UNIVERSITY OF GHANA

COLLEGE OF HUMANITIES

CHILDHOOD OBESITY AND PSYCHOSOCIAL WELLBEING: A CASE STUDY IN UNIVERSITY AND ACHIMOTA BASIC SCHOOLS, ACCRA-GHANA

BY

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ACCEPTANCE

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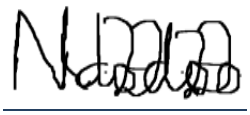

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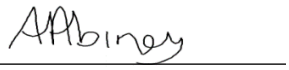

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DECLARATION

I, Lily Owusu hereby declare that except for references to other people's work, which I have duly acknowledged, this thesis is the result of my own research work, and that it has neither in part nor wholly been presented elsewhere for another degree.

…….. 7th September, 2020

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DEDICATION

I dedicate this research work to my parents, husband and children.

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ABSTRACT

Over the past two decades, the rising rate of obesity in children has become a major global health concern because childhood obesity is not only associated with a higher risk of physical morbidity, but it also increases the risk of weight-related psychosocial complications in children. However, available evidence on the association between obesity and psychosocial wellbeing, especially within the context of developing countries, is scarce. In total, 452 children participated in this study. This study aimed at examining the effect of childhood obesity on the psychological and social wellbeing of children in the University and Achimota Basic Schools in Accra using mixed methods. To determine the prevalence of child obesity in both schools, frequencies, means and percentages of estimated Body Mass Indexes from each respondent was measured. Bivariate analysis was conducted using cross tabulation analyses. Binary logistic regression was conducted to test for the probability of a child having either good or bad psychosocial outcome. The results suggest that the overall prevalence of obesity in both schools was high (8.8%). Children who were overweight were 0.381 times as likely as normal weight children to develop poor psychosocial challenges as compared to normal weight children. Similarly, obese children were 0.418 as likely as normal weight children to develop poor psychosocial outcomes. Again, children who perceived themselves to be plump or very plump were 2.057 times as likely as children who perceived themselves as slim to develop poor psychosocial outcomes. More so, children who belong to the older age group were 1.612 times as likely as children who belong to the younger age group, to be susceptible to poor psychosocial challenges. Lastly, children who attended University of Ghana Basic School were 0.608 as likely as those in Achimota Basic School to develop poor psychosocial outcomes. With regards to the qualitative analysis, 20 children were purposively selected and interviewed. It emerged that obese children experienced psychosocial distress such as name calling, poor academic performance, and social isolation among others. The study recommended that since obesity was high in both schools there was the need for the two schools to strengthen physical education and nutrition-related courses in the curriculum of the students. It was also important to teach children coping skills to overcome psychological stresses created by peers both at home and in school.

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LIST OF ACRONYMS

APS	Achimota Primary School
BMI	Body Mass Index
BOK	Body of Knowledge
COSI	Children Obesity Surveillance Initiative
CT	Computed Tomography
CDC	Centre for Disease control and Prevention
DCC	Disease Control Centre
DEXA	Dual-energy X-ray Absorptiometry
EU	European Union
FRAC	The Food Research and Action Centre
GSS	Ghana Statistical Service
IOFT	International Obesity Task Force
JHS	Junior High Schools
Kg	Kilogram
m^2	Metres Square
MoFA	Ministry of Food and Agriculture
NCDs	Non-Communicable diseases
NRCDs	Nutrition Related Chronic Diseases
NR-NCD	Nutrition Related Non-Communicable Disease
P.E	Physical Education
OECD	Organisation for Economic Co-operation Development
RIPS	Regional Institute of Population Studies
RSE	Rosenberg's Self-Esteem scale
SES	Socioeconomic Status
SPSS	Statistical Product and Services Solutions
SSA	sub-Saharan Africa
SSBs	Sugar-Sweetened Beverages

UBS	University of Ghana Basic School
USA	United States of America
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background to Study

Over the past two decades, the rising rate of obesity in children has become a major global health concern because childhood obesity is not only associated with high risk of physical health morbidity, but also increases the risk of weight-related psychosocial complication in children.

The World Health Organisation (WHO) defines obesity as a physical health condition whereby there is excessive fat accumulation in the adipose tissues of an individual (WHO, 2014). The most common and widely used measurement method is the Quetelet index, which is also known as the Body Mass Index (BMI). This is measured as body weight in kilograms (kg) divided by the square of height measured in metres (m^2) (Schwarzkopf, 2008). In children, the calculation of the BMI is quite different from that of adults. The BMI of children is plotted on growth charts for interpretation relative to a healthy reference population using standardized calculated percentiles (Viner & Cole, 2005).

Children below the 5^{th} percentile on the growth chart are termed as underweight. Children between 5th and 85th percentile are termed as normal weight while those ranging from 86th to 94th percentile are said to be overweight. Children at or above the 95th percentile are obese (Viner & Cole, 2005).

Globally, the prevalence of childhood obesity is rising (WHO, 2006). It is estimated that about 10% of school-aged children across the world carry excess body fat. The estimated number of children and adolescents who are obese increased from 11 million in 1974 to 124 million in 2016. This was ten times higher. According to WHO, 216 million children worldwide are also estimated to be overweight (WHO, 2017). Out of this number, 42 million are under the age of

five years and 35 million live in developing countries (WHO, 2017). The total number of children (under the age of five years) expected to be obese by 2026 is estimated to rise to about 70 million. In Ghana, a study conducted by Global School Health Survey estimated child obesity prevalence to be 15% (GSS, 2012; GSHS, 2013). In contrast to the physical ill effect, the psychosocial consequences of obesity are not inevitable but derive culture-bound values by which people view body fat as unhealthy and ugly. Research has shown that children in the lower socioeconomic gradient are at a greater risk of being obese in industrialized countries, while obesity is more prevalent among children from the higher income gradient in the developing countries, most especially from urban populations (Aduama, 2004).

The consequence of obesity among children and adolescents is broad, and it is not limited only to physical health-related effects but also psychological, social, and behavioural outcomes. Child obesity is also known to have negative psychosocial effects on the individuals concerned (Harriger & Thompson, 2012). These psychosocial outcomes of obesity deal with both the psychological and social challenges children face because of their obese bodies (Trandafir, Anton-Paduraru, Miron, & Laurentiu Indrei, 2015). It also incorporates how this affects their interactions with others (Trandafir et al., 2015). It is not obesity as a physical state itself that creates a psychosocial burden for many obese individuals, rather, people or society creates this burden and suffering. The perception of obesity as a condition that one brings on oneself creates little sympathy towards the obese. In contrast to the physical ill effects (such as increased rates of heart disease, diabetes, certain cancers, gall bladder disease, osteoarthritis, endocrine disorders, high blood pressure, asthma, menstrual abnormalities, sleep-disordered breathing, and infertility), the psychosocial consequences of obesity are not inevitable but derive from culture-bound values by which some people view body fat as unhealthy and ugly, as stated earlier. Leanness is seen as a desirable feature that is often associated with beauty, success, fitness, and self-control in western societies. At the same time, overweight and obesity are

undesirable for reasons that are often more related to cosmetic concerns than to actual or potential medical complications. However, the issue is different in developing societies within the sub-Saharan region of which Ghana is inclusive. In these regions, a woman's beauty is viewed or appreciated on how she weighs. Particularly, women and children who are big and plump are usually perceived as beautiful and socially desirable while those who are slender and slim are usually perceived as socially undesirable. But in recent times and as a result of globalisation, such perceptions are gradually changing in this region (Carpenter, Hasin, Allison, & Faith, 2000).

Most childhood obesity studies ignore the psychosocial consequences of this condition (Schwimmer, Burwinkle, & Varni, 2003). However, WHO (2000) states that obese children experience psychosocial problems such as low self-esteem, emotional disorders, stigmatization, victimization and teasing, social non-acceptance and discrimination, depression, psychological distress, anxiety, poor academic performance and low quality of life. For instance, weight-related teasing from peers, weight-related criticism by parents, and external control beliefs (children who believe that their weight is beyond their control) may influence the relationship between obesity and self-esteem. Teasing regarding body weight has also been linked to negative psychological consequences such as depression and suicide tendencies. This stigmatization against overweight individuals begins early in life. Females appear to be particularly vulnerable to low self-esteem and depression when they do not fit the slim body ideal or standard set by society.

In the low and middle-income setting, issues of child overweight and obesity also exist. Studies have shown that in spite of the increase in malnutrition in these countries in recent times, there has also been an onset of obesity due to changes in dietary intake and changing lifestyles (McClanahan et al., 2009; Mohammed and Vuvor, 2012; Villarejo et al., 2012). This means that child obesity could be a significant factor in the development of psychological disorders

among children. The onset of these psychosocial disorders is seen to be more prevalent in obese children and young adults. It is therefore imperative to understand the psychosocial cost of childhood obesity in order to devise a proper policy mix to effectively tackle this rising societal menace.

1.2 Statement of the problem

The past few decades have seen an upsurge in paediatric obesity (WHO, 2017). The consequence of this deleterious menace is affecting both developed and developing countries (Lobstein, 2004). There are short-term and long-term health risks of childhood obesity (Sanders, Han, Baker, & Cobley, 2015). The persistence of this condition into adulthood has increased middle-age mortality (second leading cause of preventable deaths) and morbidity worldwide and this has become a concern for demographers, public health officials and policy makers (Stovitz, Demerath, Hannan, Lytle, & Himes, 2011; Swallen, Reither, Haas, & Meier, 2005). Besides the physical health consequences associated with childhood obesity, there are also psychosocial challenges associated with this menace.

