2001). In addition, adiposity, in African tradition, symbolized beauty, prosperity and affluence among African women, regardless of their SES.

In Sub-Saharan Africa, overweight and obesity were also problematic. Economic advancements, albeit environmental, globalization and accelerated urbanization were accused of creating obesogenic settings in developing nations (Misra and Khurana 2008; Scott et al. 2012). Consequently,

lifestyle changes resulted in behavioral changes that perpetuated obesity prevalence. More affluent children in Sub-Saharan Africa experienced higher rates of obesity and overweight compared to children in the lower socioeconomic stratum (Fruhstorfer et al. 2016). This result represented an inverse relationship to childhood obesity levels in found in other developed countries. Scientists suggested that this inverse relationship prevailed due to the purchasing ability of higher income families and the lack of economic freedom of lower income populations to buy unhealthy foods. Given the economic transitions in this region, upper income families likely adapted to a Westernized culture. In addition, cultural beliefs identified overweight children as healthy and prestigious.

In South Africa, rapid social transformations over the past 20 years triggered considerable rises in childhood overweight and obesity (Ng et al. 2014). Similar to high-income countries, childhood overweight and obesity increased by 19% in boys and 26% in girls. Particularly during puberty, these conditions peaked among girls (Lundeen et al. 2016). In fact, prevalence of overweight and obesity escalated with age among girls. These conditions were not increasingly ubiquitous among boys, even though obesity was more prominent at 4–8 to 11–12 years of age. Boys demonstrated declining obesity rates after the age of 12.

ASIA-PACIFIC

Asian countries experienced epidemic proportions of overweight and obesity in recent decades. In fact, many countries in Asia have similar obesity rates (Jayawardena et al. 2013). Consequently, the greatest burden of obesity was in Thailand, followed by India, the Philippines and China (Sharma et al. 2011; CIA 2010; Sharma 2006). Obesity-related diseases (diabetes and CVD) occurred in the Southeast Asia and the Western Pacific regions (Muller and Krawinkel 2005; Misra and Khurana 2010). Diabetes prevalence was highest in India, followed by China (Muller and Krawinkel 2005). Malnutrition and overnutrition coexisted in the Philippines (Ramachandran and Snehalatha 2010). Childhood obesity remained prevalent, with 20% of the population impacted. These rates increased substantially, especially in the big cities in China. Physical inactivity and parental obesity were identified as primary causal factors.

Overall, Southeast Asia demonstrated relatively low obesity prevalence compared to other regions in the world. Similar to the other regions, Southeast Asia underwent an urbanized transformation and their plight

towards urbanization led to massive migration to urban areas in recent decades, which increased the urban population from 15% in 1950 to 50% by 2010 (United Nations 2012). In Southeast Asia, countries that had lower gross national income, such as Malaysia and the Philippines, demonstrated a significantly higher association between urbanization and widespread obesity (Angkurawaranon et al. 2014). While these aforementioned results were evident, urbanicity explained rises in obesity incidence across all age groups and genders in Southeast Asia. The rural areas of Bangladesh showed a 3.5% prevalence of overweight and obesity compared to over 65% in the Maldives (Jayawardena et al. 2013). While prevalence was lower in Bangladesh, women were 2.5 times as likely to be obese compared to their male counterparts. In addition, abdominal obesity was more prominent in Southeast Asia compared to general obesity.

As described elsewhere, urbanization brought environmental influences that led to undesirable risk factors, such as physical inactivity and unhealthy diets. Malnutrition was still an issue in Southeast Asia during the rise in the obesity epidemic. However, with increasing urbanization, socioeconomic status was consistent with higher obesity levels among females, middle-aged persons and persons with higher educational levels (Jayawardena et al. 2013). Caste, people with higher education and skilled workers experienced greater access to nutrient-rich foods and therefore had higher BMI levels.

In Sri Lanka, India and Pakistan, obesity levels in urban communities was three times higher than rural areas (Katulanda et al. 2010; Mohan et al. 2008; Jafar et al. 2006). However, the rural areas of Pakistan showed a steady increase in overweight and obesity prevalence during the period of 1995–2007 (13.9% and 19.4%, respectively) which demonstrated the influence of rural areas transitioning to urbanization (Illangasekera et al. 2004).

CONCLUSION

The obesity epidemic in the U.S. and around the world rose at unprecedented levels in the past few decades for both adults and children. Obesity prevalence is expected to persist, globally, given the range of influences that perpetuate this condition. Obesogenic environments, malnutrition, food insecurity, cultural beliefs, and—especially in developing nations—accelerated urbanization, are mounting factors that increase obesity prevalence. Given this, proper planning and interventions at a global scale, can directly address this range of influences to attenuate obesity prevalence and the comorbid conditions affected by this condition.

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The Obesity Epidemic: Individual Accountability and the Social Determinants of Health

Abstract This chapter describes the contribution of individual risk factors linked to the obesity epidemic. These factors include discourse on race and ethnicity, culture and lifestyle choices and public health's responses to such factors. While these causal factors are paramount to rising obesity prevalence, some limitations are acknowledged to justify the need for a broader understanding of contextual factors that influence individual choices. Therefore, the social determinants of health (SDoH) are also introduced in this chapter to describe the elements in the environment that determine the extent to which individuals have access to opportunities and resources that permit them to make better choices. The SDoH entail resources that maximize mental and physical well-being and encompass access to resources, health insurance, income, adequate housing, environmental conditions, employment, and education. These determinants are assessed with the intent to diminish any significant emphasis on personal accountability for unprecedented obesity prevalence to the social factors that have greater accountability.

Keywords Race and ethnicity • Acculturation • Childhood obesity • Social determinants of health • Public health programs • Income insufficiency • Discrimination

The obesity epidemic emerged to become the leading cause of premature death in the U.S., and outranked premature fatalities from tobacco and alcohol use and accidents (Greenblatt 2003). Given this, researchers investigated the causes for unprecedented obesity prevalence, and over time, constructed different perspectives (Bjorn 2016). For example, obesity was once classified as a behavioral risk factor for a disease, such as DM2. The current discourse now refers to obesity in the context of disease in connection with skyrocketing medical costs and the resulting economic burden. In some literary sources, obesity was considered a social disease given society's perception of social norms. More recently, the discourse on obesity escalated to the social determinants of health (SDoH), which linked the built and physical environment as an underlying cause for greater obesity prevalence.

Obesity was also conceptualized as an eating disorder or lifestyle choice (Bjorn 2016). Recent attempts by the American Medical Association (AMA) and various researchers offered a different framework to conceptualize obesity (Downey 2001; Hurt et al. 2014; Bjorn 2016; Penney and Kirk 2015). More specifically, the AMA's labeling of obesity as a biomedical condition, resolved to shift perceptions of excessive weight as changeable to alleviate the notion of individual responsibility. Some researchers argued that this approach induced social anxiety and created the opposite effect and enhanced anti-fat prejudice (Murray 2008). The obesity epidemic and the notion of personal accountability propagated behavioral interventions on weight reduction programs, all of which demonstrated some level of success, but lacked sustainability (Penney and Kirk 2015). Of the intervention participants, 30%–40% regained their weight within one year and within five years returned or exceeded their baseline weight. Recent public health efforts approached the debate from a weight-neutral framework; that is, Health at Every Size (HAES). This particular framework promoted healthy lifestyles; namely, intuitive eating and acceptable levels of physical activity, versus a weight-centered approach that pursued weight loss as a goal, lending greater attention to obesity treatment and prevention efforts.

This chapter summarizes the various ways the scientific discourse arrived at the same end of the obesity epidemic and in various populations; that is, the notion of personal accountability and moral weakness contributed to individual risk factors. While these factors were paramount to the discourse, some limitations are acknowledged to justify the need for a broader understanding of other determinants that influence individual health behaviors. The remaining sections of this chapter will then focus on the social determinants of health (SDoH), to show how elements in the environment have

the capacity to limit or enhance opportunities for obese persons to exercise optimal mental health and physical well-being.

OBESITY: DISENTANGLING RACE AND ETHNICITY

In the U.S., racial and ethnic minorities were disproportionately affected by obesity prevalence. Kirby et al. (2012) linked the risk of obesity, at the community level, to racial and ethnic composition. Studies showed that a higher risk of obesity was observed in communities with a large Hispanic population. Asian Americans had the lowest prevalence compared to other racial and ethnic groups; however, some researchers posited that these statistics were misleading given their traditionally lower BMI levels, diversity within the race, and that their immigration histories have not been accurately documented (Yi et al. 2015; Yeh et al. 2016). While lower obesity prevalence has been documented extensively among Asian Americans, the risk for cardiovascular disease increased significantly in East Asians and risk factors for diabetes and hypertension were higher overall among Asian Americans compared to their racial counterparts (Chen et al. 2013; Wong et al. 2014). Recent studies also showed alarming statistics on the obesity epidemic in American Indians. Approximately 33% of this community was classified as obese and half of these women are considered overweight (American Psychological Association 2017). Compared to whites, American Indians were 1.6 times more likely to be obese. Approximately 40–50% of American Indian children were diagnosed as overweight or obese before their 10th birthday.

Childhood obesity by racial and ethnic group demonstrated patterns similar to adults. Hispanic and African American children had the highest rates of adiposity, followed by non-Hispanic Whites, at 39%, 37% and 25% respectively (Asieba 2016). American Indian children were also more likely to be overweight or obese compared to their white counterparts (Whitaker and Orzol 2006; Anderson and Whitaker 2009; Zilanawala et al. 2015). More specifically, Mexican American children experienced greater disparities. In addition to cultural differences, diet, physical activity and perception of body weight previously discussed in Chap. 1, higher abdominal obesity was found among children who had obese parents and parents who migrated to California from Mexico (Jimenez-Cruz et al. 2011). Due to fear of hunger, children of migrant parents consumed more energy-dense foods such as potato and tortilla chips. Parental immigrant status also contributed to childhood obesity. Hispanic children of immigrant parents

with higher incomes were less obese. Researchers suggested that acculturation to American values in the middle- and upper-income socioeconomic classes served as a protective factor against obesity.

In addition, Filipino children, compared to other Asian ethnic groups, demonstrated higher overweight/obesity and this was commonly seen among mothers with little English proficiency and less education (Diepa et al. 2017).

Comparably, other studies conducted in low-income Hispanic and African American communities showed that having a non-U.S.-born parent limited obesity prevalence in children (Cespedes et al. 2013). Non-U.S.-born parents were more likely to restrict screen time exposure and eat less outside the home compared to low-income families where both parents were born in the U.S. Non-U.S.-born parents gave their children higher sugar-sweetened beverages (soda) compared to U.S.-born parents. However, when non-U.S. born parents established more tenure in the U.S., this resulted in a modest change in fast food consumption and sugar beverage intake regardless of education level. In addition, the immigrant protective element remained salient among Haitians who lived in the U.S. (Strickman-Stein et al. 2010). BMI levels among Haitian children differed based on nativity status. Haitian children born in the U.S. experienced excessive weight relative to their BMIs compared to Haitian-born children who resided in the U.S. However, Haitian-born children continued to experience a 3.7% increase in weight gain with each year of U.S. residency. Overall, Haitian-born children had lower BMI levels compared to U.S.-born non-Hispanic African Americans and whites, and Mexican Americans. These BMI patterns were also seen among recent non-Hispanic Caribbean Island and African adult migrants. Obesity prevalence was observed far less in foreign-born African Americans compared to African Americans born in the U.S. (Mehta et al. 2015).

At the county level, high obesity prevalence in adolescents was more pronounced in deprived crime-stricken neighborhoods and lower obesity levels were found in communities with greater density of recreational facilities (Kramer et al. 2016). This evidence explained the context in which adolescents make obesity-relevant choices. In addition, counties in the U.S. with a high density of adolescent obesity correlated with high percentages of adults with type 2 diabetes, child poverty rates and social marginalization.

