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A Comparative Study on the Differences in Policies Contributing to Childhood Obesity in the United States and Child Malnutrition in Sub-Saharan Africa

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Childhood obesity in the United States has reached an epidemic state. Child malnutrition in Africa has reached an epidemic state. The objective is: To analyze the policies that have contributed to childhood obesity in the United States and malnutrition in Sub-Saharan Africa.

Data: Trust for America's Health; for childhood obesity. Database by Dr. Lykens and colleagues for child malnutrition. Analysis performed on childhood obesity and malnutrition. Findings: Public policies have contributed to this wide nutritional disparity in these two areas. Recommendations: The policies that have contributed to these can also serve as an avenue to reverse them; Africa should learn from the West to improve food security.

A COMPARATIVE STUDY ON THE DIFFERENCES IN POLICIES
CONTRIBUTING TO OBESITY IN THE UNITED STATES AND
MALNUTRITION IN SUB-SAHARAN AFRICA

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MALNUTRITION IN SUB-SAHARAN AFRICA

THESIS

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University of North Texas
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By

Mathias Kwadwo Akuoko, BA, MPA

Fort Worth, Texas

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CHAPTER 1

INTRODUCTION

Obesity and its related diseases in the United States are increasing at an alarming rate. Obesity is one of the fastest growing health problems in the country, and one of the most serious chronic conditions of our time (Sampsel and May; 2007). Evidence from several studies shows that obesity and overweight are associated with many co-morbid conditions including type 2 diabetes, high cholesterol, high blood pressure, stroke, and certain cancers (Ford et al; 1997). Obesity has been linked directly and indirectly to cause the death of over 300,000 people each year in the United States (Mokdad et al; 2003), and it is estimated that obesity is affecting over 72 million adults in the United States (Ogden, et al, 2007).

This increasing epidemic has attracted the attention of healthcare stakeholders to address what is gradually overtaking smoking as the number one preventable cause of death in the United States. This is due in part to the fact that no state has as of 2007 been able to meet the objectives of Healthy People 2010, which focused on reducing obesity prevalence rate among adults in the United States to 15% (CDC, 2008; HHS, 2000). The trend toward increasing obesity and overweight in children and adolescents continues despite a national campaign of educating adults, adolescents, and children on the dangerous effects of obesity (National Center for Health Statistics [NCHS] 1999).

As the United States and for that matter its colleague developed nations are saddled with the increasing obesity and overweight rates due mainly to too much calorie intake against too little physical activity, and thus threatening the health of the nation, there is a part of the world, Africa south of the Sahara, which is facing an unprecedented health problems as a result of malnutrition and its associated co-morbid conditions due mainly to inadequate food and food nutrients needed to sustain the body's growth and resistance to infectious diseases.

A release by the World Health Organization (WHO) estimated that about 20 million children suffer severe malnutrition worldwide, which leaves them more vulnerable to serious illness and early death (WHO; 2009). Malnutrition has reached alarming proportions particularly among vulnerable groups. Over one third of all child deaths are linked to malnutrition, and children in developing countries according a WHO report are ten times more likely to die before the age of five than children in developed countries. Each year, 3.5 million children aged below 5 years die of malnutrition in Sub-Saharan Africa (WHO; 2006), and among the cause of this epidemic are inadequate food, lack of good drinking water and poor sanitation, and man-made and natural disasters among others.

Information with respect to malnutrition and under nutrition in low income countries particularly sub-Saharan Africa, are considered important for at least two reason. The African Union (AU), the World Bank, FAO, WFP, UNICEF, and the WHO are unanimous in their contention that hunger and malnutrition are unacceptable infringement of human well-being and human dignity, and its eradication is a development goal by itself (Nube; 2005). It is in line with this that,

one of the objectives of the Millennium Development Goals is to reduce the prevalence of hunger globally by 50% between 1990 and 2015(World Bank, 2002). However, the state of hunger in this world particularly in Africa is very much unlikely to reach that goal.

The second consideration for information on malnutrition and under nutrition is the fact that the prevalence of under nutrition in children is among the mostly used indicators to characterize poverty and food security conditions in the developing world (Food & Agriculture Organization, 2004; World Bank, 2004). Since malnutrition and poverty go hand in hand, and both thus ultimately affect economic development of a country, it suffices to note that reversing malnutrition in Africa is a combination of poverty reduction, economic development, and increasing food production. The inability of the region to have developed these factors simultaneously may in part be the result of the worsening malnutrition and under nutrition in the African continent.

For these reasons data on malnutrition and under nutrition in Sub-Saharan Africa have been gathered for many decades and all indications show that attention has been drawn to both local and international organizations and governments that the deteriorating malnutrition and under nutrition situations in Africa has become one of the most preventable cause of death in Africa and other developing areas of the world. Children are a particularly vulnerable group because their welfare hinges on the resources of their parents (Ashiabi; 200), and since poverty is likely to persist longer in Africa, the consequences of malnutrition particularly child malnutrition is likely to persist longer and thus help cause the demise of so many lives in the continent.

In his book 'Common Wealth', Jeffrey Sachs echoes this assertion by saying that lowering fertility and poverty rates in poor countries particularly in Sub-Saharan Africa is a key to child survival. This is because high fertility in poor countries are associated with too many children which the parents cannot afford to provide the best care needed in terms of health, education, and food among others. The absence of these worsens the poverty cycle and increase child malnutrition since in Africa south of the Sahara; it is children who are affected the most in malnutrition crisis (Sachs, 2008).

This thesis therefore looks into the extent of these two problems and their challenges to their respective geographic locations. It also assesses some of the policies that may have helped contribute to these problems and more importantly look into where the policies from these two regions deviate from the other, and thus helping contribute to obesity/overweight in one area and malnutrition/under nutrition in the other area.

Statement of the Problem

The United States has experienced an unprecedented rise in its population's body weight despite the vast body of knowledge on the threats of obesity several decades ago. The Harvard Men's Health Watch reports that the prevalence obesity rate is not a new problem despite the fact that the rate is much higher these days than before. Forty years ago 4 out of every 10 Americans were overweight or obese but today, two of every three Americans need to lose weight or risk the co-morbid conditions associated with obesity (Harvard Men's Health 2006). Madison re-echoed this assertion that, for more than fifty years now, obesity has become one of the most

common problems for the United States and other industrialized nations across the globe (Madison; 1980). But despite our knowledge of this epidemic throughout these years, the prevalence of overweight and obesity among children and adolescents has more than tripled, creating a need for population based approaches that make use of the best available evidence to reverse current trends (Lowery; 2009).

So far, the focus has been on individual obese people and their families as if the epidemic is an individual affair. But several policies both local and national may have contributed to this problem. Agricultural, and food and nutritional policies like the National School Lunch Program (NSLP) which has not revised its content for over a decade now; the food stamp program, the WIC program, as well as other government policies that subsidizes agricultural production in the country may have contributed to imbalanced diet among Americans, and thus contributing to obesity and overweight in the country. This is because if these food policies include healthier inputs, it may help create a healthier food supply for all consumers, including those who are unaware of the reformulations or of the benefits of the healthier ingredients (Golan et al; 2009).

While obesity continues to be a major health problem that needs the attention of all stakeholders due to the fact that the epidemic is jeopardizing the future health of the nation, a more fatal situation is escalating on the other side of the spectrum where both adults and children are malnourished and its affecting their physical, health, and their economic well being. Several studies have investigated the risk of malnutrition in developing countries particularly in Africa where poverty and inadequate technology has hindered development for several decades. Childhood nutritional

problems in less developed countries are usually related to insufficient food intake (or less nutritious food intake) or severe and repeated bouts of infection, or a combination of the two (Waterloo, 1994).

Using the United States National Center for Health Statistics (NCHS) growth reference standard for weight and height for age, studies have identified that 10 to 15% of children in poor nations fall under 5th percentile (Walker et al; 1994, Schroeder and Brown; 1994). These children are at greater risk for diseases, less intelligent, and inability to engage in any form of physical activity of their age (Walker & Walker; 1997). However, not much has been done in policy implementation originating from within the African region, and those coming from outside as a result of donor conditionalities, have not done much in reversing the ongoing poverty and malnutrition in Sub-Saharan Africa.

According to the African Action Resources, the World Bank and the International Monetary Fund (IMF) are the two major financial institutions that provide the biggest financial resources through lending to African countries. For decades now, these poor African countries in the world, have turned to the IMF and the World Bank for financial assistance and loans due to the fact that their impoverished economies do not qualify them to borrow from financial institutions elsewhere (African Action; 2009). As a result of their economic conditions, the IMF and the World Bank attach strict conditionalities which at times include killer policies such as reducing if not taken completely any subsidy on agricultural and food production in the respective economies in these poor nations. A typical example is a recent World Bank/IMF loan to Ghana which among other things strictly forbade the

country from hiring any new civil servants in the public sector and subsidizing agricultural production in the country (Adoboe, 2009, Guardian News and Media, 2009).

These loans are used as leverage to prescribe policies and dictate major changes in the economies of these countries (Africanaction.org; 2009), and are directly and indirectly affecting agricultural policies and food policies in these economies. The aftermath is the state of malnutrition and its co-morbid conditions in the region.

Importance of the Study

The purpose of this study is that, the prevalence of obesity in the United States have reached an epidemic state that demands a comprehensive approach to address. However, Sub-Saharan countries are saddled with malnutrition to the extent that it has reached an epidemic state that also demand a comprehensive approach to address. This thesis aims to analyze the policies that contribute to childhood obesity in the United States and malnutrition in Sub-Saharan Africa. In a nutshell where do the policy contributions in these two different areas deviate, and thus perpetuating obesity in one area and malnutrition in another area.

Research Question/ or Hypothesis

Having highlighted the malnutrition situation in Sub-Saharan Africa, and obesity in the United States; having established the notion that the current state of these two opposing situations center on food/nutritional and agricultural policies of these two regions, what this research intend to find is: What are the policy differences that contribute to childhood obesity in the United States and child malnutrition in Sub-Saharan Africa?

CHAPTER 2

BACKGROUND/ LITERATURE REVIEW

Obesity in the United States

In a world of increasing healthcare reforms, many would have thought that the focus of improving quality would center on technologies that advances preventive care as against the curing of diseases and infirmities. The United States is credited with having the best healthcare technologies in the world. This makes it difficult to understand the fact that for several decades now obesity has and continue to be one of the major healthcare problems to her and the other advanced economies with few concrete measures to reverse the situation. It is estimated that obesity affects over 72 million adults in the United States (Ogden et al 2007) and the rising prevalence of childhood obesity in most developed countries is well recognized as are many short and long term complications can occur as a result (Baur; 2009).

The World Health Organization defines obesity as a condition of having excessive fat in the body. In other words it is the result of an undesirable weight gain caused when people consume more energy than they expend (WHO; 2006). The world health body defines obesity in adults as having a body mass index (BMI) greater than 30 (BMI kg/m²), and it is responsible for a large proportion of the total burden of disease (WHO; 2009) and also contribute significantly to the healthcare cost of the country. The US Center for Disease Control (CDC) views overweight and obesity as both labels of weight that are greater than what is generally considered healthy for a given height, and it uses the weight and height of a person to calculate a number called the “body mass index”. Therefore and similar to the WHO definition,

an adult is may be considered obese with a BMI of 30 or more, and overweight with a BMI between 25 and 29.9 (CDC; 2009). Obesity is indeed an excessively high amount of body fat or adipose tissue in relation to lean body mass, whereas overweight refers to increased body weight in relation to height, which is then compared to a standard of acceptable weight (TFAH; 2009).

A child is considered obese when he/she is well above the normal weight for his or her age and height. Currently, every one in three children and youth in America are obese or overweight. The past 30 years has seen childhood obesity rates almost tripled “for children ages 2–5 years (from 5 to 14 percent) and youth ages 12–19 years (from 5 to 17 percent), and quadrupled for children ages 6–11 years (from 4 to 19 percent) (OIM; 2006, Hedley et al; 2004, TFAH; 2009). Using the 2000 CDC growth charts for the Unites States and expert committee, a child’s weight is determined based on an age-and sex specific percentile for BMI rather than categories used for adults. Thus, a child is considered obese when the BMI is at or above the 95th percentile for children of the same age and sex, and overweight when the BMI is at or above the 85th percentile but lower than the 95th percentile for children of the same age and sex (CDC; 2009). Obesity in childhood often continues into adulthood and thus brings an enormous burden of both disability and mortality, as well as an economic challenge.

According to the US Department of Health and Human Services (DHHS), and the CDC, the past twenty years has seen a dramatic increase in the obesity rates in America. It has indeed reached the stage where adult obesity is unprecedentedly chased by childhood obesity. In 1990, no state had obesity or overweight rates higher

than 15%, but by 2005 only six out of the 50 states had obesity rates lower than 20% (www.cdc.gov). Childhood obesity in particular poses an interesting challenge for states because the evidence base examining the effectiveness of programs and policies by individual states are still growing (Sanchez, 2009).

Among adult Americans, approximately 1 in every 3 is obese which is doubled the rate in 1980 (Hedley et al., 2004). “Among adults aged 20-74, prevalence of overweight and obesity increased from 47.0 percent in the 1976-1980 survey periods to 66.2 percent in the 2003-2004 survey periods. In 2005-2006, 34.3 percent of U.S. adults, or more than 72 million Americans, were obese: 33.3 percent of men and 35.3 percent of women” (AHIP; 2008). While many other countries, particularly those classified as advanced and developed, have seen significant increase in obesity rates, no other developed country is quite as heavy as the United States, and Americans are fatter than medical science recommends, and weights are still increasing (Cutler et al; 2003).

It is estimated that “more than a quarter of America’s healthcare cost are related to obesity and the sharp rise in obesity has accounted for 20% to 30 % of the rise in healthcare spending since 1979 (TFAH; 2009). Currently, one-third of children and youth in America are obese or at risk for overweight (Ogden et al., 2006). The more obese or overweight a person is, the more likely that person is in developing certain diseases such as heart disease, high blood pressure, type 2 diabetes, and certain cancers.