It is estimated that 10-20% of children and adolescents experience some psychosocial health issues and overweight/obesity is seen to be among the ten top diseases that contribute to psychosocial challenges and most of these issues begin to show at the age of 14 years (WHO, 2005; Gatineau & Dent, 2011)

The emotional, behavioural and financial burden faced by individuals, their families and society, due to these associated challenges is enormous. In terms of emotional challenges, specialists across disciplines such as education, medicine, and child welfare acknowledge the significant role these psychosocial outcomes play in the development of the overall well-being of the child (Bethell et al., 2009; Isakson, Hammarstedt, Gustafson, & Smith, 2009). For instance, Flour and Buchanan (2013) argued that obese children with low psychological well-

being may encounter lower self-esteem, while experiencing high levels of distress. They may also encounter psychological problems like anxiety and depression resulting from stereotyping, discrimination, and rejection by their family, friends and others (Villarejo et al., 2012). McClanahan et al., (2009) also reports that the problem of low self-esteem emanating from childhood obesity has become so grave that even obese children below the age of five years are developing a negative self-image about their bodies, and in some instances, this brings about suicidal thoughts among these children. Again, when compared to non-obese controls, studies have shown that non-obese children often perform better academically than obese children, who tend to perform poorly in school. Some also miss school mainly due to the humiliation they go through at school as a result of their weight, which in turn affects their class assessment (Puhl, Luedicke, & Heuer, 2011). Also, Faulkner, Neumark-Sztainer, Story, Jeffery, Beuhring & Resnick (2001) recorded a higher lifetime prevalence of anxiety disorders among obese children than non-obese children. They further indicated that obese girls are even more susceptible to depression than boys who are also obese. Furthermore, evidence from Adams & Bukowski (2008) suggest that obese children suffer lower quality of life than their non-obese peers. It is estimated that obese children are up to five times more likely to report lower global health-related quality of life scores (Friedlander, Larkin, Rosen, Palermo, & Redline, 2003). The situation is so alarming that no distinct differences could be found between the quality of life scores of obese children and those from children receiving cancer chemotherapy (Schwimmer et al., 2003). More so, studies have shown that perceived obesity (the bodyweight-related concerns regarding what an individual thinks about his or her current bodyweight status or what parents think about the weight of their children) sometimes affects the child's psychosocial well-being. Some children who perceive themselves to be obese have a misconception that obese people have sad lives. This goes a long way to affect them negatively (Rendón-Macías, Rosas-Vargas, Villasís-Keever, & Pérez-García, 2014).

Concerning the economic challenges, the cost of psychosocial health problems in developed countries for instance, is estimated to be between 3% and 4% of gross national product (GNP). Nevertheless, it costs national economies several billions of dollars, both in terms of expenditures incurred and loss of productivity to care for children with psychosocial challenges (WHO, 2005). In developing countries, over 90% have no mental health policy that includes children and adolescents. Out-of-pocket expenditure is the primary method of financing psychosocial healthcare in many countries. Even in countries where insurance cover is provided, health plans frequently do not cover mental and behavioral disorders at the same level as other illnesses; this creates significant economic difficulties for patients and their families. In terms of contributing to the national economy, these psychosocial challenges usually cause reduced productivity in the workplace, making unproductive contributions to the national economy (WHO, 2001; WHO, 2005).

Ghana, like any developing country, is facing greater burden of infectious diseases and undernutrition. However, the rise in over nutrition has brought about the upsurge of obesity and its related consequences (Ghana National Nutrition Policy, 2013). The proportion of children in Ghana below age 15 years make up about 40% of the population, nevertheless the Global School Health Survey estimates the obesity rate among children below 18 years to be 15% (GSHS, 2012). Children are supposed to grow to contribute their quota to the national development of the country when they get to the working age group. Yet, if 15% of this cohort are obese and may be going through some psychosocial challenges as a result, this implies that much resources need to be channeled to take care of them.

An important issue that is often overlooked when considering childhood obesity is the psychological and social outcomes associated with it. Although ample evidence exists in the developed world, scholarship on this effect is inadequately explored in sub-Saharan Africa. More so, the few studies on this topic within low-income countries, including Ghana, focus

mainly on the prevalence and determinants of actual child obesity but do not go further to look at perceived obesity as well and how both (actual and perceived obesity) can also affect children's psychosocial health. These studies were conducted in Urban Nigeria, Greater Accra Region and Northern part of Ghana. For instance, the study by Maruf and colleagues looked at influence of gender on prevalence of overweight and obesity in Nigerian schoolchildren and adolescents and also Mohammed and Vuvor studied the prevalence of childhood overweight and obesity in basic schools in Accra, Ghana (Abachinga 2001; Mohammed &Vuvor, 2012; Maruf, Aronu, Chukwuegbu, & Aronu, 2013, Dabrowska, 2014). Since the deleterious effects of childhood obesity is affecting both developed and developing countries, it is imperative to provide empirical and theoretical understandings of this menace within the context of a developing country to inform policy and heighten prevention and intervention efforts.

This study therefore aims at providing an in-depth enquiry into the social and psychological effects of both actual and perceived childhood obesity and the lived experience of obese children within the context of a developing country like Ghana. It primarily seeks to examine childhood obesity and its associated social and psychological effects. The important question this answers is: What are the social and psychological consequences of childhood obesity in Accra, Ghana?

1.3 Research questions

This study seeks to answer the following four research questions:

1. What is the prevalence of obesity (actual and perceived) among children in Primary four to Junior High School three in University and Achimota Basic Schools?
2. What is the association between the child characteristic and parental characteristics of children and their psychosocial wellbeing?

3. What is the effect of obesity on the psychosocial well-being of children?
4. What are the lived experiences of obese children in relation to their psychological and social well-being?

1.4 Objectives of the study

The general objective of this study is to explore the psychosocial challenges that obese children encounter which affect their well-being. The specific objectives of the study include to:

1. Examine the prevalence of obesity (actual and perceived) among children in Primary four to Junior High School three in University and Achimota basic schools.
2. Investigate the association between the child characteristics and parental characteristics of children and their psychosocial wellbeing.
3. Investigate the relationship between respondents' weight status and their psychosocial wellbeing.
4. Explore the lived experiences of obese children concerning their psychosocial well-being.

1.5 Rationale of the study

Health includes a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 2006). This implies that, the improvement of children's health status should be an important mandate for every country that strives for development. When all aspects of child health become a priority for the government, it promotes improvements in the health and well-being of children. Most studies on child health and well-being in sub-Saharan Africa (SSA), including Ghana, have predominantly focused on reducing child malnutrition, infectious diseases such as malaria, diarrhoea, cholera, and injury among others. They also stress on improving the reproductive health of adolescent boys and girls.

However, few studies have focused on the other side of the double burden of disease and these show that Non-Communicable Diseases and their risk factors are increasing among children in sub-Saharan Africa.

The existing studies on child obesity is primarily epidemiological in nature. These studies mostly assess the prevalence, physical health consequences (diabetes, asthma, heart diseases and others) and determinants of obesity in either women or children (Ziraba, Fotso, & Ochako, 2009). Mohammed & Vuvor (2012), for instance, conducted a study on children attending the University of Ghana basic Primary School, Legon and found that the prevalence of obesity in the school was 10.9% with higher prevalence among girls (15.0%) than among boys (7.2%). Another study by (Amidu et al., 2013) conducted in the Tamale Metropolis found that the prevalence of childhood overweight and obesity were 9.8% and 7.5% respectively**.** Yet another study conducted in South Africa investigated the gender difference in prevalence of child obesity (Armstrong, Lambert, Sharwood, & Lambert, 2006). Other studies have also examined prevalence differentials in overweight and obesity in pre-school children in SSA and a study in Nigeria looked at the prevalence of overweight and obesity in Nigerian adolescents from an urban community, and their result showed that overweight and obesity was higher among females than males, thus 0-8.1% in males and 1.3-8.1% in females (Akinpelu, Oyewole, & Oritogun, 2008; Gebremedhin, 2015).

This study will provide a better theoretical and empirical understanding of the psycho-socio-demographic outcomes of childhood obesity within the context of a developing country like Ghana. In addition, this study seeks to provide more context to the existing literature by not only using quantitative data but also conducting qualitative research to better understand the lived experiences of these obese children as far as their psychosocial well-being is concerned. This study also seeks to bring to light the weight control practices of people who correctly perceive their weight, as well as those who misperceive their body weight. This will increase

understanding of how people manage their weight; their dietary practices and engagement in physical activity. This will consequently aid in developing strategies to help children achieve a normal or healthy body weight leading to a healthy population.

In summary, the present study contributes to the literature because it will add to the discussion on the effects of obesity on children in addition to the physical health challenges faced by obese children. For policy formulation, the implications of this study will benefit child development practitioners, schools, and parents to help provide and create awareness on the negative psychosocial effects associated with child obesity**.**

1.6 Organization of the study

The study is organised into seven chapters: Chapter One introduces the background to the study, the problem, the research questions, objectives, and rationale of the study. The second chapter presents a review of relevant related literature as well as the theoretical and conceptual frameworks of the study and research hypotheses. Chapter Three relays the various methodological approaches employed in the study along with the analytical framework, the study area, sampling techniques, data collection and data analysis methods. Chapter Four provides context by presenting the obesity prevalence, background characteristics of the respondents for both the qualitative and quantitative components of the study and a look at the socio-demographic and socioeconomic characteristics and its association with the psychosocial well-being of children in the two selected schools. The fifth chapter examines the relationship between obesity and psychosocial wellbeing. Chapter Six explores the lived experience of the obese children, through in-depth interviews which were analysed using thematic network analysis. Chapter Seven presents a summary of major findings, conclusions, and policy recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter is a review of related literature on child obesity and its associated psychosocial effects. A discussion on prevalence of child obesity is presented in section 2.3 while section 2.4 looks at the psychosocial effects of childhood obesity. Section 2.5 and 2.6 discuss the theoretical and conceptual frameworks respectively. Section 2.7 examines the linkages between the variables in the conceptual framework, which is then followed by hypotheses in section 2.8. Finally, section 2.9 comprises a summary on the literature review and sheds some light on the gaps in literature.

2.2 Definition and measurement of child obesity

There are various definitions of child obesity in use but no common standard has yet been accepted. This is because there is not one simple index for the measurement of overweight and obesity in children. This is explained by the fact that, depending on their sex, the bodies of children undergo several physiological changes as they grow. Thus, the age and sex of the child play an important role in the definition of childhood obesity (Lustig et al., 2016).

The WHO (2014) defines obesity as a condition whereby there is excessive fat accumulation in adipose tissues. When there are high levels of human adipose tissues in the body they may be considered dangerous to a person's health. This excess adipose tissues in humans happens when the energy intake exceeds energy expenditure by the body. This suggests that obesity is likely to occur when food consumption exceeds the biological threshold the human body requires over a long period of time (Opuni-Frimpong, 2015).