Overall, long-term immigrants have higher BMI levels compared to recent migrants, a phenomenon often noted as the *negative acculturation effect* (Ro and Bostean 2015; Ro 2014). This pattern acknowledges deteriorations in immigrant health with longer U.S. residence due to adaptations

to Westernized culture. For example, in adult immigrants, visa classification affected overweight and obesity prevalence (Yeh et al. 2016). Immigrants that entered into the U.S. with an employment, refugee or legalization visa were burdened by overweight and obesity compared to adult immigrants with family reunion visas. In fact, the former consistently had higher BMI levels over time. Latino and Asian immigrants in the U.S. demonstrated obesity patterns that were both consistent and inconsistent with acculturation theory (Ro and Bostean 2016). For Latina and Asian women, there was an association between higher BMI levels and longer length of residency in the U.S. However, factors that mediated these circumstances differed for each cohort. In Latina women, stress due to acculturation and household income provoked excessive weight gain. In contrast, limited English proficiency and discrimination contributed to adiposity in Asian women. Consequently, little evidence indicated an association between higher BMI levels and the acculturation effect among Latino or Asian men.

Among recently migrating women of Brazilian, Haitian and Latino descent to the U.S., researchers established links between depression, income and obesity (Anzman-Frasca et al. 2016). Haitian and Latina women who reported having depressive symptoms were more likely to have higher BMI levels and lower income levels. However, this was not the case for Brazilian migrant women. Brazilians with incomes greater than \$30,000 experienced excessive weight gain and more symptoms of depression. Researchers attributed these incongruent results to their culture differences.

Education, Socioeconomic Status and Race/Ethnicity

Income and education impacted adiposity (Mirowsky and Ross 2003; Isasi et al. 2016; Schreier and Chen 2013). Healthy BMI levels in children were correlated with education levels in adults (Asieba 2016). Higher education in adults demonstrably resulted in healthier BMI levels in their children. Studies on the links between educational inequalities and obesity also confirmed this protective element. The rate of educational attainment increased significantly in the U.S. from the 1970s onward and this correlated with greater educational inequalities (Yu 2016). During this period, obesity prevalence rose from 15.7% in 1970 to 38.8% by 2010. Irrespective of educational level, obesity increased over time for non-Hispanic white males and females and non-Hispanic African American males and females. However, non-college graduates in the U.S. showed greater increases in

obesity compared to four-year college graduates during the aforementioned timeframe. More specifically, obesity levels were substantially higher among white females with a high school degree and a few years of a college education. There was no correlation between African American males, education attainment and greater adiposity during the same study period. By 2010, obesity prevalence was more prominent among white female, high school dropouts and among white males and African American females with some college education. In the absence of greater educational attainment, Yu (2016) found that 9% more of the total population would have been obese. Consequently, if educational inequalities had remained at the same level as in the 1970s, the substantive percentage increases in obesity prevalence would have been lowered by 10% during the study timeframe.

OBESITY: HEALTH INTERVENTIONS

Public health practitioners responded to the obesity epidemic in the minority community through a proliferation of public health interventions. For example, the lack of physical activity in the home environment of American Indian children was well documented. Public health practitioners launched various interventions, including the Pathways obesity prevention program, in select local schools to examine its impact on weight control and physical activity (Going et al. 2003). This program created various sports and recreational programs in physical education classes in an effort to increase motor skills. The results showed increased physical activity in PE classes in the select schools compared to schools that did not participate in the intervention. More recently, another intervention, OPREVENT2, was designed to reduce obesity incidence in American Indians that resided in rural reservations (Gittelsohn et al. 2017). The intervention focused on increased uptake of sufficient nutrient-rich foods and beverages, opportunities for physical activity and engaged stakeholders in the local environment, including tribal leaders, retail stores, worksites, schools, social media and individuals, to eliminate obesogenic Native American environments.

The Centers for Disease Control and Prevention (2017a) launched the Racial and Ethnic Approaches to Community Health across the United States (REACH US) that utilized community-based participatory theories to reduce cardiovascular disease and DM2 through obesity reduction interventions (Liao et al. 2016). Various programs were implemented in 14 African American communities in California, Illinois, Massachusetts, New York, Ohio, Pennsylvania, South Carolina, Virginia, Washington and

West Virginia using health promotion, community-based prevention strategies. These strategies included culturally tailored interventions, coalition building and advancements in policy, systems and environmental change. Using public health surveillance surveys and data on BMIs from the period of 2009–2012, the intervention demonstrated a reduction in obesity prevalence in 14 REACH US (African American) communities compared to communities that were not exposed to REACH programs. The REACH US communities showed a reduction in obesity prevalence from 12.8% to 11.1% during the study period.

In the Hispanic community, health educators piloted a lifestyle intervention program for overweight and obese pregnant women in an effort to reduce gestational DM2 (Hawkins et al. 2015). For six months during the course of pregnancy, a cohort of Hispanic women received culturally tailored and motivational messages on diet and physical activity modification. At the end of their pregnancy, the women exposed to the program engaged in more vigorous physical activity, had lower gestational weight gain and infant weight compared to the women who did not participate in the lifestyle intervention.

Another type of obesity intervention implemented for low-income, overweight and obese African American and Hispanic adults in New York City was called the Small Change (SC) approach in combination with a positive affect and self-affirmation (PA/SA) strategy (Phillips-Caesar et al. 2015). The small change approach was developed in 2008 by the task force of the American Society for Nutrition, Institute of Food Technologists and Food Information Council and promoted strategies to achieve modest weight loss approaches through small daily changes in diet and physical activity. The PA/SA was an added feature to the SC approach, which used culturally tailored approaches and galvanized participants to sustain healthy behaviors. The PA/SA are constructs in social cognitive theory that describes an individual's ability to achieve self-efficacy to perform a specific health behavior change (Boutin-Foster et al. 2013). The *positive effect* notes one's enthusiasm to complete a task and *self-affirmation* describes one's incentive to maintain self-integrity; that is, with positive statements or memories, the resolve to continue to practice a task. The goal of this intervention was to examine if the piloted SC along with the combined PA/SA approach would yield greater weight loss compared to the SC approach alone (Phillips-Caesar et al. 2017). Participants received culturally tailored workbooks that described incremental weight loss strategies; however, the participants in the SC PA/SA group received an additional chapter on strategies to “stay

positive” (Phillips-Caesar et al. 2015, 2017). The results of the study did not show evidence of greater weight loss in the participants in the SC combined PA/SA group, compared to participants in the SC group alone. However, among participants who reported major life events during the course of the study, individuals in the SC combined PA/SA group gained less weight compared to participants with the same challenges in the SC trial.

In Northern California, Filipino Americans were targeted for an obesity program to alleviate the burden of type 2 diabetes, obesity and hypertension among this population (Bender et al. 2016). Given their underrepresentation in public health interventions, Bender et al. (2014) developed a culturally tailored, six-month mobile weight loss program, using digital technology, to promote healthy lifestyle behaviors. Filipino Americans were targeted for this program due to recent studies that revealed they had a consistently higher usage of smartphones, iPads, or mobile apps, compared to any other racial and ethnic group (Bender et al. 2014). The program, called the Pil Am Go4Health, evaluated potential self-efficacy for overweight, non-insulin dependent Filipinos to engage in healthy eating and physical activity (Bender et al. 2016; Maglalang et al. 2017). Pil Am Go4Health offered virtual social support for participants through family participation and social networking groups, via Facebook. The program aimed to enhance adherence and retention and provided motivational messages, positive feedback, education, counseling and personal monitoring of obesity-related behaviors. The intervention was culturally tailored and used Filipino American language (including English) and food alternatives and included dietary fat content and calorie information.

The participants in the study reported increased self-efficacy; more than half indicated that the culturally tailored content reinforced their commitment to the program’s goals and other participants expressed the necessity for increased cultural relevance (Maglalang et al. 2017). This public health intervention provided researchers with insight on the importance of tailoring unique interventions for diverse communities.

In addition to various public health interventions that targeted racial and ethnic populations, there were other nationally recognized programs to eliminate obesity, specifically among children in the U.S. The former First Lady, Michelle Obama, launched the *Let’s Move* campaign in 2010 in an effort to change the rate of overweight obesity prevalence in the U.S. and enhance the emotional and physical health of children (Let’s Move.gov n.d.) While the program was acclaimed, with photos of the First Lady engaging in

physical activity with kids on the White House lawn, this initiative was comprehensive, such that there were collaborations with the private sector, families, communities, state agencies and policymakers to pass legislation aimed to improve physical activity in public schools and nutrition education and options. Some states incorporated surveillance tools to monitor the BMIs of students in schools that adopted healthier food options. In spite of criticism from Republicans, food companies, and students unfavorable to the new nutrition requirements, the campaign has taunted some success: Provisions in the Healthy, Hunger Free Kids Act transformed nutritional standards in the school environment and this is the first update to these guidelines in 15 years. These changes subsequently provided over 50 million kids with healthier food options; over 3 million children had access to fruits and vegetables through salad bars (“Let’s Move! Salad Bars to Schools”); the program was marketed in critical children’s TV programs, such as *Sesame Street*; over 81 million people benefitted from Let’s Move! Cities, Towns and Counties, which created commitments from local legislators, U.S. Department of Health and Human Services, and The National League of Cities to create healthier communities.

The aforementioned literature review summarized risk factors for obesity in minority populations. The risk factors for adiposity among racial and ethnic groups included the following: immigrant acculturation, socioeconomic status, education, and racial and ethnic differences, with more diversity within versus between races.

The U.S.-defined racial categories appear muddled, as scientific evidence showed that it is hard to disentangle race without regard to ethnicity. The economic undercurrents that prevailed among all racial and ethnic groups in the obesity epidemic in the U.S. presents challenges for sustainability purposes, in its reliance solely on interventions that target low-income communities and their individual behavioral risk factors. A broader framework is required to contextualize the obesity epidemic beyond racial categories. The remainder of this chapter is devoted to a greater understanding of the social determinants of health to explore the role of the physical and built environment.

THE SOCIAL DETERMINANTS OF HEALTH

The social determinants of health (SDoH) are elements in the environment that determine the extent in which individuals have access to opportunities and resources that permit them to experience optimal mental and physical well-being. The Centers for Disease Control and Prevention (2017b)

defined the SDoH as including the following: access to resources, health insurance, income, adequate housing, environmental conditions, employment, social networks, segregation, discrimination and education.

A multitude of SDoH were identified as root causes for obesity prevalence. This chapter identifies the SDoH associated with obesity and overweight conditions in the U.S. Unmistakably, a dearth in critical SDoH increases vulnerability to overweight and obesity incidence and prevalence and DM2. Subsequently, this chapter will then ascertain if the SDoH is sufficient to address the unprecedented obesity rates in the U.S.

Access to Resources

Food

Access to critical resources, such as healthy foods, is a significant SDoH. Researchers recommended reductions in the cost of healthier foods and the accessibility of farmers markets in disenfranchised communities. Gardens in public housing communities created access to affordable foods and social networking (Bryant et al. 2015). Food pantries, which are owned by non-profits, increased substantively in the U.S. over the past three decades and offered residents in designated neighborhoods access to healthy lunches and hot meals. The federally subsidized Women, Infants, and Children program added vouchers for fruits and vegetables and offered nutrition counseling to recipients. Zoning policies were implemented to restrict the proliferation of fast-food outlets in low-income neighborhoods. In addition, 12.7% of U.S. households (42.2 million people), suffered from food insecurity in 2015, which reflected a decrease from 14% in 2014 (United States Department of Agriculture 2017). Also in 2015, 6.4 million households with adults and children experienced food insecurity. Mississippi lead the U.S. with the highest food insecurity rate during the period of 2013–2015 compared to North Dakota, which had the lowest rate, at 20.8% and 8.5%, respectively. The individuals most susceptible to food insecurity were children and single women and men with children.

