

**DETERMINANTS OF CHILDHOOD OBESITY AND POLICY AND  
PROGRAMME RESPONSE IN GHANA**

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Vrije Universiteit Amsterdam**

DETERMINANTS OF CHILDHOOD OBESITY AND POLICY AND PROGRAMME RESPONSE IN  
GHANA

A thesis submitted in partial fulfilment of the requirement for the degree of Master of Public  
Health

by

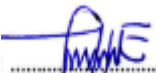
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## **LIST OF ABBREVIATION**

<b>AIDS</b>	Acquired Immune Deficiency Syndrome
<b>BMI</b>	Body Mass Index
<b>CDC</b>	Center for Disease Control and Prevention
<b>CHP</b>	Child Health Policy
<b>ECHO</b>	Ending Childhood Obesity
<b>FANTA</b>	Food and Nutrition Technical Assistance
<b>FAO</b>	Food and Agriculture Organisation
<b>FHI</b>	Family Health International
<b>FTO</b>	Fat mass and obesity-associated protein
<b>GDHS</b>	Ghana Demographic and Health Survey
<b>GDP</b>	Gross Domestic product
<b>GES</b>	Ghana Education Service
<b>GHS</b>	Ghana Health Service
<b>GSFP</b>	Ghana School Feeding Programme
<b>GSHS</b>	Global School-based student Health Survey
<b>GSS</b>	Ghana statistical Service
<b>HIV</b>	Human Immunodeficiency virus
<b>LMIC</b>	Low-Middle Income Countries
<b>MCHNIP</b>	Maternal and Child Health Nutrition Initiative Project
<b>MMDA</b>	Metropolitan, Municipal & District Assemblies
<b>MOE</b>	Ministry of Education
<b>MOFA</b>	Ministry of Food and Agriculture
<b>MOH</b>	Ministry of Health
<b>NCD</b>	Noncommunicable diseases
<b>NGO</b>	Non-Governmental Organizations
<b>NHP</b>	National Health Policy
<b>NNCDP</b>	National Noncommunicable Disease Policy
<b>NNP</b>	National Nutrition Policy
<b>PE</b>	Physical Education
<b>PHC</b>	Population and Housing Census
<b>RCT</b>	Randomised Control Trials
<b>SES</b>	Socioeconomic status
<b>SFP</b>	School Feeding Programme
<b>SSA</b>	Sub-Sahara Africa
<b>SSB</b>	Sugar- Sweetened Beverage
<b>TV</b>	Television
<b>UN</b>	United Nations
<b>UNICEF</b>	United Nations Children’s Fund
<b>USAID</b>	United States Agency for International Development
<b>WB</b>	World Bank
<b>WHA</b>	World Health Assembly
<b>WHO</b>	World Health Organisation

## GLOSSARY

**BMI:** Body mass index = weight(kg)/height(m<sup>2</sup>)<sup>a</sup>

**BUILT ENVIRONMENT:** The built environment includes all of the physical parts of where we live and work (e.g., homes, buildings, streets, open spaces, and infrastructure). The built environment influences a person's level of physical activity.<sup>b</sup>

**CHILDREN:** Those less than or equal to 19 years of age.<sup>a</sup>

**FOOD ENVIRONMENT:** Physical presence of food that affects a person's diet, proximity to food store locations, distribution of food stores, food service, and any physical entity by which food may be obtained.<sup>c</sup>

**OBESITY:** From birth less than 5 years of age: weight-for-height more than 3 Standard Deviation(SD) above the WHO Child Growth standards median. From 5-19 years: Body mass index (BMI) > 2 standard deviations above the WHO growth standard median.<sup>d</sup>

**OBESOGENIC ENVIRONMENT:** Environment that promotes high intake and sedentary behaviour. This includes the foods that are available, affordable, accessible and promoted; physical activity opportunities; and social norms in relation to food and physical activity.<sup>a</sup>

**OVERWEIGHT:** From birth to less than 5 years of age: weight-for-height more than 2SD above WHO Child Growth Standards median. From 5-19 years: BMI > 1 standard deviation above the WHO growth standard median.<sup>d</sup>

**SOCIAL ENVIRONMENT:** Family environment, parental nutrition and behaviours, family eating behaviours, parent support and modeling.<sup>e</sup>

**UNHEALTHY FOOD:** Foods high in saturated fats, trans-fatty acids, free sugars or salt (i.e. <sup>1</sup>energy-dense, nutrient-poor foods).<sup>a</sup>

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<sup>a</sup> Report of the commission on ending childhood obesity. World Health Organization 2016

<sup>b</sup> <https://www.cdc.gov/nceh/publications/factsheets/>

<sup>c</sup> <https://www.cdc.gov/healthyplaces/healthtopics/healthyfood/general.htm>

<sup>d</sup> [http://www.who.int/growthref/who2007\\_bmi\\_for\\_age/en/](http://www.who.int/growthref/who2007_bmi_for_age/en/)

<sup>e</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1446600/pdf>



## **ABSTRACT**

**Background:** The purpose of this study is to explore and identify the various drivers underpinning the emerging increasing trends in childhood obesity in Ghana; and to further analyse policy and programmatic response to the drivers, with the view to make evidence-informed recommendations to help tackle childhood obesity in Ghana.

**Method:** Haddad's Conceptual Framework for the analysis of double burden of malnutrition is used to guide the literature review. A search was done using PubMed[with MeSH terms], Google Scholar, Google electronic search engines as well as the Vrije Universiteit Library database to source for relevant articles for the study. This is supplemented by snowball method of a literature search to identify articles from the reference list of current published papers. Desk study (Grey literature) was conducted to collect unpublished articles, policy documents, reports, guidelines and other relevant information from the official websites of organisations/institutions[CDC, GES, GHS, MOE, MOFA, MOH, WHO] whose operations are important to the study. The study included all relevant articles published in the last 10 years (from 2007-2017), peer-viewed, in English language, and met the WHO's definition of a child. Exceptions, however were made to include important papers and documents identified only by snowballing method, and are below the years specified. All other articles outside these criteria were excluded.

**Result:** The following key determinants emerged as the drivers of childhood obesity in Ghana: the food environment, built environment, social environment, socioeconomic status, female sex, poor dietary habit and physical inactivity. The result further found no clear school policies to address school unhealthy food practices, no clear strategies to tackle overnutrition, no prioritization of playing grounds for children, and no guidelines to encourage physical activity as key policy and programmatic gaps to obesity response.

**Conclusion:** Childhood obesity is increasing in Ghana. This has been recognised and given some sort of attention in policies. However, harmonization of policies are lacking and therefore, a whole-of-government approach is necessary to effectively tackle this problem of growing childhood obesity going into the future.

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**Keywords:** Determinants, Childhood, Obesity, Overweight, Overnutrition, Policy, Programme, Ghana, Africa.

**Word Account :** 12,560

## **INTRODUCTION: THE EMERGING WORLD TREND OF CHILDHOOD OBESITY**

Globally, the prevalence of childhood obesity is soaring with most of the increases occurring in the developing countries (WHO 2016a). Between 1990 - 2015, the number of childhood overweight and obesity has almost risen by 50% from 31million to 42million globally (WHO 2016). In the same two and half decades (25 years) in the continent of Africa, the region has experienced more than double (that is from 4million to 10million) in numbers of children under 5 years living with overweight and obesity (WHO 2016). And about a quarter (25%) of these global estimates of children with overweight and obesity lives in Africa (UNICEF/WHO/World Bank 2016).

In 2016-, the available figures showed an estimated 2million children with overweight and obesity in the West Africa Region, whilst the region continues to battle with issues of infections and undernutrition (WHO 2016). Presently, the region is also experiencing a rapid rise in noncommunicable diseases (NCD) with obesity implicated among the key drivers of NCDs in the region.

For a Long time, we have thought that in Africa is about infectious diseases, malnutrition, and communicable diseases (CD). But NCDs are now becoming more important than communicable diseases in terms of causes of death and suffering than communicable diseases. So in this 21<sup>st</sup> century, there are new challenges and that is why it is important to focus on these challenges. And being a nutritionist working in the Health Sector of Ghana, with most of the focus on childhood undernutrition. These emerging trends of childhood obesity also present a new challenge, and have a major impact on Ghana as well. This is the reason why this topic has been chosen to be studied.

## **THE STRUCTURE OF THE THESIS**

This write up is a review of literature to explore the drivers of childhood obesity and current policy and programme response in Ghana. The review is guided by Haddad and colleagues (2015) conceptual framework used to analyse dual burden of malnutrition. I have approached and structured this write up under four main chapters. The first chapter looks at the background information of the study area including geography and demography, economy, education, agriculture and trade as well as health. The second chapter analyses the problem and the rationale of the study, the objectives and method employed to achieve the study objectives. The third chapter examines the drivers of childhood obesity, policy and programme responses, shorfalls of various policies and programmes, and approaches and strategies in addressing these identified gaps. The fourth section which is the final chapter discusses the emerging findings and issues, conclude and proposes evidence-informed recommendations to relevant bodies for action.

## CHAPTER 1.0 BACKGROUND INFORMATION

### 1.1 GEOGRAPHY AND DEMOGRAPHY

The Republic of Ghana is centrally located in the coast of West Africa. It is bordered by three francophone countries (Togo on the east, Côte d'Ivoire on the west, and north and northwest by Burkina Faso). And occupies a total land area of 238,537 square kilometres. Ghana was the first British colony in the Sub-Sahara Africa to gain independence in 1957. Since 1992, Ghana has held seven successive democratic elections with the most recent held on late 2016 (Ghartey 2010 and GSS 2015).

Ghana administratively is divided into ten regions (Annex 1), which are subdivided into 216 districts to ensure equitable resource allocation and efficient, effective administration at the local level. The Ashanti, Eastern, and Greater Accra regions together constitute about 50 percent of the country's population (GSS 2013).

The population is estimated at 24,658,823 by the 2010 population census with an annual population growth rate of 2.5%. Females constitute 51.2% and males 48.8%. Children aged 0-19 constitute 12,058,164 (48.9%) of the total population. The urban population is 12,545,229 (50.9%) whilst 12,113,594 (49.1%) lives in the rural Ghana. See Table1 for rural-urban distribution among children age 0-19years in the Ghana (GSS 2012).