Various methods are used to measure human adiposity. These include the Dual-Energy X-ray Absorptiometry (DEXA), Magnetic Resonance Imaging (MRI), Computerized Axial

Tomography (CAT) and Computerized Tomography (CT) (Gray et al., 1991). These methods which are complex and costly have led to the widespread adoption and acceptance of the Quetelet's index also known as the Body Mass Index (BMI). This is measured as body weight divided by height squared (kg/m^2) (Schwarzkopf, 2008). In calculating the BMI for adults, 30 kg/m^2 is recognised as the international standardized value for normal weight. However, for children, the cut-off point is not definite. It changes with age and sex. This is because weight and height distribution changes with age. A person's median BMI at birth is estimated to be 13 kg/m^2 which then rises to 17 kg/m^2 by age 1. It then plummets to 15.5 kg/m^2 at age 6 and increases again to 21 kg/m^2 at age 20 (Cole, Bellizzi, Flegal, & Dietz, 2000).

To precisely measure obesity in children, the WHO has largely used the calculation of BMI in combination with statistical percentiles. This BMI is plotted on growth charts for interpretation relative to a healthy reference population, which then uses percentiles to define who is obese and overweight. In applying these BMI percentiles, the WHO and the Disease Control Centre (DCC) have helped to reduce the ambiguity in the interchangeable use of overweight and obesity. By their guidelines, a BMI that ranges between the 85th and 94th percentiles is referred to as overweight, while BMIs in the 95th percentile or above are considered obese (DCC, 2009). According to WHO (2016), child obesity occurs at or above the 95th percentile for children and teens of the same age and sex. This cut-off point logically implies that every obese child is an overweight child. In other words, every obese child is an overweight child but not all overweight children are obese.

2.3 Prevalence of child obesity

Prevalence of child obesity is the percentage of children who are obese (WHO, 2006). According to WHO (2010), global prevalence of childhood obesity has risen astronomically during the last few decades. The number of children and adolescents who were obese increased

by tenfold between 1974 and 2016. Precisely, from 11 million to 124 million. Similarly, between 1990 and 2010 alone, the global rate of obesity and overweight in children surged from 4.2% to 6.7% (Opuni-Frimpong, 2015). It is estimated that ten percent of the school-aged children all over the world carry excess body fat. One out of every four children is either overweight or obese (Karnik & Kanekar, 2012). By 2026, the total number of children expected to be obese is estimated to be about 70 million. This represents a 67percentage increase in the prevalence of childhood obesity.

The Organisation for Economic Co-operation and Development (OECD) (2014) reported that almost 20% of school-aged children in the European Union (EU) are overweight while 5% are obese. In North America, the figures stand at 30% and 15% for overweight and obese children respectively (Harvard School of Public Health, 2014). In Asia, Mushtaq et al., (2011) revealed that prevalence of overweight and obesity among Pakistani children aged 5 to 12 years old was 17% and 7.5% respectively. In India and Kuwait, the prevalence of childhood obesity stand at 14% and 45% respectively (Langendijk et al., 2003).

In Africa, although there are several underlying trends in child obesity, some African countries including Ghana lack representative data on trends in childhood obesity (Aballa, 2013). Hence, there is little to report regarding surveys on childhood obesity. That notwithstanding, Onis, Blossenr, & Borghi (2010) found out that the prevalence rate of childhood obesity in Africa was 8.5% in 2010 and projected it to rise to 12.7% by 2020. South Africa recorded an obesity rate of 17% among 8-11 year old school-going children (Snell, Adam, & Duncan, 2007).

In Ghana, the Global School-based Health Survey found obesity rate to be 15% among children (GSHS, 2013). Nevertheless, in a study conducted by Abachinga (2001), he recorded 19.3% combined overweight and obesity rate among school-aged children in Accra. A little over a decade later Mohammed & Vuvor (2012) reported a higher prevalence rate of 26.7% among basic school children in Accra. In that same study, childhood obesity prevalence alone stood at

10.9 %. Mogre, Gaa, Nagumsi, & Abukari (2013) also found a combined prevalence rate of 8.5% for overweight and obesity among school-aged children in the Northern Region of Ghana. These findings confirm the existence of obesity among children in Ghanaian schools thus the need for intervention by stakeholders.

2.4 Perceived weight status of children

The effect of actual and perceived obesity on the physical, psychiatric and psychological wellbeing of individuals is well documented (Schienkiewitz, Mensink, & Scheidt-Nave, 2012). Perceived overweight or concern about one's weight, rather than actual weight status, is foretelling of the psychosocial or emotional fall-out of overweight or obesity (Perrin et al., 2010). Weight perceptions refer to the bodyweight related concerns of people or what an individual thinks about his/her current bodyweight status. It deals with whether they consider themselves as being heavier than their right body weight (overweight perception), slimmer than their right body weight (underweight perception) or about just as their right body weight ('right weight' perception) (Hayward, Jacka, Waters, & Allender, 2014).

Children who have high BMI usually do not describe themselves as obese. They usually describe themselves as being slimmer than their actual weight in order to insulate themselves from the negative psychosocial outcomes of obesity (Saxton, Carnell, van Jaarsveld, & Wardle, 2009). In some instances, children may misperceive their weight which may serve to protect them from certain psychological and social challenges that are associated with obesity like negative stigma, social isolation, bullying among others (Brewis, Wutich, Falletta-Cowden, & Rodriguez-Soto, 2011). Individuals who are obese are more often than not described as failures and susceptible to obesity-related conditions. As such, children and adolescents who have extreme weight issues (obesity or extreme thinness) are vulnerable to stigmatization (Puhl, 2011). Their misperception about their weight compels them to avoid stereotypes attached to

their body size (Puhl et al., 2011). Erickson et al. (2000) found out that 8-year-old girls who were concerned about their weight and shape experienced psychosocial symptoms such as depression than those with low levels of weight concern. Allen, Byrne, Blair, & Davis (2006) also found that overweight children were more self-conscious about weight and shape than children who had normal weight. They also reported that in spite of weight status, children who were overweight and obese reported lower levels of self-esteem and higher levels of body dissatisfaction and depression than children with low weight. It should be noted that healthy weight children who also perceive themselves as obese are more likely to adopt some unhealthy weight control behaviours, putting them at a higher risk of obesity and psychosocial distress (Ha et al., 2016; Robinson & Sutin, 2016; Sonneville, Thurston, Milliren, Kamody, Gooding, & Richmond, 2016). In a German study, obese children who thought of their body weight as 'just right' perceived a higher quality of life than normal weight children who considered themselves "far too fat" (Kurth & Ellert, 2008)

Weight misperception therefore might be deleterious and have dire consequences on the quality of life of children.

2.5 Relationship between obesity and psychosocial outcomes

Psychosocial outcomes of an individual deals with both the psychological and social issues (either positive or negative) they encounter in their lives. This incorporates how they think, feel and behave. It also incorporates how this affects people's interactions with others. It is asserted that the state of wellbeing promotes development of basic life skills, which helps individuals, families or communities to understand and interact with their ecosystem as well as help them to make informed healthy choices (Trandafir et al., 2015).

Obesity affects the psychological and social wellbeing of children and young people usually resulting in undesirable consequences (WHO, 2000). Obesity in itself does not create the

psychological trauma many obese individuals face but rather people or society are the drivers that create the burden and suffering on these individuals. This perceived condition of obesity brings about little or no sympathy towards obese individuals.

Most child studies on obesity overlook the psychosocial aspect of the condition (Schwimmer et al., 2003). However, WHO (2000) assert that obese children are prone to experiencing psychosocial problems, which means that child obesity could be seen as a key influence in the development of psychological disorders among children. More so, it can also be implied that, obese children may suffer from both poor psychosocial and physiological outcomes (Wardle & Cooke, 2005). The next section gives a detailed account of some psychosocial outcomes associated with child obesity.

2.5.1 Low self-esteem

Self-esteem, defined by William James (1890), is a balance between a person's attainments and their goals or aspirations. The emphasis on the social aspect of self suggests that whether we have high or low self-esteem partly depends on how others regard and treat us. Self-esteem plays an important role in the growth and development process of a child (Trandafir et al., 2015). Studies have shown that most obese children have low self- esteem (Ackard, Neumark-Sztainer, Story, & Perry, 2003; Kornilaki, 2014). The psychological cost often associated with low self-esteem includes but is not limited to escalated levels of nervousness, piety, fear, anxiousness, self-pity, and shyness.

Self-esteem in obese and overweight children varies with gender. Female children show a higher risk of developing lower self-esteem than males (Latzer & Stein, 2013). Franklin, Denyer, Steinbeck, Caterson, & Hill (2006) further assert that, low self-esteem in obese female children emanates from societal rejection of their body shape. This is because society is increasingly creating and raising a strict standard of thinness for females than males, ignoring their innate physiological and biological predisposition to have more body fat than males. The

problem of low self-esteem has become so grave that psychologically, even obese children below the age of five years are developing a negative self-image about their bodies (McClanahan et al., 2009).

Also, Zeller & Modi (2008) revealed that there are levels in the degree of low self-esteem depending on the cause of the obesity. Children who think that their obesity is as a result of their own debilitating behaviour, like poor eating habits, suffer from lower self-esteem than those who think that their obese status is due to independent influences like genetics and medical problems. Children who are obese tend to have lower peer acceptance and are less likely to be chosen as best friends. Such children often hold the view that when they lose weight it will help them make more friends (Kornilaki, 2014). French, Story & Perry (1995) found out that there was an improvement in the level of self-esteem among overweight and obese children who began to lose weight.

2.5.2 Weight-based stigmatization and teasing

According to Cornette (2008), weight-based stigmatization is when negative attitudes and beliefs are expressed through stereotypes, bias, rejection, and prejudice towards children because they are overweight or obese. Renman, Engström, Silfverdal & Åman (2007) posit that the most stigmatizing and least socially tolerable conditions in childhood is obesity. Obesity is not something that you can hide. Likewise, there is a global supposition that modifying one's behaviour such as eating less and engaging in frequent physical exercises can control obesity. The visible nature of obesity as well as the assumption that obesity can be controlled is an important determinant of weight bias. Children prefer to identify with non-obese peers because they align obesity with undesirable traits. In so doing they demonstrate weight bias. Children who associate overweight/obesity with negativity are more likely to tease and bully children who appear overweight (Puhl & Latner, 2007).