Health and Healthcare Access

Access to the healthcare system offers support for healthy weight and nutrition and, in the past, contributed significantly to reductions in overweight and obesity prevalence. Myers et al. (2016) found that the more physicians in a given area, lessened obesity prevalence. When the uninsured

population reached nearly 50 million by 2010, with 9.8 million being children, the Patient Protection Affordable Care Act (ACA) was implemented and created substantial increases in access healthcare services (Collins et al. 2011; Centers for Medicare and Medicaid Services n.d.). Some studies showed that a high uninsured population was linked to greater obesity prevalence, while other studies negate such associations (Myers et al. 2015; Pernenkil et al. 2017). In any case, provisions in the ACA increased access to preventive screenings, including obesity counseling for children and adults and health care coverage for obesity-related services. The Children's Health Insurance Program also increased access to periodic screening and surveillance and medical services for overweight and obese children. Adults with Medicaid benefits were covered for minimal obesity treatment, which was dependent on state provisions.

Income Sufficiency

Given the research on the links between obesity and low-income populations, alleviating poverty is critical to the obesity epidemic. Studies showed a correlation between economic hardship and adiposity among Hispanics who resided in Chicago, Miami, the Bronx and San Diego, (Isasi et al. 2016). In adults, current economic hardship was associated with greater adiposity and in poorer children, greater adiposity was consistently found in U.S.-born Hispanic children. Exposure to persistent poverty exacerbated the obesity epidemic (Lippert 2016). Children who were overweight or obese and consistently lived in poor neighborhoods were more likely to be obese as adults. Consequently, children who were able to move out of poverty-stricken neighborhoods had lower obesity prevalence as adults. These results indicated the significance of social mobility in lessening the impact of overweight and obesity, especially among women.

Social Context

Segregation

Extensive scientific research documented the diminutive effects of segregation on health outcomes (Massey 1990). Racial isolation impacts obesity prevalence (Chang et al. 2009; Humpel et al. 2002). In racially segregated poor African American neighborhoods, the built environment showed signs of distress and disorder; that is, criminal activity, loitering, uncivil behaviors

and physical capital depreciation and physical dilapidation. Concentrated poverty and racial segregation becomes evident in these communities and residents experience a sense of powerlessness and fear as disorder prevailed in the absence of law enforcement control. As a result, self-efficacy to perform favorable obesity-related behaviors, such as walking, becomes diminished (Brownson et al. 2001). Concentrated poverty enhanced chronic stress, which was also a risk factor for overeating leading to excessive weight gain. Studies on the association between racial segregation and obesity in poor neighborhoods in Philadelphia showed links between excessive BMI levels, particularly among women (Chang et al. 2009). Living in racially isolated communities increased the odds of obesity in women in Philadelphia by 35%. In the same study, living in a crime-infested community was not associated with weight gain.

Discrimination

Stigmatization and discrimination has been inherent in the discourse and in social media towards obese persons (Hoyt et al. 2017). Anti-fat prejudice campaigns placed responsibility on the individual and attributed laziness, lack of self-discipline and often apprehended deviant body size (Carr et al. 2008; Erdman Farrell 2011).

Obesity discrimination is ubiquitous in employment, education and healthcare settings (Puhl and Heuer 2009; Schwartz et al. 2003; O'Brien et al. 2013). Health professionals demonstrated weight biases at international conferences. Dieticians showed anti-fat prejudice towards their obese clients. Obesity, especially morbid obesity, has been linked to negative emotions of disgust (Vartanian 2010). Anti-fat prejudice is also associated with persons with authoritarianism. In the employment sector, the presence of authoritarianism resulted in discrimination against hiring obese individuals (O'Brien et al. 2013). In addition, the perception of one's physical appearance was related to discriminatory practices.

Neighborhood and Built Environment

Reported elsewhere, obesogenic communities in the physical environment affected overweight and obesity-related risk factors. Neighborhood dynamics and poverty were often correlated. Short- or long-term neighborhood poverty resulted in overweight and obesity among African American and white women (Do and Zheng 2017). The proliferation of fast food environments in low-income neighborhoods affect sufficient nutrient intake.

Children were least likely to consume vegetables daily in fast food restaurants that were within 500 meters of their homes (Dunaway et al. 2017). Fruit intake increased only among households that prepared home cooked meals at least five times per week and among children who received public assistance (Dunaway et al. 2017).

Employment

Research studies implicated a relationship between type of employment industry, obesity prevalence and race (Jackson et al. 2016). The industries investigated included Agriculture, Fishing, Forestry, Construction, Wholesale, Transportation, Finance, Retail, Real Estate, Healthcare and Social Assistance, Accommodation and Food Services, Public Administration, Professional, Scientific and Technical Services, and Arts, Entertainment and Recreation Industries. Between 2004 and 2011, while adiposity increased across all industries for both non-Hispanic African American and white men and women, African American women had the highest rates. People employed in healthcare demonstrated the highest prevalence of obesity, at 32%, followed by food/accommodation services (31%), public administration (31%) and the education industry (26%). Women employed in healthcare and the food accommodation industries outranked men in obesity prevalence and men employed in education were more likely to experience adiposity compared to women. African American men demonstrated greater adiposity compared to their white counterparts only in select industries; that is to say, healthcare, education, public administration and manufacturing/construction/agriculture. These African American/white disparities in obesity levels associated with employment industry confirmed other studies, which reported African American men and women's experiences with being employed in low-wage, shift jobs, experiencing poverty, which ultimately resulted in sleep deprivation. All these were risk factors for abdominal fat accumulation and/or comorbid conditions; namely, sleep apnea, type 2 diabetes and hypertension (Kmec and Trimble 2009; Lieu et al. 2012; Mensah et al. 2005).

CONCLUSION

While various SDoH have been linked to the obesity epidemic, issues of equity continue to present its challenges. Equity in the distribution of the SDoH is problematic. Merely identifying health determinants does not create the conditions to improve the built and physical environment, especially in lower income communities. While policies have been implemented

to ameliorate such conditions, institutional forces hinder equitable access to the SDoH and thus, complete elimination of the obesity problem. For these reasons, macro level approaches must be considered.

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The Argument for Social Justice

Abstract The term “social justice” implies there is an *injustice, or unfairness*, experienced among a potentially vulnerable population. A social justice lens requires acknowledgement and accountability of various disciplines, including political science, economics, sociology, legal, environmental, community accountability, health and human rights, for impartiality and equal opportunities and liberties for all members in society. Hence, the social justice argument brings to the forefront a change in historical ideologies of *personal responsibility* to the realities of *constrained choices*. This chapter describes obesity from a social justice perspective. Using John Rawls’ theories of justice, the obesity epidemic is re-articulated and provides a broader understanding on factors that impede sufficient access to critical resources, especially among the disadvantaged groups. This book goes beyond a recognition of personal attributes and endorses a more intellectual consideration of the worldwide obesity epidemic.

Keywords Social justice • John Rawls • Difference principle • Environmental justice • Economic justice • Health and social justice

The term *social justice* implies that there is a state of affairs where people in a given society experience fewer advantages relative to others (Miller 1999). Social justice provides assumptions of agency accountability vs. individual accountability. This means the agency (or institution) is responsible for and

holds discretion in, changing any inequalities in such a way that it balances the distribution of goods and services to lessen any burdens. Social justice engages political theories and systems and its philosophical concept is grounded in an accountability to public responsibility between the individual and society, in contrast to individual justice, which is focused on obligations between individuals (Gunmar 2013).

Social justice is concerned with the attainment of equal rights for all citizens, in order to meet basic needs, advance opportunities and choices; and correct any injustices (Gordon et al. 2008). An injustice can include an unfair distribution of critical resources. The social determinants of health (SDoH) identifies those critical resources required to achieve optimal health opportunities. If there is an inequitable allocation of such resources, then structural inequalities in health are imminent. Social justice enters the discourse at this juncture through the ideology of a social contract between civil society and its members, which guarantees the rights to benefits required for citizens to enjoy basic liberties (Gunmar 2013). The U.S. and other international governments signed commitments to protect the human right to attain mental and physical health and well-being (Gruskin et al. 2007).

Rawls (1971) added the difference principle to explain the idea of justice in a society and claimed that justice was achieved when “any inequality in the distribution of ‘primary goods’ is permissible only in so far as it is to the advantage of the worst-off group in society” (Gordon et al. 2008, p. 4). This meant that social arrangements should reflect an allocation of resources where indigent populations received the maximum social benefit (Miklosi 2010). Furthermore, an intrinsic humanitarian perspective should prevail, which shows more concern for accessibility to a minimum social benefit and provides vulnerable populations the opportunity to achieve a healthy lifestyle. According to Rawls (1971):

... laws and institutions no matter how efficient and well-arranged must be reformed or abolished if they are unjust. Each person possesses an inviolability founded on justice that even the welfare of society as a whole cannot override. For this reason justice denies that the loss of freedom for some is made right by a greater good shared by others. (pp. 3, 4)

Theories of Rawls’ difference principle are not intended to arrange resources so that the least advantaged exceed the social minimum; rather, the intent is to improve socioeconomic well being to avoid falling below the threshold of sufficiency (Miklosi 2010; Freiman 2012). The latter, which is

the sufficientarianism concept, incorporates humanitarian views and claims to present greater specification on social justice ideologies (Freiman 2012). Rawls advocates for a welfare society that benefits the worst off; however, according to sufficientarianism views, this theory does not identify the conditions in which groups are definitively considered economically worse-off and lacks the potential to reconcile if those that are not defined as such should have not, in fact, been excluded. The sufficientarianism principle extends a moral priority to people who live below a specified threshold and allows for the distribution of resources so that they have enough to meet their basic needs. Once this sufficiency standard is met, the demands for justice and agency accountability then becomes altered. In addition, sufficientarianism defines the threshold and the level of resources required for persons to live adequate lifestyles.

While there are other acclaimed theories that expand our knowledge on the principles of social justice, this chapter adopts to Rawls' views. If we adjust the discourse on obesity to Rawls perception of justice, then we must acknowledge the availability of those primary goods required to achieve optimal health outcomes, that is, the SDoH. If everyone had basic and equal rights to critical resources that created the opportunity for adequate lifestyles, would the obesity epidemic be widespread, globally, nationally and locally? If social arrangements were altered, such that, the most vulnerable groups were allocated sufficient social benefits, how would the face of the obesity epidemic change?

For the remainder of this chapter, I discuss the obesity epidemic in the context of social justice theories, mainly John Rawls' difference principle and its application to critical SDoH.

ENVIRONMENTAL JUSTICE

Environmental justice is described as an inequitable exposure to environmental hazards that mostly impact disenfranchised populations. Exposure to environmental toxins are not equally distributed in all populations. The term, environmental justice, initially coined in the 1980's, addressed the location of waste sites, which were disproportionately located in African and Native American and other vulnerable communities (Bullard and Wright 1993; Burger and Gochfeld 2011) Environmental Justice later expanded to include ambient air toxins from bus depots, automotive exhausts, indoor air pollution and decayed facilities in low-income public housing sites and in the workplace (Chakraborty and Zandbergen 2007; Landrigan et al. 2010;

Moffa and Longo 2016). More recently, obesogenic pollutants was added to the discourse as such pollutants served as the catalyst that drove excessive weight gain, obesity prevalence and DM2 disparately in poor and marginalized populations, including children. As previously described, obesogenic pollutants included neighborhoods that were crime infested, experience excessive violence and poverty, the absence of affordable healthy foods and inadequate access to healthcare.