**Table1. Rural-Urban Distribution of children aged 0-19years in Ghana**

Age groups	All Regions	
	Urban	Rural
<1	356,688	374,578
1-4	1,184,768	1,489,497
5-9	1,389,660	1,739,291
10-14	1,391,229	1,524,811
15-19	1,364,124	1,245,865
	<b>5,686,449</b>	<b>6,374,042</b>
19+	6,859,105	5,739,552
<b>Total</b>	<b>12,545,229</b>	<b>12,113,594</b>

Source: Ghana statistical Service 2012

## **1.2 ECONOMY**

The Ghana economy has expanded and shifted from the previous agro-based economy to a market-based economy in the sub-region. The service sector remains the largest contributor to the economy. From 2014-2015, the share of GDP of the service sector rose from 52% - 53.3%, the Agriculture sector from 21.5%- 20.2% and the Industry sector from 26.6%-26.9% (GSS 2016). The service sector recorded the highest growth of 5.2%, with Agriculture and Industry sectors 2.5% and 1.0% growth respectively.

The total estimated GDP in 2015 stood at \$36,739Million with real annual growth rate of 4.1% compared with the 3.9% growth observed in 2014. The estimated per capita GDP in 2015 was \$1,328(GSS 2015b).

## **1.3 EDUCATION**

The education sector in Ghana for the past one and half decades has seen major changes. Notably is the incorporation of the pre-school education (nurseries and kindergartens) officially into the basic education as integral component of primary and junior high school. As policy, all primary schools in the country are required to have pre-schools (nurseries or kindergartens). In addition, during the 2005/2006 academic year, the government of Ghana introduced free basic public school education by absorbing all the fees associated with the enrollment of pupils into the basic public schools in the country (Darko *et al.* 2009).

And as strategy to increase enrollment, the government of Ghana in the same period introduced a school feeding programmes in some selected districts across the country. This was subsequently scaled-up to other public basic schools in the country. The school feeding programme is one nutrition intervention that is also helping to improve the nutritional status of children in public schools who largely come from low to middle socioeconomic backgrounds.

## **1.4 AGRICULTURE, FOOD PRODUCTION AND TRADE**

The Ghanaian economy which was based primarily on agriculture has shifted to a market-based economy. There are relatively few barriers to agriculture, food production, and trade and investment policies in comparison with other neighbouring countries in the sub-region.

The economy has prioritised the agriculture and food sector in favor of cash crops exports through free trade agreements. This has affected the production of crops locally used for food, and resulted in over reliance on outside market to import foods (Lock *et al.*, 2009, Agyei-Mensah & de-Graft Aikins , 2010).

According to Trade Statistics 2009-2013 from the Ghana statistical service, Ghana imported rice worth \$639Million, Frozen chicken (\$192Million), sugar (\$186Million), Animal/vegetable fats and oils(\$660Million), and prepared foods also worth at \$786Million. These figures are expected to rise in the course of years looking at the growth rate, and consumption pattern of urban residents in Ghana.

## **1.5 HEALTH**

Ghana has a well-developed health sector which is organised at three levels: national, regional and district. This is administered by the Ministry of Health (MOH) and its implementing body, Ghana Health Service (GHS). The health system was primarily set up to handle infectious and communicable diseases but now overwhelmed with the growing burden of noncommunicable diseases (NCD).

The prevalence of hypertension and diabetes are now estimated between 28%-40% and 6.0-9.5% respectively among adults (Bosu 2015). Noncommunicable diseases are now estimated to account for about 47,841 premature deaths (aged <70years) every year. And it is projected to exceed total share of death attributable to communicable diseases by 2030 (MOH 2012).

Obesity which is a major known risk factor of NCDs is reported to be on the rise in women aged 15-49 years as well as children (MOH 2012, GSS 2015). Evidence shows that, within a decade and half (1993-2008), overweight/obesity rose from 12.8% to 30% in women aged 15-49 years; and from <1% to 5% in children under 5years within the same period (GSS 2008). A recent review conducted by Ofori-Asenso and colleagues (2016) now put the prevalence at 43% among women, and 6.3% - 17.4 % in children (6-14 years) (Obirikorang *et al.*, 2013 and Mogre *et al.*, 2013). Despite the rise in the prevalence of childhood obesity, implementation strategy to address this, is still unclear.

## **CHAPTER 2.0 PROBLEM ANALYSIS, RATIONALE AND METHODS OF THE STUDY**

### **2.1 PROBLEM STATEMENT AND JUSTIFICATION**

Ghana is presently experiencing rise in childhood obesity with co-existence of undernutrition (National Nutrition Policy, (NNP) 2013, Ghana Statistical Service (GSS), 2015). The joint UNICEF/WHO/WB global and regional estimates reported under-five overweight prevalence of 2.5% in 2011 (WHO 2016) whilst the Ghana Demographic and Health Survey 2014, reported a prevalence of 3% (GSS 2015). The Global School-based Health Survey GSHS (2007) conducted in Ghana reported overweight and obesity prevalence of 6.9% and 0.7% respectively among children aged 13-15 years. And that of 2012 GSHS also revealed a prevalence of overweight (8.1%) and obesity (1.3%) in children aged 13-17 years (GSHS 2007 and GSHS 2012). Other available studies conducted across the regions of the country reported prevalence varying between 9.8%-17.4% for overweight and 0.8% - 52.7% for obesity among children aged 5-17 years (Mohammed and Vuvor 2012, Amidu *et al.*, 2013, Manyanga *et al.*, 2014, Kumah *et al.*, 2015, Obirikorang *et al.*, 2015, Oppong 2016).

The prevalence of childhood overweight and obesity varies across the regions within the country. The GSHS 2007 reported a high prevalence of overweight (10.5%) and obesity (1.3%) in the South followed by the central (5.7% and 0.6%) and the Northern Ghana with the least prevalence of 4.0% and 0.1% respectively (GSHS 2007). This increasing trend in childhood obesity is more common in urban settings than the rural areas. And predominantly observed more in girls(1.8%) than boys(0.9%), and mostly found in children with high socioeconomic background (GSHS 2012, Mohammed & Vuvor 2012, Mogre *et al.*, 2013, Manyanga *et al.*, 2014, Kumah *et al.*, 2015, and Obirikorang *et al.*, 2015).

This growing burden of childhood obesity in addition to the existing infectious diseases, and undernutrition indicates a double burden of malnutrition; and seriously presents a challenge to the already over stretched health care system (Ofei 2005 and NNP 2013). However, this is not recognised as a problem since the present health care system is organised and set-up to tackle maternal and child malnutrition particularly undernutrition and micronutrient deficiencies. And this is evidenced by the National Nutrition Policy which is silent on childhood over nutrition (NNP 2013).

There is also a worrying development especially at the primary care level where mothers whose children are "big" (obese) are commended during child welfare clinics by health care workers for taken good care of them[Anecdotal source]. This exemplifies the lack of awareness of the impact of childhood obesity by health care workers involved in growth monitoring (GHS/USAID/FANTAI/III/FHI360/MCHIP, 2013). Generally speaking, the acceptance of obesity in many societies as a symbol of well-being is also compounding the problem of early identification and prevention (Ofei 2005). And evidences are there currently, to show the high prevalence of adult obesity particularly among women in the urban settings in Ghana (Benkeser *et al.*, 2012; GSS 2015, Ofori-Asenso *et al.*, 2016).

In 2015-, the United Nations General Assembly having considered the potential threat of childhood obesity to the attainment of Sustainable Development Goal target three by 2030; gave a clarion call to member nations to halt childhood obesity and any other forms of obesity (WHO 2017). In view of this, a committee on ending childhood obesity (ECHO) was constituted to play a lead role in tackling this epidemic and in spite of having come out with global strategies and interventions that could be adapted at country levels to address childhood obesity, the direction for action on childhood obesity in Ghana is yet unclear.

Presently, many children are overweight, and are on the route to obesity although obesity is preventable (GSS 2015). The failure to halt this emerging public health problem now

suggests rise in obesity and its related diseases later in life. These have both health and cost implications on the national economy as well as the achievement of the sustainable development goals.

Although economic impact studies on childhood obesity is lacking in Ghana and in the African sub-region at large. There is evidence to show in other jurisdictions such as United States of America and the United Kingdom about the economic impact of childhood obesity (Trasande & Chatterjee 2009, Trasande *et al.*, 2009 and Glaintelligent Unit, 2011). In London, for instance, it is estimated that, the direct cost per childhood obesity treatment per year is £7million. This translates to about £31 per obese child per year in direct cost, and could increase to £611 per year if childhood obesity continued to adulthood (Glaintelligent Unit, 2011). In the United States of America, it is estimated to cost \$ 14.1billion annually for drug prescription, emergency and outpatient services only, and about \$237.6million for inpatient costs (Trasande & Chatterjee 2009 and Trasande *et al.*, 2009).

A part from the direct economic costs, childhood obesity has been indirectly linked to delayed childhood skill acquisition particularly among 2-3 years olds, stigmatisation, and discrimination by mates. This is coupled with both health and economic consequences for themselves, relations and the community at large (Cawley & Spiess 2008 and WHO 2016). And this calls for urgent attention to tackle this emerging public health problem in Ghana.

To the best of my knowledge, several studies on obesity have been conducted but not many on children in Ghana. Most of such literatures are on prevalence and/or determinants of obesity among children (Mohammed & Vuvor 2012, Mogre *et al.*, 2012; Amidu *et al.*, 2013; Kumah *et al.*, 2015; Obirikorang *et al.*, 2015, and Oppong 2016). There is still paucity of literature on drivers, policy and programme response on childhood obesity in Ghana. And this gap, is what this study seeks to bridge in literature. In view of that, this study will seek to examine the drivers of childhood obesity and policy and programme response in Ghana.

## **2.2 RESEARCH QUESTION**

3.2.1 What are the factors that are driving childhood obesity in Ghana?

3.2.2 What policies and programmes are there to address these drivers? And where do the current responses fall short?

3.2.3 What evidence-based actions can be used to tackle this problem in Ghana?

## **2.3 OBJECTIVES**

### **2.3.1 General Objective**

To explore the drivers of childhood obesity and current policy and programme responses in order to make recommendations to policymakers for appropriate action in Ghana.

### **2.3.2 Specific Objective**

1. To identify and examine the drivers of childhood obesity in Ghana
2. To analyse the policies and programmes in place in tackling childhood obesity with a view to identifying gaps in current responses.
3. To review the current evidence on approaches to address the gaps identified, in order to make evidence-informed recommendations to address childhood obesity in Ghana.

## **2.4 METHODOLOGY**

### **2.4.1 Search Strategy**

A literature review was conducted. A search was done using electronic engines such as PubMed (with medical sub-heading [MeSH] terms), Google Scholar, Google, and Vrije University Library database to identify relevant papers for the study. Ghana Medical Journal Archives were also explored to access peer reviewed articles for the literature review.