2.5.3 Peer victimization

Victimization involves an obese child being subjected to negative actions due to their excess bodyweight. These negative actions may either be direct (which involves the use of physical violence or verbal abuse) or indirect (when the obese child deliberately excludes him or herself from certain social activities in order to avoid being a victim of physical violence or verbal abuse). Peer victimization is one of the odious negative psychosocial outcomes of child obesity (Janicke et al., 2007). Peer victimization refers to forms of aggression perpetuated by a group of peers or an individual either overtly (e.g. kicking, hitting or pushing) or covertly (e.g. gossiping, excluding, ignoring or teasing) (Gray & Leyland, 2008). Teasing, irrespective of gender, ethnicity or weight status, is linked to body dissatisfaction and psychological symptoms. Obese girls are generally more likely to be teased than obese boys, and as such are more exposed to emotional problems such as low self-esteem, depression and suicidal tendencies (Eisenberg, et al., 2003). Lowes & Tiggemann (2003) report of young boys aged between 6 and 10 years old who described obese body types as being indicative of negative personality characteristics. They used adjectives like cheating, lazy, sloppy, lying, naughty, mean, ugly, dirty or stupid to describe obese bodies.

2.5.4 Depression

It is stipulated that there is a potential relationship between eating disturbances and depression (Rawana, Morgan, Nguyen, & Craig, 2010). Nonetheless, it cannot be confidently defined that this relationship is unidirectional because depression may be both a cause and a consequence of obesity (Goldfield et al., 2010). This was evident in a study where a clinical sample of obese adolescents reported a higher lifetime prevalence of anxiety disorders compared to non-obese controls (Britz et al., 2000). According to Faith et al. (2011), obesity was the cause of increased depression in children with obese bodies, but not the reverse. This is expected since obese children largely experience high rates of peer victimization**,** which is a predictor of depression

(Pearce, Boergers, & Prinstein, 2002). Similarly, Nemiary (2012) argues that peer victimization may mediate the relationship between obesity and depression**.** While victimization in the form of teasing from the peers of the obese children is a usual experience, such victimization leads to depression, which also decreases the obese children's ability to be physically active. According to Sinclair-Mcbride, Mcbride & Cole (2014), a fundamental feature of depression is causing children to discontinue physical activities that they previously found enjoyable. Erikson et al. (2000) and Falkner et al., (1999) indicated that obese girls are more susceptible to depression than boys.

2.5.5 Quality of life

Shoup, Gattshall, Dandamudi & Estabrooks (2008) define quality of life as a multidimensional construct that mirrors a person's self-perceptions of enjoyment and satisfaction with life. Numerous studies, including Adams & Bukowski (2008), have reported that obese children experience lower quality of life than their non-obese peers. Friedlander et al. (2003) also found that obese children are five times more likely to report lower global health-related quality of life scores when compared to healthy-weight children. One study even indicated that children's perception of quality of life vary in the extent to which children are obese (Shoup et al., 2008). This to some extent is reported by Schwimmer et al., (2003) who asserts that no distinct differences is observed between the quality of life scores of obese children and children receiving cancer chemotherapy.

2.5.6 Psychological distress

Smith, (2008) stressed that emotional feelings, if unresolved, should not be ignored. He asserted that feelings like guilt, frustration, anger and failure must adequately be addressed to avoid negative psychosocial effects. Particularly, the impact of these unresolved feelings could have dire consequences on the overall psychological well-being of the adolescent. Being obese affects a child's social interaction. A study conducted on obese children between the ages of 9

and 11 years showed that they were ashamed of their weight, they had fewer friends and were left out from various social activities on account of their weight. Also, 90% of the overweight children were convinced that their classmates would stop harassing them if they lost weight, whereas 69% of them reckoned that they would have more friends if they had a normal weight. This study suggests that children who are overweight often attribute blame to themselves for the negative social messages they receive and they think they are guilty for not managing to keep their body weight under control.

2.5.7 Social rejection

Puhl & Brownell (2003) argue that obese children encounter various social attacks relative to their weight status. For instance, they are subjected to negative stereotyping, discrimination and social marginalisation. In other words, obese children mostly suffer from rejection and stigmatisation and are often teased and/or bullied because of their weight. Across gender, AL-Hamad (1999) notes that female children who are obese are likely to be rejected by their peers than non-obese children. However, since adolescents find peer approval very important in their psychosocial development, such negative experiences can be damaging to the development of their self-esteem (Paxton, Neumark-Sztainer, Hannan, & Eisenberg, 2006).

Social rejection experienced by obese children, according to Datar, Sturm & Magnabosco (2004), could result in them showing abysmal performance in school. Also, when those negative messages are sent across to obese children, it causes them to exclude themselves from peer activities. Again, obese children receive significantly fewer friendship nominations from peers, and sometimes even receive no friendship nominations (Strauss, Harold, & Pollack, 2009). Despite the fact that children are bold to socially interact with their peers in physical activities, they are sometimes restricted to do so. This is very common among obese children, who usually partake in these activities which sometimes tend to make them slower than their peers and causes them to have a shortness of breath.

This suggests that difficulty in weight management may arise from the social cost of childhood obesity. This is explained by Lossing (2010) who stated that obese children often resort to safe places like their home, where they may binge on food, for emotional consolation. Largely, they do this to protect themselves from disparaging comments and attitudes. At other times too, the children become used to their lifestyle to the extent of an "I don't care" attitude, which can be unhelpful in the effort to reduce body mass. In this case, food is being used to provide some kind of emotional consolation, or the child may have developed an "I don't care" attitude and, in a sense, may have given up on themselves and any determinations to reduce their body mass (Smith, 2008).

For instance, a study conducted among school-aged children between the ages 11 and 16 years in Canada revealed that the rate of social consequences related to childhood obesity was on the increase, and this can have short-term and long-term consequences on the children who are involved. The study also asserted that the rate of bullying was 8.8%. The rate increased with an increment in ones BMI. Again, the study also showed that there was a positive association between BMI status and verbal victimization which was mainly limited to name calling and teasing (Janssen, Craig, Boyce, & Pickett, 2004)

In addition, another survey conducted on 1,520 children aged between the ages 9-10 in the USA revealed that there was an association between obesity and low self-esteem after four years of being followed up upon. The study again revealed that about 19% of the children who were obese and had low self-esteem and felt sad. More so, about 48% of them felt bored, and lastly, about 21% of them felt nervous, especially in the midst of people. Comparatively, 8% of the children who had normal BMI status felt sad, 32% of them felt bored, and 10% of them felt nervous (Strauss, 2000).

Ben-Sefer, Ben-Natan, & Ehrenfeld (2009) reiterated that when an obese child develops a negative body-image he/she is more likely to develop lower self-esteem. These children usually

become depressed, they also feel stigmatized by their friends, classmates and others. This can cause long term consequences on the child's psychological and social wellbeing.

Against this background**,** Russell-Mayhew, McVey, Bardick, & Ireland (2012) postulate that obesity is a mental or behavioural disorder and that research conducted on child obesity should be directed towards identifying the psychological and social determinants of obesity rather than concentrating more on identifying medical strategies for prevention and treatment. Similarly, Finnegan (2010) notes that research should contribute to effective intervention targeting negative social implications of child obesity.

2.6 Theoretical framework

The theories reviewed in this section are: Nutrition Transition Model, Behavioural Change Models, Attachment and Social exchange theories.

2.6.1 Nutrition transition model

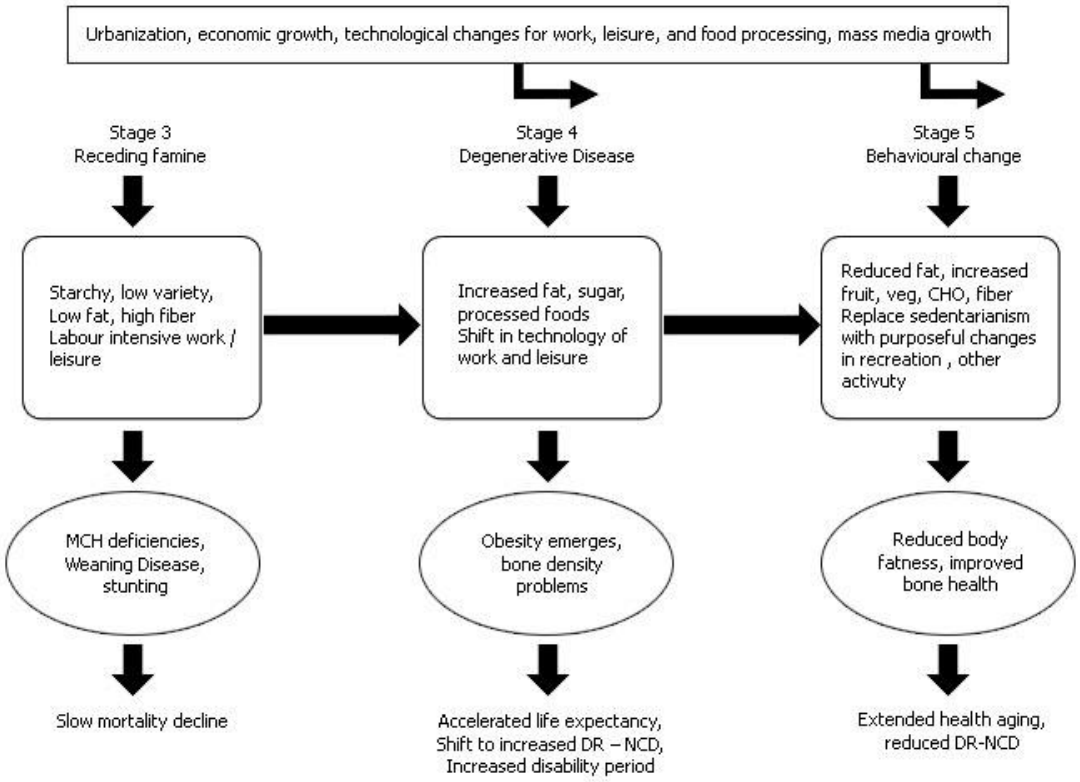
This study focuses on the nutrition transition model which was propounded by Popkin (1993) and has stood as the most cited in the field of nutrition transition. Popkin (2006) asserts that people in the developing countries are changing their dietary intake. They are shifting rapidly, particularly to fat, caloric sweeteners, and animal source foods. These rapid changes encompass levels, and the composition of our dietary intake as well as physical activity and/or inactivity patterns in some shifting societies, are mainly related to a number of socio-economic and demographic changes (Popkin, 2006). The effects are generally shown in nutritional outcomes, of which changes in average stature and body composition are inclusive.