Causes of obesity in the United States

A child's obesity and overweight may result from so many factors. This multi-factorial factor includes complex interrelationship between family history, environmental factors, genetics, metabolism, socioeconomic status, and behavioral factors among others (CDC; 2001; Shepherd; 2009). Certain things like family history or culture cannot be changed but factors like behavioral factors and environment can be changed or altered to reverse the onset of obesity or overweight. Environmental factors that may be attributed to the onset of obesity and overweight include lack of neighborhood sidewalks and safe places for recreation, work schedules, bigger food portions, and inadequate or lack of access to healthy foods (NIH 2009).

Genetic factors according to scientists can contribute to obesity or overweight but can hardly predict the future health of a person. Genes may need the contribution from other factors such as the behavior of a person to become overweight or obese (CDC, 2009). However, for many, overweight and obesity are caused by not having energy balance which is the balance between energy IN and energy OUT (NIH, 2009). In other words it's likely the result from eating too many calories and not getting enough physical activity to burn the excess calorie intake (Fox & Trautman: 2009; Ogden et al, 2007). The obesity trend in the United States follows a behavioral pattern where most children remain inactive physically and also consume poor nutritional foods (TFAH, 2009: 7).

Notwithstanding this, not much has been done in the areas of prevention or in reversing the trend, and childhood obesity in states today according to Sanchez (2009) lack common objectives and goals, and manifest little or no coordination across

community and state groups (Sanchez, 2009). According to Lobstein and Wang (2006), the two main challenges are the lack of comparable representative data from different countries, and the use of varying criteria for defining obesity among different countries and researchers (Lobstein and Wang; 2006) . This has become a major problem in the United States in the fight against obesity particularly childhood and adolescent obesity and overweight.

There is also the emphasis on the reliance on an evidence based findings by governments and other stakeholders to effect any change whatsoever. This recommendation according to Spear et al (2007) is very critical to reversing the current pediatric obesity trends because obese children and adolescents are at risk for developing many of the diseases seen on obese adults (Spear et al; 2007). However, the absence of a generally agreed definition of overweight and obesity hinders the establishment of a convincing evidence-based approach to tackle the obesity epidemic in the country (Homer & Simpson; 2007), and experts advise that, policy makers and healthcare stakeholders must as a matter of urgency utilize available evidence they have, and make initiative to reverse the escalating obesity and overweight problem in the country especially among children and adolescents.

Effects of Obesity in the United States

The effects of obesity are enormous as it may stretch from health problems, economic, social, and productivity among others. Over 100,000 excess deaths are attributable to obesity and overweight each year in the United States (Hernan & Taubman; 2008:8). It is estimated that over 300,000 adults will die annually in the US

from obesity related causes (Mendfield et al; 2008). These estimates places obesity and its associated co-morbidities as one of the most important public health concern in the United States and also as the second most preventable cause of death in the country. The most significant health consequences of obesity and overweight according to the World Health Organization include “non-insulin-dependent diabetes, cardiovascular diseases, dyslipidaemia, gallbladder disease, certain types of cancer (endometrial, ovarian, breast, cervical, prostate, colorectal, gallbladder, pancreatic, hepatic and renal) and psychosocial problems” (WHO; 2002).

Since it is directly linked to a long list of chronic diseases, including hypertension, type 2 diabetes, some cancers, dyslipidemia, stroke, gout, and depression (McTigue et al: 2002., U.S. Department of Health and Human Services 2001), Obesity and overweight create an enormous burden of disability and mortality. Childhood obesity is a strong risk factor for adult obesity. Obese children are likely to develop non-insulin-dependent diabetes, heart disease and other chronic diseases before or in early adulthood (WHO; 2002). This makes the obesity and overweight epidemic in the country a public health concern that demand a comprehensive approach from governments, educational institutions, food manufacturers, healthcare providers, parents, and all stakeholders to reverse the current situation.

All these are associated with cost to both the individual and the State or the economy as a whole. As the sizes of the population increases, so is the price tag associated with it. The National Institute of Health (NIH) in 2005 estimated the total cost of obesity and overweight to be around \$ 116 billion with direct and indirect costs respectively at \$61 billion and \$56 billion (NIH 2005). In a report by the CDC

and RTI international, obesity in America carries a price tag of \$ 147 billion in direct medical cost (CDC; 2009) which is nearly 9% of all medical spending in the country. Direct health care costs according to the NIH refers to preventive, diagnostic, and treatment services such as physician visits, medications, and hospital and nursing home care, while indirect costs are the value of wages lost by people unable to work because of illness or disability, as well as the value of future earnings lost by premature death.

Researchers compared data from 1998 and 2006 and found that the increasing obesity in the country which is now about a quarter of the entire population are responsible for a \$40 billion jump in annual medical cost (Sudath; 2009). According to the CDC, obesity and diabetes which cause is also attributable to obesity are the two major health challenges that are getting worse everyday. If the current obesity trend is not reversed or curtailed, obesity is estimated to cost the nation \$344 billion in annual medical-related expenses by 2018 (Hellmich; 2009) through workdays lost, physician office visits, restricted activity days, and bed days. In other words, “failing to slow down and reverse the obesity and overweight trends in children will result in increased demand for and cost of medical care that will simply overwhelm supply side improvements and cost containment (Sanchez and Thompson, 2009).

In as much as almost a third of the US children are obese or overweight; there is a high stigma, prejudice, and discrimination against persons with obesity (Melanie et al; 2008). Obesity prevalence cut across all ages, races, and sex, which according to Ogden et al (2007) has more than doubled across all ethnic groups, even though some are disproportionately affected than others. People who are significantly overweight

or obese experience some form of discrimination from family and their social work environments (Lewis & Puymbroeck; 2008). A study by Puhl and Brownell showed that, 28% of teachers in one study believe that becoming obese is the worst thing that can happen to a person; 24% of nurses said they are 'repulsed' by obese persons; and, in controlling for income and grades, parents provide less college support for their overweight children than for their thin children (Puhl and Brownell; 2003).

In their 2006 report on the stigmatizations associated with obesity, Puhl & Brownell outlines some of the stereotypes obese people face in their homes, work places, at schools, and even with healthcare providers when they are receiving care of any kind (Puhl and Brownell; 2003). Children who are overweight are often seen as undesirable playmates. They encounter teasing, rejection, abuse, and humiliations among others from their peers which affect their psychological and social well being. Social interactions across the lifespan are often limited due to the presence of obesity. This is due in part to the fact that even people who are significantly affected do not only experience discrimination and rejection from others, they themselves discriminate against people who are overweight (Lewis & Puymbroeck).

“Negative stereotypes include perceptions that obese people are mean, ugly, unhappy, less competent, sloppy, lazy, socially isolated, and lacking in self-discipline, motivation, and personal control” (Puhl & Broenell; 2006). In a focus group study by Cossrow et al (2001), the researchers found that people with a range of weight experience many types of mistreatment because of their weight from sources in every aspect of their lives (Cossrow, et al 2001).

Food Policies in the United States and their Possible Contribution to Obesity

The 20th century in the history of food production in the United States was one of dynamic adjustment and remarkable achievements in farm technology for the United States agricultural sector. This agricultural technology revolution was embraced by American agriculture after the 1930 great depression which saw a 400 percent increase in per worker labor agricultural productivity between 1949 and 1991 (Barbara et al 1996). Technical innovations which thrived in all areas of agricultural production in the decades after the great depression saw the reinvention of farm technology in machinery, improved seeds, and a sophisticated use of purchased intermediate inputs (Paarlang and Paarlang 2000).

The results of these agricultural revolutions saw a greater speed and magnitude than anything previously seen in human agricultural history. So by the turn of the 21st century, the agricultural sector had become demographically small; due in part to the influx of agricultural labor into other equally emerging industrial activities of the economy but more importantly, the American passion to escape from a settled rural community where agriculture was dominant to the urban fringes after the 2nd world war as the nation grew affluent (Friedberger; 2000). But by this time farmers were far more wealthy and productive than anytime before in history due to improved technology and government policies that provided funds and support to the American farmers (Paarlberg & Paarlberg 2000).

These improvements have come to the fore due to food policies that the federal and state governments instituted several decades ago through investing in organizational learning to increase agricultural productivity. The nation capitalized on

its natural endowments which saw the agricultural productivity per labor output surpassing every other nation (Ferleger & Lazonick; 1993). Policies like the Food Control and Production Acts of 1917, Agricultural Adjustment Act (AAA) of 1933, and Commodity Credit Corporation (CCC) as well as various subsidies to farmers through the United States Department of Agriculture (USDA) have been very instrumental in overseeing the development of this nationwide structure which did most to promote technological change and public investments in basic applied research, not forgetting the human development with its rural education and extension (Paarlberg & Paarlberg 2000, Staples; 2000).

Throughout history, the governments through acts and policies like the Agricultural Marketing Agreement Act, Agricultural Adjustment Act which provides acreage allotments and quotas, ever-normal granary, price-supporting loans, regional research laboratories, and Federal crop insurance, Agriculture and Consumer Protection Act which emphasizes maintaining or increasing instead of controlling production, the National School Lunch Act, Food Stamp Act (USDA; 2009) as well as the Supplemental Nutrition Program for Women, Infants and Children (WIC) which provides nutrition education, nutritious foods, breastfeeding support and information, the Child and adult care food program, and the Summer food service programs among others are all programs which through history have provided inexpensive and more than sufficient food to the American people and other parts of the world. As a result, food is available in abundance to all Americans, even to those who do not work and are poor, because food stamps and other welfare benefits are available to people who do not work (Cutler et al; 2003).

Today a product like corn is an important ingredient in making plastics, toothpaste, cosmetics, and many pharmaceutical products (Ferleger; 2000). Cereal and dairy produce have become the common staple in most American homes and restaurants. As the population moves the dining table into the restaurants and fast food joints in every corner of the country, these products have become the staple of the population from the bread we eat to the drink we take for refreshments. Foods like fructose sweeteners which are found in almost every diet in America have replaced more nutritious foods and thus decrease our intake of vitamins, minerals, amino acids, essential fatty acids, and other beneficial nutrients (Gaby 2005). Currently, approximately 5–7% of calories in a typical US diet are derived from fructose sweeteners and this excessive fructose consumption may be responsible in part for the increasing prevalence of obesity, diabetes mellitus and non-alcoholic fatty liver disease (Gaby, 2005; Funari et al, 2007).

These policies have played significant role in subsidizing food production in the country allowing Americans to spend less to feed themselves than in any other part in the world. Apart from a single rise in food prices at the time of the early 1970s oil shock, the relative price of food in the United States have declined consistently over the decades (Lakdawalla, & Philipson; 2002). However, the availability and their extra-ordinarily inexpensive nature have resulted in abundance of the not so healthy foods in our markets than the healthy foods. According to John (2007), there are hidden costs to these cheap calorie foods, and this cost is obesity which is bringing a bigger problem of over-nutrition to the United States. “It has raised the cost of physical activity by making household and market work more sedentary and has

lowered the cost of calories by making agricultural production more efficient” (Lakdawalla, & Philipson; 2002).

Today more than half of the US population is overweight and the nation spends billions annually in treating obesity and its related diseases (John, 2007). There are no direct findings that connect obesity to these policies. However, these policies, which span more than a century, with the aim of modernizing agriculture and increasing food security through cheap and nutritious foods in the homes of every American cannot escape the blame to the recent obesity epidemic that has entangled the nation.

Malnutrition in Sub-Saharan Africa

There is a saying that too much of a thing is bad. Likewise, too much of calorie intake as against fewer or no expense of those calories through physical activity is dangerously affecting the health of Americans. However, a more dangerous and perhaps difficult to tackle in the immediate is malnutrition resulting from inadequate food intake as against what the body needs to function properly. Since the adoption of the Millennium Development Goals (MDG) in 2000, policy makers and other international agencies have turned towards developing concrete action plan for nations to reverse extreme poverty, hunger, and disease affecting billions of people (Lykens et al, 2009). These issues contribute significantly to the worsening malnutrition in Sub-Saharan Africa. Malnutrition is a canker that is affecting the psychological, social, and economic well being of people in less developed nations particularly those in Sub-Saharan Africa.

The World Health Organization (WHO) defines malnutrition as simply “ bad nourishment” (WHO; 2009), which concerns not enough as well as too much food, the wrong types of food, and the body's response to a wide range of infections that result in mal-absorption of nutrients or the inability to use nutrients properly to maintain health (WHO; 2009). Malnutrition occurs when your body doesn't get the right amount of nutrients. Someone is under-nourished if they don't get enough nutrients, and over-nourished if they get too many. The World Bank puts malnutrition as the world most serious health problems in our days as more people particularly children die from poor nutrition than any other form of infectious disease (World Bank; 2009).

A well nourished person or for that matter a child is characterize with soft skin, bright and clear eyes, shinny hair, white teeth, and a healthy body which means the person hardly gets tired so easily when engaged in a small physical activity. However, according to a U.S. department of labor report by Lydia Roberts (2009), a malnourished child is a child that is usually thin, but may be fat and flabby instead. His skin may have a pale, delicate, wax-like look, or be sallow, muddy, even pasty or “earthy” in appearance (Roberts; 2009). Under-nutrition encompasses stunting, wasting, and lacking essential vitamins such as vitamin A and Zinc (Lykens et al; 2009). Malnutrition is synonymous with growth failure because malnourished children are shorter and lighter than they should be for their age (UNICEF; 2009). This is the characteristics of most children in Sub-Saharan Africa, and these unfortunate characteristics predispose them to diseases due to the inability of their bodies to withstand external threats to their bodies.

Causes of malnutrition in Sub-Sahara Africa

Malnutrition like obesity has several possible causes. While poor nutrition from over eating may meet the definition of malnutrition in the western world, the cause of malnutrition in Sub-Saharan Africa are multi-faceted and multi causal (USAID; 2006). However, the cause of the high malnutrition rate in Sub-Saharan Africa is as a result of inadequate food and in areas where there may be food available, such food lack the nutritional contents needed to sustain the growth of the body. About 180 million Africans—up 100% since 1970—do not have access to sufficient food to lead healthy and productive lives, making them more susceptible to the ravages of malaria, HIV-AIDS, and tuberculosis (Sanchez; 2002). Soil nutrients and water management which are needed for food production are among the major cause of malnutrition in Sub-Saharan Africa (Sanchez & Swaminathan; 2005).