Desk study was conducted by retrieving non-scientific papers (such as policy documents, annual reports, guidelines and strategic plan documents) from the official websites of Ghana Health Service (GHS), Ministry of Health (MOH)-Ghana; Ministry of Food and Agriculture (MOFA)-Ghana, Ghana Statistical Service (GSS), Ghana Education Service (GES), World Health Organisation (WHO), Food and Agricultural Organisation (FAO) and United Nations Children's Fund (UNICEF). In addition, unpublished dissertations and papers were also sourced from the websites of the Universities of Ghana, and a few personal contacts were made to friends, colleagues and officials in departments and ministries for other relevant information.

I further supplemented the search with the snowballing method of literature search to select relevant articles from the reference lists of recent published papers.

### **2.4.2 Inclusion and Exclusive Criteria**

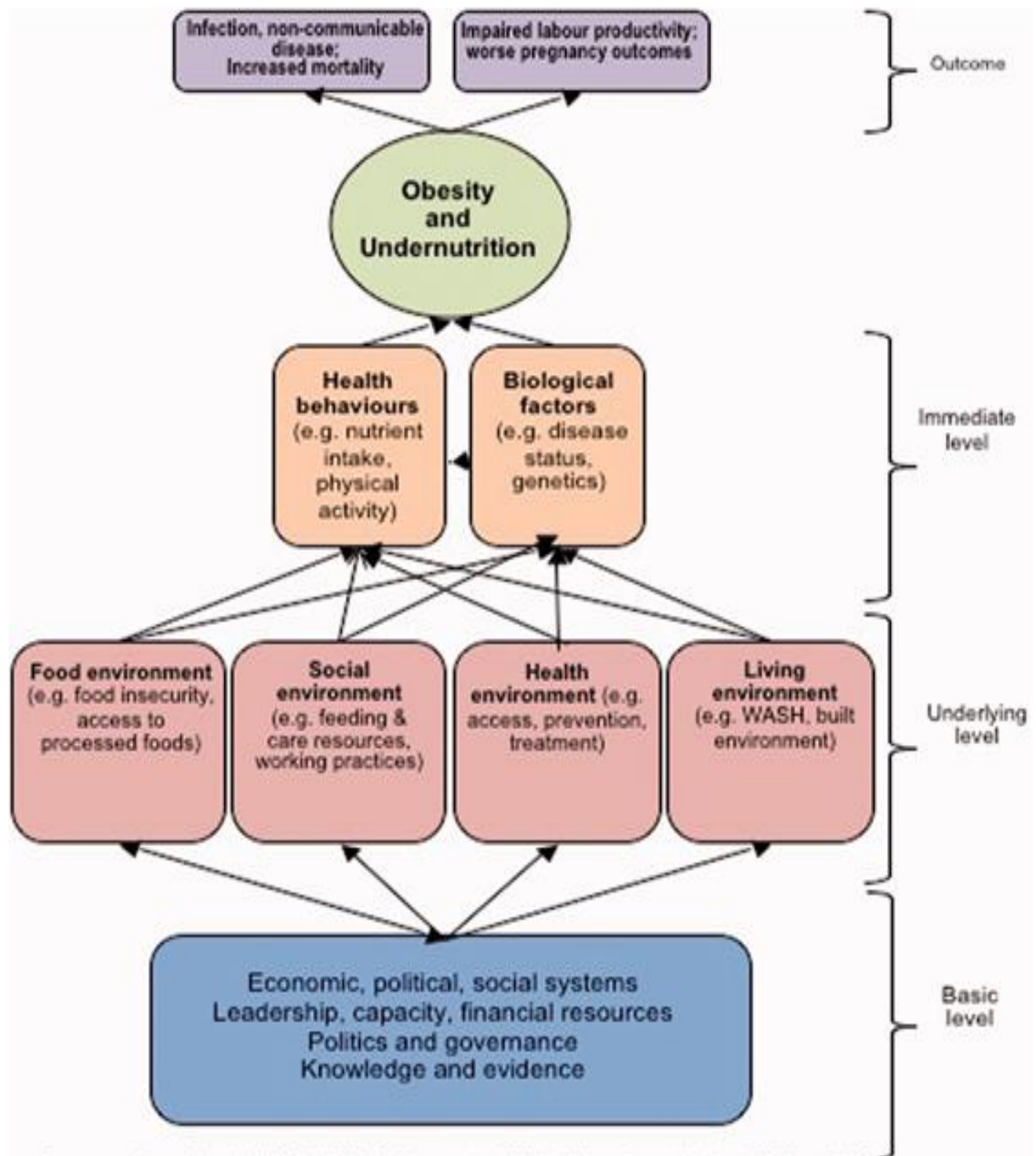
All relevant articles published in the last 10 years (from 2007-2017), in English language, peer-reviewed, and met WHO's definition of a child ( $\leq 19$  years old) was included. However, a few exceptions were made for relevant documents and articles to be included from before 2007 if found through snowballing and desk study method. All articles that fell outside these specified criteria were excluded.



### 2.4.3 Research Table

Objectives	Source	Keywords/concepts
1. To identify and examine the drivers of childhood obesity in Ghana.	PubMed Google Scholar Vrije University e- Library	Childhood, Obesity, Overnutrition, Health behaviour or lifestyle, dietary or habit or behaviour or lifestyle, nutrient intake, food habit or practices, physical activity, exercise, Biological factors, age, genetics, sex, Food environment, supermarkets, food, Social environment, home, school, family, community or neighbourhood, Health environment, service delivery, health promotion, Living or built environment, parks, playgrounds, sports fields, Economic, political, Socioeconomic status, income, education, occupation, cultural beliefs or norms, Ghana, Africa, SSA, LMIC
2. To analyse policies and programme in place in addressing childhood obesity with a view to identify gaps in the current responses.	Google, Institutional website(GHS, MOH, , MOE, GES, and Industry, MOFA)	Obesity, Overnutrition, Health, Policies, strategies, , interventions, guidelines, action plan, reports, programmes, MOH, GHS, MOE, MOFA, Urban planning, Ghana
3. To review the current evidence on approaches to the gaps identified in order to make evidence informed recommendations to address childhood obesity in Ghana.	Google, Google Scholar, PubMed Website of organisations (WHO, UN, CDC, UNICEF)	Global guidelines, Action plan, Policies, Recommendations, Strategies, Evidence, interventions, Systematic reviews, Peer review, RCT Africa, LMIC.

## 2.5 CONCEPTUAL FRAMEWORK



Source : Haddad *et al.*, 2015

### **2.5.1 Description of Conceptual Framework**

In order to analyse the drivers and policy response to childhood obesity in Ghana, Haddad *et al.*'s (2015) Conceptual Framework for the analysis of double burden of malnutrition (under and over nutrition) was selected as the conceptual framework to guide the literature review. This was done because the framework draws on and combines insights from three important frameworks (UNICEF 1990, Swinburn *et al.*, 2011 and Gillespie *et al.*, 2013) which are relevant and widely used in the analysis of factors driving over nutrition (obesity) at the individual, community and national levels. This framework was chosen because it effectively helps identify the factors that drive obesity and also allows to situate them in the Ghanaian context.

More so, the framework is useful in understanding the population level drivers of obesity spanning from local to national in the context of Ghana and helps in structuring the literature review on drivers of childhood obesity in Ghana. The framework has common characteristics with other frameworks and presents a broader compilation of obesity drivers with their interrelations (Butland *et al.*, 2007 and Swinburn *et al.*, 2011).

Haddad's conceptual framework analyses drivers of obesity in three levels: immediate, underlying and the basic. The immediate cause refers to the interplay of health behaviours and biological factors, and how these interactions contribute to the development of obesity. The underlying factors on the other hand examine the distal environmental drivers such as the food, social, health and the built environment; their interactions and consequences on the individual behavioural and biological factors. Whilst the the basic level drivers analyse the broader structural drivers such as political and economic forces that drives trade agreements, agricultural policies and modulates the food system; the socioeconomic factors that thrives on the political and economic wheels, and in addition, the cultural factors regarding large body size, that influence the 'obesogenic environment' (WHO 2016). These basic drivers do interact with the underlying factors to influence obesity risk.

## CHAPTER 3.0 DRIVERS OF CHILDHOOD OBESITY, POLICY AND PROGRAMME RESPONSE IN GHANA

### 3.1 DRIVERS OF CHILDHOOD OBESITY

According to Haddad *et al* Framework employed for this study, the immediate drivers of childhood obesity are health behaviours namely nutrient or dietary intake and physical activity, and biological factors constituting genetics, sex and age which interact to cause obesity among children. And I examine the above mentioned factors in this section.

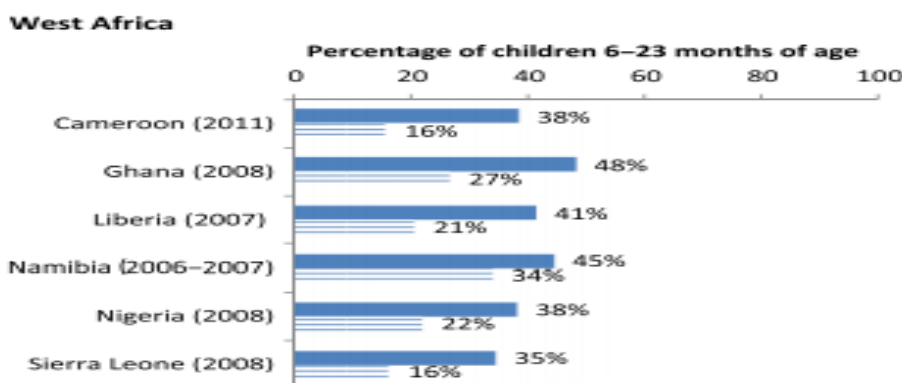
#### 3.1.1 Health Behaviours

According to Conner and Norman (1996), health behavior is any action undertaken by people for the purposes of preventing diseases or improving health and well-being. This has been examined by other studies and has been demonstrated to play a significant role in morbidity and mortality (Blaxter 1990). The key behaviours such as diet, exercise, alcohol and smoking have been associated with health outcome (Conner 2002). And for the purposes of this study, the dietary and physical activity behaviours are discussed.