Conceptually, changes in modernization, urbanization, economic development and culture are influenced by shift in diet. In Ghana, it is unclear how policy makers are appreciating the link between these factors and how the nutrition transition can help them to develop food policies

that can address the global burden of chronic diseases. While the subject of shift in dietary intake has been widely discussed, tracing the specific pathways between these factors and dietary changes has been a major challenge (Hawkes, 2006).

The nutritional transition model has five constructs or patterns which, according to Popkin (2006), are logically linked as illustrated in figure 2.1. The constructs are: Food collecting, famine, receding famine, nutrition-related non-communicable disease (NR-NCD) and Behaviour Change.

Figure 2.1 Nutritional Transition Model



Of the five patterns of the nutritional transitional model, this study will focus on patterns 4 and 5. This is based on the fact that most developing countries, including Ghana, are shifting from pattern 3 to pattern 4. This shift, according to Harvard School of Public Health (2018), has been the main contributor to the epidemic of obesity in low income countries. However, as there is

increment in our income levels and populations migrate to the urban areas, societies enter different stages of the nutrition transition.

Generally, there is an increase in the consumption of foods high in fats and sweets in the developing world. Nevertheless, the intake of cereals, fruits and vegetables seems to be declining (Kearney, 2010). These poor-quality diets are a contributing factor to the increase in prevalence of overweight and diet-related NCDs like heart disease, diabetes and some cancers. According to Malik, Schulze & Hu (2006), intake of sugar-sweetened beverages (SSBs), especially carbonated soft drinks, can be seen as a contributor to the rise of overweight and obesity. These beverages usually have high amounts of sugar which are low satiety, and incomplete compensation for total energy.

In conclusion, it is clear that the shifts in patterns of diet, physical activity and body composition seem to be occurring more rapidly, while demographic differences accentuate and speed up the effects of nutritional changes. For the application of the nutritional transition model, obesity emerges early in these shifts, so does the age and level of morbidity and mortality. It is therefore becoming evident that changes in diet and activity patterns are beginning to fuel the obesity epidemic (Popkin, 2006). There is generally a wide acceptance of the link between these factors and the changes in dietary intake and physical activity, with body composition changes among children. Even though the nutritional model has gained popularity and has been used in a lot of studies, its simplicity has subjected the model to criticism. However, the unavailability of relevant data makes it difficult to establish if the shift in diet and physical activity are consistent with the fast changes in child obesity. Another criticism of this theory is that though the theory looked at obesity and its related health consequences, it is limited to only physical health consequences such as the known NCDs, but does not go further to look at the psychosocial health challenges associated with the onset of childhood obesity. This is a gap this study attempts to fill. This study goes beyond the physical health challenges

related to obesity, to look at the psychosocial health related to childhood obesity. This is important because the definition of health goes beyond the mere absence of diseases but also considers the mental and social health of an individual.

2.6.2 Behaviour change models

Theoretical models of health behaviour change guide this study. A central theme underlying most behaviour change models is that a person needs to have favourable perception of the behavioural issue in order to make a successful behavioural change (Baronowski et al., 2003). For example, the Knowledge-Attitude-Behaviour Model asserts that some level of knowledge is needed to develop healthier attitudes and consequently healthy behaviour change (Baronowski et al., 2003). The Trans-Theoretical Model also states that a change from pre-contemplation to contemplation stage depends on whether or not a person perceives there is a problem or need for behaviour change (Prochaska, 2002).

Another behaviour change model, the Social Cognitive Theory, is governed by the fact that a person's perception guides him/her to desire the achievement of a positive outcome and neglect that of the negative ones (Wang, Worsley, & Cunningham, 2008). The theory further emphasizes the relationship between an individual and their social world. In that, Individuals' beliefs and behavioural targets are grounded by the social context in which the individual finds himself, or subjective norms related to the behaviour.

In relation to this study, obesity in children with its associated psychosocial consequences arises from a complex interaction of perceived behaviours and its outcomes (Rennie, Johnson & Jebb, 2005). Some behaviours can influence the behaviour of an individual once he or she feels it will yield favourable outcome to them. For instance, an obese child who has knowledge about the consequences of obesity may turn to consume diets low in sugars, carbohydrates and fats because they believe that will result in certain health outcomes. Nonetheless, an obese child who probably perceives him/herself to be slim will turn to consume large portion sizes, indulge

in unhealthy eating patterns, sedentary lifestyles and low level of physical exercises among others to promote weight gain (Rennie, Johnson & Jebb, 2005). So, this implies that once an obese child sees a behaviour (eating and physical activity) as favourable to them, they have the tendency to change their behaviour, which can in turn positively or negatively affect their weight status.

There are some weaknesses that have been identified in relation to this theory. For instance, one weakness of this model is that it does not take into account behaviour intension and motivation such as fear, mood, threat among others. Another weakness of this theory is that it assumes that behaviour change of a person is always linear and does not consider the change of a person over time. Also, despite the fact that the theory talks about perceived control over a behaviour it does not consider the actual control over a behaviour.

2.6.3 Attachment theory

The attachment theory is a socio-psychological theory about the characteristics of human interpersonal relationships developed by (Bowlby, 2012). The theory attempts to link human, social and psychological behaviours. In other words, attachment theory is about the response of humans to relationships in terms of hurt, separation from loved ones, or the perception of a threat (Waters et al., 2005).

Specifically, obese children engage with their peers, family and relatives through an interpersonal relationship either long term or short term. This engagement, according to Mikulincer and Shaver (2010), could result in attachment anxiety, if their anxieties are not properly regulated in the relationship with these stakeholders. Obese children seem to be most comfortable with relationships that are empathetic, respectful and nurturing that strengthen their capacity to build relationships with others and promote their social satisfaction in life (Pearce et al., 2002; Mitchell, 2012).

According to O'Connor and Scott (2007), providing quality care to an obese child, particularly sensitivity and responsiveness, may lead to a 'secure' (optimal) or 'insecure' (non-optimal) attachment. A secure attachment is likely to develop when persons are sensitive and attuned to the obese child's communications, which meets the needs of the child quickly and reliably (Mesman, Oster, & Camras, 2012). This is evident by the assertion of Muris, Mayer & Meesters (2000), which states that an obese child with securely developed attachment bonds usually reports fewer symptoms of depression and anxiety than insecure children. In relation to this study, obese children with securely developed attachments are more likely to exhibit effective adaptive qualities including self-efficacy and high self-esteem. This implies that obese children who are securely attached may experience fewer psychological problems later in life.

It is likely that an insecure attachment can develop when a person becomes insensitive to the plight of an obese child and is not well familiar with the child's communications. Insecurely attached children are more likely to demonstrate more negative psychological effects than their peers with secured attachment. Experiencing low anxiety by obese children may lead to a feeling of safety and fulfilment within the child's life (McVey, Pepler, Davis, Flett, & Abdolell, 2002).

The attachment theory is applied in this study to serve as a framework for understanding social relationships and the relevancy of such relationships on the social, emotional, cognitive and psychological development of obese children. From a psychological perspective, the attachment theory focuses on the extent to which the relationship of a child with the society provides him/her with protection against harm and gives the child a sense of emotional security. Therefore, an important question of this study which relates to the attachment theory is how child obesity affects the social and psychological safety and protection of the child.

However, one distinct weakness of this theory is the assumption that the attachment figure of the child is mostly the primary caregiver of the child, which is usually the mother. It is known

that these primary caregivers shape the emotional and social wellbeing of the children. But this statement is flawed, because the emotional and social wellbeing of a child is also shaped by other external people like other relatives, friends, among others, so it is important not to limit the attachment figure to only the primary caregiver, but to other people around who also shape the wellbeing of the child.

2.6.4 Social exchange theory

One of the most important social psychological theories to the study of human relations is the social exchange theory propounded by Homans (1958). It relates particularly to relationship formation, maintenance, and dissolution.

Important assumptions of the theory that make it applicable to the study of child obesity and its associated psychological effects are that obese children's emotions with the social environment can be construed as satisfaction or dissatisfaction. Emotional satisfaction with the social environment is achieved when society accepts obese children for who they are without any rejection and isolation. However, Green (2015) argues that the inability of society to promote the emotional development of obese children could lead to peer-rejection and isolation.

Another important assumption of the theory is that obese children will try to avoid negative emotions and reproduce positive emotions in their relationship with their peers. This is based on the argument of the theory that persons, that is, obese children, assess their relationship options based on what is most important to them (Smith & Hamon, 2012).

In other words, obese children will try to ignore interactions and relationships that they are not attracted to since they are attracted to those who grant them rewards (Rivka & Azy, 2010). Hence, the relationship between an obese child and his/her social environment, is that such a child is attracted to persons who grant them a well and meaningful life. These relationships

taking place in the home, school and the community are common contexts for obese children to refine their emotional development.

In summary, the application of the social exchange theory to the study of child obesity and its associated social and psychological effects suggests that stereotyping of obese children may be overcome by the trading of other personal attributes in exchanges between obese individuals and others. This theory has certain weaknesses. One weakness of this theory is that the ultimate goal of a relationship is intimacy but this is not always the case. Another weakness of this theory is that once there is a positive exchange in a relationship the individuals should move forward but this is also not always the case. In some instances, there is always a back and forth in the relationships.