Food deserts are environments that have an inadequate access to healthy foods. Food deserts are most common in urban, African Americans neighborhoods, regardless of income levels (Baker et al. 2006). The literature is divided on the influence of supermarket proximity, residence and obesity prevalence. Some studies showed that the distance to healthy retail stores and supermarkets were factors that increased obesity prevalence and other health disparities (Dubowitz et al. 2012; Bodor et al. 2010). When supermarkets were present within a closer residential distance, obesity prevalence was lowered by 24% and being overweight was reduced by 9% (Morland et al. 2006). Other studies confirmed that women between the ages of 50–79 had lower BMI levels based on a higher density of supermarket presence (Dubowitz et al. 2012). In fact, studies revealed that as distance between healthy food stores increased, obesity prevalence increased by 5% (Dubowitz et al. 2012). In addition, high BMI levels were associated with shopping in local (low-income) neighborhood stores, whereas other research studies showed no apparent link to obesity prevalence and distance to quality food stores (Drewnowski et al. 2013; Fuller et al. 2013; Lear et al. 2013).

Marketing of junk foods compared to healthy foods, such as fruits and vegetables, influenced food choices in lower-income communities (Dubowitz et al. 2012). Low-income people mostly shopped in discount grocers in their neighborhoods. It was found that discount grocery stores marketed junk foods (candy, salty snacks and sugar-sweetened beverages) in the main entrance of their stores 67% of the time, compared with 33% of high priced supercenters. Consequently, 71% of high priced supercenters marketed fruits and vegetables in their main entrances compared to 14% of low priced stores. Hence, investing in food deserts by opening supercenters in low-income communities increased access to healthier food options; however, cost impacted the consumer's purchasing power as they still chose to shop in discounted markets that had favorable prices but more unhealthier food options.

When structural forces in the built environment influenced the availability of individual choices, (excessive) obesity prevalence is inevitable in low-income populations. Rawls' perception that "Each person possesses an inviolability founded on justice that even the welfare of society as a whole cannot override," is applicable in this context. If the greater good for society is to reduce obesity prevalence and eliminate the economic costs of obesity, both financially and from human loss of productivity, then increasing access to those material goods and services required to alleviate the burden of obesity among the poor is considered politically moral. Then, what follows is that the agency (government) is responsible for the elimination of food deserts and obesogenic pollutants. Therefore, agency intervention is necessary, according to Rawls' assumption of justice, to appropriately allocate goods such as accessible supermarkets, healthy cost-effective foods for all and to ensure safe environments where kids can play, grow up and work (Sangha 2011). The aforementioned resources are those environmental benefits that serve to enhance social, physical and mental health options where the most vulnerable populations would benefit the greatest; that is, with less prevalence, morbidity and mortality from obesity and obesity-related conditions.

ECONOMIC JUSTICE: POVERTY

Poverty is inextricably associated with obesity. On a global scale, less developed nations have more obese adults compared to developed nations (904 million and 557 million, respectively). Locally, U.S. counties with poverty rates at or above 35% consequently have obesity rates 145% higher than wealthier counties (Levine 2011). Long-term concentrated poverty was proven as a direct link to neighborhood obesogenic characteristics. As previously described, disinvestments in low-income environments influenced food choices. Obesogenic agents in poverty-stricken communities shaped the attitudes, cultures and behaviors of residents and had adverse effects on health outcomes (Sheehan et al. 2017). In a cohort of mothers who lived in poor neighborhoods in California, living in chronic poverty for a short or longer period of time influenced weight gain. For example, mothers who experienced persistent long-term poverty in disadvantaged neighborhoods had more convenience stores within a half mile distance from their homes and as a result, their BMI levels were higher and they had a greater chance of being obese. Comparatively, mothers who lived in long-term low poverty neighborhoods had fewer convenience stores near their

homes, short distal access to large parks and lower obesity prevalence. In addition, mothers who had the ability to move from neighborhoods with persistent disadvantage had considerably lower odds of being obese.

Being poor and obese also impacted child development and worsened their academic achievements (Echeverría et al. 2014). School absenteeism was higher in obese and poorer children compared to normal weight students. Studies also showed that poverty had an additive effect on school performance and school attendance in extremely obese children (Echeverría et al. 2014). Echeverría et al. (2014) demonstrated how missed school days, BMI levels and poverty exists on a gradient; that is, children who were less than 200% of the Federal Poverty Level (FPL) had almost twice as many absenteisms compared to children who fell within 200–399% of the FPL, with a 1.19 chance of missed days compared to higher income children with normal body weight. However, these same studies revealed that obese children at or above 400% of the FPL missed even more days of school compared to poorer obese youths. The researchers claimed that home instruction, preventive care and private educational support explained these findings. They resolved that higher income parents had greater access to these resources compared to lower income youths, which mitigated potentially deleterious ramifications from repetitive school absenteeism.

The poor have systematically been the direct targets of exposure to saturated fats and processed foods. Additional obesogenic environmental pollutants further exacerbated overweight, obesity leading to consequences such as diabetes mellitus especially among the poor. Among college-age Hispanics in Texas who suffered from diabetes, poverty and education accounted for these rates (Rehman 2016). Texas had demonstrably higher increases in obesity levels over the past few decades. These college-age youths claimed that persistent lack of financial resources and health insurance prevented them from purchasing prescribed medications to treat DM, restricted their food purchases to inexpensive, unhealthy meals and their inability to access doctors. Education was critical in their understanding of DM2. The majority of these cohorts perceived DM as inevitable and believed fruits were consumed only on special occasions. This shows how a lack of education and being poor impacts a cultural perception, creating a cultural perception of disease.

Given the evidence on the association between poverty, education and obesity, political beliefs varied and resolved that governments cannot dictate what people eat (Rehman 2016). However, political institutions have demonstrated in the past their political ability to protect consumers with laws to

guarantee safety. For example, the unprecedented deaths from tobacco products led to policies that restricted the use of the industry's products that had proven addictive elements. Electronic surveillance on prescription drugs limited unlawful usage. Automobile policies required that seat belts were developed and enforced for consumer protection. Irrespectively, the polity has not been led to restrict multinational food corporations that manufacture addictive obesogenic products on what to produce or sell; however, these companies benefit substantially from the marketing of these products to the poor. The pharmaceutical industry also profits considerably from obesity and diabetes expenditures—another means to exploit the poor.

The association between poverty and obesity showed that structural elements in poorer neighborhoods compromised principles of social justice (Graf and Schweiger 2016). Especially for poorer children, a transformation of the dominant ideology of liberalization directly contradicts chances for favorable outcomes in their life trajectory without the ability to access sufficient resources. The long-term consequences of living in persistent poverty remain eminent and requires society to establish livable conditions that guarantee children (and adults) access to healthy lifestyles. Children lack the capability to make certain choices and yet are still entitled to reside in communities that ensure adequate mental and physical growth and development. Therefore, while individualistic views on parental choices are important, societal and political responsibility and commitment towards the alteration of external (harmful) conditions can create meaningful circumstances where children can play, grow up, work, and grow old.

HEALTHCARE AND SOCIAL JUSTICE

For decades, health care in the U.S. followed the trajectory of market justice. As a commodity, health care was bought and sold as a good or service in the marketplace for individuals with the ability to pay (Navarro 1993). The need for healthcare reform was imminent; however, for several decades, former presidents opted not to deal with this issue on their political agenda since deliberating healthcare as a social benefit was met with pressure and resistance from insurance companies and wealthy corporate elites (Teitelbaum and Wilensky 2016; Blumenthal and Monroe 2009). At a minimum, former president Roosevelt succeeded in the passage of social protections for the poor and elderly to receive healthcare under the Social Security Act. Unfortunately, the pervasive market justice approach in

healthcare left millions of people uninsured, underinsured or receiving sporadic healthcare.

The essence of market justice undergirds capitalism, which is the pursuit of profit with the end goal of making additional profits (Swanson 2013). For the capitalist, consumer choices in competitive free markets increased business and ultimately more profits. Healthcare services followed this culture of capitalism for decades and created a fragmented healthcare system where comprehensive coverage for long-term care was unaffordable, and affordable healthcare coverage was out of reach. That is, until the Obama administration endorsed theories of healthcare as a fundamental right for citizens and successfully passed the Personal Protection and Affordable Care Act (ACA) of 2010.

The primary goal of the ACA was to increase access to healthcare coverage, especially for low-income persons who suffered the greatest from morbidity and mortality as a result of being uninsured (The Henry J Kaiser Family Foundation 2017a). The ACA achieved its goal with 10.5% of the population uninsured, a substantial decrease from 16.6% in 2013 and 18.2% in 2010. The ACA invested in critical programs to reduce health disparities and improve health outcomes. The ACA funded public health prevention programs, including in the workplace and mandated coverage for essential health benefits in all healthcare plans, prescription drug coverage and chronic disease management (The Henry J. Kaiser Family Foundation 2017b; Jaffe 2014). As previously noted, obesity screening was included in these provisions, including nutrition counseling and education for weight gain, obesity and DM2. Obesity treatments (surgery) were part of the ACA's provisions, however, states had exclusionary discretion. To date, 25 states included at least one obesity treatment for ACA enrollees. Persons with chronic conditions, including diabetes, were no longer denied healthcare coverage for pre-existing conditions and could rely on continued coverage if the costs for their medical expenses increased, due to medications or complications.

Since the implementation of the ACA, there have been continued threats by Republicans to repeal (or replace) it. In 2012, provisions in the ACA went before the Supreme Court; however, the ACA still remained the law of the land. More recently, the Trump administration proposed to replace the ACA with the American Health Care Act (AHCA) (The Henry J Kaiser Family Foundation 2017b). If passed, the new law would cut funds for Medicaid expansion, resulting in substantial loss of coverage for millions, including individuals with pre-existing conditions. If the ACA is repealed

and not replaced, more than 32 million people would lose coverage over time. Low income populations and minorities would be disproportionately affected. In addition, the current administration proposed a 17.9% budget cut for the U.S. Department of Health and Human Services, a 19% cut to funds for the National Institutes of Health and to eliminate funding for the Prevention and Public Health Fund (PPHF) by the end of 2018 (The Henry J. Kaiser Family Foundation 2017b; Centers for Disease Control and Prevention 2017). All funds allocated to PPHF beyond 2018 would be rescinded. The National Institutes of Health was tasked with conducting ongoing research to eliminate health disparities and in the development of effective interventions. The PPHF represented a national investment, established under the ACA to improve America's public health system. Many governors have been in opposition to the budget cuts to the PPHF, as this would eliminate public health and prevention programs in their state. In 2016, the Centers for Disease Control and Prevention allocated over \$625 million in grant funds to states for these programs.

If any current (or future) political administrations succeed in repealing essential provisions in the ACA, many more people would become uninsured or have inadequate coverage for chronic conditions or pre-existing conditions (Center for Budget and Policy Priorities 2017). Higher premiums would likely be charged for other health conditions such as repeated sinus infections, obesity or maternity care. There would be greater disparities in premiums between healthier consumers and persons with health issues compared to the premium gaps in 2009, prior to the implementation of the Affordable Care Act.