##### 3.1.1.1 Dietary/Nutrient intake

Evidence shows that high consumption of energy-dense foods such as high sugar intake, saturated fats and salts coupled with low activity levels can result in positive energy balance and extra weight gain (Swinburn *et al.*, 2011). According to Huffman *et al* (2014), intake of unhealthy foods (such as sweetened cereals, soft drinks, biscuits, candies and salty crisps) among older infants and young children instead of more nutritious diets(eggs, fortified infant cereals or vitamin-A rich fruits) are increasing in lower-middle-income countries including Ghana. These foods are high in energy, poor in nutrients and can predispose children to obesity (Malik *et al.*, 2013).

In 2008-, Ghana, evidence showed that, about 48% of children aged 6-23 months old in urban areas of Ghana consumed unhealthy sugary snacks compared to 27% of their counterparts in the rural areas(Fig.2). This was by far the highest in the sub-region with Nigeria and Sierra Leone reporting 38% and 35% respectively in the same year.



Source: Huffman *et al.*, 2014

Fig. 2 Percentage of children(6-23months of age) who consumed any sugar added meal during the day or night prior to interview by area of residences ■ urban and ▨ = rural.

An unpublished study conducted by Alangea (2014) among school children in Greater Accra on determinants of obesity revealed that, frequent intake of beverages combined with little physical activity by children with middle socioeconomic background demonstrated significant increase in body mass index. And this is after controlling the following variables such as parental BMI, age, sex, and calories consumed. To add to this, any additional occasion of beverage intake per week showed an increase of BMI by  $0.1\text{kg/m}^2$  (95%CI = 0.03-0.17,  $p < 0.01$ ) whereas the least physically active group predicted a BMI increase of  $1.27\text{kg/m}^2$  (95% CI = 0.37 -2.18,  $p < 0.01$ ) over their counterparts in high physically active category (Alangea, 2014).

Amidu *et al* (2013), in a study conducted in the Tamale Metropolis in Northern Ghana among children 6-12 years old, reported that, 67% of children with overweight status and 60% of children with obesity status have higher energy intake in school ( $P < 0.0001$ ). A similar study carried out in Kumasi, Ashanti Region of Ghana among children aged 6-12 years old also established a significant association of fast food consumption (14.7%) with central obesity as compared to non-fast food consumers (1.9%) ( $p < 0.0001$ ) (Obirikorang *et al.*, 2015).

Mogre *et al* (2013) however, found no significant association between poor dietary lifestyle (snacking behaviour) of children (5-14years) and overweight/obesity status. This was also consistent with a recent cross-sectional study conducted in Abura-Pedu in the Central Region, Ghana (Oppong 2016). In the study, children aged 5-15years with both poor and good dietary practices showed a high level of obesity status. The finding was however not significant (Chi-sq. value 1.456,  $p < 0.692$ ) (Oppong 2016).

Although findings on nutrient intake and childhood obesity is mixed, it may infer that, other risk factors including low physical activity in addition to dietary lifestyle may contribute to childhood obesity in Ghana.

### **3.1.1.2 Physical activity**

Poor dietary behaviour and physical inactivity interact to produce positive energy balance, and this may result in poor nutritional status. Physical inactivity alone has been established to be one of the predictors of childhood obesity as well as adult obesity (Mogre *et al.*, 2013). Study has shown that, changing health behaviour particularly decreasing physical activity level, coupled with poor dietary behaviours among other factors have contributed in the emerging obesity prevalence in Ghana (Asamadu 2012).

Another study carried out among children (13-17 years old) in seven African countries including Ghana indicated that, not walking/cycling to school, regularly eating fruits among other key risk factors are associated with obesity (Manyanga *et al.*, 2014). Asamadu (2012) also found that, decreasing schools physical activity programmes, with increasing engagement of sedentary recreational activities for instance watching television, playing video games and other indoor activities have encouraged sedentary behaviours. This reduces the total daily energy expenditure, and may facilitate the weight gain in children .

In one study, Mogre *et al* (2013b) revealed that, television viewing among children aged 6-14years during leisure periods were linked to obesity. The study further showed a significant relationship between the level obesity and time spent on physical activity. For instance, about 54% of children who exercise for about 2hours per week were found to have normal BMI-for-Age status ( $P < 0.047$ ).

However, Obirikorang *et al*(2015) reported that, children who performed physical activity per week, work for 60-120 minutes daily and consumes fast foods were more at risk of obesity. Interestingly, in the same study, it was reported that children who trek to school on foot had a high obesity to overweight (57.1% vs. 25.7,  $p<0.0001$ ) % status whilst those who attended school by car had a high percentage of overweight to obesity status (74.3% vs 42.9%,  $p=0.001$ ) (Obirikorang *et al.*, 2015).

This result was inconsistent with the study conducted by Amidu *et al*(2013), where it was observed that, the majority(76.7%) of children who attended school by car/motor bike were obese. Likewise, significant proportion of children who went to school by walking or means of bicycle had normal weight. In addition, children with overweight (38.5%) and obesity(70.0%) who played with digital gadgets such as computer and video games showed a significant rise in sedentary lifestyle and declining physical activity level(Amidu *et al.*, 2013).

From the studies reviewed so far on physical activity, childhood obesity in Ghana has partly been related to declined in regular exercise coupled with a mix of other important determinants such as biological factors which will be considered subsequently.

### **3.1.2 Biological factors**

With regards to biological factors such as sex, age and genetics, this section is going to examine how these factors predict childhood obesity in Ghana.

#### **3.1.2.1 Age**

A study conducted by Doku & Neupane ( 2015) established a positive relationship with age and obesity. Whilst an unpublished dissertation (Alangea 2014) though did not find significant association between child age group and obesity status( $p>0.05$ ), the age group 11-12years was significantly associated with higher odds of obesity status compared to the age group 9 – 10years old(OR=3.375, 95% CI= 1.080– 10.554,  $p<0.05$ ).

In another study, it was revealed that greater percentage of pre-obese (48.6%) and obese (42.9%) were found within age group 9-11years (Obirikorang *et al.*, 2015). However, a systematic review conducted by Muthuri *et al* (2014) in the Sub-Saharan Africa including Ghana among school-aged found a mixed results between childhood obesity and age. The study then concluded that, the available evidence on independent effect of age was not convincing.

#### **3.1.2.2 Sex**

With regards to sex, evidence has shown a relationship with obesity in children (Muthuri *et al.*, 2014). A review of literature revealed that, females have a higher body composition measures as well as higher proportion of obesity/overweight than their male counterparts (Muthuri *et al.*, 2014). In Ghana, a cross-sectional study carried out by Mohammed and Vuvor (2012) also reported a higher body fat composition in females than males between the ages of 10-12years. Obirikorang *et al* (2015), also reported a higher overweight/obesity (57.1%) status in females than their male colleagues (42.9%). Additionally, other similar cross- sectional studies conducted in Ghana have also showed a higher adiposity status in female than the male sex (Agyemang *et al.*, 2005, GSHS 2008, Amidu *et al.*, 2013, Mogre *et al.*, 2013a, Alangea 2014, and Kumah *et al.*, 2015).

### **3.1.2.3 Genetics**

According to Hetherington & Cecil (2010), predisposition of genetic factors can heighten the risk for obesity among individuals including children through interplay of lifestyles within an “obesogenic environment”. And one important gene variant associated with obesity is the fat mass and obesity-associated protein (FTO) (Hubacek *et al.*, 2011). This gene variant are linked to different populations (Hubacek *et al.*, 2009), and established to influence BMI in Asians (Tan *et al.*, 2008) as well as in Africans (Hennig *et al.*, 2009, Yako *et al.*, 2015).

Though no genome-wide association studies have been done to establish the relationship between genetic predictors and childhood obesity propensity in Ghana, in a similar context in Gambia, a West African neighbour, such studies have been conducted (Hennig *et al.*, 2009). In a long-term surveillance programme, carried out to examine FTO variants on the BMI of the Gambian residents, no significant association between FTO gene variants and Weight-for-Height (WFH) z-score across all age groups (Hennig *et al.*, 2009).

However, a systematic review study on African population including Ghana to established evidence of obesity and genetic determinants showed a significant relationship between FTO and obesity (Yako *et al.*, 2015). Though the available data were not enough to ‘establish the true nature of genetic susceptibility to obesity’ in people within Africa (Yako *et al.*, 2015). Other similar studies have also shown an association between genetic determinants and obesity among West Africans, although in adult population (Chen *et al.*, 2005, Adeyemo *et al.*, 2010).

In other context, Hubacek *et al.* (2011), examines BMI connected FTO variants associated to elevated energy consumption and decrease physical activity level among Czechs. The result demonstrated no association between FTO (genetic determinants) with energy intake and physical activity. This suggests that genetic determinants (FTO) have no effect on body mass index. Studies on genetic determinants and child obesity in Ghana, and Africa although few, evidence available shows mixed results. Further research particularly among children is needed in this field to understand the genetic drivers of obesity in Ghanaian context.

### **3.1.3 Environmental Drivers**

Distally driven environmental factors which underpin both behavioural and biological drivers of obesity shall be the focus of this section. Moving forward, I examine the food, social, health and living environment factors in relation to childhood obesity in Ghana.

#### **3.1.3.1 Food Environment**

According to Maxwell *et al.* (2000), most people living in Accra spent over 33% of their budget on foods sold on the streets. And significant proportions of those who consume these street foods are children (Hussain 1990).

A cross-sectional study conducted in both Techiman (Brong Ahafo region) and Winneba (Central region) municipalities among children 2-5 years reported that, about 80% of mothers purchased foods on the streets for their children. This constituted about 35% of the total energy intake of the children (Mica *et al.*, 2012). Among the few papers that have examine food environment and obesity risk, it was reported that, food environment in urban Accra is associated with increased risk of obesity via providing access to convenience stores (Dake *et al.*, 2016).

According to Therien (2017), the capital city of Ghana, Accra, is now experiencing a rapid growth in supermarkets, which provide access to cheaper, convenience processed foods.

And interestingly, other cities within Ghana are also having their share in these growing convenience stores. In a previous study conducted by Agyei-Mensah and de-Graft Aikins (2010), it was revealed that there is increasing presence of the international food service providers in urban cities of Ghana, particularly in Accra. These providers have infiltrated the traditional food environment with cheaper, available, accessible fast foods which might also be aiding the high emerging prevalence of obesity among children in Ghana (Therien 2017).