2.7 Conceptual Framework

The conceptual framework for this study was adapted from the work of Gatineau & Dent (2011). They looked at how obesity can result in mental health disorders. Again, their framework looked at how some mediating factors can affect one's weight status as well as their mental health outcome. Obesity is seen as a direct cause of mental health disorders, however there are some pathways through which the mediating factors work which are as follows:

Behavioural: This refers to lower levels of physical activity, lower perceived athletic competence, high caloric diets which are unhealthy.

Psychological: This refers to psychological challenges like low self-esteem, body dissatisfaction, and perception of being overweight.

Social: This refers to social stigmatisation, social rejection and weight-based teasing.

When mental health disorders are the cause of obesity, the mediating factors work as follows:

Moderating factors

The model suggests the following moderating factors are likely to increase one's chance of becoming obese and these factors include the following:

Sex

Research has shown a strong association between mental health disorders and obesity among girls than boys (Wardle & Cooke, 2005). This shows the difference in socio-cultural pressures on girls to conform to an idealised physique (Burton & Brown, 2009). A study again has found a significant association between the increment in BMI and decreases in physical activity over time among young women (Gray & Leyland, 2008).

Age

There seems to be an inverse relationship between age and mental health. As a child gets older, he or she tends to experience severe psychosocial issues as compared to when he or she was young. Some studies have shown that the weight of young children may have little effect on perceived or actual weight status. Nevertheless, by the time the child gets to his/her teenage years, peer relationships can become more problematic, which may lead the obese child to be at greater risk of marginalisation and victimization (Griffiths, Parsons, & Hill, 2010)). For girls, consequences of obesity on their self-esteem are often obvious before they reach puberty. For instance, a study on obesity and age found that the effect of overweight on self-esteem begins to show in children as young as five years old (Walker & Hill, 2009). In boys, it is only during early teenage years that self-esteem is impaired (Franklin et al., 2006).

Socioeconomic factors

The socioeconomic status of the child's parents is known to either increase or decrease the risk of childhood obesity. Studies have found an association between childhood obesity and parental education, parental occupation, as well as income levels since 1989 (Shrewsbury &

Wardle, 2008). Studies have also shown that children whose parents have a low socioeconomic status (SES) are usually fed with poorer diets and engage in minimal physical activity compared to those from higher socioeconomic households, who eat nutritious food (Hanson & Chen, 2007). However, there is also another side of the argument that says that because of changing lifestyle in dietary pattern, children from high socio-economic background tend to eat more junk food and engage in less physical activity which increases their risk of becoming obese, as compared to those from low socio-economic backgrounds who engage in vigorous activities (Hanson & Chen, 2007). Similarly, another study from Cameroon revealed that children from households with high socioeconomic status (HSES) were strongly associated with overweight/obesity. They found that children from high socioeconomic households who attended high class schools were almost two and half times more likely to be overweight or obese than those from low socioeconomic status (LSES) who attended low class schools (Choukem et al., 2017).

Ethnicity/Race

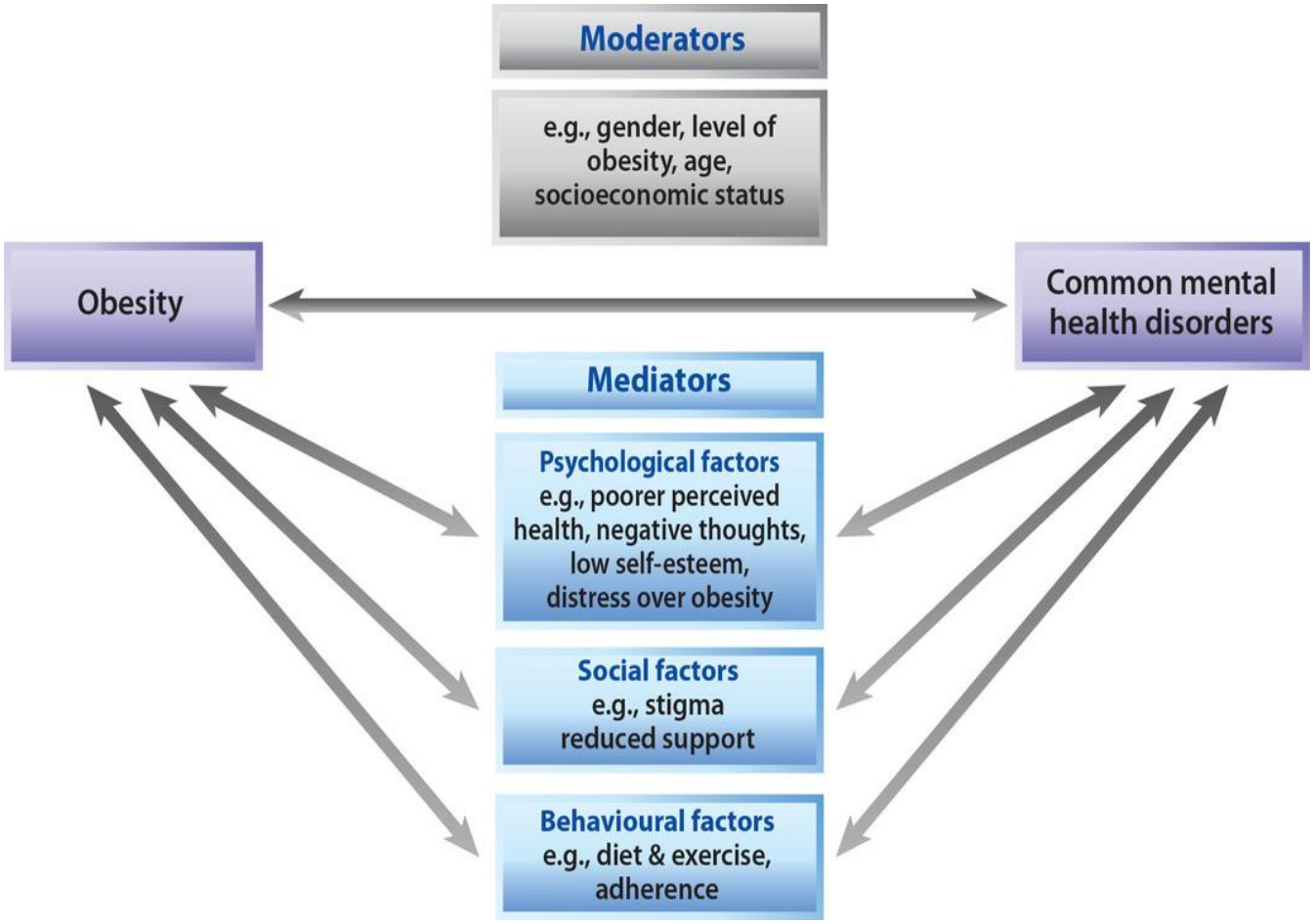
Even though there is little evidence on ethnic differences with regards to body dissatisfaction, studies from the US have proposed that African American girls may see themselves to be more desirable and socially acceptable at a higher BMI than white girls, and are less vulnerable to low self-esteem (Wardle & Cooke, 2005). A study conducted in Eastern part of London on adolescents established that obesity among black girls was associated with higher self-esteem among Black-African groups, but lower in Bangladeshi groups. In addition, obesity among white boys had a negative effect on their self-esteem. This means that culture plays an important role in shaping our psychosocial wellbeing, however this may differ from each ethnic group and race (Franklin et al., 2006). More so, research on British children aged 13-15 also

revealed that Asian boys may be at greater risk of low self-esteem than British boys (Gray & Leyland, 2008).

Mental health outcome: This refers to the common mental health outcomes that is linked with obesity. They include depression, anxiety, among others.

The next section explains the conceptual framework adapted for this study. For the purpose of this study, the conceptual framework in Figure 2.2 was modified to suit the present conceptual framework (Figure 2.3).

Figure 2.2 Model of the moderating and mediating psychological factors that contribute to the relationship between obesity and well-being (Gatineau and Dent, 2011)



Source: Adapted from Markowitz et al. 2008 and Napolitano et al, 2008

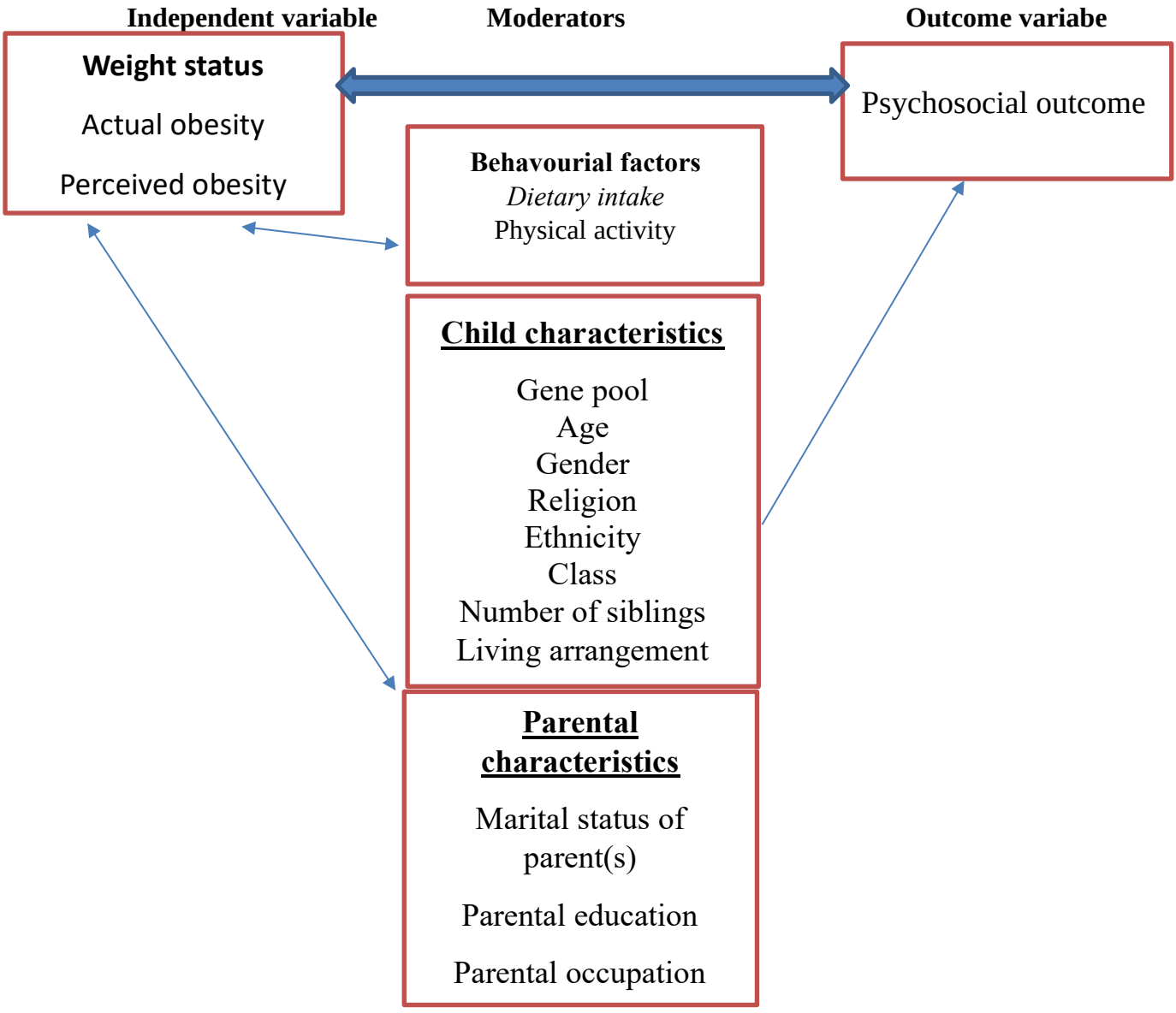
This study was not concerned about the relationship between child obesity and mental health outcomes but was more concerned about the psychosocial effect associated with child obesity. Therefore, the framework of this study looks at the effect of obesity on psychosocial challenges of children, controlling for other variables.