A USAID report on Understanding nutrition data and the cause of malnutrition in Niger found evidence that suggest an intersection among areas with crop production deficit, areas with forage production deficit, and areas with high malnutrition rates (USAID; 2006). By contrast with other developing world, fertilizers are almost not used by the small African farmers not withstanding the fact that there are not enough irrigation facilities in the region to facilitate food production. This has resulted in the region's agricultural yields being the worst in the world (Sachs; 2008:227). The soils in Africa south of the Sahara have become depleted and thus need fertilization to improve soil quality and subsequent food production. However, “fertilizers in Africa cost two to six times as those in Europe, North America, or Asia. A report by Sanchez(2002) indicates that “a metric ton of

urea costs about U.S. \$90 FOB (free on board) in Europe, \$120 delivered in the ports of Mombasa, Kenya, or Beira, Mozambique, \$400 in Western Kenya (700 km away from Mombasa), \$500 across the border in Eastern Uganda, and \$770 *in* Malawi (transported from Beira)” (Sanchez; 2002).

The absence of comprehensive policies from governments and other development partners, and perhaps the absence of a participatory approach at solving the food crisis in Africa may partly be blamed for malnutrition in many parts of the continent. This is because; in other developing part of the world, where there has been some kind of food policies, have seen crop yield increase significantly. One of the key policy successes in the production of food in the latter part of the 20th century in the developing world was the green revolution which saw the production of food in the developing world more than tripled over the past 30 years or so. The green revolution with its package of improved seeds, farm technology, better irrigation and chemical fertilizers, was highly successful at meeting its primary objective of increasing crop yields and increasing food supplies in Asia where the package was widely adopted (FAO). This success however, did not extend to Africa although their contribution to crop yield increased 70 to 90% in Asia, Latin America, and the Middle East, but only 28% in Africa (Sanchez & Swaminathan; 2005). Thus, food production in Sub-Saharan Africa has lagged behind other developing parts of the world even though their population is increasing disproportionately to that (Sachs: 2008:227).

This unacceptable, but unfortunate, situation of malnutrition and under nutrition in this century has indeed attracted the attention of all stakeholders especially the international community and development partners such as the United

Nations, the Food and Agricultural organization, and the United States Agency for International Development among others to the region. However the absence of initiatives by these very countries is worsening the plight of the ordinary person on the continent. While Some African states and developed countries, and for that matter some of these development agencies and other not for profit organization are now considering restoring high priority to the development of agriculture in Africa (Africa Hunger; 2009), not much is coming from the very governments whose inhabitants are falling victims to the debilitating effects of malnutrition. There is therefore the call for a comprehensive approach and a well adapted participatory effort from African leaders and governments to take drastic initiatives in tackling the food crisis that has been the number one cause of malnutrition and under nutrition on the continent.

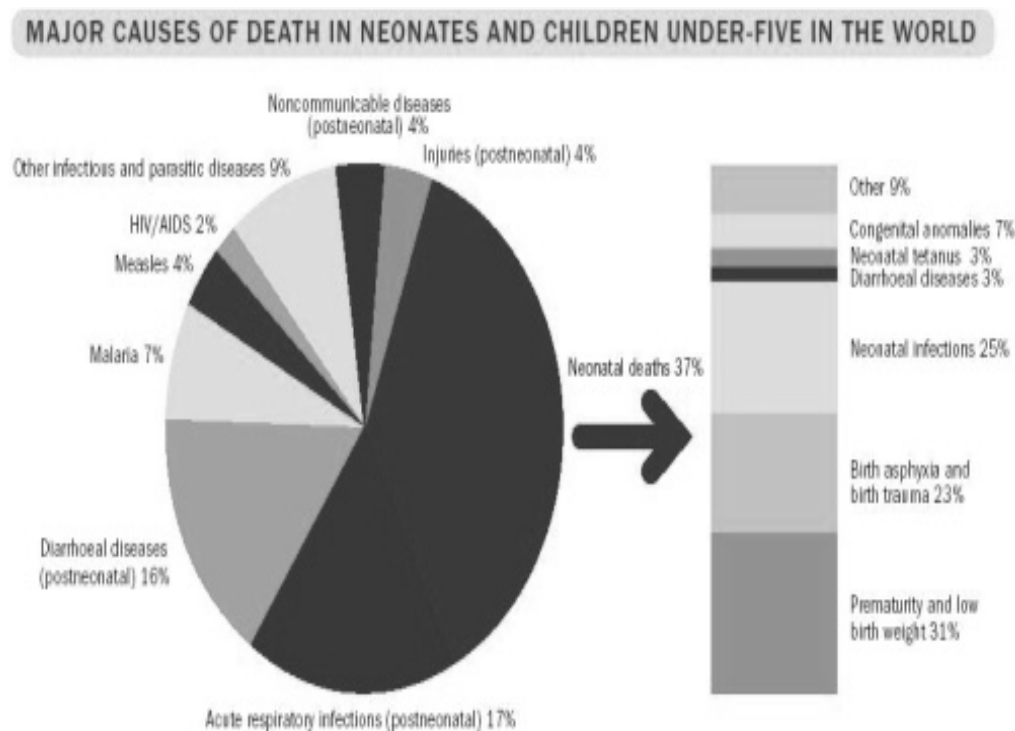
Effects of Malnutrition in Sub-Saharan Africa

Generally, malnutrition and its associated effects are commonly with the poor and in situations where the entire population in an area is affected by malnutrition, the poor and the poorest among them are those that are hit hardest (Susser et al; 1979). In a clinical sense, malnutrition is characterized by inadequate intake of protein, energy, and micronutrients, and by frequent infections or diseases. To this many studies have been conducted on child malnutrition and parental malnutrition and their effects on general child development. It is important to note that in Africa south of the Sahara, malnutrition and under nutrition affects all ages, but is most prevalent among children under five years of age, especially in the weaning and post weaning periods of 6-24 months.

From the onset of life, early developmental stages have significant impact on adult health (Kuh & Ben-Shlomo; 2004), for example low birth weight is related to increased risk of cardiovascular and its associated diseases. In a cohort study on the exposed and unexposed to prenatal famine, the Dutch Hunger Winter of 1944–1945 research shows some evidence of effects of prenatal famine on obesity and insulin resistance (Susser et al; 2008), as well as mental disorders especially schizophrenia (Hulshoff et al; 2000) which was also replicated in the findings from the Chinese famine of 1959 to 1961. Under nutrition, defined in public health as poor anthropometric status, is mainly a consequence of inadequate diet and frequent infection, leading to deficiencies in calories, protein, vitamins and minerals (WHO; 2009).

In a related study by De Souza et al, the researchers found that malnutrition in early periods of life (gestation, lactation, and young age) effects the spatial learning capability of the offspring (De Souza et al; 2008). Therefore, the effect of malnutrition, which in Africa is mainly the result of inadequate food supply, and where they are available, they may lack the needed nutritional content, is not only a difficult experience to the individual but a widespread disorder in children and affects them as they grow into adulthood. Malnourished children have shorter stature and decreased body weight than the normal child. They are associated with significant functional impairment in adult life, reduced work capacity and decreasing economic productivity (Pelletier et al; 1993). They are more prone to morbidity and mortality and suffer from delayed mental development.

According to Rice et al (2000), underweight children resulting from malnutrition are at increased risk of mortality from infectious illnesses such as diarrhea and pneumonia (Rice et al; 2000). Malnutrition, according to a WHO report, compromises natural immunity leading to increased susceptibility to infection, more frequent and prolonged episodes, and increased severity of disease. A WHO report estimates that about 35% of child deaths globally are associated with under nutrition, of which Africa is more significantly impacted than most of the world. This report is shown in figure 1 below which gives a World Health Organization’s snapshot on the major causes of death among children in the world (WHO, 2009).

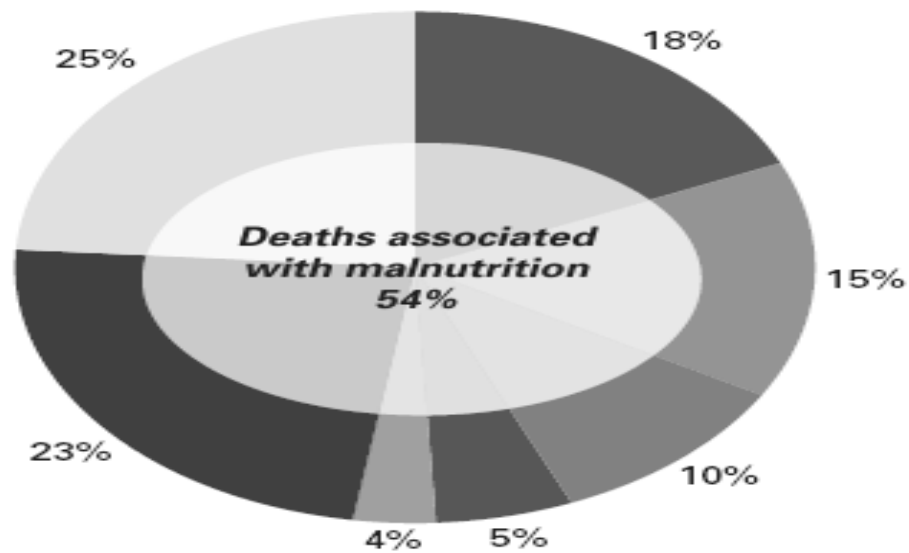


35% OF UNDER-FIVE DEATHS ARE ASSOCIATED WITH UNDERNUTRITION

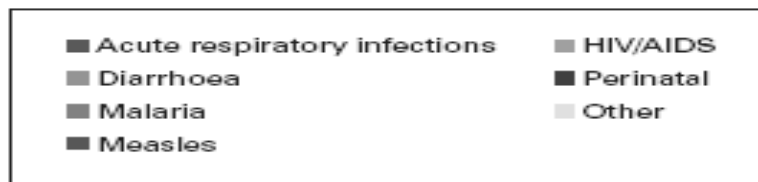
Sources:
 For estimates of causes of neonatal and under-five deaths: World Health Organization. The global burden of disease: 2004 update.
 For estimates of undernutrition: Black R et al. Maternal and child undernutrition: global and regional exposures and health consequences. Lancet 2008; 371:243-60.
 Sources: (1) WHO. The Global Burden of Disease: 2004 update (2008); (2) For undernutrition: Black et al. Lancet, 2008

Fig. 1

The above figure shows how malnutrition and under nutrition negatively affects the lives of children in the world of which Africa is worst. The next figure by the world body also depicts the serious nature of this problem in this 21st century and how developing countries are on the verge of losing its economic resources due to malnutrition and its associated co-morbidities. For in as much as 54% of deaths in developing countries, of which Sub-Saharan Africa is worst among its peers is highly impacted with morbidity and other burdens of diseases.



Major causes of death among children under five in developing countries, 2002



Sources: For cause-specific mortality: *The World Health Report 2003*, WHO, Geneva. For malnutrition: Pelletier, D. L., E. A. Frongillo, and J. P. Habicht, 'Epidemiologic evidence for a potentiating effect of malnutrition on child mortality', *American Journal of Public Health*, vol. 83, no. 8, August 1993, pp. 1130-1133.

Fig.2

The most significant impact among them all is that malnourished children have smaller kidneys than healthy children (Ece et al; 2007). The effects of malnutrition on the immune system are wide-ranging, and infectious illnesses also tend to be more frequent and severe in underweight children. This predisposes them to poor renal growth, such as increased risk of hypertension and the tendency to develop chronic renal insufficiency as they develop. Susser et al (2008) in their research supports these findings and their detrimental impacts throughout a child's development to adulthood. These effects among others calls for a desperate intervention to address the situation in a continent endowed with so many resources but lack the technology to translate these resources to address the malnutrition and food insecurity problems in the continent.

Food Policies in Africa and their Possible Contribution to Malnutrition

Agricultural output according to the World Health Organization has increased at an average rate of 0.4% globally since 1961. This growth has been slow but significant progress in improving food security and human well-being over the past three decades (IFPRI; 2002). This has resulted in a considerable decline in the number of food insecure people in the developing world, but this growth has been very uneven, and has not been realized in Africa like it has in other parts of the world. This makes Sub-Saharan Africa the only region, according to the world health body, where agricultural output per capita has not seen a sustained increase (WHO; 2009).

Today, Sub-Sahara Africa is not only the lowest in regional food production but also produces less food per person today than it did about three decades ago

(FAO; 2006). In many developing parts of the world, the leading policy for the increase in food production in the latter part of the 20th century was the green revolution which was highly successful through its package of improved seeds, farm technology, better irrigation and chemical fertilizers, which met its primary objective of increasing crop yields and increasing food supplies in Asia where the package was widely adopted (FAO, 2006). This policy success which form the foundation for the development of many agricultural and food policies in other parts of the developing world did not develop to the Africa region although their contribution to crop yield increased 70 to 90% in Asia, Latin America, and the Middle East, but only 28% in Africa (Sanchez & Swaminathan; 2005).

The result is an absence of comprehensive agricultural and food policies either in individual countries or in the African region as a whole, and thus resulting in food insecurity in the region with its malnutrition and under nutrition effects. This food insecurity and its resultant malnutrition in Africa, according to the WHO, may be due, among other constraints to the unavailability of culturally-acceptable food and nutrition policies that would boost agricultural production (WHO; 2009) in the individual countries that constitute the Sub-Saharan Africa. To this, food insecurity and water-borne diseases will as always be the number one public health challenge in the region as the region experience rural-urban migration leaving agriculture in the hands of the old and infirm who do not have the strength and the technology to tackle the malnutrition problem in the continent.