Evidence shows that the proportions of urban residents including children who access these fast foods outside home have increased (Amoah 2003). And this suggests that the current obesogenic urban food environment is shifting family eating practices from healthy traditional diets to unhealthy foods. This has the likelihood to increase childhood obesity as well as adult obesity. A study carried out by Oppong (2016) in Central Region, reported that a significant proportion (32.2%) of children aged 5-15years ate three times per week averagely outside the home prior to the study. And according to Nepper (2016), children are less at risk of developing overweight and obesity when they eat family meals more often. In addition, there is established evidence of increasing out-of-home food consumption and increasing obesity prevalence (Fenton 2017).

Dake *et al* (2016) in a research to examine the local food environment and BMI among the urban poor in Accra(Ghana) revealed that for every additional convenience store in the food environment, BMI is increased by 0.2kg/m<sup>2</sup>. However, a reduction in BMI (0.1kg/m<sup>2</sup>) was observed for every 'out-of-home cooked food' venue available in the study setting. The findings observed the increase risk the local food environment may pose on childhood obesity development through the existence of convenience stores.

More so Alangea (2014) revealed that the majority of children in schools are exposed to unhealthy food environment where by schools either own shops on their compounds or vendors outside the school compounds selling energy-dense foods and sugar- sweetened drinks to these vulnerable children all the time. These food environments among other determinants particularly the social environment which will be examine subsequently may be key in contributing to the rising childhood obesity levels in urban Ghana.

### **3.1.3.2 Social Environment**

The immediate physical and social setting of children particularly the home and school environment have significant influence on their obesity status (Dake *et al.*, 2016). According to Campbell (2016) in a review, children food and activity habits are modulated by the social environment through individuals. And mothers being important actors of the family setting have been associated with the establishment of the home food environment (Campbell 2007), where a significant proportion of children dietary consumption (65%-72%) and obesity development happens (Rosencrantz & Dzewaltowski, 2008 and Nepper 2016).

In the home setting, parental eating lifestyle, provision of access, use of snacks/SSB as reward and keeping drinks in the home have a significant influence on their children (Arcan *et al.*, 2007, Alangea 2014). The findings in unpublished study by Alangea (2014) showed that about 66% of parents had eaten snacks and sweetened drinks in the presence of their children whereas a greater proportion (73%) of mothers had pressurised their wards to eat. A little below fifty percent incentivised their children with snacks and drinks whilst majority (71.2%) of homes did not restrict access to these low in nutrient, energy-dense foods (Alangea 2014). Another similar study carried out in the Central Region, Ghana, among children aged 5-15 years also revealed that most children (90%) ate snacks (biscuits,



cakes, chocolates) and soft drinks in between meals, and these decisions were mostly made by the parents (Oppong 2016).

Study has showed that family and social environment can directly influence the childhood obesity risk via eating and activity behaviours (Campbell 2016). And evidence has also established a positive correlation between eating patterns of parents and children (Arcan 2007 and Campbell 2007).

In the context of Ghana, Alangea (2014) revealed that parental modeling of healthy eating behaviour for children, and frequent sharing of family meals are associated with less fast food consumption. And this partly together with the built environment can reduce children's risk to obesity in Ghana.

Regarding school social environment and its influence on child obesity, evidence has suggested that schools exercising moderate control of foods available to children was linked with decreased odds of childhood obesity (AOR = 0.157, 95% CI = 0.033 – 0.734,  $p < 0.01$ ) comparing to those that exercised least control (Alangea 2014). In the same study, the researcher found that schools providing higher supporting environments for physical activity were associated with reduced odds of childhood obesity (AOR = 0.198, 95% CI = 0.058 – 0.674). However, schools found to be engaging in the promotion of healthier food choices were interestingly, associated with elevated odds of child obesity (AOR = 5.546, 95% CI = 1.430 – 21.511,  $p < 0.05$ ) comparing to the least promoters of healthy food choices (Alangea 2014). The other outcome of the study (Unpublished, Alangea 2014) revealed that high proportion (58.7%) of children brought money to school to spend on food; and about 47% of their purchases were found to be energy-dense foods (confectioneries, pastries, biscuits, SSB and fried foods). Interestingly, the same study has established a positive predicted BMI of children with frequent beverage intake per week and low physical activity. The study showed a significant predicted increase of child BMI ( $p = 0.004$ ) by 0.1 kg/m<sup>2</sup> with any extra occasional beverage intake per week whilst being in the lowest activity level category also predicts a 1.27 Kg/m<sup>2</sup> rise in child BMI over that their counterparts in the active category of physical activity (Alangea 2014).

### **3.1.3.3 Built Environment**

A study conducted by Ofori-Asenso and Garcia (2016) revealed that the present built environment in many urban settings of Ghana has not developed to meet the growing population. Sidewalks or parks are virtually not in existence, and road congestions are often at its peak.

Another study carried out in the urban Accra to determine environmental barriers to outdoor physical activity reported that, lack of sidewalks; poor access or conditions to sidewalks are the main barriers to outdoor physical activity. In addition, the study revealed that difficulty in achieving physical activity goals are due to massive real estate development as well as commercialisation of the available living spaces (Aryeetey 2016).

Recent findings from report cards on physical activity for children in Ghana showed that more than half (60%) of Ghanaian children do not attain the minimum beneficial health enhancing threshold for physical activity (Ocansey *et al.*, 2016). Ocansey and colleagues further revealed that opportunities for families including children to engage in physical activity (community walks, active play and other forms of active transportation) is rapidly declining due to poor built environment. And this may even grow worse due to rapid growing urbanisation in Ghana (GSS 2012).

According to the 2010 population and housing census (PHC) report, the number of urban residents has grown from 43.8% to 50.9% within a period of 10 years (2000 to 2010) (GSS 2012). And the number of persons per square kilometre in the same period also increased from 79.3 to 103.4. These put pressure on open spaces or parks for recreational events, available sidewalks and often create traffic congestions which may discourage children from walking to school.

In one study in Ghana, it was revealed that in instances where parents perceived the built environment to be unsafe, they personally drive their wards to school in private vehicles to prevent them from crossing busy roads during school rushing hours (Oppong 2016). This can decrease the children's physical activity and may increase their sedentary lifestyles.

More so, in the unpublished work of Alangea (2014), creating supportive environment in schools for physical activity (open spaces, parks for sports) was found to be associated with decreased risk (i.e. up to 80.2%) of overweight among children compared to schools with least supportive environment. And according to Bjork *et al* (2012), settings with decrease obesity levels are associated to living environment with 'high recreational value'. This suggests that the built environment in Ghana may partly play a role in facilitating childhood obesity.

#### **3.1.3.4 Health Environment**

According to Haddad and colleagues (2015), the health environment which is not responsive to the growing burden of over nutrition can further increase obesity prevalence and its related health problems. In relation to child health in Ghana, the health sector environment is primarily set up to manage and treat infectious diseases and malnutrition (undernutrition and micronutrient deficiencies).

Nutrition programmes and activities at the national, regional and district levels are all centered on combating hunger, reducing stunting and wasting in under-fives as well as addressing hidden hunger; that is micronutrient deficiency among school going children, and adolescents (NNP 2013). Protocols and guidelines for the management and treatment of severe acute malnutrition are readily available in health facilities but none exist to address the growing childhood obesity (GHS/USAID/FANTA/UNICEF/WHO/FHI 2013).

In addition, the health information monitoring and surveillance systems in place at the various facility levels are designed to collect indicators on underweight, stunting, and wasting. This is for the purposes of reporting, and limited to only under-five years olds. Children outside this age category are often lost to growth monitoring when they are no longer brought to the child welfare clinics by parents. There is lack of effective monitoring and surveillance system to track obesity in most of the health facilities. No literature was found during the search on health environment and childhood obesity in Ghana.

### **3.1.4 The General Structural Drivers**

#### **3.1.4.1 Economic**

Ghana is a lower middle income country with total estimated GDP of US\$36.7billion and per capita GDP of 1,328 as of 2015 (GSS 2016). The economy has transformed from agro-base economy to market based economy with the service sector remaining the largest with 53.3% share to the GDP (GSS 2016). This has contributed in improving the socioeconomic status of the people, as more people are currently engaged in the service and industry sectors. This economic transition coupled with the growing urban population is driving nutrition transition in Ghana (Ofori-Asenso *et al.*, 2016).

The dietary behaviours of the people in the urban settings are shifting from traditional foods to more 'westernised diets' (high fat, sugar and salt diets) high in calories, and this has the potential to expose people including children to the risk of becoming obese (Popkin, 1997, Ofori-Asenso *et al.* 2016).

To add to the above, Ghana like any other nation in economic transition is greatly impacted by globalisation via trade liberalisation; which is driving rapidly technological evolution (cars, transportation, computers, telecommunication, game consoles) (Agyei-Mensah and de Graft Aikins 2010). Evidence shows that more homes in Ghana now own automobiles, communication gadgets, computers, and games console for different elite class (GSS 2015). These technological appliances are displacing active outdoor recreational activity for less active indoor one. And this has been shown to be aiding more sedentary lifestyle in children, and implicated in the rising obesity prevalence in Ghana (Agyei-Mensah & de Graft Aikins 2010, Amidu *et al.*, 2013, and Ofori-Asenso *et al.*, 2016).

Though evidence is sparse on economic growth and obesity in Ghana, a recent study conducted by Gebremedhin (2015) on pre-school children in 26 SSA countries including the three neighbouring countries (Togo, Burkina Faso, Ivory Coast) of Ghana showed no significant association between growth in the economy( per capita GDP) and obesity. However, Jone-Smith *et al* (2012) established a relationship between per capita GDP and obesity among the lowest wealth quintile compared to the highest quintile. Whilst Egger and colleagues (2012) showed a positive association of per capita GDP ( up to about \$3000 ) with body mass index.

#### **3.1.4.2 Socioeconomic Factors**

Muthuri *et al* (2014) in a systematic review including Ghana, found a high obesity status among children from higher SES families. Another similar systemic review conducted in Sub-Saharan Africa (SSA) among school going children also showed that children from higher socioeconomic homes were 5.28times at risk of becoming obese as compared to their colleagues from households with lowest SES (95% CI:2.62 – 10.66) (Frushstorfer *et al.*, 2016). To add to it, Frushstorfer and associates revealed that children from high SES, attending private (affluent) schools were 15.94times at risk of obesity compared to their counterparts attending public schools(95% CI: 5.82 – 43.68).

In Ghana, Mohammed & Vuvor (2012) found that children from high SES homes have higher obesity prevalence than their friends from low SES households. This was however, not significant (p = 0.23). Another study conducted in Kumasi Metropolis among children (aged 6-12 years) reported that children attending private schools are at greater risk of obesity than those in public schools (4.3% vs. 0.61%; p<0.0001 ) (Obirikorang *et al.*,

2015). And this finding was consistent with study carried out by Amidu *et al* (2013) in the Tamale Metropolis, Ghana.