Rolling back federal protections in the ACA will regress society towards an individualistic perspective on the obesity epidemic (CBPP 2017). In the absence of a social justice lens, libertarianism upholds the ideal that obesity can be managed through private contracting arrangements (Yang and Nicholas 2011). Libertarians endorse *laissez-faire*; that is, government intervention is necessary except for property rights and defense. The libertarian views the presence of Big Government in the obesity epidemic as invasive and excessive, and regards what an individual eats as a personal choice. The consequence of such choices that result in policy interventions, inconveniently causes the healthy to subsidize the unhealthy. For example, the burden of the costs for obesity, under current reform measures, shifts excess costs for insurance premiums to firms and co-workers (of obese persons). Libertarian views would restrict government intervention and adjust premiums back to obese workers. Medicaid and Medicare costs are

12.5% and 8% higher (respectively) due to obesity prevalence, which impacts taxpayers. In addition, obesity costs employers between \$3 billion and \$12 billion annually as a result of loss productivity.

The progressive view situates health care reform for the obesity problem as necessary and successful to date (Yang and Nichols 2011). Policy interventions were implemented and evaluated and demonstrated, through food labeling policies, evidence of reductions in caloric intake and in employer-based efforts, along with documented weight loss in workplace wellness programs. The ACA is clearly an act of governmental redistributive efforts to increase a social benefit for marginalized members of society (Gunmar 2013). Given this, merely identifying access to healthcare as a social determinant of health is not effective if political will continues to impede sustainability of this critical material resource.

CONCLUSION

This chapter was contextualized in Rawls' theory to highlight the injustices that impede the greater good for a relative few societal members who suffer disproportionately from obesity. Structural arrangements cause injustices in the obesity epidemic and include economical, environmental, healthcare and food injustices (which is described in greater detail in the next chapter) and denies select members the opportunity to enjoy optimal health. When applying Rawls' theory to the obesity epidemic, everyone should have the right to enjoy equal access and opportunity to healthy foods, reside in non-obesogenic environments, have the economic ability to purchase healthy foods, with access to education and healthcare services to reduce morbidity and mortality from obesity and its related comorbid conditions.

Returning to capitalism and arguments for social justice, capitalist economies contributed to obesogenic environments and perpetually, predisposed populations over the life cycle to undernutrition or excess nutrition (Wells 2012). Globesity is contextualized in the capitalist global economy and is subjected to corporate forces and influence. This presents a class struggle such that the best interests of non-corporatists suffer the greatest in the obesity epidemic with excess morbidity, comorbidity, loss of wages and generational challenges—which is a matter of social justice. Therefore, interventions to eliminate this epidemic should follow the tobacco paradigm, with macro-level commitments to transform state and local environments. Public health interventions that target individual behaviors remain futile for a macroeconomic problem. Essentially, this calls for

the political will to alter economic decisions and arrangements towards a service to protect the most vulnerable members of society. Theories of the political economy approach are described in the next chapter to highlight macro-level options to achieve justice in the food industry.

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The Political Economy Perspective

Abstract The scientific literature is immersed with discourse on how individual risk factors and obesogenic pollutants in the built environment exacerbate obesity prevalence. This chapter deviates from the contemporary dialogue and focuses on a political economy perspective. This perspective calls for a macro-level approach in order to understand why higher levels of food insecurity and obesity persist in the most vulnerable communities in the U.S. and globally. The problem of food scarcity is linked to factors that contribute to obesity-related risk factors. The political economy lens recognizes this association and, therefore, explores larger dimensions; that is, institutions that influence the availability, production and dissemination of food products, the impact of profit maximization on food commodities and the effect of dominant social forces on decision-making. This chapter summarizes research findings associated with food inadequacy and the obesity epidemic to address the underlying political, economic and social factors that shape this discourse.

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Keywords Political economy • Food insecurity • Income inequality • Obesity • Multinational corporations

FOOD INSECURITY AND THE OBESITY EPIDEMIC

According to the Food and Agricultural Organization of the United Nations (2012) “Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life” (n.d.). In 2007, Food insecurity impacted 15.8 million persons in the U.S. (Congressional Digest Debates 2010). At least 8.3% of these households consisted of children experiencing food insecurity. The United States Department of Agriculture (USDA) reported that at least 0.8% of such households had irregular meal schedules, which is considered a severe case of food insecurity according to USDA standards. These dangerous levels of food supply increased from earlier findings at 0.5% in 1999 and 0.7% in 2006. In the U.S., food insecurity levels reached 17.6 million households (Coleman-Jensen et al. 2012). In addition, 7 million households experienced food shortages that caused at least one or more family members to reduce their food intake.

Adults with children in food insecure environments were more likely to have full time jobs, less than half were not high school graduates and more likely to reside in large cities or rural areas. However, during the recent recession, suburban areas showed substantive increases in food insecurity and resulted in greater usage of food assistance programs (Coleman-Jensen 2012; Andrews 2010). Food insufficiency in children was associated with a range of health conditions including frequent headaches, poor psychosocial development, depression, anxiety, and low achievement scores in math and reading (Brown et al. 2007). In adults, limited access to food resulted in loss of work productivity and higher medical expenses. Programs to assist food-insecure families included the National Lunch and School Program, Supplemental Nutrition Assistance Program (SNAP) and Special Nutrition Program for Woman, Infants and Children (WIC), totaling approximately 60 billion dollars from USDA resources. However, 32% of families did not benefit from these critical programs and were considered ineligible if their monthly incomes exceeded 185% of the poverty level.

Unemployment and poverty are key social determinants of health (SDoH) that impact the extent of food insecurity (Nord et al. 2014; Brooks and Matthews 2015). Poverty attributed to limited access to adequate and quality food sources and inconsistent meals (Jasbir-Kaur et al. 2015). National studies showed that food insecurity was associated with higher obesity prevalence among low-income boys and girls aged of 6–11 years old, compared to their food-secure counterparts. In addition, food-insecure children were likely to have higher prevalence of being overweight (Alaimo et al. 2001; Jasbir-Kaur et al. 2015; Casey et al. 2006). This occurred mostly in children who were eight years old or older. In contrast, food-secure children younger than seven years old were less likely to be overweight compared to their counterparts (Deitz 1995). The scientific literature is inundated with studies that link physical activity to the obesity epidemic; however, recent studies also show correlations between food insufficiency and a lack of physical activity (Fram et al. 2015). Hence, the scientific data is evident—the availability of less expensive foods high in dietary fat, and greater consumption of sugar and calorie intake contributed to overweight and obesity prevalence in lower income communities (Hilmers et al. 2012; Larson et al. 2009; McLaren 2007).

POLITICAL ECONOMY APPROACH: FOOD INSECURITY

The economics of food insecurity is clear. The Organisation for Economic Co-operation and Development (OECD) (2015) claimed that food insecurity is caused by a lack of access to affordable foods driven by substantial price increases on food products over the past decade. The World Health Organization (WHO) further acknowledged that market forces impacts individual choices to purchase unhealthy or an inadequate supply of food (World Health Organization 2005). Hence, poverty exacerbates food insecurity and reflects a lack of critical resources, primarily income, unavailable to the most vulnerable members of society. As millions of adults and children experienced food insufficiency, mental and physical outcomes deteriorated, billions of dollars were appropriated to medical costs and this burden on society ultimately impacted national productivity (Chilton and Rose 2009; Brown et al. 2007).

Scientists perceive the inequitable distribution of food where the poorest suffer the greatest as a matter of social justice—food justice to be more precise (Brown et al. 2007). The perception of food insecurity as an issue of justice shifts the discourse to recognizing the agents that can be held

accountable for the billions of people, globally, that lack an adequate food supply (Shiman 1999; OECD 2015). The accessibility of resources, which includes the income to purchase nutrient rich foods, to all social classes reflects a *political decision* on how to distribute such resources throughout society. Therefore, the unjust distribution of critical resources among all income groups can be explored from a political economy perspective (Raphael 2003). The political economy studies inconsistencies in the reliance of market forces versus social welfare programs to achieve equity in food security. In contrast, scientists argue that open trade diminishes food insecurity and benefits the poor (Brooks and Matthews 2015). Studies demonstrate that trade facilitates the availability of foods by enhancing agriculture in surplus areas and alleviating food shortages in places designated as food deficient zones. Brooks and Matthews (2015) argue that free markets or price elevation of food products does not threaten food security; rather, inadequate income hinders access to affordable foods. Therefore, social provisions are needed to offset income shocks (i.e. job loss) that contribute to the inability to purchase food. However, Nord et al. (2014) contend that the prevalence of food insecurity remained the same even after turbulent economic conditions improved in the U.S. after the recession and this was attributed to relative increases in food prices (Nord et al. 2014; Morrissey et al. 2014).

The pursuit for profit and the power of elitists group impact the production, consumption and distribution of quality foods throughout society (Weingast and Whittman 2006). Wealth exists in the form of access to money, capital, and land or other pertinent goods and services, which can be traded in free markets. This embodies how (and to whom) foods are disseminated throughout society. The political economy studies political behavior in the context of economic circumstances and social well-being and incorporates an assessment of the social structures that influence political decision-making (Weingast and Whittman 2006). For purposes of food insufficiency, this discipline examines how macro-level factors can cause persistent scarcity in resources, such as healthy food products, and subsequently predicts how these resources are ultimately distributed to persons in the lower socioeconomic classes. Food and biotechnology multinational corporations (MNCs) exercise such dominance over the food industry and benefit the greatest from conventional modes used in food production and profit substantially from increases in market price (Alkon and Mares 2012).

POLITICAL ECONOMY APPROACH: THE OBESITY EPIDEMIC

The economics of obesity is articulated in many ways in the scientific literature. Galvez et al. (2010) recommend investing in low-income communities to facilitate opportunities to reduce crime and enhance infrastructure in transportation and school systems to promote physical activity. In lower income families, economics is commonly discussed with respect to the body mass index (BMI) of children and the availability of inexpensive fast foods (Cawley 2010). In addition, studies show that among low-income children BMIs increased as the price of fruits and vegetables also increased. Many researchers also found correlations between poverty and obesity, while others implicate overweight prevalence is also common in higher income households given their capacity to purchase food. The outpatient medical cost of obesity in children is \$14.1 billion while inpatient costs totaled \$237.6 million. The cost to treat obesity-related illness in adults is approximately \$147 billion.

The economic factors that exacerbate the obesity epidemic can be framed from a macro-level analysis; that is, gauging the association of rising income inequality levels to the obesity crisis (Pickett et al. 2005). Income inequality measures the gap between the rich and the poor and the higher the degree of income and wealth among elitist groups relative to other members of society, the greater the degree of morbidity or mortality from obesity and obesity-related illnesses (Raphael 2003; Su et al. 2012). This theory claims that the inequitable distribution of income and wealth among the social classes drives higher rates of obesity prevalence and obesity related conditions, especially among persons in the lower economic stratum. This places the concept of the obesity epidemic distant from a discourse of individual related risk factors to a political economy lens and allows for a deeper exploration on how the pursuit for profits, even in the consumption and dissemination of corporations that produce food products, affects obesity or obesity-related conditions. (Winson 2004; Raphael 2003; Wells et al. 2012).

Studies associated income inequality and obesity prevalence as most problematic within wealthy nations (Wells et al. 2012; Avner et al. 2010). Poorer people in richer nations were more likely to have higher obesity prevalence. Among various nations, Japan, was noted for having the lowest income inequality levels compared to other OECD nations and the lowest obesity rates among men and women at 1.9% and 2.9%, respectively. In comparison, the U.S. and Mexico had the highest income inequality levels and corresponding high obesity rates compared to other OECD nations

(Su et al. 2012). Affluent countries saw substantial increases in body weight over the past three decades compared to non-affluent nations and this is attributed to the capitalistic nature of wealthier nations. Studies also show positive correlations among men in developed countries between calorie intake, income inequality and obesity rates (Pickett et al. 2005). Higher death rates from diabetes were linked to income inequality, such that people who were not wealthy experienced greater mortality compared to their elite counterparts. In addition, higher BMI in women and greater abdominal weight gain in men was associated with higher income inequality levels in the U.S.