Urbanization is linked to poverty (Ramin, 2009) which increases malnutrition especially child malnutrition in rural areas which suggest that reducing hunger and

malnutrition is not possible unless public policies emphasize on agricultural and rural development (FAO, 2007). “Malnutrition contributes to poverty because it causes or aggravates illness, lowers cognitive function and thus educational attainment, reduces productivity, and relegates the individual to reduced options for livelihoods”(Ramin; 2009). However, the development agenda by Africa governments are concentrated in the urban areas to gain political favors at the expense of national development, and therefore exacerbating hunger and malnutrition in the region. Like many developing countries, children are disproportionately affected by the burden of diseases in slums. For example, in Ethiopia and the Niger, rates of child malnutrition in both urban slums and rural areas are around 40% (Ramin 2009). In Ghana, malnutrition in the form of Protein Energy Malnutrition (PEM), which causes growth retardation and underweight account for about 54% of all deaths beyond early infancy and thus making malnutrition the leading cause of child mortality in the country (Ghana Health Service; 2005).

These events require immediate policy interventions to reverse the situation, since the malnutrition epidemic in the continent may have largely been attributed among other constraints to the unavailability of culturally-acceptable food and nutrition policies that would boost agricultural production. Thus, inaction or lack of long term policy initiatives in areas of nutrition and agriculture on the part of African governments and their development partners contribute to inadequate food production in the region, and hence malnutrition. It is therefore imperative on the part of continent to have their individual and regional agricultural and food policies that are geared toward providing food security and food production to help reverse the current trend.

CHAPTER 3

METHODS AND PROCEDURES

This thesis is a comparative study on the differences in policies that have contributed to obesity epidemic in the United States and malnutrition epidemic in Sub-Saharan Africa. Divided into four chapters, this thesis made use of secondary and tertiary sources in the literature that addressed these two health concerns in two different parts of the world. These secondary sources included books, research articles both in print and in electronic files, reports, and other respectable organizations and websites that are known to champion the courses this thesis seek to address.

Data for the Sub-Saharan Africa region on malnutrition were drawn from the United Nations Children's Fund (UNICEF, 2009) databases on malnutrition and under nutrition. It also made use of a database developed by Dr. Kristine Lykens and colleagues on malnutrition, child mortality, and other socio-economic factors affecting the region (Lykens, et al, 2009). Data on obesity for the United States were sourced from the Trust for America's Health, a non profit, non-partisan organization dedicated to saving lives by protecting the health of every community and working to make disease prevention a national priority.

These data were analyzed using Statistical Package for Social Sciences (SPSS) to find means and other statistics. Since the available data for both regions were fewer than anticipated, this thesis resorted to only paired sample T-test and descriptive analysis to ascertain the changes, in both childhood obesity and malnutrition in the United States and Sub-Saharan Africa respectively, for two different periods. This was not only to ascertain the changes in the two different periods, but to analyze the

correlation between the data findings in the two periods. The correlation between the policies, and childhood obesity and child malnutrition were deduced from the impacts these policies have had on the people, and the time frame within which such impacts have been realized. Since such inferences are more subjective than can be quantitatively defined, the correlations between agricultural/nutritional policies and childhood obesity in the United States on one hand, and the correlation between agricultural/nutritional policies and child malnutrition in Sub-Saharan Africa on the other hand, were deduced from the literature.

The policy information for the United States was drawn from national policies that are believed to have contributed to the abundance, affordable, and food security in the country. It also looked into some individual state policies, where available, on obesity to ascertain the effects those policies have had on childhood obesity, especially those that have been more aggressive in their implementation. For Sub-Saharan Africa, policies were sourced from the literature, and some of the country's agricultural and health department's home pages to ascertain the effects of these policies on their current nutritional status.

Since the Sub-Saharan Africa region depends heavily on external funding for most of its policies and programs, this thesis also looked into some of the external policies in the region such as those from the United States, the Europe Union, and other development partners like the World Bank, the International Monetary Fund (IMF), the African Development Bank, and the New Partnership for African Development (NEPAD) among others, and how such policies have contributed to the current state of malnutrition in the Sub-Saharan African region.

Generally, even though information were sourced from all the states in the United States, and from all the countries in Sub-Saharan Africa, this thesis narrowed its policy findings to only six states in the United States and six countries in the African region due data limitation and time constraints.

For the United States, this thesis narrowed its analysis to California, Illinois, Minnesota, Massachusetts, Texas, and Mississippi. The criteria for selecting these states were based on a number of factors including:

- **Data Availability:** Even though childhood obesity and overweight has attracted a national attention due to its prevalence in every state in the United States, not all the states have made efforts in curbing what appears to be a serious health problem in the country. Due to this, this thesis limited itself to some of those states that have made efforts and accumulated some data through their own initiatives to address childhood obesity and overweight.
- Similar to data availability was the enactment and implementation of some policies to address childhood obesity. Whereas the federal government through Medicaid and other nutritional programs such as SNAP has set the foundation for almost all the states to help reverse this problem, some states have gone beyond these general policies to enact more direct and effective measures specific to their states. The selection of the states was also influenced by those states that have been able to enact and implement their own policies to address their growing childhood obesity.
- The United States is divided into five main regions based on history, traditions, economy, climate, and geography. These regions are the Northeast,

Southeast, Midwest, Southwest, and the West. For spread of analysis, this thesis considered a state from each of the regions for data analysis. The purpose of this is to have a regional balance since childhood obesity/overweight and for that matter general obesity prevalence is spread across all the five regions of the country.

- In their series of reports on obesity trends in the United States, The Trust for America's Health (TFAH), a respected organization which publishes obesity and overweight trends from every single state, also rank the first ten states with the highest childhood obesity/overweight prevalence rates, and the ten states with the lowest childhood obesity/overweight rates. To have a balance on less severe and more severe states, the selection of states for analysis was also influenced by this disparity. The purpose of this was to see whether their own policies or the lack of it have anything to do with their current ranks in obesity rates.

For the Sub-Saharan African region, the areas under consideration comprised all the countries on the African continent excluding Egypt, Algeria, Morocco, Libya, Sudan, Tunisia, and Western Sahara which are not considered part of Africa, south of the Sahara. Also within the Sub-Saharan African countries, three countries including the Comoros, Seychelles, and Uganda were excluded. Their exclusion was based on inadequate and inconsistencies in data between the years under consideration. This would have made it impossible to do any meaningful analysis for the two periods, since they did not have data on one of the years. The six countries that were selected include: Nigeria, Kenya, Ghana, South Africa, Mozambique, and Cameroon. The criteria for selecting these countries included:

- **Regional Balance:** The Sub-Saharan African region is divided into four (4) different regions. These are the Western, Eastern, Southern, and Central Africa regions. For regional balance, this thesis selected countries from each of the regions under on the continent.
- For various reasons such as political instability, civil strife, poor governance, and poor data keeping, some of the countries in the region did not have adequate data for this thesis analysis. In some cases country specific data were marred by poor data gathering and unconfirmed sources. Therefore, the selection of these countries was based among others on data availability to aid in analysis.

In a related development, these countries were selected based on their ability to have initiated agricultural and nutritional policies in the course of the years. The purpose of this was that, this thesis intends to do comparative study in policies and how they have impacted on the people, particularly children. Therefore, policy initiatives by these countries whether by themselves or with the help of other international agencies and donor countries was a pre-requisite for their selection.

CHAPTER 4

AGRICULTURAL / FOOD POLICIES

State-Specific Policies to fight childhood obesity in the United States

There are many food and nutritional policies and sub policies that the states have instituted to help fight what have become a pervasive problem in the United States. Constitutionally, Public Health which childhood obesity falls under is primarily the responsibility of the state. However, policies of the federal government as well as major funding of many child healthcare programs through Medicaid and the State Children's Health Insurance program have set the pace and impacted the agricultural and nutritional policies of the states.

According to the Trust for American's Health (TFAH), many states have realized the magnitude of this epidemic and have therefore implemented policies to protect the welfare of their children. So by 2009, nineteen states including California, Massachusetts, Mississippi, and Texas have set nutritional standards for school lunches, breakfasts, and snack that were stricter than before. However, only seven out of the nineteen states, including Texas, had specific enforceability languages to penalize those who do not comply as of 2008 (TFAH; 2009: 33). Below are some examples of states that have developed and implemented policies and programs to help reverse the childhood/adolescent obesity epidemic in the United States.

California

Similar to the national trend, California is having its share of the childhood/adolescent obesity syndrome. By 2001, 26.5% of 5th, 7th, and 9th grade children in California were obese and by 2004, this numbers according to the California Center for Public Health Advocacy, has increased to 28.1% (New & Information Bureau; 2005) and still growing. The California Center for Public Health Advocacy for some time has been calling on policy makers to establish comprehensive policies that support parents and their children in tackling this problem. Among the policies and programs that California has instituted to address this problem include:

- The California ProjectLean- “The goal of this project is to increase opportunities for healthy eating and physical activity in communities across California, particularly among school children and adolescents, to reduce the prevalence of obesity and chronic diseases such as heart disease, cancer, stroke, osteoporosis, and diabetes. It also aims to provide technical assistance, tools, and resources on community-based strategies for improving nutrition and physical activity environments; and to prioritize nutrition and physical activity efforts in communities with the greatest health disparities” (California Project Lean; 2009).
- The School Soda Ban Program- which defined beverage standards for high schools (CA SB 965 (2005), elementary and middle schools. The policy set the standards which must be met statewide in schools by July 2007 for the middle and elementary schools, and by July 2009 in all high schools. The

purpose of this policy is to reduce sugar/sweets consumption of all sorts and encourage healthy eating habits among students.

- California has instituted a statewide menu labeling in chain restaurants- which requires all chain restaurants to make menu labeling and nutritional information available at the point of sale. This program, designed for all ages, will educate people on the calorie count of food and help them know exactly what they are putting into their systems.
- The School Junk Food Ban- This law establishes standards for all foods sold on school campus outside the school meal program. It establishes limits on fat and sugar contents in all foods sold to school children (California Center for Public Health Advocacy; 2010) while in school.

Illinois

Illinois is ranked 10th among the states with the highest rates of overweight and obesity among children and adolescents. With over 34 % of this group being overweight and obese (TFAH; 2009), this state like many other states have seen the implications of the problem and thus have planned through policies and programs to tackle what has gradually become a serious health concern to the state. Among these include:

- IL SB 162, Public Act No. 94-199. This law's provision includes nutrition guidelines for food sold on school campuses during school days. It provides that the board of Education shall distribute the model wellness policies to all

school districts. This is similar to the California's ban on junk food which set guidelines for all foods sold on school campuses to follow.

- The state has enacted nutritional standards, nutritional education, and physical education requirements for all schools. The aim of these programs among others is to encourage healthy eating habits, increase physical activity among school children, and help children reverse the state's child obesity/overweight epidemic (NCSL; 2005).
- The Illinois Obesity Prevention Initiative-Calls for public hearings that educate policy makers about the cost of inaction and provide information about programs and policies that can effectively counter these trends (IPHI; 2009).
- Illinois Administrative Code Title 77 requires that the results of diabetes screening, including body mass index, as one indicator of whether a child is overweight, be documented on the certificate of child health examination form for the required school health examination (NCSL 2008).

Texas

Like most southern states, Texas is also having a share of the pervasiveness of obesity and overweight especially among children and adolescents. In 2007, 32% of Texas high-school students were considered overweight or obese (CDC; 2007). The demographic diversity of the state also depicts the diverse obesity epidemic of the state. Minority Texas students continue to have the highest prevalence rates since 2004. Hispanic boys in 4th and 11th grades constitute the group with the highest

obesity prevalence rate (Hoelscher et al; 2005). Some of the policies and programs the state has put in place to tackle this growing problem includes:

- TX SB 42 (2005) – “Encourages school districts to promote physical activity for children through classroom curricula for health and physical education. It also allows the state board of education, by rule, to require students in kindergarten to grade nine to participate in up to 30 minutes of daily physical activity as part of a school district's physical education curriculum, through structured activity or during a school's daily recess. The law provides for consultation with educators, parents, and medical professionals to develop physical activity requirements”.
- TX SB 415 (2007) – “Establishes a student risk assessment program for type 2 diabetes in certain regions of the state that includes screening of body mass index for students identified by a noninvasive screening as at risk for type 2 diabetes” (NCSL 2008). This program is helping track the health of those children whose health have been impaired by the effects of obesity and overweight.
- Texas, as of 2009 has also established obesity related standards that set nutritional standards for school meals, Nutritional standards for Competitive Foods, health education requirements, as well as collecting BMI and other health information from school children to help inform decision making (TFAH; 2009).

Mississippi

For the past approximately five years, Mississippi has consistently ranked number one in obesity prevalence in the country. Data from the 2007 National Survey of Children's Health showed that 44.4 percent of children ages 10-17 in Mississippi are overweight or obese (TFAH; 2009). It's important to know that the state is also ranked number one in Adult obesity. Like other Southern States, minorities have the highest prevalence rates. The situation in Mississippi is so alarming that about 95% of Mississippians consider childhood overweight and obesity to be a serious health problem, and as many as 45% believe it's a statewide issue that demands immediate and comprehensive efforts from all stakeholders in their various communities such as schools and community groups among others (DREAM 2007:6). With such a threat to the health and resources of the state, some of the programs and policies that the state is implementing to help tackle this growing epidemic include:

- MS SB 2369 (2007) – “Enacts the Mississippi Healthy Students Act in support of school wellness policies. The legislation provides that beginning with the 2008-2009 school year, local school wellness plans shall promote increased physical activity, healthy eating habits, and abstinence from use of tobacco or illegal drugs. The law directs the State board of Education to adopt regulations addressing healthy food and beverage choices, healthy food preparation, marketing of healthy food choices to students and staff; food preparation ingredients and products, availability of food items during lunch and breakfast periods, minimum and maximum time allotments for student and staff lunch and breakfast periods, and methods to increase participation in

the child nutrition and school breakfast and lunch programs. It requires the appropriation of sufficient state-source funds for the state's department of education to employ a physical activity coordinator to assist school districts in the implementation of physical education programs" (NCSL; 2008). This bill thus changes the statutory duties of local school health councils from permissive to mandatory.