Alangea (2014) also established that attending private school and belonging a middle SES household is associated with childhood obesity status. More so, Mohammed and Vuvor(2012) showed that childhood obesity prevalence is reduced with increasing maternal level of education( $p=0.043$ ) whereas Oppong(2016) also reported that childhood underweight, overweight/obesity risks are lowered with increasing maternal educational attainment( $p=0.0344$ ).

In contrast, Amidu and colleagues (2013) in a study on determinants of childhood obesity in Tamale Metropolis reported that children with obesity status were more likely to have parents with higher educational level than their counterparts with normal weight; whilst Mogre *et al* (2013), in a similar study in the same settings among children (5-14 years), found no significant association between obesity status of children and the SES (occupation) of their parents( $p=0.443$ ).

#### **3.1.4.3 Cultural factors**

A large body size is culturally associated with 'nobility and affluence' among Ghanaians. Especially, girls with large body size (fat) are linked with beauty and good health (Amoah 2003, Appiah *et al.*, 2014). Mothers make no effort to improve the obesity status of their wards instead motivate them to grow heavier (Caprio *et al.*, 2008 and Mohammed and Vuvor 2012). For example, in some homes in Ghana, children are occasionally given 'blood tonics' and 'appetite stimulants' to force them to eat and gain weight[Anecdotal].

Mothers most often pressurise their children to eat (Alangea 2014). Although evidence on cultural determinants in Ghana is scarce, in South African, which shares similar characteristics with Ghana; evidence showed that having children with obesity status is associated with good parenting (Mvo *et al* 1999). And being fat (obese) as a female is also linked with beauty, higher social status and absence of illness (HIV/AIDS) particularly in the black African community (Mvo *et al.*, 1999, Puoane *et al.*, 2005).

The cultural belief that predicts these positive attributes in women partly with other factors may be influencing the growing childhood obesity prevalence in Ghana

#### **3.1.5 Summary of the Findings**

In this section, the study explored the determinants driving childhood obesity in Ghana using the Haddad and colleagues framework to guide the search. The findings emerged with some key drivers determining child obesity. These include unhealthy eating habit, physical inactivity, food environment, built environment, social environment and socioeconomic status, and female sex. By moving forward, these identified drivers are examined subsequently to ascertain to what extent current existing policies and programmes respond to them.

## **3.2 HEALTH POLICIES AND PROGRAMMES RESPONSE TO THE DRIVERS OF CHILDHOOD OBESITY**

This section examines in detail, the current policies and programmes response in relation to the identified drivers, and critically looking at the resource allocation, and prioritisation process in Ghana to see what extent to this address the various drivers I have identified in the earlier section. From the drivers, it follows that six policy areas are key: national health policy, national urban planning policy, noncommunicable diseases policy, child health policy, School health policy, and national nutrition policy. These policies have bearing on both, children getting obese, and on children being protected from getting obese. Next, I review and examine to what extent these policies are addressing the drivers identified.

### **3.2.1 National Health policy**

In 2007, the National Health Policy (NHP) was developed with the goal of creating wealth and building the economy with healthy people. It depicts that the health of the children today shows the wealth of the nation tomorrow. By this, the policy focuses on the adoption of healthy lifestyle via healthy eating (good nutrition), regular exercise, recreation, rest and personal cleanliness (hygiene).

The NHP respond to the drivers by placing healthy lifestyles within the context of the built (physical) and social environment where people including children live, go to school and work. The broader health policy recognises the increasing burden of childhood obesity, and prioritises healthy school by collaborating with the major key stakeholders (MOH, GES and private schools); promote healthy eating programmes in schools and communities by partnering with the local food service providers (caterers, food vendors, restaurants, 'chop bar' (local restaurants); and promoting physical activity, recreation and rest by making physical education in schools mandatory. All these policy measures are geared towards healthy lifestyles through schools' curricula to address the identified drivers (MOH 2007).

### **3.2.2 Non Communicable Diseases policy**

The national non-communicable diseases policy (NNCDP) (MOH 2012a) takes inspiration from the NHP and other global policies and strategic papers. It prioritises health promotion, early detection, and strengthening of the health system and further tracks NCD, and its associated risk factors. The NCD policy measures adopt life course approach (from conception through old age) to target children and adolescents since many childhood risk factors can be tracked into adult life.

The existing programmes and guidelines in place focuses on the common shared risk factors of the four main NCD (WHO 2014). And the dietary and physical activity guidelines are explicit documents which focuses on promotion of a healthy eating and physical activity lifestyles (MOH 2009, WHO 2014). These guidelines emphasise primary and secondary prevention intervention approach in tackling the obesity and its accompanying risk factors in the broader context of NCD control and prevention (MOH 2010). The screening guidelines currently in place for assessing risk factors of NCDs including obesity, but exclude children (MOH/GHS screening services guideline).

The available evidence showed that in 2015, the planned resource allocation for primary prevention stood at US\$4million versus US\$4.5million in secondary prevention (early detection). This increased marginally in 2016 with primary prevention allocated US\$ 0.05million less than the secondary prevention (\$4.5 vs \$4.55million) (MOH 2012). The analysis of the broad health and NCD policy showed no targeted childhood primary prevention strategies to address the drivers of childhood obesity in Ghana (MOH 2012a, and

MOH 2012b, GHS 2015). The interventional areas of NCD and its associated risk factors have been more secondary preventive focused toward adults than children (MOH 2012b, MOH/GHS screening services guideline). There are also resource constraints and implementation challenges for the policy strategies.

### **3.2.3 Child Health Policy**

There is existing child health policy whose aim is to promote and maintain optimal growth, and development of children from birth to 18 years of age through promotive, preventive, curative and rehabilitative services (GHS 2016). The policy has programmes through which the aims and goals are operationalized.

The child welfare programme focuses on addressing undernutrition and micronutrient deficiencies among under-fives and school age children (5-15years), whereas the school health component of the programme focuses on screening and examining children (for dental, hearing and visual problems for early treatment) and food vendors as well as adolescent sexual and reproductive health issues(GHS 2014, GHS 2016).

The policy prioritises clinical care, neonatal health, prevention and control of infectious diseases, and adolescent health services and with no found policy strategy and programme on the drivers of childhood obesity (Child Health Policy 2007, GHS 2014). The child healthy policy has no explicit approaches and strategies in the policy that address unhealthy eating habits and physical inactivity lifestyles of children in Ghana (GHS 2015).

### **3.2.4 National Urban Planning Policy**

The Ghana national urban planning (GNUP ) policy (2012) exist to create sound living and working environment for all people including children through the development of sustainable infrastructure , cities and towns to support the rapid socioeconomic growth of Ghana. It has well developed action plan with specific objectives that prioritise infrastructural development for economic development. The policies and programmes do not respond to the built environment drivers of childhood obesity identified (GNUP Action Plan 2012). There are no clear strategies found to prioritise play grounds, create recreation parks, spaces and walk paths to encourage physical exercise among children and the general public in Ghana (GNUP Action Plan 2012, Adjei-Mensah 2016, Arku *et al.*, 2016, Ocansey 2016).

### **3.2.5 School Health Education Policy**

The school health education policy on the other hand was jointly developed by the MOE and MOH to instil health promotion behaviours and other values into children(GES/SHEP 2012 , Aawulena 2016). There is existing school health education programmes (SHEP) which are implemented in collaboration with the Ghana Health Service (GHS)-, and prioritises screening and examination of children (for early detection and referral) and food vendors (to monitor health status); personal and environmental hygiene (WASH), sexual and reproductive health issues for adolescents as well as school-based nutrition services rendered to Ghana School Feeding Programme (GSFP) (GHS 2014, GHS 2015).

The priority areas of SHEP barely response to the identified drivers, although the policy includes prevention and management of NCD, and healthy lifestyle promotion in its programme objectives (GES/SHEP 2012 and Aawulena 2016). There is a clear evidence of policy and programme response gap in addressing food and living environment factors driving childhood obesity (Alangea 2014 and Ocansey *et al.*, 2014). No written policies

were found regarding food and healthy eating, and physical activity for schools (Alangea 2014). And Ocansey *et al* (2014) also revealed lack of policy guidelines on physical activity and appropriate built environment for promotion of physical activity in schools. Moreover, resources are allocated to align with prioritised programmes.

The intervention areas of the SHEP have been more of primary than secondary prevention, and programmes have suffered major setbacks due to lack resources (GHS 2013 and GHS 2015). No clear school policy was found to address the unhealthy eating habits, physical inactivity and selling of unhealthy foods in and around the school environment to children (GES/SHEP 2012, GHS 2015).

### **3.2.6 National Nutrition Policy**

A national nutrition policy has been developed and enacted to address all forms of malnutrition and lifestyle behaviours in children and mothers (NNP 2016). The policy has a whole range of aims and goals to tackle the identified determinants driving childhood obesity. However, programmes and activities are prioritised to address undernutrition (stunting, wasting, and underweight), micronutrient deficiencies in children, adolescents and mothers since these areas receive donor support (GHS 2015).

Additionally, government commitment to public health programmes including nutrition has been declining and as it is the case, there is no follow through of the strategies (GHS 2015). As it is now, resources (human and financial) are preferentially allocated to priority programmes and activities (GHS 2015).

The national nutrition policy prioritises 'nutrition specific' and 'sensitive actions' in addressing childhood undernutrition and micronutrient deficiency with no clear strategies, operationalisation policies found to tackle the childhood overnutrition (GHS 2015, NNP 2016). Moreover, there are financial and capacity challenges to effectively operationalise programmes to address the drivers of childhood obesity.

### **3.3 EVIDENCE ON APPROACHES AND STRATEGIES TO TACKLE POLICY AND PROGRAMME RESPONSE GAPS IN GHANA.**

The various policies and programmatic shortfalls emerged in the earlier section can be understood to be in this four broad areas: lack of prioritization of play grounds and spaces to promote physical exercise, no clear policy guide lines to encourage physical activity, no clear strategies to tackle the marketing of unhealthy food, no explicit policy strategy on childhood obesity in Ghana. In this section evidence on the approaches and strategies that are effective in tackling those gaps is synthesised. More so, it is also contextualized for its feasibility and applicability to the context of Ghana. Evidence is extracted from international guidelines, best practices, systematic reviews and peer review documents.