Nations with economic growth at the forefront of their political agendas are negatively impacted by the obesity crisis. The infrastructure of societies that experience greater income disparities lack social cohesion and are vulnerable to the self-interest of powerful institutions. Multinational corporations freely exert their influence on decision-making and the availability of critical social provisions, such as access to healthy foods.

POLITICS: MULTINATIONAL CORPORATIONS, FOOD INSECURITY AND OBESITY

While the scientific literature is well documented on the importance of, and the accessibility and availability of, healthy food products in the built environment, especially in low-income communities, what is often omitted in these discussions is how the pursuit for profit maximization shapes the concentration and quality of foods that harm societies. More specifically, the literature lacks discourse on the role of multinational corporations in dominating the food industry and its power over political decision-making and the allocation of welfare provisions to improve food options.

The concept of sustaining food security started with a dialogue on a health and human rights perspective through the Universal Declaration of Human Rights (Jarosz 2011). However, resolutions to balance the supply and demand for food shifted to neoliberal ideologies, thus linking trade liberalization and capital accumulation to the discourse on the manufacturing and distribution of food (FAO 2000). The new political hegemony emerged in the food industry such that governments in capitalist and developing nations supported corporate interests and implemented neoliberal policies accordingly (Otero et al. 2013; McMichael 2000). Nations made provisions for deregulated markets to facilitate capital accumulation.

Influential international power structures, such as the World Trade Organization (WTO), supported corporate interests and encouraged neo-liberal policies to OECD nations including the agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). TRIPS was conducive to elitist interest for the protection of property rights for foreign investments in products and processes. (McMichael 2000). Given this, many U.S.-based multinational organizations capitalized on trade agreements and international policies that facilitated open markets to import foods to respond to the demand for food security. Multinationals had the power to monopolize profits during food production through biotechnology for the advancement of food production and contract farming, and also dissemination—elucidating dominant control over prices increases, sales and the amount of product supermarkets were able to purchase (FAO n.d.).

An example of powerful actors in the food industry are agribusiness multinational corporations (ABM). Their role includes food trade at the national level, but they have greater participation in the international markets (Otero et al. 2013). The agricultural business has evolved to the usage of biotechnology to expand its operations and progressive agricultural practices to multiple national markets worldwide in the pursuit of capital accumulation. The focus of ABMs is to sell artificially inseminated (transgenic) crops, which were developed to offset the effects of herbicides, causing farmers around the world to be dependent on their supply. These genetically modified foods (GMO) consists of an organism, such as a plant, whose DNA material was genetically altered, albeit not naturally, but through a biotechnological process causing the material to grow larger and at a faster rate. Currently, transgenic corn is the most highly traded commodity between ABMs and farmers. In addition, farmers owned their own seed stock; however, this stock is now genetically manufactured and disseminated by ABMs to farmers (Rifkin 1998). These genetically modified foods are protected under the TRIPS agreement. This, in turn, impacts the availability (and quantity) of food supply, especially in rural areas, worldwide. Social movements called for equitable access and control in the food industry for local farmers who may not otherwise have the resources to compete with multinationals. These farmers desire the ability to produce their own resources, and maintain local access to food supplies. In addition, agricultural corporate monopolies control the quality of foods imported in advanced capitalist nations. Quality or luxury foods contain fewer calories and consist of alcoholic beverages, fruits and vegetables, and require the production of labor in nations such as Mexico. Consequently, these same

foods are not available or affordable to most of the people who reside in these countries. A similar phenomenon exists in the U.S., where these luxury foods are costly and are unavailable in low-income communities or places that have been geographic classified as a food desert.

Corporate producers of genetically modified foods (GMOs) have been at the center of political controversy in the U.S. Given the crisis in global and national food insufficiency, WHO supports scientific evidence that the long-standing conventional agricultural system does not meet the current demand for extreme population growth, therefore contributing to food shortages (World Health Organization 2005). WHO cited food biotechnology as a more sustainable and valuable resource to alleviate hunger problems and eliminate food insecurity, because its rapid process increases food productivity, provides greater access to food for the poorest members in society, decreases diseased food harvests or crops impacted by inclement temperatures, and can increase the incomes of farmers who adapt to this process (WHO 2005). WHO further claimed that GMOs do not present a risk to human health. In addition, the U.S. Food and Drug Administration and the American Association for the Advancement of Science cited that the safety and quality of genetically engineered products is not compromised and, therefore, labeling products that contain genetically modified ingredients should not be required (U.S. Food and Drug Administration 2015; American Association for the Advancement of Science 2012). However, multiple independent surveys were conducted to determine consumer perception of GMOs, which showed, at nearly 100% unanimity, that consumers preferred GMO labeling (ABC News 2015; Consumer Reports National Research Center 2014; New York Times 2013). Overall, 52% of Americans were more likely to purchase foods labeled as grown organically compared to foods labeled with genetically modified ingredients. A 2015 ABC poll showed that 62% of women and the majority of young adults believe genetically modified products are unsafe and 13% of the population is uncertain of the risks posed by such products.

Given consumer perception of genetically modified ingredients, food and biotechnological corporations could lose substantial profits if policies that require GMO labeling are implemented. Corporate food and biotechnology companies, such as the Grocery Manufacturers Association, Campbell's soup, Abbot Laboratories and Coca-Cola, spent millions in lobbying efforts in the first two quarters of 2014 to block legislative efforts requiring mandatory labeling of foods with genetically modified ingredients

(Environmental Working Group 2015). Expenditures by these GMO corporations totaled \$28.3 million, more than doubling the amount spent by GMO labeling supporters. Food and biotechnology corporations use these funds to enlist congressional support to oppose bills and policies enacted by states to label GMO products. Several states have already passed GMO labeling laws and 30 others proposed similar bills in 2013 and 2014. However, the Safe and Accurate Food and Labeling Act of 2015 was passed in the House of Representatives in July, with provisions to ban states from passing GMO labeling laws and to permit the FDA to label GMOs as “natural” products or omit labeling any ingredients on food labels as bioengineered (H.R. 1599, 2014).

The Fast food industry is another MNC that has infiltrated the built environment since the 1970s (Albritton 2010a). The largest fast food restaurants include McDonald’s and Yum corporations, which include Taco Bell, Pizza Hut, KFC (Assadourian et al. 2004). The largest soft drink MNCs include Coca-Cola, Pepsi, Cadbury Schwepps and Nestlé. These food and drink MNCs are relatively inexpensive to purchase and have been recognized for their contributory risk factors for obesity, excessive weight gain, diabetes and the prevalence of other chronic diseases in the U.S. and worldwide (Stuckler et al. 2012; Vartanian et al. 2007). As poverty increased in the U.S. and worldwide among young adults and children, the purchase of products from food and drink MNCs also increased among these age groups. With easy access to immediate food preparation, this allowed Americans to consume foods expeditiously in a fast paced society. Their products are deficient in nutrients, are high in salt and sugar as well as calories (Albritton 2010b). The soft drink industry acquired substantial profits for their unhealthy products due to their minimal expenses in production and the long shelf life of the products (Stuckler et al. 2012). In restaurant-driven MNCs, their massive and expeditious consumption resulted in increased manufacturing of products such as beef, to meet the demand (Albritton 2010a; Schlossor 2001). Beef production, which utilizes the meat packing industry, receives the greatest revenues compared to other agricultural products in the U.S. Consequently, the exploitation of workers involved in its assembly resulted in insufficient pay, challenging working conditions and high rates of work-related injuries.

Supermarkets also participate in the global food markets as circuits to retail products for MNCs. The goal is to increase capital from seed to supermarket to undermine the activity of profits from local farmers in the food industry. Wal-Mart is among the top five supermarkets that warehouse

commodities produced by MNCs and transport such products to consumers (McMichael 2005).

The United States controls the largest food industry in the world, yet millions of people still suffer in America from hunger or food insecurity or an inadequate supply of nutrient-rich foods (McMichael 2000). Consequently, the discourse on food insecurity can be situated in the political economy context due to the dominant controlling interests of food industrialized MNCs, the exploitation of labor, inequality of opportunity for labor to participate in the marketplace and the inequitable distribution of food resource allocation to the poorest members of society (Holt-Gimenez and Wang 2011).

CONCLUSION

This chapter purports that the political decisions to maintain corporate interests to resolve food insufficiency demonstrates major shortcomings. While the OECD, WHO and government officials acknowledge causal drivers of food insufficiency and the obesity crisis, the common denominator is the power of MNCs to operate without constraints in pursuit of capital accumulation at the expense of the poor. Prior efforts to achieve the goal of food security through privatization was ineffective and led to grave food injustices including substantive increases in poorer households with intermittent periods of food shortages and a compromise on the quality of foods available to these households. Corporate influences have been a dominant force in political decision-making, thus impacting the availability of social welfare provisions to labor workers or ordinary citizens. In the absence of addressing macro-level forces, efforts to eliminate food insecurity will prove to be futile or lack sustainability.

Policy recommendations to reallocate income or foods can provide sufficient protections to improve the social well-being of the poorest members of society. Human social capital can benefit from excess capital through investments in social welfare programs. The current discourse in which we articulate food security should undergo modification to address macro-level approaches and perhaps the trends in the number of families who experience food insecurity in the U.S. will also begin to diminish as well.

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Policy Solutions

Abstract Legislative activity represents a sustainable opportunity to improve health disparities and health outcomes over the long term. With this in mind, this chapter is devoted to policy solutions that address the social determinants of health related to the obesity crisis. This chapter consists of an overview of existing policies and programs at the national and global levels that were proposed, enacted or implemented in an effort to lessen the burden of obesity. While not exhaustive, a range of policies at state and local levels are also discussed.

Keywords Obesity • School policy • Food policy • Zoning policy • Healthcare reform

This chapter consists of a repository of obesity-related policies in the U.S. that were proposed, formulated, successfully implemented and/or enforced. The scope of policies described attempted to reduce the prevalence of obesity and spanned various levels of government including federal, state, local, community, school-based, college-based, worksite and clinical health levels. The milieu of policy initiatives discussed were enacted as preventive measures to circumvent or lessen the burden of obesity in the U.S. Frieden, et al (2010) These policies led to programs that exposed low-income children and adults to greater access to healthier foods and physical activity. Other federal, state and local initiatives provided nutrition education, wellness programs and

programs to eliminate food deserts. In addition, health care reform efforts passed legislation which gave states the option to finance obesity education and treatment.

Below, is a range of mainstream policies associated with the obesity discourse:

SCHOOL-BASED POLICIES AND PROGRAMS

Child Nutrition Act of 1966

The Child Nutrition Act was enacted by former President Lyndon B. Johnson. This policy was developed to oversee all federal programs that provided food and nutrition education to children and families (City Harvest 2016). These federal programs included school-based breakfast and lunch programs in public and nonprofit schools and the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). This law is reauthorized every five years.

Child Nutrition and WIC Reauthorization Act of 2004

The aforementioned legislation was enacted in 2004 and required federally funded schools and programs that participated in the national school breakfast and lunch programs, milk program and afterschool snack program, to implement wellness policies by the 2006–2007 school calendar year (Bridging the Gap 2014). Wellness policies incorporated physical activity, daily nutritional meals, healthy beverages and snacks to children, periodic updates on implementation efforts to appropriate stakeholders and designated persons to ensure compliance.