- The State Nutrition Action Plan (SNAP), a program of the Food and Nutrition Service (FNS), "is a process to foster strong collaboration and information sharing across program lines and support implementation of more integrated nutrition education and promoting activities at state and local levels". The major goal of this program is to promote the consumption of fruits and vegetables through collaborative efforts with the USDA nutritional assistant program and other related programs (POWER project; 2007).
- Preventing Obesity with Every Resource (POWER) Project- This statewide project consistently tracks the obesity epidemic in the state and provides ways and means to combat it; it provides an avenue to encourage parents and the community to help in this fight. It also provides legislative and state level mandates and policies for physical education, health, education and nutritional standards, and provides the initiatives to decrease the obesity rates among children in the state (POWER project; 2007).

Massachusetts

Nearly 30 percent of children in Massachusetts are overweight and obese (TFAH; 2009). The obesity prevalence rates have more than tripled in the past three decades in Massachusetts. More than a third of children between ages 2 and 5, according to PedNSS, are either at risk or are already overweight. Compared with other states, Massachusetts may seem to be better in terms of the percentage of people who are obese/overweight, but the health, economic, and other threats that the current trend pose to the state's today and its future workforce shows that, like many other states, Massachusetts needs a comprehensive obesity prevention program to help reverse the current trend. It is important to note that Massachusetts is among the states with the lowest adult obesity rates of 21.1% prevalence rate (TFAH; 2009). Among the programs and policies of this state include:

- Obesity related standards in schools that set nutritional standards for school meals, collect BMI and other health information on school children, and requires health education in schools (TFAH;2009). Since children and adolescents spend a considerable amount of their time in schools, the purpose of these policies, among others, is to improve and track the health of children to help tackle the obesity epidemic that has bedeviled the state.
- MA HB 4900 (2008) Appropriates \$150,000 for the Childhood Obesity School Nutrition Project to initiate or maintain school lunch programs that can help diminish the epidemic of childhood obesity. This law allows food service providers working with public schools to institute or maintain a

school nutrition program designed to reduce childhood obesity. (NCSL; 2008).

- The Massachusetts Public Health Council approved a measure which requires all restaurant chains including drive-through to display the calorie count of all menu items. The measure which takes effect in November 2010 mandates that chain restaurants with 20 or more in-state stores post the calories count next to each menu item. Similar to California and New York, Massachusetts goes further to include drive-through menus. Though this initiative is designed for all ages, the purpose of it is to help people make more informed choices that can help reverse the one-third middle and high school overweight and obesity prevalence in the state.

Minnesota

The 25% obesity rate among Minnesota's adults is not among the best in the country, but among its children 10 to 17 years, Minnesota, together with Utah are the states with the lowest overweight and obesity rates (23.15%) in the country (National Survey of Children's Health, 2007). However, a 23.15% obesity rates among children and adolescents is still problematic and cannot be completely classified a success. However, the partial success or otherwise of Minnesota in tackling childhood obesity is based on a number of policies and programs designed to reverse the escalating obesity trends in the country, and among them include:

- Healthy kids, Healthy Minnesota- A statewide program which seeks to put childhood obesity prevention front and center as a health priority. With an

ambitious plan to cut the rate of obesity by half by 2012, this program aims at improving school wellness, developing community partnerships and prevention programs for at-risk population, and to establish a statewide childhood obesity measurement system to track trends (NGA; 2010).

- MN SB 3780 (2008) “Created a Statewide Health Improvement Program and grants to local communities. Among other provisions, it establishes health care homes and reporting requirements, payment restructuring and care coordination payments, a health care workforce shortage study, free and reduced school lunch program data sharing, and automation and coordination for state health care programs” (NCSL; 2008).
- The Minnesota Nutrition, Physical Activity, and Obesity (NPAO) program- This program, according to CDC, aims to reduce healthcare cost by reducing the percentage of Minnesotans who are overweight or obese (CDC; 2009). The purpose of this program is to develop and promote the Minnesota Plan to Reduce Obesity and Obesity Chronic Diseases between 2008 and 2013.
- The Statewide Health Improvement Program (SHIP) - The aim of this program is to reduce the percentage of Minnesotans who are obese or overweight through better nutrition and increased physical activity. It ambitiously plans to move as much as 10 percent of the adult population into normal weight category by 2015 (MDH; 2010).

Despite these policies and programs by the states, childhood obesity continues to be a problem to all levels of governments and civil organizations. This is due in part to the fact that, these organization and government institutions have invested significant amount of resources and time in this endeavor. But the statistics do not

show any signs of leveling or reducing childhood obesity in the country. Below are some statistics that show the state of childhood overweight and obesity in the United States.

Among the states including the District of Columbia (DC), the Paired Samples Statistics on the Percentage of Overweight and Obese in the US, in table 1 below, shows a mean of 14.29 for the percentage of overweight and obese children ages 10-17 in the 2003-2004 national survey of children’s health with a standard deviation of 3.21. This is inline with most of the literature that reported obesity rates among this age group around that time. However, in the 2007 national survey of children’s health, shown in Paired Samples Statistics on the Percentage of Overweight and Obese in the US table, a mean of 31.01 among the percentage of overweight and obese children ages 10-17 with a standard deviation of 4.21 were recorded.

Paired Samples Statistics on the Percentage of Overweight and Obese in the US

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Percentage of Overweight and Obese Children Ages 10-17(2003-04 National survey of Children's Health)	14.2922	51	3.21016	.44951
	Percentage of Overweight and Obese Children Ages 10-17(2007 National survey of Children's Health)	31.0118	51	4.20698	.58909

Table 1

Characteristic of national averages, the six states did not deviate in any significant way from the national averages. They recorded a mean of 14.93 in the percentage of overweight and obese children ages 10-17 in the 2003-2004 national

survey of children’s health with a standard deviation of 3.3. In 2007, as shown in the Paired Samples Statistics on the Percentage of Overweight and Obese in Selected States in the US table below, the mean for the percentage of overweight and obese children ages 10-17 was 32.52, with a standard deviation of 7.02. This show a slightly higher obesity growth rates among the states than the national rates. This may be due to the criteria used in selecting the six states, which considered those states with the highest and lowest child obesity rates, as classified by the Trust for America’s Health (TFAH).

Paired Samples Statistics on the Percentage of Overweight and Obese in Selected States in the US

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Percentage of Overweight and Obese Children Ages 10-17(2003-04 National survey of Children's Health)	14.9333	6	3.30071	1.34751
	Percentage of Overweight and Obese Children Ages 10-17(2007 National survey of Children's Health)	32.5167	6	7.01525	2.86396

Table 2

Similar to the national statistics, the 2007 survey recorded higher percentage of obese and overweight children than the 2003/2004 survey. This is shown in table 2 above. Thus, just about have a decade, the childhood obesity rates in both the states and the nation in general have more than doubled.

However, the focus of analysis is not to compare the two different survey years, either among the states or the country in general. This is due to differences in the definition of childhood obesity in the two different survey periods. The 2008

national survey of children's health expanded the definition, and defined childhood obesity and overweight to include more subjects that were excluded in the 2003/2004 survey. This makes it academically unfair to compare the means of these two periods among the sample (states) or the population (country) due to differences in indicators used. However, the focus of this analysis is to stress the similarity in childhood obesity trends among the states (sample) and the country (population) in the two survey periods, as indicated by the means of both the 2003/4 and 2008 national survey of children's health.

As the obesity rates continue to be problematic to the states and the federal government, some states including the ones in this study are stepping up their efforts to tackle this health problem. Appendix A shows the fifty states including DC and some of the policies they are implementing to help reverse childhood obesity in the country.

Africa Agriculture/Food Policies

Country-Specific policies to fight child malnutrition

Political instability and perhaps Public Policy discontinuity to address under-nutrition of children by successive governments' in addition to economic conditions may account for the inadequate comprehensive agricultural/ nutritional policies in the Sub-Saharan African region. In areas where there has been some level of political stability and comparative favorable economic conditions, agricultural/food production, though not to the level expected, have seen a relative increase than the not so stable areas in the region. Notwithstanding this, the region, without exception of

any country, lacks good and modern forms of agricultural technology and good agricultural practices.

Apart from some few traditional areas where there is the unscientific insistence of land fallowing by traditional leaders for at least a year or two as a way for the lands to regenerate some of the nutrients needed to support crop growth, there are not enough, if any, regional or country specific policies modernizing the agricultural industry to increase production, reduce malnutrition, and improve the health of children in the region. This tradition may have been due to lack of fertilizers to regenerate the land. However, some countries have made some strides to develop and implement policies and programs aimed at increasing agricultural production to help reverse malnutrition and improve children's health in their respective areas. Some of the countries and their policies are discussed:

Nigeria

Like many countries on this continent, agricultural and food policies in Nigeria can be divided into four broad chronological phases which spanned from the pre-colonial era to date. The broad objectives of these policies have been to increase food sufficiency through modernization of agricultural production and processing, storage and distribution through the infusion of improved technologies and management. The first phase according to Manyong et al "spanned the entire colonial period and the first post-independence decade from 1960 to about 1969; the second covered the period from about 1970 to about 1985; the third phase started from about 1986 in the

structural adjustment period; and, the fourth was what could be characterized as the post-structural adjustment era, starting from about 1994 (Manyong et al, 2003).

In the years leading to 1970, there was a minimum government involvement in agricultural production in the country. Since the government attitude to agriculture was very much relaxed, food production and development was the responsibility of the private sector particularly the millions of subsistence farmers who steered agricultural development efforts in the country (Manyong et al, 2003). After 1970, there was the realization that food and agricultural production required a multi-dimensional approach to meet the growing population demands through policies, programs and projects that required direct and substantial federal government involvement in the industry. This saw the government moving from not so interested to almost taking control of the agricultural sector of the country.

This complete take-over of the sector did not go well with agricultural development in the most populous country in the sub-region due to their inability to sustain the industry coupled with programs discontinuity and increasing food demands. This in combination with Nigeria's dwindling fortune in the petroleum export market, a burgeoning debt burden and an unhealthy investment climate, led to the structural adjustment program (SAP) of 1986 which was a combination of demand-side policies, supply-side policies and other policies designed to improve a country's international competitiveness in all sectors of the economy (Manyong et al, 2003). The post-structural adjustment era came with some key agricultural policies that continue to the present. Throughout these periods, some of the core policies in this country included:

- The Agricultural Commodity Marketing and Pricing Policy- which established six national commodity boards for cocoa, peanut, palm produce, cotton, rubber, and food grains in 1977 to replace the regional, multi-commodity board that had been operating since 1954 (Manyong et al; 2003).
- The Agricultural Input Subsidy Policy of the 1970s which saw the centralization of agricultural input subsidies and the extension of these subsidies such as seeds, fertilizers, and other agro-chemicals to food crops; Water Resources and Irrigation Policy (Manyong et al; 2003).
- Agricultural Credit Institution- to provide credit to small-scale and large scale farmers as well as farmers' cooperatives.
- Agricultural Research and Development- to provide national coordination for agricultural research and for creating stronger linkages between research and extension services; the Water Resources Development and Irrigation Policy, Land Development Policies, and other trade and fiscal policies(Manyong et al, 2003).

However, despite all these initiatives, food production is still a problem in Nigeria, and the constraints to the effective implementation of these policies have been attributed to policy instability, inconsistency in policies, poor implementation of policies, and weak institutional framework for policy coordination among others (Manyong et al, 2003).

Kenya

Agriculture plays a very significant role in Kenyan's economy. It remains a key sector of the economy and plays the pivotal role in the country's efforts to reduce poverty and increase economic growth. With the sector contributing about 60% of export earnings and 45% of government revenue (Muriithi & Ayuko; 2009), Kenya throughout the decades has initiated and continues to implement policies and programs that are geared towards reducing the overall poverty and malnutrition situation in the country. Being the most important sector of the economy, employing 75% of the national labor force (Republic of Kenya 2005), it is not easy to reconcile that in a country where agriculture is the backbone of the economy, famine and malnutrition can be so frequent across all class of people (Alila & Atieno; 2006).

Having said these, Kenya which occupies mostly arid and semi-arid lands has made some improvements by initiating policies and programs to help improve the agricultural industry and subsequently reverse poverty and malnutrition among the people. Among these policies and programs are:

- The 1970's Kenyan National Soil Conservation Program supported by the Swedish International Development Authority (SIDA). With the main focus on individual farmers the objective of this policy was to "increase and sustain agricultural production, by introducing simple, cheap and effective soil conservation measures that could be carried out by the farmers themselves" (Kinyanjui et al; 2000).

- The Animal Production Research Program which seeks to develop and disseminate appropriate technologies and promoting their adoption to facilitate profitable livestock production and range resource management.
- The Socioeconomics and Biometrics Program which provide appropriate socio-economic information and biometric support required in the development, adaptation and adoption of agricultural technologies (Kari; 2010).

Ghana

The agricultural sector in Ghana has and continues to play, a major role in Ghana's economic growth and development in the short to medium term. Though this country has experienced some relative stable governance over the past two decades and subsequently seen some significant improvement in poverty and malnutrition, results from the 2003 Ghana Development and Health Survey (GDHS) indicated that the proportion of children under five with stunted growth marginally increased from 26 per cent in 1998 to 30 per cent in 2003, 11 percent severely stunted (UNICEF; 2005) with children having multiple micronutrient deficiencies.

Agriculture contributes an average of 40% of the country's GDP (FAO; 2003), but food crop producers in the country are among the industries with the highest levels of poverty and malnutrition (WFP, 2005). The 1970's saw a significant decline in the country's economy but through series of economic recovery programs (ERP) and structural adjustment programs embarked on by the country with support from the World Bank and the International Monetary Fund (IMF) saw a reversed of the trend (FAO;2003). However, the agricultural sector did begin to grow with other sectors of

the economy. “The period 1989 – 1992 recorded the lowest agricultural average growth rate of 1.6%, with negative rates of -2% and -0.6% in 1990 and 1992, respectively. Between 1992 and 2000 agricultural growth improved, peaking at 5.2% in 1996, but declined again to only 2.1% in 2000 before recovering again in 2001 and 2002 “ (FAO;2003).