#### **3.3.1 Encouraging Physical Exercise and Sports Evidence from Literature**

Evidence from global guidelines suggest these interventions: provision of local play facilities(such as walking trails), making school policies supportive for physical activity, and provision of safe and suitable spaces and infrastructures to schools where children can spend their school recess time (WHO 2007, WHO 2008, WHO 2009, WHO 2010). Additionally, the WHO's commission on ending childhood obesity also recommends, provision of guidance on healthy body size, physical activity, sleep habits, and appropriate use of screen-based entertainment to children, adolescents and their parents/caregivers, teachers and health workers. It further suggests that equipping school premises and public spaces with adequate facilities for physical exercise during recreational period for children, with appropriate gender-friendly spaces has a positive impact on physical activity (WHO 2016).

Moreso, evidence from Center for Disease Control and Prevention, CDC (2011) guideline suggests that employing an enhanced school-based physical education strategy encourages children to engage in physical exercise and sports. This intervention has been shown to be effective( 10% median increased in physical education devoted time and about 50% increase in time spent on MVPA during PE).

A randomised control trial (RCT) conducted with 379 children(4years) (188 intervention versus 191control) in pre-school established that physical exercise intervention that equip teachers to provide opportunities for children to be active during the hours of school sessions increased moderate-to-vigorous physical activity(MVPA) (Pate *et al.*, 2016). In the intervention, teachers were motivated to use SHAPES elements to modify instructional practice and the class environment in ways that fit their teaching style, classroom, and pupil. The intervention school engaged in a significantly higher MVPA than the control school (7.4minute/ hour vs 6.6minutes/hr) (Pate *et al* 2016).

Evidence from review of reviews also established that an integration of multicomponent approaches(physical education(PE), behavioural change or combination) into regular school curriculum, instructed by P.E. teachers and involving families have proved effective in increasing physical activity in children(Kriemler *et al.*, 2011). Heath *et al*( 2012) also on an evidence-based intervention on physical activity showed that a comprehensive school-based intervention entailing P.E, classroom activities, after school exercise and active transport can raise physical activity in children.

And a comprehensive multi-component school-based intervention in North of India which randomised two schools into intervention and control groups for 18weeks intensive and repetitive lifestyle lessons (nutrition and lifestyle education) has shown effective in encouraging children towards positive active lifestyle, as well as improving children's body mass index in the interventional group(Singhal *et al.*, 2010).



### **3.3.2 Prioritising Poor Playgrounds to Increase Physical Activity by Urban Planning, Evidence from Literature.**

Evidence shows that interventions aiming at the built environment, policies to decrease physical exercise barriers, active transport policies and policies to prioritise space for recreational activity have been proven effective in raising physical activity levels of children (WHO 2007, WHO 2009 and WHO, 2009). To achieve this, evidence further suggests national policies and plans on physical exercise to have an integrated multi-strategies targeted at creating enabling environment to support individuals for physical exercise (WHO 2007, Edwards & Tsouros 2008, WHO 2010). For instance in Columbia (Bogota), evidence shows that the national policies have reduced obstacles to promote active transport and physical exercise. This is operationalised through an intervention called "ciclovía initiative" where roads are closed to vehicles between the hours of 7am and 2pm on weekends (Sundays), and holidays to promote active transport (cycling and walking) among residents including children (Parra *et al.*, 2007).

Another interventional study involving 15 community schools in disadvantage areas of England showed that pupils in schools with multi-coloured design playgrounds engaged in more physical activity than their counterparts in schools with no designs. It was concluded that urban design of playgrounds and physical structures that employ markings of different colours is a suitable stimulus for raising physical activity levels of children during school recess (Ridgers *et al.*, 2014).

Additionally, in south Africa, an intervention utilises 'painted game markings, small equipments and play ground stations' to design a low-cost- friendly playing grounds in 3 disadvantaged schools. In 6 weeks post-intervention, the result showed raised physical activity levels and declined sedentary lifestyle among the children. The improvements were statistically significant in both gender- boys ( $t = 2.50$ ,  $p = .017$ ,  $d = .41$ ), and girls ( $t = 2.38$ ,  $p = .022$ ,  $d = .37$ ) (Walter 2014).

Evidence further suggests that providing access to places for physical exercise (such as via community-scale and street-scale urban design and land use policies and practices) has proven to be one of the effective evidence-based intervention to increase physical exercise (Heath *et al.*, 2006). More so, evidence indicates that physical activity levels go up when urban planning and design policies create accessible play grounds, spaces or parks for children and adolescents (Sallis *et al.*, 2000). The intervention further shows that children's level of activity rises when they spend more time outdoors (Sallis *et al.*, 2000); whereas Ding *et al.*, (2011) in a review shows that support for access or proximity to recreation facilities, side walks and land use mix particularly for children and adolescents correlates to physical exercise.

### **3.3.3 Tackling the Marketing of Unhealthy Foods to Children Evidence from Literature.**

Studies have linked children's high intake of snacks and sugar-added drinks coupled with excess energy intake to television advertisement(Cairns *et al.*, 2009 and WHO 2011). And available evidence has demonstrated that limiting or banning advertisement of foods and non-alcoholic beverages to children on TV, has shown to be one of the most cost effective public health strategies in tackling childhood obesity prevalence. For instance, in LIMC such as Mexico, Peru, Uruguay and Costa Rica have banned unhealthy foods in public schools whereas other high income countries(Australia, USA, France) have also used this approach to tackle the marketing of the unhealthy food to children(Haby *et al.*,2006, Hawkes 2013, Guthrie 2013).

South Africa also in 2009 initiated a pledge on marketing to children to place restriction on advertisement of unhealthy foods and drinks on television, and in schools to children (< 12years ) (Igumbor *et al.*, 2012). In the same context, South Africa has also used the National School Nutrition Programme (NSNP) to developed a guideline for the small food-sellers (tuck shop operators) operating in and around the school premises. This has assisted in controlling sale of unhealthy foods in school environments (NSNP 2014).

Evidence further suggests that putting taxes on unhealthy foods have proven to be highly cost effective strategies for governments to tackle unhealthy food sales as well as curbing child obesity, and obesity in general(Gortmarker *et al.*, 2011, Sacks *et al.*, 2011, WHO 2011 and Guthrie 2013). Denmark for example put taxes on saturated oils in 2011(BBC News Europe 2011, Vallgård *et al.*, 2015) whilst Mexico and France have also put taxes on sugar-sweetening beverages, and the later earmarking the proceeds for programmes to help address obesity(WHO 2012, Guthrie 2013). Additionally, a longitudinal study conducted in China revealed that consumption of unhealthy foods dropped when prices were raised(Guo *et al.*, 1999) whereas in USA, evidence indicates that consumption of healthy foods shot up when prices of these foods were lowered(Suhrcke *et al.*, 2005).

A review also suggests four approaches that have been widely used in other jurisdictions to address the unhealthy school environment:- establishing available food or nutrient based standards for foods in school, implementing available food – or nutrient-based standards via specific channels (example meals, or vending machines); setting standards for the available foods in close proximity to schools (Fiji and South Korea have acted on this); and placing restrictions on specific types of foods( about 30 countries as at 2008 had taken steps to restrict SSB availability) (Hawkes, 2013). To add to it , other cost effective approaches can be sourced from global guidelines and best practices such as WHO commission on ending childhood obesity recommendations, WHO's Regional office for Europe's guideline for tackling food marketing to children, and population-based approaches to child obesity prevention and adapted to the context of Ghana (WHO 2012, WHO 2016a, WHO 2016b).

### **3.3.4 Elaborate Nutrition Policy no Strategies to Address Childhood Overnutrition**

Ghana has an elaborate national nutrition policy which presents a whole range of aims and goals. But as it is the case now, there are no clear strategies, no clear guidelines, and no operationalisation of the policy to follow through (GHS 2015, NNP 2016). This requires action to follow through the policy and as a necessity; steps ought to be taken to establish a body to initiate dialogue for the development of effective strategies to tackle overnutrition. And to inform this process one can draw upon evidence in WHO guidelines (WHO 2004, WHO 2009, WHO 2010, WHO 2012, WHO 2016b), review papers (Waters et al., 2011, Hawkes *et al.*, 2013, Mohammed 2015), and South Africa's strategy document on prevention and control of obesity (Department of Health, South Africa 2016).

## **CHAPTER 4.0: DISCUSSION AND CONCLUSION**

The findings section reveal a whole range of structural, socioeconomic and political choices or inactions related drivers determining childhood obesity in Ghana. From the findings, a few key themes stand out and would be considered under this section for discussion.

### **4.1 Socio-cultural Norms**

Social norms about what body image is desirable and admirable as well as how boys and girls should look like 'particularly girls' exist and drive childhood obesity. The society views a healthy child with the lense of a larger body size or image particularly the girl who is often associated with beauty. These norms are less often not targeted in policies and programmes to address childhood obesity. And in my view, any strategies and interventions to tackle childhood obesity in Ghana without interventions to change and demystify the socio-cultural norms around large body image stand to be unsuccessful.

Though there are proven recommendations and cost effective interventions available, targeting children in their school environment and outside home environments, one has to acknowledge that parents role is central to this issue and unless they are recognised, the problem of childhood obesity will continue. For instance, in the Ghanaian societies, parents serve as role models for children including their body image as well as acting as trustees of socio-cultural norms which are handed over to their wards. I believe that for any headway to be made on this issue, it is very important to adopt the whole-of-community approach particularly involving parents as advocates and agents of healthy body image in order not to affect the sensitivity of the people in society as well as ensuring continuity of the intervention.

For we know that socio-cultural norms are not fixed; they evolve, change and they are already changing in certain areas in the context of Ghana. For example, the large extended family system has evolved to a small nuclear family system, and the socio-cultural norms which were surrounding male uptake of contraceptives in the Northern Ghana have also changed through Navarogo project to increase contraceptive uptake in Northern Ghana. These signals present an opportunity for change if proper interventions are done.

These approaches should engage parents starting from the planning up to the implementation levels of the interventions to effectively make a meaningful impact. And additionally, one can also employ social marketing strategies (campaigns) aiming at parents to modifying social norms about large body image, 'food preferences and choice and social desirability' of physical exercise which to me seems prospective.

In conclusion, one can say that it is extremely important not only do we need measures to tackle childhood obesity but also we need actions to change the interventions, to change strategies to trigger a change in socio-cultural norms in Ghana.