Healthy, Hunger-Free Kids Act of 2010 (P.L. 111-296)

Former President Barack Obama reauthorized the Child Nutrition and WIC Reauthorization Act under the aforementioned statute. Reform efforts included additional oversight by the Secretary of Agriculture on the school breakfast and lunch programs and expanded access to healthy foods and physical activity to low-income children (NCSL 2017b). The Secretary received increased authority to monitor food distribution and enforce nutritional standards. This change permitted the secretary to set guidelines for food products, food safety and recalls. In addition,

low-income children benefitted from reform efforts. For example, foster children were automatically eligible for free school meals. Children who resided in high poverty communities were no longer required to complete an application to participate in the free school meals program—they were automatically accepted. Nearly \$2 million was awarded to states to expand their breakfast programs in schools where at least 75% of children were eligible for free meals. Restrictions were removed from nonprofit summer food service programs that originally limited the number of sites they were permitted to operate and the number of children who received meals. Overall, an additional \$10 million grant was awarded to maintain summer food programs.

The Afterschool Meals Program, which operated through the Child and Adult Food Care Program, expanded program initiatives to provide healthy food, snacks, increased physical activity and media time to all 50 states in afterschool programs, child care centers and homeless shelters. Prior to reform, only 13 states participated. Funding for the Supplemental Nutritional Assistance Program (SNAP) changed from a federal matching state funding program to open-ended funding. SNAP became a two-year grant awarded to states, based on expenditures from prior years and current year projections. States were also allowed to carry unused funds. These various expansion initiatives allowed the Secretary of Agriculture to establish benchmarks to monitor state performance to achieve the policies' targeted goals.

Physical Education, Physical Activity and School Recess Legislation

After the passage of the Child Nutrition and WIC Reauthorization Act, some schools encountered barriers to implementing physical education due to cost and competing time constraints. As a result, many schools implemented recess-related policies and proposed bills to adhere to national recommendations for physical activity (Active Living Research 2017; NCSL 2009, 2014; Peaceful Playgrounds n.d.). For example, House Bill 273 was approved in 2017 in the state of Georgia with provisions for 30 minutes of daily unstructured recess time for elementary school children. In Indiana, Public Law 54 was enacted in 2006 and required schools to implement daily physical activity, which could include recess but should also align with student curriculum and programs. South Carolina enacted SC HP 3499, Act 102 in 2005 and mandated elementary schools to assign a physical education director to implement physical activity programs before, during and after school instruction. Programs included dance, recess, fitness trails,

bicycling and walking programs. Arkansas adopted AR HR 1023 in 2007 and required 10 minutes of recess time in the morning and afternoon for grades K-6. Oklahoma passed HB 1601 OS 70-11-103.9 in 2007 and encouraged schools to incorporate 20 minutes of recess daily in addition to the 60 minutes students received for physical education and intermittent breaks for physical activity. Massachusetts proposed MA HB 478 in 2013 and required all public and charter schools to offer physical education to all grades and 30 minutes of physical activity, which could include recess. New York proposed NY SB 2374, in 2013 to instruct elementary and secondary schools to incorporate at least 120 minutes per week of physical education and exercise, including instruction on obesity-related health risks and education on proper nutrition. This proposed policy also applies to students with disabilities and students in alternative educational programs.

BMI Screening, Surveillance and Reporting or Student Fitness Screening at Schools

Many states enacted legislation to measure student BMI levels to determine potential risk factors for childhood adiposity (NCSL 2014). States considered BMI screening as both convenient and inexpensive since it only required student measurements of height, weight, and gender. Some states conducted BMI surveillance to monitor statewide trends, community health and obesity-related program evaluations. Some states have proposed BMI surveillance, while others prohibited data collection efforts on BMI status of children. BMI results were disclosed to parents along with suggestions to improve health status.

Student Diabetes Care

Some states enacted policies to respond to the need for clinical care for children diagnosed with diabetes (NCSL 2014). The following states enacted legislation to permit clinical school staff or proposed dedicated staff to administer medication (insulin or glucagon) to children with diabetes: Arizona, Arkansas, Connecticut, Florida, Georgia, Illinois, Indiana, Missouri, Nebraska, New Jersey, Tennessee, Texas, Rhode Island, Utah, West Virginia and Virginia. Parents were required to provide schools with diabetes equipment.

Statewide Farm to School Programs

To bridge connections between agriculture and education, school districts purchased local foods from farmers or local distributors, fishermen and ranchers from school gardens, both on or off school property, to increase access to healthy foods in schools (U.S. Department of Agriculture 2017; National Farm to School Network 2014). Congress issued \$5 million in 2010 to USDA for states to initiate Farm to School grants to facilitate the program. To date, 46 states enacted policies on Farm to School legislation, doubling since the 2012–2013 fiscal year, which only consisted of 20 states. Students received education on appropriate food choices and through farm field trips. Food quality improved in more than 12,300 schools across the country as farm to school programs provided poultry, fruits, vegetables, grain products, herbs, rice, dairy and cereals to local schools. In addition, farm to school policies enhanced economic productivity in the farming industry.

School Facilities

In an effort to expand opportunities for children to play and exercise, school districts and city governments formalized joint agreements that permitted students to play on school property (National Conference on State Legislators 2014). When not in use, children had access to school playgrounds, open school fields and gymnasiums. In 2013, Arkansas enacted AR SB 1062, which permitted school facility usage for community activities outside of school hours. School districts were allowed to charge fees for property use. California passed CA AB 1359 with provisions for parks and recreational spaces to enter into shared use agreements with school districts and other public districts to provide access to such properties.

FOOD POLICIES

Farm to School Act of 2017

The Farm to School Act of 2017 was proposed in order to extend funding to additional communities and schools that can benefit from the existing Farm to School Program (National Farm to School Network n.d.). Currently, the demand exceeds program funding. Since program inception, 1600 applications were received, however only 365 applications were

approved for nearly \$25 million. Hence, the bill proposed to increase funding to child care centers, summer food programs, tribal schools and producers, as well as an increase of \$10 million in mandatory funding each year.

Nutrition Labeling and Education Act of 1990

The Nutrition Labeling and Education Act (NLEA) replaced the Food and Drug Cosmetic Act (FDCA) of 1938 (U.S. Food and Drug Administration (FDA) 2017). The Affordable Care Act amended the Food and Drug Cosmetic Act. The original law designated The U.S. Food and Drug Administration as the agency to oversee and protect the safety of consumers from harmful food, drugs and cosmetics. This law prohibited misbranded foods. The passage of the NLEA gave the FDA exclusive authority to require all food packaging to have nutrition labels that displayed nutrients, serving sizes, carbohydrates and sugars (Institute of Medicine 2010). Meat and poultry was regulated by other U.S. agencies. The provisions in the NLEA applied to restaurants, chain restaurants and vending machines. This amendment marked the most significant legislation in 50 years relative to food labeling. The NLEA mandated that calories derived from total fat, cholesterol, vitamins and iron were displayed for consumers. Foods with an insignificant number of calories were omitted from nutrition labels. Some states and cities passed legislation similar to the FDCA (National Policy and Legal Analysis Network 2012). For example, New York City and California banned restaurants from serving foods with trans fat and San Francisco banned the use of polystyrene foam as a take out container in restaurants. In Watsonville, California, licenses are only permitted to new restaurants if they proved to have healthy food options.

Zoning and Fast Food

Zoning reflects actions by the state or cities governed by the state to control building heights, enforce restrictions to sustain unbuild land, and control land and/or building use (Mair et al. 2005a). The latter reflected opportunities to create healthier food markets and to prohibit the proliferation and/or location of fast food retailers. Zoning laws represented legitimate ways in which police powers have been exercised to promote the public's health, safety and welfare. Zoning laws were implemented as a tool to reduce access to unhealthy options and to increase opportunities for

healthier alternatives. The scope of zoning laws varied in different states. For example (Chiqui et al. 2012): In 2010, Los Angeles, California placed a moratorium on new land use for fast food outlets in South Los Angeles (Los Angeles City Council General Plan Amendment, 10-1843 (2010)); In Concord, Mass, initially, drive through fast food outlets were banned but, by 2008 and 2009, the towns of Concord and Calistoga banned fast food restaurants (Town of Concord, Mass. Zoning By-Laws 4.7.1 (2008) and Calistoga, Cal. Municipal Code §17.22.040 (2009)); In 2008, Detroit, MI issued an ordinance to restrict fast food outlets within 500 feet of elementary, secondary and high schools (Detroit, Mich., Municipal Code § 61-12-91 (2008)); In Ohio (1987), the Supreme court ruled in favor of the City of Cincinnati against Franchise Developers Inc., who wanted to develop a Wendy's restaurant with a drive-in services (Mair et al. 2005b). The city wanted to preserve the pedestrian characteristics of the neighborhood and inhibit an automobile oriented community.

Taxes on Sugar Sweetened Beverages

Prior scientific research associated weight gain in children and adults with consumption of sugar sweetened beverages (Marrow 2011). Additional health issues related to intake of sugar-based drinks included higher risk factors for cardiovascular disease and DM2 and dental cavities (American Heart Association 2017). Given these public health concerns, the World Health Organization (WHO), and more locally, the (CDC) for Disease Control and Prevention encouraged fiscal policies to tax sugary beverages as a measure to protect consumers from unhealthy products (WHO 2017; Centers for Disease Control and Prevention 2017). Excess fees from the imposed tax were allocated toward public health initiatives to reduce the economic burden of obesity. Prior research on pricing policies for tobacco and alcohol consumption proved effective in reducing product utility.

There are various types of pricing policies on sugary drinks, which include regulatory fees, sales taxes, excise tax and proportional pricing initiatives (Marrow 2011). Regulatory fees were imposed on businesses that distributed products and subjected to police powers. Consumers were burdened by sales taxes on sugary drinks; however, consumers were not always aware of the increased price imposed on a specific product. Sales taxes were not often displayed in product marketing and were often applied to final purchases invisibly, in such a way that the tax does not appear associated with any specific product. Excise taxes were imposed on the consumer, producer and retailer. The retailer includes vendors, cafeterias, fast food restaurants, or

convenience stores and the higher retail marketed price was transparent. The tax is based on the volume or per ounce or gram of the sweetener. Proportional pricing requires excess costs relative to the size of the beverage sold. That is, the larger the sweetened beverage, the higher the cost. These pricing policies were enacted on sweetened beverages based on the political landscape of a state or local level government.

Pricing policies for sales taxes on soda were implemented in 34 states including Washington D.C. and 39 states imposed taxes on sodas in vending machines (Chriqui et al. 2014; County Health Rankings 2017). The average sales tax in these 34 states was 5.172% on soda products and the average sales tax on sodas sold in vending machines was 5.261%. Twenty states imposed higher sales taxes on soda compared to general taxes on food products. Only seven states implemented taxes at the distributor, wholesaler or retailer levels on other sugary beverages such as syrups and powder mixes. Berkeley, California was the first city in the nation to impose an excise tax. In Berkeley, the first penny per ounce tax was implemented on sweetened beverages. Other cities followed with similar policies, including Boulder, Colorado, at two cents per ounce; Cook County, Illinois, at one cent per ounce; Philadelphia, Pennsylvania, at one and a half cents per ounce; and three more cities in California add one and a half cents tax (San Francisco, Oakland and Albany). Rhode Island enacted legislation in 2013 to tax distributors, wholesalers and manufacturers on sweetened beverages and direct the proceeds to fund prevention and wellness programs (National Conference on State Legislators 2017a). California, Virginia and Utah imposed statewide local taxes at 1% and 1.25%, respectively (Chriqui et al. 2013; Chriqui et al. 2014).

While such efforts were aligned with public health initiatives, some research indicates that the taxes were too low to alter consumer behavior; however, evidence on the taxes on can sodas imposed in Berkeley, California, showed a decrease in product consumption by 21% and a 63% increase in water consumption (Falbe et al. 2016). In fact, neighboring cities increased sugar sweetened consumption by only 4% and increased water intake by 19%.