Agricultural policies in Ghana spanned over a century ago. Agricultural development featured prominently during the colonial era with the development of a ten year economic development plan under Sir Gordon Giggisberg rule in 1919. A similar plan was drafted by the same colonial masters in the 1946-1956 development plan but these pre-independence policies did not have any significant impact in the food and nutritional sectors of the country. The post independent era came in with the election of the first Africa majority government in 1951. This brought in the introduction of a five year development plan from 1951-1956 (FAO; 2003). Similar plan continued after independence in 1957 by the then Government through its five year interim economic plan. However, the whole plan was dropped in 1961 after the country adopted the policy of building a socialist state which demands a stronger government participation in the creation and production of social services, infrastructure and wealth for the growth of the economy (Hug; 1989). The seven year plan placed a strong emphasis on industrialization through the diversification of agricultural produce of the country.

Successive governments, both legitimate and illegitimate, after 1966 did not contribute in any way meaningful to the agriculture sector of the economy. It was not until the 1980s and 1990s that the Economic recovery program and the structural adjustment programs under the assistance from the World Bank and the IMF brought

in some light into the agricultural sector of the country (UNICEF 2006; FAO 2003). Since then, policies relating to agriculture, food, and nutrition have been inconsistent without any comprehensive program and results. Among the policies and programs that have been initiated in the agriculture and food/nutritional sector throughout the decades include:

- The State Farms Workers Brigade and Farmers' Co-operative (1963-1966) which engaged in an extensive bush clearing operations designed to bring a maximum amount of acreage under cultivation (FAO;2003).
- The National School Feeding Program which was launched in 2005 seeks to reduce hunger and malnutrition, increase enrollment, attendance and retention, and provide market for domestic farm produce (Republic of Ghana; 2005). This program provides nutritious meals and lunch to all pupils especially needy children in primary schools.
- The Ghana National Health Insurance Act of 2003 provides free basic care and nutritional information to pregnant women throughout their gestation period until six months after their birth. Part of this program replaces what was known as “weighing” where nursing mothers in the past were given free formula and other foods on a monthly basis to supplement the breast milk (Republic of Ghana, 2003).
- The recent Removal of subsidies for all agricultural imports into the country to help develop local food production by preventing undue competition from products from Europe and the United States which are relatively cheaper and pose serious threats to local producers (Government of Ghana; State of the nation address: 2010).

South Africa

Though South Africa constitutes the largest economy in the Sub-Saharan African region, it has its share of the malnutrition problem necessitated by poverty among children and adults alike. The apartheid ravaged economy did not have much of any comprehensive agricultural and nutritional policies to reduce poverty and malnutrition especially in the rural areas where they dominated. However, prior to 1994, many national economic policies were initiated to protect the agricultural industry (Viljoen, 2005). During this time, public policies, particularly those governing agriculture, were exercised within a minority rule. As a result there was strong government interference in both social and political life as well as the centralization of authority. This effected the smooth growth of all industries including the agricultural sector (Backeberg; 2003) which by then had been identified as the engine to reducing malnutrition and poverty in the country. Government's intervention and control in the agriculture sector reached its peak sometime in the 1980's, with a host of laws, ordinances, statutes and regulations affecting all sectors of the agriculture industry (Jooste *et al*, 2001).

After this period, agricultural policies were generally determined by the constitution (Viljoen, 2005), and among the policies that the country has implemented throughout the decades include:

- The Agricultural Marketing Act, which provided subsidies to farmers usually in the form of drought aid and other disaster payments primarily in the maize, dairy, and wheat industries (Jooste *et al*, 2001). The purpose of this act was to

compensate farmers who, through drought, lost their crops or could not even plant, so that they could continue their production.

- The Marketing of Agricultural Products Act (Act 47 of 1996) which created the National Agricultural Marketing Council (NAMC) to increase market access, promote marketing efficiency and optimize export earnings (Van Schalkwyk *et al*, 2003). In most hinterlands, foods usually go bad during the bumper periods due to lack of labor or transportation to the markets.

Therefore, a system to increase agricultural produce and market it to improve the welfare of farmers was a motivation to increase production.

- The Land Redistribution for Agricultural Development (LRAD) program which provided grants for aspiring commercial farmers. Again, this program provided grants to those who plan on going into commercial farming.
- The Agricultural Labour Act (147 of 1993) which addressed the inadequate rights of farm workers by giving them some legal rights to organize and to basic conditions of employment comparable to workers in other sectors of the economy (Viljoen; 2005). Through this act, the labor relations act, the skill development act, and the employment equity act became applicable in the agricultural sector as well.

Mozambique

Mozambique is one of the Sub-Saharan countries that were once ravaged by civil strife, poverty and malnutrition among others. But there are clear indications suggesting that the economic conditions of Mozambique is developing more quickly than anticipated after a peace deal was signed in 1992 and a democratic election was

held in 1994 (Waterhouse & Lauriciano; 2009). The last fifteen years has been characterized by impressive economic growth and poverty reduction, as well as agricultural output that have improved the country's food security. Once dependent on donors for more than half of its domestic food needs after the civil strife, the country as of 1996/97, depended on donors for only 4% of its aggregate food consumption (Tschirley, 1997). Gross Domestic Product in the same year also increased by 14 %.

Despite these improvements, Mozambique is still one of the poorest countries in the world with about 70% of the population living under the poverty line, and as in the case of most African countries, poverty and hunger continue to be a problem in many parts of the country particularly in rural areas (Rose et al; 1999) where majority of the people live. This affects children and women the most. Absolute poverty, defined as, living below the country's average poverty level of less than \$0.40 a day, is estimated to be around 67% with over 64 % of the total population experiencing all forms of food insecurity. About 67% and 63 % of urban and rural families respectively do not have enough food to eat (Selvester & Castro; 2003). Therefore, malnutrition/undernourishment is very prevalent in this country affecting all class of people.

This has attracted the attention of the government and donor agencies to tackle food insecurity in the country. Led by the Ministries of Agriculture and Fisheries, Health, and Planning and Finance, Mozambique has developed a vulnerability assessment report focusing on food insecurity and malnutrition (Rose et al; 1999). This has been necessitated by the rapid rural to urban migration of the young and able

bodied leaving the agricultural sector in the hands of the old and infirm. The challenge for the country, and perhaps most Sub-Saharan African countries, is how to feed a rapidly growing urban population (Tschirley et al; 2005), along with dwindling rural food production and increasing rural cereal consumption. Among the post war policies that the country has instituted include

- Structural Adjustment Program (SAP), which the country subscribed to in 1984 but aid and credit inflow started in 1987. This program focused on curbing inflation and restricting government spending in all areas of the economy, as well privatization of state owned enterprises to reduce government's role in the economy. The structural adjustment program which focused on poverty reduction through growth gave way for the national Action Plan for the Reduction of Absolute Poverty (Mohn; 1994: 17).
- The National Action Plan for the Reduction of Absolute Poverty -PARPA focus primarily on economic growth through market liberalization, fiscal restraint and improving the environment for the private sector in areas like agriculture production (Waterhouse & Lauriciano; 2009).
- In 2007, the council of ministers approved the Food Production Action Plan (Plano de Acção para a Produção de Alimentos PAPA) which sets ambitious targets in food production over a period of time in response to low production and productivity in agriculture. This action plan for 2008-2011 seeks to reduce Mozambique's current grain deficit through vigorous and practical actions beginning in the 2008/2009 agricultural year (Republic of Mozambique; 2006).

- Mozambique instituted the Social Protection Policy (SPP) and the Food Subsidy Program (FSP) to support the poorest in food supply when food rations were abolished (Waterhouse & Lauriciano; 2009).
- The Food and Nutritional Security Strategy of 1998 aim to develop strategies for rural development and food security through improvement of access to food, road development, and investment in trade among others (Selvester & Castro; 2003).

Cameroon

Characteristic of many Sub-Saharan African Countries, Cameroonians rely heavily on the agricultural sector to feed themselves and their families. Endowed with rich natural resources, Cameroon is positioned geographically to benefit from its agricultural resources both domestic and within the sub-region. But Cameroon continues to face significant food security problems in that the growth in food production has lagged behind population growth. This has resulted in a situation where only 80 percent of the food needs of the population are met, compared to 96 percent in the 1980's. According to Ayissi (2009), one of the challenges facing Cameroon is improving the living conditions of the population. Cameroon produced about 80% of its rice consumption in 1975, but the severe economic crisis that hit the entire region in the 1980s resulted in a situation where the country imports a sizable portion of rice which is among the staple foods of the country (Republic of Cameroon; 2009).

This recession also caused the stagnation in agricultural mechanization and intensification in the country (ECA; 2001). It is estimated that about 40 percent of the population live below the poverty line. About 70 percent of the total 17 million populations live in the rural areas with the agricultural sector employing about 60% of the people. Rural poverty ranges from 33 percent in the South Province to 56 percent in the extreme North Province (WFP; 2007), and as many as 2.8 million people are food insecure representing 26 percent of rural households. Nutritional status has been deteriorating since 1991, and according to a latest study in 2006, about 30% of children below the age of five (5) suffer from chronic malnutrition and almost thirteen (13) percent are severely stunted. Acute malnutrition affects 6 percent of children in its moderate and 1.2 percent in its severe form. Underweight affects 19.3 percent of children under 5 in its moderate and 5.2 in its severe form (WFP; 2007).

The dangers these conditions pose to the nation have resulted in the establishment of many agricultural and nutritional policies with the aim of reversing the current trend of poverty and child malnutrition in the country.

- Cameroon has been under the Structural Adjustment Program since 1980's with the help of World Bank and the International Monetary Fund (IMF) to improve the living conditions of the people by tackling the major causes of poverty and malnutrition (ADF; 2001).
- Cameroon has also implemented the Cameroon Agricultural Statistical System. Having conducted surveys and provided data since 1985, this program aims to provide data for the assessment of the agricultural sector and its importance in the national economy (Ayissi; 2009).

- The country is also subscribed to the Millennium Development Goals (MDG), the New Partnership for Africa's Development (NEPAD), the new US/Africa Partnership at dawn of the 21st Century, the Tokyo International Conference on African Development, and the ACP/EU Cotonou Convention (Ayissi; 2009).

The consequences of these policies and programs or the lack of it are the widespread malnutrition in Africa. The table on Descriptive Statistics on Underweight Children in Sub-Saharan Africa below shows a mean of 21.56 and a standard deviation of 11.94 for underweight children in 2008, down from the 2000 survey mean of 24.57 and standard deviation of 9.38. The standard deviation of 11.94 in the 2008 survey was however higher than the 9.38 reported in 2000. The table also indicates the mean mortality rate of 146.16 deaths for children under five (5) years in 2000. Even though data is not available to track the under five mortality trend from 2000 to date, the current high malnutrition rates do not suggest any significant improvements in the under five mortality rate.

Descriptive Statistics on Underweight Children in Sub-Saharan Africa

		u5mort2000	Under weight 2000	Underweight (NCHS/WHO) Moderate & Severe 2003-2008
N	Valid	43	42	43
	Missing	0	1	0
Mean		146.16	24.57	21.5581
Std. Deviation		58.023	9.384	11.94492
Percentiles	25	115.00	18.75	14.0000
	50	132.00	23.00	21.0000
	75	191.00	31.25	31.0000

Table 3

According to the World Health Organization (WHO), among the major causes of death in children under five in developing countries, 54% of them are associated with malnutrition (WHO; 2009). With a standard deviation of 9.38 and 58.02 respectively for underweight children under five (5), and under five (5) mortality, there is the concern that some of the countries in the region are severely affected by the child malnutrition problem contributing to over 50% of annual death among children under 5 years. The paired sample statistics table on Underweight Children in Sub-Saharan Africa below shows similar results emphasizing the deepening child malnutrition crisis in Africa, south of the Sahara.

Paired Samples Statistics on Underweight Children in Sub-Saharan Africa

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Under weight 2000	24.57	42	9.384	1.448
Underweight (NCHS/WHO) Moderate & Severe 2003-2008	21.8571	42	11.92573	1.84018

Table 4

The Paired Samples Correlations table on Underweight Children in Sub-Saharan Africa below shows a strong positive correlation between under 5 underweight in 2000, and the underweight (NCHS/WHO) moderate & severe from 2000 to 2008 with a correlation of 0.761.

Paired Samples Correlations on Underweight Children in Sub-Saharan Africa

	N	Correlation	Sig.
Pair 1 Under weight 2000 & Underweight (NCHS/WHO) Moderate & Severe 2003-2008	42	.761	.000

Table 5

In the Paired Samples Test table below on Underweight Children in Sub-Saharan Africa, the T-value was 2.70 with 41 degrees of freedom. The 2 tailed significant value was 0.029. P-VALUE = 0.029. With this value, It can be concluded that there is a statistically significant difference between the under 5 underweight in 2000, and the underweight (NCHS/WHO) moderate & severe from 2000 to 2008. This difference may have been caused by improvements in malnutrition rates in the

2000-2008 survey, reported by the WHO/NCHS. For underweight (NCHS/WHO) moderate and severe, an average of 21.56 was realized in the 2009 report indicating a reduction of two (2) average points. In the same year, the standard deviation of 11.94 also shows some positive signs with an improvement in the malnutrition rates.

Paired Samples Test on Underweight Children in Sub-Saharan Africa

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Under weight 2000 - Underweight (NCHS/WHO) Moderate & Severe 2003-2008	2.71429	7.75001	1.19585	.29921	5.12936	2.270	41	.029

Table 6

In the same way, the six countries showed some significant improvements and reported relatively favorable figures than the region as a whole. They've made some improvements in child malnutrition in course of the years. The table on Descriptive Statistics on Underweight Children in Selected Countries in Sub-Saharan Africa below shows means of 20.33 and 131.33 respectively for the underweight children under five (5), and under five (5) mortality in those six countries in 2000 with a standard deviation of 5.75 and 40.09 respectively. For the 2008 survey report, the mean was 16.17 with standard deviation of 9.28. Similar results are also shown in the Paired Samples Statistics on Underweight Children in Selected Countries in Sub-Saharan Africa table below.