Figure 2.3 shows the diagrammatic representation of the inter-linkages between the overall causes and consequences of childhood obesity and how it can affect the child's psychosocial health. As indicated in Figure 2.3, the genetic and demographic characteristics of the child are

some predictive factors of childhood obesity. This effect can be either direct or indirect. A child's current age, gender and genotypic credentials may make him have a certain BMI measure at a point in time. The genetic development of binge-eating disorder as well as abnormal rates of metabolism are all associated with the onset of childhood obesity (American Psychiatric Association, 1994). This is a direct transmission mechanism from the background characteristics of the child to obesity.

The indirect transmission mechanism is through dietary intake and physical activities. Since obesity and overweight are determined largely on the amount of calories we consume, nevertheless, when there in balance in the energy intake thus the food we eat and the energy expended thus our involvement in physical activity, it is likely to cause excess fat in the adipose tissue of the individual. The imbalance in the two (energy intake and expense) is generally considered to be the two major environmental promoters of obesity in modern societies. Modern diet, which is high in fat, calories and sweeteners, as well as being easily available in large amounts, has created a phenomenon known as 'passive overconsumption' of excess energy (Blundell, Burley, Cotton, & Lawton, 1993). Apart from the kind of food choices that households and individuals make daily, the frequency and pattern of food consumed plays a significant role in influencing the prevalence of obesity and overweight in a population. The type and volume of calories consumed daily and the level of physical activity may also be defined by the child's age, sex, religion, ethnicity, class or grade of the child, number of siblings, living arrangement, marital status of parent, parental education, and parental occupation.

Figure 2. 3 Conceptual Framework: Childhood Obesity and Psychosocial Wellbeing



Source: Constructed by Author (2019)

2.7.1 Relationship between obesity and the moderating variables

Research has revealed the factors that are likely to contribute to the epidemic of obesity. Despite the fact that studies have revealed the risk of obesity is mainly linked to the kind of food we consume (Bhadoria et al., 2015), a number of studies have also identified several other key determinants that are widely acknowledged as the main contributing factors of the obesity epidemic among children (Choukem et al., 2017; Mohammed & Vuvor, 2012; Mohammed, 2015)

2.7.2 Behavioural factors

2.7.2.1 Dietary intake

Dietary factors have been studied comprehensively as possible contributions to the rise in the prevalence of obesity. According to Opuni-Frimpong (2015), obesity is likely to occur when the consumption of food exceeds the physiological threshold of the body's requirement over a long period. The dietary factors identified as contributors to one's increased risk of being obese include fast food consumption, sugary beverages, snack and large portion sizes. Chapman & Maclean (1993) have demonstrated that children and adolescents are associated with the excessive intake of these foods with pleasure, independence, and convenience.

The increment in the intake of fast food in recent times has been linked with obesity. Many families, especially working parents, usually opt for these kinds food for their children as it often favours them, because these foods are usually convenient and inexpensive (Niehoff, 2009). Foods that are usually served at fast food restaurants tend to contain a high number of calories with low nutritional values. Some studies have shown that fast food consumption is associated with higher intake of sugar sweetened beverages and lower intake of milk, fruit, vegetables and dietary fibre (Poti, 2014). The poor nutritional quality of fast foods makes its

intake a key contributor to the rising rate of obesity among children (Dundar, 2012). Anderson & Butcher (2006) found that consumption of sugary beverages over time increases BMI. Sugary drink is also another factor that has been seen as a possible contributing factor to obesity. Sugary drinks are less filling than food and are usually consumed quicker, and this can cause an increase in the caloric intake (CDCP, 2010). Portion sizes have increased drastically in the past decade. Consuming large portions in addition with frequent snacking which are high calorie foods can consequently cause obesity (Anderson & Butcher, 2006).

Some studies showed higher prevalence of childhood obesity among students who skip breakfast (Veldhuis et al., 2012). Breakfast is seen as the most important meal to start a day. Skipping breakfast increases the intensity of hunger, which subsequently increases the volume of food consumed at lunch. This may lead to obesity in children in the long run (Umairah, 2012). A study among grade 5 school children in Nova Scotia has shown that children who skip breakfast pose a 50% more likelihood of being overweight while those who buy lunch at school pose a 47% more likelihood of being overweight (Veugelers & Fitzgerald, 2005). During a cross-sectional survey in the United States of America (USA), it was observed that children and adolescents who ate breakfast in their homes acquire a protective effect on their BMI and further reduce their risk of getting obese (Deshmukh-Taskar, Radcliffe, Liu, & Nicklas, 2010). A nutritional survey targeted at children between ages 2-18 years in the USA reported that children who buy lunch at school increase their risk of becoming overweight or obese because they are more likely to settle for fast foods, which are sugary and energy-dense, resulting in poorer diet and weight status (Poti et al., 2014). Also, it has been shown in the USA that children who eat supper at home with family decrease their risk of getting obese (Dehghan et al., 2005). This finding is due to the fact that children are more prone to eating foods available at home even though they may not enjoy eating it (Holsten, Deatrick, Kumanyika, Pinto-Martin, & Compher, 2012; Veugelers & Fitzgerald, 2005).

2.7.3 Level of physical activity

Studies suggest that physical inactivity is one major contributor to the development of obesity in children (Dietz & Gortmaker, 1985). Physical activity, which is opposite to sedentary behaviour, is one of the main strategies in the rising energy expenditure in recent times. Sedentary behaviours, such as watching television and playing video games are seen as factors that do not only result in low energy expenditure but also seen as factors that contribute to the rise in snacking behaviour as well as exposure to food advertising. Kohl, Fulton, & Caspersen (2000) and Schneider & Brill (2005) indicates that the exposure of children to obesity increases when there is decreased access to sporting activities and other physical exercises, together with increased access to television, video games, and energy-saving appliances. It has also been shown that hours of activity per week in children is inversely related to body fat mass (Goran, Hunter, Nagy, & Johnson, 1997). Thus, increases in sedentary behaviours accompanied by decreases in physical activities are key contributors to child obesity. Exercise is a key tool used in reducing body weight and fat mass. The amount of energy that is expended during physical exercise has been found to be high when compared with the energy deficit that can be achieved by dietary restriction (Epstein et al., 1988). Largely, there seems to be fewer opportunities for physical activity as parks, green spaces and bike paths are fewer in lower income neighbourhoods, thus limiting the opportunity for outdoor physical activities (Opuni-Frimpong, 2015). In higher income neighbourhoods, more school-age children are driven to school by their parents rather than being left to walk to their nearby schools, which in turn reduce the physical activity of the child (Lovasi et al., 2013). Studies have again revealed that obesity is higher among children who go to school by vehicle compared to those who walk or ride a bicycle to school (Guedes, Rocha, Silva, Carvalhal & Coelho, 2011). Also, Bhuiyan,

Zaman & Ahmed (2013) reported that more than 30 minutes of physical activity has a protective effect on obesity in school children between 10-15 years old. According to Tucker and Friedman (1989), men who spent 3 hours in watching television per day were reported to be two times as likely to be obese as those who viewed less than one hour per day. This shows that television watching should be of concern in the context of childhood obesity; this is because not only is television affecting energy expenditure, but many of its commercial messages are promoting the "cafeteria-diet" described above. Again, it was revealed some years ago that among children in the United States, the amount of time spent on watching television was similar to the amount of time spent in attending school, and that time spent watching television was directly related to an increased risk of obesity (Klesges, Shelton, & Klesges, 1993).

2.7.5 Gene pool

Anderson & Butcher, (2006) have shown that obesity (as measured by BMI) is 25% to 40% heritable. This makes obesity pedigree in the immediate family line one of the prime contributors of child obesity. Furthermore, in an effort to identify the specific genomic contributors to this phenomenon, Welsh (2010) reports that scientists have found that the fat mass and obesity-associated (FTO) gene has the strongest association with BMI and weight. However, since the phenotypic expression of a trait is greatly determined by environmental and behavioural factors, (Anderson & Butcher, 2006) estimates that the genetic factor accounts for less than 5% of childhood obesity cases worldwide.