Food Deserts

Given that many rural and urban disadvantaged communities have been designated as food deserts and the populations affected were disproportionately African American, policymakers, more specifically African American lawmakers, spearheaded funding and policy initiatives to alleviate food

deserts nationwide (National Black Caucus of State Legislators 2017). In 2014, the Agriculture Policy Committee in Resolution AGR-14-09 addressed the elimination of food deserts by increasing access to healthy and affordable foods, including farmers markets and expanded grocery stores to underserved areas. As a result, New Jersey enacted the Fresh Mobiles Pilot Program in 2012 (AB 3688/SM 2728). Refrigerated trailers and vans of local vendors and food producers were linked to NJ cities identified as food deserts. In 2008, Washington enacted the Local Farms Healthy Kids Act (HB 2798/SM 6483). In addition to improving school nutrition, provisions were made to address food deserts by issuing coupons to low-income families to shop at farmers' markets and mandated markets to accept the coupons. Illinois adopted the Farmers' Market Technology Program (HB 4756) in 2010 to provide funding to vendors at farmers' markets to purchase equipment that would allow them to accept electronic sales from recipients of nutrition benefits coupons.

OBESITY AWARENESS AND TREATMENT

Health Promotion

Legislation and resolutions were adopted in various states to increase public awareness of childhood obesity (National Congress for State Legislators 2017). For example, in 2013, Louisiana enacted LA HB 214 to fund initiatives aimed to engage and educate parents of children in the public school system on the importance of sleep and proper nutrition to enhance student achievement. North Carolina implemented NC SB 402 in 2013 to fund health education, physical activity and wellness programs.

Public Health Programs

Funding provisions toward national investments to protect the public's health were enacted in Section 4002 under the Personal Protection and Affordable Care Act of 2010 (U.S. Department of Health and Human Services n.d.). The Prevention and Public Health Fund was created and represented a dedicated funding stream to expand the nation's public health initiatives, clinical programs, research, public health workforce, surveillance and to transform communities. The U.S. Department of Health and Human Services (HHS), served as the implementing agency, and allocated funding to state and local governments for programs that focused on

chronic diseases (i.e. obesity and diabetes), tobacco control, Alzheimer's disease, healthcare associated infections, immunizations, lead poisoning, breastfeeding, suicide, early child care and access to care. Administered by CDC, programmatic initiatives included the Racial and Ethnic Disparities to Community Health (REACH). In fiscal year 2017, CDC received \$50,950,000 for REACH program initiatives. REACH funded recipients were nonprofit organizations, tribes, local health departments and academia. Since 1999, REACH awardees created and disseminated culturally sensitive intervention programs that addressed a range of chronic diseases that impacted African Americans, Hispanics, Asian Americans, and Alaska Natives and Pacific Islanders. CDC also received \$324,350,000 to improve access and coverage to immunizations for children and adults. The Administration for Community Living received over \$14 million to issue grants to raise awareness and expand services for Alzheimer's disease and related disorders. The Substance Abuse and Mental Health Services Administration received \$12 million to fund statewide suicide prevention programs.

Marketing

The World Health Organization, based on scientific evidence, called for nations to restrict fast food marketing to children due to the relationship between fast food consumption and BMI levels (WHO 2014). WHO encouraged governments to eliminate these advertisements and the marketing of other unhealthy food products (salt, sugar, etc.) to children. As a result, the United Kingdom banned advertisements of unhealthy food products during children's programs. Prior to the WHO's warnings, in 1980, Quebec banned junk food advertisements to children, and today, the province has the lowest obesity rates compared to other areas in Canada, which experienced increasing obesity prevalence similar to other nations (Musemeche 2012). In 2012, Chile enacted the Law of Nutritional Composition of Food and Advertising (Ley 20.606), which restricted advertisements of unhealthy foods in television programs, radios, websites, and magazines, and in schools to children under 14 years of age (World Cancer Research Fund International 2017). Ireland passed similar legislation which targeted children 18 years and younger (Children's Commercial Communications Code, 2013 revision). In Taiwan, advertisements for foods high in fat, sodium and sugar could not be televised between the hours of 5:00–9:00 p.m. (Regulations Governing Advertisement and Promotion of Food Products Not Suitable for Long-term Consumption by Children,

pursuant to Article 28 Paragraph 3 of the Act Governing Food, Safety and Sanitation). In 2010, Sweden implemented the Radio and Television Act, which not only prohibited marketing unhealthy foods to children under the age of 12, but also banned celebrities from participating in these advertisements.

Currently, the U.S. lacks policies that ban fast food advertisements that target children (Graff et al. 2012). The food, advertisement and entertainment industry claimed that regulation at this level blocks first amendment rights. However, opponents argued that children lacked the cognitive ability to critically evaluate advertisements and, therefore, legislative initiatives should consider increasing consumer protections, especially for younger children. In fact, government interventions on advertisements are allowed under the first amendment if such ads prove in any way to mislead the public. In 2006, research showed that over \$2 billion was spent on advertisements that marketed unhealthy food products to children by the largest food companies (Food Trade Commission 2012). Research evidence also demonstrated that the content marketed was tailored to mostly target Hispanic and African American children (Grier and Kumanyika 2010). In 2013, the industry spent \$8 billion to attract Hispanic consumers and over \$2 billion was spent marketing to African American consumers (AdAge 2012). However, by 2016, food-related television advertisements decreased by 57% and marketing for fruits and vegetables more than doubled between 2007 and 2016 (Frazier and Harris 2017).

Insurance

In 2004, Medicare expanded coverage to include obesity treatments. By 2014, provisions in the Affordable Care Act prohibited cost-sharing or deductibles for obesity screening and counseling for adults and children (National Conference on State Legislators 2017a). In addition, insurance companies were not allowed to impose premium surcharges on people who were obese. In 2012, 33 states offered at least two types of coverage, bariatric surgery and nutritional counseling and therapy, for obesity diagnosis and treatment. At least 23 states covered gastric bypass surgery, which reduces abdominal size. Prior to the ACA, only five states had this mandate. Currently, 16 states mandate coverage for dietary counseling, therapy, weight loss programs and counseling for obesity. Four states, Virginia, New Jersey, Indiana and Georgia require obesity coverage in health plans.

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Justice for All

Abstract This chapter concludes with a summary of the various perspectives that contributed to the ways in which the obesity problem was defined over time. This chapter also describes the action-oriented responses by public health practitioners and policymakers, the shortcomings associated with each response and how this hindered potential progress in reversing the obesity crisis. A new model to redefine this epidemic is proposed and provides greater accountability to the macro level forces that impede progressive movements. These forces can potentially reverse the trajectory of this epidemic.

Keywords Capitalism • Neoliberalism • Social determinants of health • Individual accountability • Social justice • Discursive democracy • Transnationals • Policymaking • Laissez-faire • Distributive justice • Humanitarian

The U.S. spent decades in discursive rhetoric on the obesity crisis, citing the simplicities required to produce behavioral change. Public investments were made in programs that defined strategies focused on personal accountability. This ultimately resulted in producing our current environment of unprecedented obesity prevalence at both the global and national levels

because the root cause of the problem remained hidden. The underlying determinants for rising obesity levels and obesity-related chronic conditions could no longer be ignored. Research scientists began to shift the paradigm of individual blame attributed to racial, ethnic and cultural characteristics and grasped broader approaches to identify the social determinants of health (SDoH).

We can applaud global and national organizations and public health initiatives that have embraced the critical determinants that influence the context in which individuals make choices. We can appreciate an extended conversation on the range of issues associated with the SDoH to help us evaluate why unprecedented obesity rates in adults and children persist. Issues of discrimination, or income and food insufficiency, added to the discourse. But merely stating and researching the critical factors that exacerbate obesity is not enough. Action-oriented approaches, that is, the development of sustainable policy solutions, provided opportunities for the SDoH to become more accessible, especially in disenfranchised populations and communities.

The paradigms adopted on the obesity epidemic in the U.S. dictated the type of policies that came to fruition. When the paradigm focused on individual accountability, funding towards government agencies (National Institutes of Health and Centers for Disease Control and Prevention–CDC) centered on behavioral interventions. After WHO and the CDCs shifted their perspective on the causes for obesity to the SDoH, a Health in All Policies approach evolved with the intent to adopt legislation aimed to improve equity in the distribution of the SDoH, especially in lower income communities. The CDC incorporated the SDoH as a priority for the nation’s health agenda by the year 2020. Environmental policies on zoning restrictions were adopted at the local level to limit the proliferation of fast food restaurants as a strategy for environmental justice movements. Funding to improve access to insurance and obesity education prevailed and programs to improve the availability of healthy foods were inducted into mainstream politics.

Policymaking is instrumental in acknowledging the need for government accountability (and assistance) in reversing obesity trends. However, when political ideologies are influenced by external forces, then a *laissez-faire* paradigm on the elimination of health disparities, improving health outcomes, or access to health services dominates the discourse. Policy as a solution to any given health problem is then constrained, non-existent or

more transparently, underfunded. External forces from capitalist pursuit for profit have, and continue to be, a sovereign influence in health care decision-making. Policymakers rely on capitalists to finance their campaigns. Transnational corporations trade goods and services worldwide and increase the level of wealth generated in the U.S. While capitalism can be good for any given nation (and some may argue this), if profit maximization moves at an accelerated rate this has, historically, impacted the degree in which an equitable social system can coexist.

Capitalism, or more specifically, neoliberalism, has systematically created and sustained a poorer economic class. The U.S. social system has historically segregated newly migrating groups, including the Irish, Jews, Italians, African Americans and Hispanics, which inherently impacts economic advancement. There has been a historic need to loudly (scientifically) identify which minority groups were worse off than others. Today, African Americans and Hispanics dominate the scientific literature on rising obesity rates. This, I argue, creates a divergence from the fundamental problems in our political, economic and social system and results in a victim-blaming paradigm from an economic system that allocates very little to lower income populations. The need for a discursive democratic paradigm that embraces a political process founded on principles of intrinsic humanitarianism, social justice, food justice, distributive justice, environmental justice and sufficientarianism can potentially change the trajectory of the obesity crisis. The manifestation of neoliberal undertones would fail to prosper under these circumstances. In the absence of applying this discursive democratic paradigm, the obesity crisis would continue to follow this contextual approach:

<i>Racial and ethnic characteristics</i>	<i>Social determinants of health</i>	<i>Policy approaches</i>
Capitalism/neoliberal—undertones of personal accountability	Accelerated capitalism restricts access to critical resources	Capitalist ideology influences decision-making
Laissez-faire strategies	Underfunded social programs	Lack of policy enforcement/critical policies are blocked
Underfunded social programs		Underfunded policy initiatives

A discursive democratic paradigm follows this approach:

<i>Racial and ethnic characteristics</i>	<i>Social determinants of health (accessible)</i>	<i>Policy approaches</i>
Humanitarianism	Difference principle	Difference principle
Paternalism	Sufficientarianism	Distributive justice
Government accountability to public discourse	Distributive justice	Government accountability to public discourse

The pursuit for social justice in the obesity crisis requires governments (federal, state and local) to uphold their responsibility and give greater accountability to the least disadvantaged members of society who suffer the most. This requires confining the values of wealthy elitists in political decision-making. Healthcare reform efforts benefit members who were persistently uninsured and if obese, provided access to education, counseling and treatment. Policies that resulted in programs that provided access to healthy foods could consider expanding funding opportunities to reach additional communities in need. However, these initiatives become constrained in the face of transnational corporations that profit the most from the obesity epidemic—that is, the food, marketing and pharmaceutical industries (to name a few), at the expense of the least advantaged. The capacity to live in environments where individuals have the freedom to make healthy choices is an economic good and service to society that should be valued and protected. Simply put, a social justice perspective matters.

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