Descriptive Statistics on Underweight Children in Selected Countries in Sub-Saharan Africa

		Under 5 mortality- 2000	Underweight under 5- 2000	Underweight (NCHS/WHO) Moderate & Severe 2003-2008
N	Valid	6	6	6
	Missing	0	0	0
Mean		131.3333	20.3333	16.1667
Std. Deviation		40.09322	5.75036	9.28260
Percentiles	25	107.2500	16.5000	9.0000
	50	129.5000	19.5000	18.5000
	75	159.5000	25.2500	22.5000

Table 7

Paired Samples Statistics on Underweight Children in Selected Countries in Sub-Saharan Africa

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Underweight under 5-2000	20.3333	6	5.75036	2.34758
	Underweight (NCHS/WHO) Moderate & Severe 2003-2008	16.1667	6	9.28260	3.78961

Table 8

There is a positive correlation of 0.628 between Underweight under 5 in 2000 & Underweight (NCHS/WHO) Moderate & Severe 2003-2008. This is shown in the Paired Samples Correlations on Underweight Children in Selected Countries in Sub-Saharan Africa below.

For this pair, the T-value was 1.413 with 5 degrees of freedom. The magnitude between the means in the Paired Samples Correlations and Paired Samples Test on Underweight Children in Selected Countries in Sub-Saharan Africa below is very wide, almost five folds. This may have been resulted from the small sample size used for this analysis. The 2 tailed significant value of 0.217 AND P-VALUE = 0.22 in the Paired Samples Test table below can be concluded that, there is statistically no significant difference between the under 5 underweight in 2000, and the underweight (NCHS/WHO) moderate & severe from 2000 to 2008.

In 2009, the underweight mean of 16.17 among the six countries shows about four (4) average points drop among children below five (5) who are below their average weight, with a standard deviation of 9.28. This further explains that, some of these countries saw some partial improvements between 2000 and 2008. Even though the averages shown in the tables are higher enough for concern, there is a comparative improvement among the cohorts in the course of the years, than the overall region.

Paired Samples Correlations on Underweight Children in Selected Countries in Sub-Saharan Africa.

	N	Correlation	Sig.
Pair 1 Underweight under 5-2000 & Underweight (NCHS/WHO) Moderate & Severe 2003-2008	6	.628	.182

Table 9

Paired Samples Test on Underweight Children in Selected Countries in Sub-Saharan Africa

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Underweight under 5-2000 - Underweight (NCHS/WHO) Moderate & Severe 2003-2008	4.16667	7.22265	2.94863	-3.41304	11.74637	1.413	5	.217

Table 10

US/EU agricultural Policies and their impacts in Sub-Saharan Africa

The nature of agriculture and nutritional policies in Sub-Saharan Africa are affected both directly and indirectly by policies of the United States, the European Union and other rich development partners. Agricultural subsidies in these countries, as well as food aids to the continent, have according to experts contributed to the malnutrition and worsening poverty in Sub-Saharan Africa. According to Oxfam international, European agricultural subsidies are inflicting enormous damage on agricultural producers in developing countries through dumping of their relatively cheap products at below local food prices (Oxfam; 2002). These practices not only hurt the economies of these developing nations but destroy the agricultural industries in these areas exacerbating poverty and malnutrition.

Related to this is the strict and perhaps the killer economic conditions that developed countries, through the International Monetary fund (IMF) and the World Bank, imposes on poor nations of the world, particularly those in Africa, since they are the poorest among the poor nations. To be able to reduce poverty and eradicate malnutrition demand these organizations and countries to devise their own economic development plans, and implement them through participatory decision making. This was echoed during the 2002 United Nations conference on financing for development stating that “each country has primary responsibility for its own economic and social development, and the role of national policies and development strategies cannot be overemphasized” (United Nation; 2002). Ghana, in their attempt to improve their healthcare sector decided to finance about 85% of healthcare spending through domestic resources (Government of Ghana; 2005). This has significantly improved healthcare in the country. However, very few countries can take such bold initiatives through domestic resources without resorting to outside funding sources due to limited GDP. It is as a result of their inability to generate internal resources that almost all African countries resort to the rich nations through the IMF and the World Bank for financial assistance.

But these supports do not come without strict and economic rippling conditions. A survey by the Strategic Partnership for Africa (SPA) in a donor forum for development in 2003 in low income African countries showed that, about 48% of aid from donor countries were delayed or lost due to unmet policy conditions (SPA-6 Budget Support Working Group (2004). But meeting these policies means that these poor nations have to implement social and economic policies based on a one-size-fits-

all policies rather than an evidence-based (Oxfam; 2006) through local knowledge and participatory approach.

In a country like Mali where more than 90% of the people live under two dollars a day, the country has seen a dramatic increase in its energy prices due to forced privatization by donor countries. This country through a requirement by the World Bank has been denied more aid to help jump start their ailing economy on the grounds of its failure to privatize its cotton industry (Oxfam; 2006). A similar situation is currently happening in Ghana where World Bank and IMF conditions have prevented the government of Ghana from hiring any new civil servants into the public sector (Adoboe, 2009, Guardian News and Media, 2009). The nature of these imposed policies and aids conditionalities have continuously crippled agricultural development in Sub-Saharan Africa, and thereby exacerbating the malnutrition situation on the continent. “There is no doubt, for example, that the programs of economic reform imposed by IMF and the World Bank on indebted countries have a profound and direct influence on the situation of the right to food and food security in many countries (Bertow & Schultheis; 2009).

Among some of the external policies include: The Global Food Security Act of 2009 which among others seeks to increase agricultural research through biotechnological advances appropriate to local ecological conditions, form university partnerships for agriculture to provide assistance to foreign countries to promote food security, to stimulate rural economies, and to improve emergency response to food crises (S 384; 2009)

CHAPTER 5

DISCUSSION

Sub-Saharan Africa

Malnutrition and poverty go hand in hand. To eradicate malnutrition demands a comprehensive approach towards poverty reduction which is threatened by high fertility and lack of infrastructural development in Sub-Saharan Africa. The problem of malnutrition among the people of African is multifaceted comprising poverty, high fertility, illiteracy, (Sachs; 2008) and underdevelopment. According to Sachs, what is applicable to individual families is also applicable to the larger society. Therefore, the success or otherwise of a country or regional policies, geared towards reducing malnutrition depend on such factors as well. Malnutrition, for several decades, has been a serious problem, and continues to be a problem for the African continent. Many efforts outlined in the continent's policy initiatives have not adequately satisfied the multi-dimensional approach needed to address the malnutrition and poverty crisis on the continent.

A Look at the trends by Lykens & colleagues (2009) indicates that, the region in general has made some partial improvements in tackling malnutrition over the past decade or so. However, the results are inadequate considering the nature of the crisis now. This partial success cannot be said of all the countries in the region, but very few who are taking bold steps to address the problem holistically in areas like education, high fertility, and poverty reduction. Countries like Ghana and Cameroon have made significant efforts through profound changes in agricultural policy (Dewbre & De Battisti; 2009). These changes among others include government's

ability to motivate farmers through pricing of their produce, and in some cases, providing them with farm inputs such as equipments and fertilizers to increase their output. Some other countries have made similar efforts. But where such efforts are not backed by sustained funding and commitment from governments and donor agencies, as well as economic and political stability, these efforts have become futile.

The six countries selected for analysis, statistically, have seen significant improvements in their efforts to tackle child malnutrition. The results section some significant improvements in the course of the years compared to the region as a whole. In these countries, efforts have, and are still made through policy initiatives to holistically address the problem. Programs like national school lunch programs in Ghana and in Kenya, through the help of donor agencies, are believed to have improved the nutritional backlog among children of school age, and have reduced mortality rate among children who may have died through hunger and malnourishment.

These policies, while feeding children with nutritional foods to supplement what they receive from their homes, also purchase the food directly from the local farmers, thereby providing fresh foods to the students and providing direct market for local farmers as well. These programs are contributing a lot at reducing poverty among farmers, not forgetting the thousands that are employed through the program, in countries that have these policies and programs. Where malnutrition prevention efforts have been addressed together with poverty reduction efforts, the results show decline and perhaps a comparative low malnutrition rate among children in those countries. In Mozambique, this thesis could not find similar policies that seek to

address child malnutrition and poverty reduction. Where as Mozambique for decades have depended heavily on food aid than any of the remaining five countries, malnutrition rate has not been low compared to its peers. Perhaps, it may be that, as Sachs (2008) indicated, malnutrition issues were tackled in isolation but not together with poverty reduction strategies, a situation that has seem to be successful in countries like Ghana, Mali, and Cameroon (Dewbre & Battisti; 2009).

The results also indicate interesting trends among the six countries. Most of their policy initiatives were identical. In other words, a majority of them have similar trajectory. Thus, they are all geared towards reducing malnutrition and poverty among the people. South Africa and Nigeria, both have implemented policies to help increase food security in their respective countries for decades now. Some changes were done through subsidies to farmers, in the case of South Africa, while others were done through strengthening and helping farm produce reach the market with guaranteed market and price for the produce. Ghana and Ivory Coast for example, have succeeded in this area in their cocoa industries.

However, not all efforts by the countries have ended at the anticipated results. The six countries have in at least one time in their development agenda, subscribed to the Structural Adjustment Programs (SAP) by the IMF, and other such programs. But very few have realized their full benefits. Whereas Kenya and Ghana have made significant improvements through the Structural Adjustment Programs by the IMF and the World Bank, the success by Mozambique and perhaps Nigeria in reducing child malnutrition and poverty through such programs have not been successful like their counterparts. The reasons for not been so successful in these programs can be

attributed to the lack of continuity and commitment by successive governments to continue ongoing projects and programs initiated by previous governments.

The other thing that these two countries have had in common over the past two decades or so is political instability. Therefore, so far as political instability and the attitude of introducing new programs without resorting to the spirit of continuity exists, issues surrounding malnutrition and poverty in the region, may be difficult to address in the immediate. Similarly, in as much as majority of policies and programs supposed to help eradicate hunger and poverty continue to sing political tunes, but not that of the populace, eradicating hunger and poverty, which has ravaged the continent for far too long, may be difficult, if not improbable, to realized.

The situation is also complicated by inadequate funding for programs and policies. Most policy initiatives in Sub-Sahara Africa to combat malnutrition and poverty are funded through donor support, and very little coming from the countries themselves. Therefore, in situations where such supports are not forth coming, programs are abandoned. But the countries that have been able to fund a greater proportion of their initiatives have seen some success, at least better than before. Ghana's national health insurance scheme is a typical successful example where 85% of funds needed for the scheme are generated internally (Government of Ghana; 2006). The program has so far been able to withstand the economic pressures in the wake of dwindling donor aids.

In a related development, there is also a significant effect of commodity dumping from donor countries and agencies on the continent. The nature of agriculture and nutritional policies in Sub-Saharan Africa are affected both directly

and indirectly by policies of the United States, the European Union, and other rich development partners. Agricultural subsidies in these countries, as well as food aids to the continent, have according to experts contributed to the malnutrition and food insecurity, as well as the worsening poverty in the Sub-Saharan African region.

“Developed country subsidies have a particularly strong poverty impact when they are provided for crops that are also grown in developing countries. This is because, since developing country farmers generally do not receive any subsidy and have higher input prices than their counterparts in developed countries, they are disadvantaged when they have to compete directly with the subsidized produce from developed country farmers who comparatively, enjoy cheaper agricultural input prices (La Vina et al; 2006:8).

According to Oxfam international, European agricultural subsidies are inflicting enormous damage on agricultural producers in developing countries through dumping of their relatively cheap products at below local food prices (Oxfam; 2002). These practices not only hurt the economies of these developing nations but destroy the agricultural industries in these areas exacerbating poverty and malnutrition. The Benin, Burkina Faso, Chad, and Mali delegations in 2003 submitted their initiative to the WTO stating that” if U.S. cotton subsidies were eliminated, cotton production in West and Central African countries would be highly profitable and could act as an important catalyst for poverty reduction in the countries concerned” (WTO 2003b). This is because subsidies on cotton in the developed world in every year deny West and Central African countries up to US \$ 250 million in revenue and the estimated 10 million people whose livelihoods center around the cotton industry (Oxfam, 2004). Since malnutrition is tied to poverty, such initiatives by the developed nation do not

only deny poor farmers in developing countries of the income due them, they also deny developing countries the resources needed to jump-start their ailing economies to reduce poverty, and subsequently eradicate hunger and malnutrition.

These factors and conditions continue to dominate the development climate of the continent. They have significantly impacted the region's efforts to fight malnutrition and poverty; the two avoidable evils that have and continue to claim lives, making life unbearable for millions of people particularly children and women. Therefore, Africa, south of the Sahara can do best in tackling malnutrition and poverty through local knowledge and participatory approach. This has proved to be very successful in projects and policies that originate from within, instead of those coming from outside. This is because majority of these outside policies do not harmonize well with the development climate of these developing economies. So the earlier Sub-Saharan Africa countries begin to initiate programs and policies that are friendly to their socio-economic health, the earlier they will be on their path towards reducing poverty and malnutrition

United States

Childhood obesity continues to be a problem to Public Health officials and policy makers. Almost a third of United States children are overweight, and sixteen (16%) percent are obese (Ogden et al 2008). As the national rate continues to rise, the federal, state, and local governments have instituted measures to help reverse a growing problem, which is costing the nation billions of dollars in health care bills. The link between childhood obesity and agricultural/food policies may be faint.

However, there are indications that public policies that subsidize and provide food assistance may have unintentionally contributed to the childhood obesity problems in the country (Kimbrow & Rigby; 2010). Since overweight and obese children are more likely to become overweight in their adult age than normal weight children, tackling childhood obesity is the most effective approach at addressing this health problem, which is now a major priority of the US government and the Public health community.

A study by Kimbro and Rigby (2010) shows a strong connection between food assistance to low income families and childhood obesity. These programs reach as much as half of all US children, especially African American and Hispanic children through the Supplemental Nutrition Assistance Program (SNAP) and the Supplemental Nutrition Program for Women, Infants, and children (WIC). The objectives of these programs were to alleviate hunger and supplement children's nutrition in the days when balanced meal was a problem in many American homes (Ver Ploeg & Ralston; 2008). Today, there is strong association suggesting that SNAP may have increase the body mass index (BMI) for these Americans (Kimbrow & Rigby; 2010).