## **4.2 Intersectoral Policy Action and Intervention**

Interestingly, the key drivers determining childhood obesity lie outside the purview of the health sector, and for my observation, more than one key policies intersect to either check or create conditions for child obesity to emerge in the context of Ghana. This implies that no single ministry or sector can effectively tackle the emerging childhood obesity and its complexity without the support of other key sectors. For instance, supportive physical exercise environment will need policy support from the urban planning (built environment), transport (active transport), sport (recreational activity) and education (school-based physical exercise), whilst tackling the food environment will require the engagement of sectors such as food and drug authority (regulation and 'reformulation'), agriculture (primary production investments), education (school-food environment) as well as trade and finance for fiscal policies and taxes on food to sanitised the whole food environment.

This makes it necessary to harmonise policies and strategies to effectively and collectively tackle this issue from different sectoral angles, and this calls for a whole-of-government approach to tackling childhood obesity in Ghana. And the MOH/GHS should be seen to engage multi-stakeholders as well as playing a key coordinating role in partnership whilst roles and responsibilities are clearly assigned to each stakeholder.

As often is the case, we witness policies and strategies developed and enacted with well intended purposes and aims, and nothing happens afterwards. And we have to recognise that for childhood obesity to be successfully addressed, steps ought to be taken to operationalise policy guidelines in Ghana. This should be shown as a commitment by government in resource allocations-funds, material, capacity to effectively implement policy actions. And for me, it is necessary for civil society groups and NGOs to initiate dialogue with relevant authorities and bodies to honour their various international pledges to end childhood obesity by committing needed resources to effect action. More so, the civil society and NGOs should be seen to advocate for the implementation of childhood obesity policies as well as encourage resource mobilization for programmes targeted to prevent child obesity in Ghana.

In conclusion, it can be said that any action to tackle childhood obesity in Ghana necessarily requires multi-sector to work closely together and develop a coordinated response both for policy and programme to be effective. And civil societies should play an advocacy role for resources to be committed to operationalise policies and programmes of childhood obesity.

## **4.3 Making the Food Environment Less Obesogenic to Promote Healthier Behavioural Norm among Children.**

The food environment is a strong driver in determining childhood obesity in Ghana. This has a greater influence on children's eating habit. One has to recognise that the food environment is a complex one and difficult to tackle without the private sector engagement.

Presently, Ghana like any low-to-middle income country is going through nutrition transition, and there is a shift from traditional diets high in fiber to high energy-dense foods rich in fat, sugar and salts. Tackling the food environment requires a political commitment and action at the highest level. And one strategy which has shown cost effective for governments is to put taxes on unhealthy foods to check the food environment. This action though cost effective may not be feasible but not impossible in the context of Ghana due to certain binding trade agreements and pressure that will mount from the big weight companies.

However, the engagement with the private sector to address this issue has shown some positive results in another context in Africa. For example, in South Africa, companies pledged not to advertise unhealthy foods to children less than 12 years on TV, and this was initiated by civil society groups. This implies that engaging the private sector as well as the civil society is necessary for tackling the unhealthy food environment children are exposed to.

Regarding the home food environment, parents are seen as models in homes and can be engaged to serve as role models in healthy eating lifestyle for their children. This can be achieved by encouraging the frequent family consumption of home-cook foods and limiting consumption of unhealthy foods in the presence of their children. Additionally, parents can also be educated to limit stocking unhealthy foods in homes as well as avoiding eating and drinking unhealthy foods and drinks in the presence of their wards. This approach requires parents' maximum cooperation and support to make the home food environment healthier for children.

The school food environment is one key area that has proven effective in delivering healthful population-based interventions to tackle the unhealthy food environment. The school environment can be an enabler of healthy eating norms but can also create conditions for children to be obese. For we know that children spend most of their time in schools and often depend on foods in and around the school premises. Tackling the school food environment has a ripple effect on the larger food environment children are exposed to outside school. This is a bigger milestone in tackling the unhealthy food environment.

In South Africa, for instance, through their national school feeding programme, a nutrition guideline has been developed for vendors selling foods in the various school vicinities, and this help limit sale of unhealthy food in the school compounds. This can equally be employed in the Ghanaian context to sanitised the sale of unhealthy foods by a wide range of vendors in and around school vicinities. Already there is existing GSFP, and nutrition guidelines for healthy eating are also developed for the programme by the GHS. However, implementation is constrained by resources. As a necessity, Local Government Ministry and MOH/GHS should team-up to allocate resources-financial, material and technical resorces to implement the guideline in all schools including private schools to help limit the unhealthy food environment. Additionally, healthy food options should be made available, accessible and affordable to children to encourage healthier behavioural norms in schools and by extension outside school environments.

Moreover, we have to realise that for any intervention to be successful in the school environment, teachers as well as other staff are key. And therefore, supporting them technically (both to develop professionally and capacity building on intervention related activities) is helpful to implement strategies and activities to create a more healthy school environment. The school environment is a very crucial platform in our fight against childhood obesity, and there are available best practices, interventions and strategies that are cost effective and also proven successful that Ghana can adapt and apply in its context to make the school environments less obesogenic.

To conclude, one can say that the food environment is a very complex and difficult one but the school environments have proven effective to roll-out population-based strategies to partly tackle it.

#### **4.4 The Centrality of the Built Environment to Enable the Development of Active Healthy Children.**

The built environment is very key in this time and age if we want to make any inroads in addressing childhood obesity in Ghana. For a long time, the built environment has been neglected, poorly planned and managed to respond to the growing population. The environmental laws and regulations concerning land mix use, provision of playgrounds, open spaces or parks, and recreational facilities to promote active healthier lifestyle in sound environments are flouted by developers without any action being taken by the Metropolitan, Municipal, and Districts Assemblies(MMDA) of the Local Government Ministry and other regulatory bodies. There is a total disconnection between urban planning and built environment designs that create a supportive environment of public health benefit. And this to me ought to be changed because the built environment by not being properly organised can have the potential to contribute to the problem of childhood obesity as well as creating other public health problems going forward.

There is evidence from other parts of the world to show that wherever the built environment has been managed properly, wherever opportunities, spaces and conditions have been created for physical exercises and sports to be done, it contributes to increased physical activity and decreased sedentary lifestyle of children including adults. But we have to acknowledge that, the built environment is a difficult thing to change, and once things are poorly planned and organised, it is very difficult to undone. However, Ghana is presently on the route for a change. It is transitioning from low-middle income economy to a middle-income economy. It is one of the rapidly growing economies in Africa, and it is also undergoing a rapid transition, moving away from primarily rural society to an urbanizing society. Cities are being developed, and cities are being expanded. This presents both a threat but also an opportunity to get it right. To plan cities properly so that the built environment creates an opportunity to support active healthier living among the people particularly children.

In doing so, we have to take a second look at the existing urban planning policy, amend it and bring it up to speed to conform to the internationally acceptable practice of planning and designing cities which are appropriate, acceptable and feasible in the context of Ghana. This "in my opinion" requires a commitment of government to policy actions, build capacities of personnels of the urban planning departments, and resource them both financially and technically to effectively drive this course. More so, environmental laws and regulations on land mix use and provision of open spaces or parks and playgrounds should be enforced by the Local Government Ministry to sanitise the whole built environment to support active lifestyle.

In conclusion, one can say that the built environment is a key driver, and it can also be an enabler if spaces are well organised in such away to promote physical exercise and sports among children in Ghana.

It is important to point out that due to the limited time available to conduct this study, only reports available on the official websites of the relevant institutions as of the time of the literature review were used to analyse the policies and programmes. Additionally, studies in neighbouring countries and some LIMCs on environmental drivers of childhood obesity were also cited and contextualised to complement the few available studies in Ghana. In view of this, one ought to interpret the findings cautiously. However, I have to say that these do not in anyway make the findings less useful.

## 4.5 RECOMMENDATIONS

This section draws from the strategy and evidence that has been presented in chapter four. It is also contextualised and presents specific recommendations where possible directed for specific actors and where appropriate with a time frame and always keeping in mind the criteria of feasibility and appropriateness of the recommendations in the context of Ghana.

1. Parents are central to socio-cultural norms driving childhood obesity in Ghana. Therefore, it is recommended that interventions tackling childhood obesity on socio-cultural norms should engage parents from the planning level up to the implementation level. Additionally, MOH should initiate parent projects including gaining an understanding of the triggers for socio-cultural norm change in different parts of Ghana. This should include research to find out what is driving norms and important health promotion campaigns around body image or size.
2. For effective prevention of childhood obesity, a whole-of-government approach is necessary. So in view of this, it is recommended that an inter-ministerial and intersectoral working group should be convened by the office of the Vice President to develop a strategy to tackle childhood obesity in Ghana. In doing so, resources should be released to implement this action, and further commitment should be made by government to ensure that resources are continuously allocated to MOH/GHS to operationalise the policy actions on childhood obesity.
3. The urban planning department should be given financial and technical support to prioritise open spaces, parks, playgrounds and other recreational facilities in schools, communities and public places to promote physical activity. More so, a collaborative research should be initiated between the urban planning department and the MOH and supported by the Faculty of Planning, Kwame Nkrumah University of Science and Technology (KNUST) to deepen an understanding of the built environment and its interaction with public health. This is necessary to assist them come up with a supportive healthier built environment that would make physical activity part of daily life.
4. The MOE/GES in the short term, should take steps to refurbish available open spaces, parks or sportfields in school environments and enforce the teaching of PE and healthy lifestyles in schools curricula. In doing so, MOE/GES should allocate resources and build capacities of teachers to effectively instruct PE and a healthy lifestyle to promote a healthier behavioural norms among children.



5. Childhood obesity has been implicated both in adult obesity and NCDs. And NCDs are currently more important than communicable diseases in terms of death and disabilities. In view of these, it is recommended that MOH/GHS should build staff capacities on childhood obesity and incorporate childhood obesity prevention and strategies into the curricula of the health training institutions. Also MOH/GHS should develop a standard format for tracking childhood obesity in all facilities. More so, childhood obesity monitoring, surveillance and reporting should be integrated into the existing health information management system for effective policy decisions and actions.
  
6. The roles of civil society groups and NGOs have been recognised as key to the successful implementation of population-based childhood obesity programmes/policies. It is therefore recommended that civil society groups and NGOs should continue to play an active advocacy role for government to commit to policy implementations on childhood obesity. More so, they should initiate dialogues with government and its relevant institutions particularly MOH/GHS to allocate resources to implement childhood obesity interventions and activities in Ghana.

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**ANNEX 1.**

**MAP OF GHANA SHOWING THE TEN ADMINISTRATIVE REGIONS AND THE TERRITORIAL BOUNDARIES.**



Source: [www.mapsofworld.com](http://www.mapsofworld.com)