Reiterating Jeffrey Sachs (2008), "what is applicable to individual families is also applicable to the larger society". Thus national policies to subsidize and increase food production may have contributed to the larger picture of childhood and general obesity and overweight in the United States. Pollan (2003), in a report states that "the obesity epidemic which most researchers date back to the mid 70s", became dominant "just when the country switched to a farm policy consecrated to the overproduction of

grain. Since that time, farmers in the United States have managed to produce 500 additional calories per person every day” (Pollan; 200). The 2002 Farm Bill tied subsidies to some yields. It encouraged farmers to produce more of certain crops such as corn, wheat and other grains and animal products than they otherwise would (Mayrand et al. 2003), ignoring fruits and vegetables.

Today, corn, wheat, and other grains form the main staple of many Americans meals. Corn varieties are directly used for food and animal feed, or processed to make food and feed ingredients (such as high fructose corn syrup, corn starch and lysine). Their over abundance have made food, poultry, meat, and dairy products cheap and available in the United States than in any other country of the world. While a whole fresh chicken cost approximately \$ 10 equivalent in most Sub-Saharan Africa food markets, a whole cooked chicken marinated with ingredients and ready for consumption, cost around \$6 in most grocery stores in the United State. As Americans continue to spend less and less on food, one cannot resist, but to consume, resulting in the childhood obesity epidemic we are witnessing now.

The so called American dream has also been translated into the portions of our foods. Thus, as foods become cheaper and cheaper, and Americans continue to spend less and less of their income on food, portion sizes increases, and thus, many tend to consume more. Today, there are size wars among restaurants and fast food operators, as burgers and French fries continue to get bigger and bigger, increasing the calorie and sodium consumption of American children. Fried chicken is now sold in buckets, as soda cups follow in that direction. Even serving plates and cutlery sets used in restaurants and in fast food joints are going super size to help accommodate the big

portions of food. The result is the increasing sizes of children and adolescents, posing a serious threat to the health of the nation. With these, public policies that set the pace for such an abundance of the not so healthy foods in our homes and in our restaurants cannot escape the blame of contributing to what has now become a national epidemic. It is the same habit that has been translated into our public schools through the national school lunch programs.

A look at the results of this study shows that not a single state has been able to reduce the incidence of childhood obesity in the course of the years; rather all of them have seen an increasing size of their children and adolescents. The states with the lowest rate of obesity cannot even boast on this partial success, since their low rates are as dangerous and pose serious threat to the health of their citizens. Comparing the national averages to the six states, there are no significant differences in the childhood obesity trends between the sample and the total population. States like California, Illinois, Texas, and Massachusetts that have implemented policies and are somehow very strict in policies that are geared towards reducing childhood obesity are not the very states with the least rates of childhood obesity. Their rates are equally as high as those that do not have major policies to help reverse the obesity/overweight epidemic the nation faces.

The solution may not be the ones coming from the state level since majority of the states agricultural and nutritional policies derive their funding and guidelines from the federal government through farm subsidies and programs like the WIC and SNAP among others. It is indeed not within the powers of policy makers as well to prescribe what people should eat, and how people should trim their portion sizes. But the same

policy initiatives that may have contributed to the present obesity epidemic, can also serve as an avenue to reverse the escalating childhood obesity in the United States. Kimbro and Rigby (2010) found that “subsidized meals at schools and or day care are beneficial for children’s weight status, and therefore, subsidized meals may be the most effective tool to use in combating obesity in low income children” (Kimbro & Rigby, 2010). Increasing nutritional value through federal assistance programs such as the WIC and the SNAP, providing nutritional guidelines for subsidized meals, as well as limiting access to food of minimal nutritional value as part of government programs may be a an effective strategy to fight childhood obesity (Kimbro & Rigby; 2010).

Until subsidies on the not so healthy foods are reduced, if not removed, and placed on the relatively healthy foods such as fruits and vegetables to encourage healthy eating habit among children and adults alike, the problem of childhood and adolescent obesity will continue to be a challenge to the country’s health and economy. This is very much important because, it was both national and local policies that have accumulated over the years to result in the present situation. Therefore, if efforts by state and local governments have not yielded any positive results so far, then, there is the need to go back to the basis and through same approach, develop policies to reverse the current trend. For, it is time to appreciate the fact, the American child is at danger to chronic diseases like hypertension, type 2 diabetes, some cancers, dyslipidemia, stroke, gout, and depression (McTigue et al: 2002., U.S. Department of Health and Human Services 2001), and other illnesses that were once considered adult diseases.

Conclusion and Recommendations

Policies can typically be described as deliberate plans of action to guide decisions and to achieve rational outcomes. It is indeed the action plan on which social organizations thread to provide goods and services to their constituents. Through the literature, there were identical policies that were found to be associated with the agricultural/nutritional policies of both the United States and the African region. But the results of these policies and programs have never been same or similar for the two regions. Whereas Americans spend millions of dollars every year on weight loss programs, as a result of the effects of these policies, Sub-Saharan African governments spend millions of dollars on programs at curbing malnutrition and food insecurity, having gone through similar policy programs.

A majority of the policies being implemented in the Sub-Sahara Africa region are similar to the policies that have been implemented from over a century to date in the United States. Similar programs and policies like the National school feeding programs, subsidies to low income families through Medicaid and other health programs, subsidies to low income families to provide nutritional foods, subsidies on local agricultural production, and trade liberalization to encourage ready markets for agricultural produce, were all seen across the two regions under study, even though the United States is over a century ahead of Sub-Saharan Africa in their policy initiatives and implementations. The difference is that, whereas those policies have been seen to contribute to the rising childhood overweight and obesity epidemic in the United States, similar policies, on the other hand, have not been able to help the African region come out from their protracted malnutrition, food insecurity, and

poverty among children and adults alike. Perhaps, they may have contributed to the status-quo. Below is a snap shot of some of the differences that were identified in the two regions under study.

Differences identified in the two regions

United States	Sub-Saharan Africa
<ul style="list-style-type: none"> ■ Political stability ■ Policy/Project continuity ■ Adequate funding ■ Good project implementation ■ Focus on local food security ■ Agriculture is profitable ■ Millions on weight loss Programs 	<ul style="list-style-type: none"> ■ Political Instability ■ Policy/project discontinuity ■ Inadequate funding ■ Poor project implementation ■ Focus on export crops ■ Agriculture not profitable ■ Millions on Malnutrition prevention programs

Table 11

The difference in the success or otherwise of agricultural and nutritional policies in these two different areas were found to center on a combination of issues such as project implementation, funding, project continuity, and political stability among others. Where as policies in the United States have seen to be relatively well implemented and well funded due to the country’s economic success, most policies in Africa, south of the Sahara have lacked proper implementation due in part to

inadequate expertise and the political will needed to deliver on those policies and programs. In situations where the implementation shows signs of success, inadequate funding have played significant role in their failure.

In a similar way, the United States have experience more than two centuries of political stability and project continuity by successive governments and leaders. These two factors are very much important to a country's development and food security, and hence, the eradication of poverty and nutritional related problems in that country. These attributes cannot be said of the politics and the policy arena in Sub-Sahara Africa, where political instability have always derailed development projects, and lack of "political will" on the part of the continent's leaders have curtailed many development projects that had previously shown signs of success.

Therefore, the difference in success in the United States, and perhaps the failure in Sub-Saharan Africa in providing food and nutritional security to the people can be said to be issues surrounding effective project implementation, adequate funding to develop and sustain those programs and policies, project or policy continuity by successive governments and leaders, and political stability among others. The economic strength of any country is the foundation for successful project/policy initiation and implementation. However, political instability and the lack of political will by successive governments in Africa to continue ongoing projects, are believed to have worsened the playing field, and contributed to the failure of many agricultural and nutritional policies on the continent, even when they have been adequately funded by donor agencies.

Related to the above, is the difference in profitability of the agricultural industry in these two regions. It is through the agricultural sector that nutritional problems are addressed, and today's agriculture industry demands state of the art technology and both large capital and quality human resources. While most American farmers are relatively rich and educated, and gain substantial income from their occupation, farmers in Sub-Sahara Africa are mostly uneducated, and the poorest among all industries in the region, even though they are the backbone of the continent's economy, and employs more than any other industry in the continent. This de-motivates the already poor farmers to invest in the sector. The unprofitable nature of the industry also does not motivate and attract new and young investors into the industry, leaving the sector to the old, the poor, the uneducated, and at the mercy of the weather.

Therefore, in situations where there are substantially similar policies among the United States and Sub-Sahara Africa, the unattractive nature of the sector in the African region to attract the youth and investors into the sector, has contributed significantly to the protracted food insecurity and malnutrition in the region. Subsidies also play a vital role in the policy differences in these two regions. In the United States, the government through the tax payer's money provides subsidies to farmers in the most important areas to produce enough food locally, provides ready markets for their produce, and facilitates exports to earn more income for the country. Such subsidies support and encourage farmers and even invite new investments into the agricultural industry.

In Sub-Saharan Africa, this thesis did not recognize any organized subsidy to farmers to help increase food production, and reverse the protracted food insecurity in the region. In some few countries like Ivory Coast, Cameroon, Ghana, and Mali, subsidies provided in the form of insecticide sprays and other farm inputs are done on only export crops like cocoa, coffee and cotton. The other agricultural products like food crops (maize, wheat, rice etc) needed for local consumption to help reverse the growing malnutrition epidemic and food insecurity are not given the needed attention. The result is the status quo the continent finds itself in today. This has placed farmers in the African region at disadvantaged in the global market, when competing with their colleagues in the developed world who through subsidies are able to send relatively cheap farm products to the global market. This has been interpreted by some experts to be the woes of the agricultural sector in the African region.

Nevertheless, lessons are learned everyday in the African region. As the West sets the pace through research and inventions in the agricultural and nutritional sectors to accelerate local food production, the developing world particularly those in Sub-Saharan Africa are following gradually to help reverse the protracted food insecurity and malnutrition among children and adults alike. The introduction of subsidies into the agricultural industry and the introduction of policies and programs like the national school feeding programs in some countries to supplement the nutritional needs of children and adolescents are indications that, Sub-Saharan Africa is gradually following the path of the west particularly the United States and the European Union.

As the introduction of these programs begins to take effect, and development begins to trickle in, there are some signs of the impact of such policies among the people in Africa. Even though malnutrition is very prevalent in the African region, there are pockets of overweight and obesity among some children in the region particularly among the relatively rich in the society. Thus, as the percentage of income spent on food reduces, families tend to consume more and resort to more processed foods than the fresh ones. Meaning, the African region is not immune to overweight and obesity among children and adults alike. As these pockets of overweight and obesity begins to surface among the people, Africa should learn from the United States, and perhaps the European Union not to subsidize only the not so healthy food but balance it with the healthy ones such as fruits and vegetables, accompanied by a healthcare system that focus on prevention as against treatment, in order not to move from one extreme point (malnutrition epidemic) on the food-security/nutritional line to the other extreme point (obesity epidemic).

On the other hand, the United States should develop comprehensive and practical approaches towards reversing childhood obesity. The same policy initiatives that may have contributed to the present obesity epidemic, can also serve as an avenue to reverse the escalating childhood obesity in the country. Subsidized meals at schools and or day care are beneficial for children's weight status, and therefore, subsidized meals may be the most effective tool to use in combating obesity especially among low income children" (Kimbro & Rigby, 2010). The states and federal programs should also channel some subsidies to the production of fruits and vegetables. This may encourage healthy eating, and subsequently help reverse the burgeoning childhood obesity epidemic in the country.

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Appendix A

OBESITY RELATED STANDARDS IN SCHOOL---2009

States	Nutritional Standards for School Meals	Nutritional Standards for competitive Foods	Limited Access to competitive Foods	Physical Education Requirements	BMI or Health Information Collected	Non-Invasive Screening for Diabetes	Health Education Requirements	Farm to School Program
Alabama	√	√	√	√			√	
Alaska				√			√	
Arizona	√	√	√	√			√	
Arkansas	√	√	√	√	√		√	
California	√	√	√	√	√	√	√	√
Colorado	√	√	√	√				√
Connecticut	√	√	√	√			√	√
Delaware				√	√		√	
D.C.				√			√	
Florida			√	√	√		√	
Georgia			√	√			√	
Hawaii		√	√	√			√	
Idaho				√			√	
Illinois		√	√	√	√	√	√	
Indiana		√	√	√			√	
Iowa				√	√		√	√
Kansas				√			√	
Kentucky	√	√	√	√			√	√
Louisiana		√	√	√	√		√	
Maine		√	√	√	√		√	√
Maryland		√	√	√			√	√
Massachusetts	√			√	√		√	√
Michigan				√			√	√
Minnesota				√			√	
Mississippi	√	√	√	√			√	
Missouri				√	√		√	

Montana				√			√	√
Nebraska			√	√			√	
Nevada	√	√	√	√			√	
New Hampshire				√			√	
New Jersey	√	√	√	√			√	
New Mexico		√	√	√			√	√
New York			√	√	√		√	√
N. Carolina	√	√	√	√	√		√	
North Dakota				√			√	19
Ohio				√			√	
Oklahoma	√	√	√	√	√			√
Oregon		√	√	√			√	√
Pennsylvania		√	√	√	√		√	√
Rhode Island	√	√		√	√		√	
S. Carolina	√	√	√	√	√		√	
South Dakota	√			√			√	
Tennessee	√	√		√	√		√	√
Texas	√	√	√	√	√		√	
Utah				√			√	
Vermont	√	√	√	√	√		√	√
Virginia				√			√	√
Washington				√			√	√
West Virginia		√	√	√	√		√	
Wisconsin				√			√	
Wyoming				√			√	
# Of States	19	27	29	50 + D.C.	20	2	48+ D.C.	19

Checkmarks in red represent new laws passed in 2008 or 2008

Source: Trust for America's Health; 2009: 32