2.7.6 Age and Sex

Age and sex are seen as key factors of obesity. A study conducted among children aged 2-18 years in Nigeria discovered that males had higher BMI than females at age group 2-6 years, however as they grow older to their teen ages, females tend to have higher BMI than males especially with the age groups 11-14 years and 15-18 years. Besides, a study conducted among

Sri Lankan children aged between 5 and 14 established that fat-free mass index (fat free mass/height^2) decreased among children between the ages 5 to 6 after which adipose tissues surge without much increment in fat-free mass index (Dabrowska, 2014; Maruf, Aronu, Chukwuegbu, & Aronu, 2013; Reilly et al., 2003).

From the studies, it showed that obese girls are likely to be more prone to develop persistent obesity during childhood through to adulthood. A study conducted in the United States of America (USA), indicated that in 2011 and 2012, 18% of 6 to 11-year-olds and 21% of 12 to 19-year-olds were obese. The study revealed that the only age group which experienced decrease in obesity rates were those aged 2-5 years, where obesity prevalence fell from 13.9% in 2003-2004 to 8.4% in 2011-2012. In addition, age and sex were seen as contributing factors of psychological morbidity associated with obesity. With regards to age, the study showed that the older the obese child, the more visible the psychosocial challenges such as depression, anxiety, stigmatisation, distress, among others. Also, girls are more prone to being obese as compared to boys.

2.7.8 Socio-economic status of the child

Socioeconomic causes of obesity that are consistent with the theory of epidemiologic transition have been identified (Mohamed, 2015). Broyles et al. (2015) argue that any effort to address child obesity must account for country-specific socioeconomic factors of their parents, that is both mother and father.

2.7.8.1 Occupation of parents, household income and child obesity

The link between parental occupation (both mother and father), family income and the occurrence of childhood obesity has not been studied comprehensively (Opuni-Frimpong, 2015). Few studies have endeavoured to find the link between child obesity and parental/household income. Mazur et al. (2008) found no correlation between childhood obesity and family income. The WHO (2000) indicates that improvement in economic

conditions in Africa tends to be associated with increase in obesity, and that children from families with higher income status are likely to be obese. Nonetheless, Muthuri et al. (2014) reveal otherwise. In his study he found that low income households are associated with higher body composition measures among school-aged children in sub-Saharan Africa. On the contrary, data from the National Health and Nutrition Examination Survey from 2005-2008 in the US revealed that children in low-income families were more likely to be obese than those from higher income families (Opuni-Frimpong, 2015). This suggests that while children from rich homes in developed nations are less likely to be obese, the reverse is observed for those from developing countries. Therefore, childhood obesity appears to be a principal problem of the rich in low- and middle-income countries. In Ghana, Mohammed & Vuvor (2012) revealed that the prevalence of obesity increased with socio-economic status.

2.7.9 Educational level of parents

There is ample empirical proof that parents play a pivotal role in shaping the cumulative habits and behaviours of children (Butte et al., 2014; Elder et al., 2010; Ogden et al., 2010). Consequently, the educational level of parents(mother and father) has been found to correlate with the weight status of children (Butte et al., 2014). Ogden et al. (2010) reported that comparatively, children living in households whose head had a college degree were less likely to be obese. Butte et al. (2014) also found in his study that mothers with higher educational levels had children with higher BMI compared to those with lower educational levels. It may be because these mothers engage in work schedules that take most of their time and therefore do not have enough time to regulate the kinds of food their children eat. Again, Elder et al. (2010) uncovered a positive correlation between the educational level of the father and child obesity in Croatia. These findings show that parental education has some influence on a child's BMI status, though the relationship is not unidirectional.

2.9 Hypotheses

Hypothesis 1: Obese children are more likely to have a poorer psychosocial wellbeing compared to children with normal weight.

Hypothesis 2: Children who perceive themselves to be plump are more likely to have a poorer psychosocial wellbeing as compared to children who perceive themselves to be slim.

2.10 Chapter Summary

Obesity is becoming a concern in sub-Saharan Africa. Onis, Blossenr & Borghi (2010) presented a childhood obesity prevalence rate of 8.5% in Africa and projected a 12.7% rise by 2020. South Africa recorded 17% of school-aged children between 8 and 11 years to be obese (Snell et al., 2007). In Ghana, the Global School Health Survey found the obesity rate to be 15% among children. Nevertheless, Abachinga (2001) recorded 19.3% overweight and obesity combined prevalence in his study of school-aged children in Accra. A little over a decade later, Mohammed & Vuvor, (2012) found a higher overweight and obesity combined prevalence of 26.7% among basic school children in Accra. In that same study, childhood obesity prevalence alone stood at 10.9 %. Mogre et al. (2013) studied school-aged children in the Northern region of Ghana and found a combined prevalence of 8.5% for overweight and obesity. Also, dietary intake and genetic predisposition of the child, together with socioeconomic factors like age and gender, sedentary activities, physical activity pattern, and parental characteristics (such as employment and income status as well as educational level) are the most attributable causes of childhood obesity. In addition to the physical health implications of child obesity, there are psychosocial outcomes as well. These psychosocial outcomes of child obesity deal with both the psychological and social challenges children face as a result of their obese bodies. It entails

how obesity causes the child to think, feel and behave. It also incorporates how this affects his/her interactions with others. Most childhood obesity studies ignore the psychosocial consequences of this condition (Schwimmer et al., 2003). However, WHO (2000) states that obese children do experience psychosocial problems. These studies also rarely discuss perceived obesity and its implications for psychosocial wellbeing. This means that child obesity could be seen as a significant factor in the development of psychological disorders among children and must be studied in Ghana, a low-middle income nation with increasing prevalence of obesity among children and adults.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter describes the kind of methods used in the study. The sections in the study include the study area, study design, ethical considerations, sampling procedures, sample size determination method, data collection techniques, and tools and data analysis. The main aim of this study is to investigate the psychological and social problems obese children face. The study employs a pragmatic research approach through the use of mixed methods, that is, a combination of both quantitative and qualitative methods. The quantitative method addresses research questions one, two and three, while research question four was answered using a qualitative approach.

3.2 Study population

The research was conducted at the Achimota Basic School and University of Ghana Basic School, both in the Greater Accra Region of Ghana. Achimota Basic School is situated in Achimota in Accra. It is a co-educational school with both boarding and day facilities. The school was founded in 1956 and has educated children from all walks of life, most notably, children of the elite/those who hold high positions in the Ghanaian society. It has both primary and Junior High School (Junior High School) sections. According to recent school records, the primary section is made up of about 2,200 students. Each class has five streams with each stream identified by their respective/assigned colours (red, pink, yellow, green and blue) and with about 50 students in a classroom. The Junior High School section also has about 950 students. Each class is made up of seven streams assigned with letters A, B, C, D, E, F and G

with about 40 students in each classroom. The school has numerous extracurricular activities including Girls' Guide, Wildlife Club, Cadets, and Career Day. Students in the lower school (Primary) are taught about ten subjects, including a local language and French. Students in the upper school (Junior High School) learn at least twelve subjects, including a local language and French. Physical education is a compulsory subject for all the students in the school, and it is held once a week for each class in the school. The school also has a canteen that sells food, drinks and other items to the school children. Some of the foods and drinks sold include: fried rice and chicken or fish, soft drinks, and fruits. Available data in the school indicate that the school canteen is mostly patronised by the day students. This is because those in the boarding school are served lunch from the dining hall of the school. They are mostly served with meals such as rice and stew, rice and beans, beans and fried plantain, and 'kenkey' with fried fish.

The University of Ghana Basic School, on the other hand, is located on the University of Ghana campus at Legon in Accra. The school was built in 1955 to educate the children whose parents were staff of the university. Currently, it also educates children whose parents are non-staff as well. The school has only day facilities. It has both primary and Junior High School sections with a total population of about 1,542 pupils. Each class has four streams, which are identified by the letters U, P, S, and L for the primary section and U, H, L, and J for the Junior High School with about 35 students in a classroom for both the primary and the Junior High School sections. They also have a wide range of extra-curriculum activities at all levels in the school which include Girls' Guide, Wildlife Club, Spelling Bee Club, and Cadets. The lower school studies about ten subjects, including a local language, French and Chinese, while those in Junior High School study not less than twelve subjects, including a local language, French and Chinese. Physical education is a compulsory subject for all the students in the school and is done once a week for each class in the school. The school also has a canteen that sells food, drinks and other items to the school children. However, from observation, the researcher found

out that the school canteen was mainly patronised by children in the lower primary section. Children in the upper primary and Junior High School mostly bought food from the University of Ghana canteen (popularly called the "Night Market"), which is situated just behind the basic school. At the Night Market, there are varieties of calorie dense foods like Indomie (fried noodles), fried yam and sausage, chicken or fish, ice cream, fruits, assorted soft drinks (Coca Cola, Sprite, Fanta etc), to mention but a few, which unfortunately are risk factors of child obesity.

3.3 Study design

This study used a mixed-method approach. The first part was a quantitative cross-sectional study which was used to answer research questions one, two and three. The second part was qualitative in nature. The quantitative data collection formed the basis for the qualitative interviews with the obese children in order to have a better understanding of their lived experiences. Thus, participants for the interview could only be identified after the analysis of the questionnaire in determining children's obesity levels

3.4 Ethical considerations

For this study, ethical clearance was sought from the Institutional Review Board (IRB) of the University of Ghana known as the Ethics Committee for the Humanities (ECH) in February 2018. The agreement for this study's protocol required that the study adheres to the protection and rights of the children and minors under study. The participants were given both parental consent and child assent forms (Appendices A&B) explaining the purpose, confidentiality, risks and benefits of the study. This was to seek parental consent and approval.

3.4.1 Access to School Facilities

To conduct the survey and in-depth interviews with the children in the two schools, a letter of introduction to both University of Ghana Basic school and Achimota Basic school was obtained from the University of Ghana (see Appendices C &D) and was submitted to the management of the schools, which stated that the research was purely for academic purposes and the researcher required permission to gain access to the respondents. The data to be collected from participants was specified in advance and given to the schools (by sending them a copy of the questionnaire and interview guide) as recommended by several researchers (Gainott et al., 2018; Gliklich, Dreyer, & Leavy, 2014; Creswell, 2014).

3.4.2 Voluntary participation, confidentiality and anonymity

If a child who had previously given his/her consent or assent decided to withdraw their participation at any point in time during the study, they were free to do so without the need to offer any explanation. Thus, participants had the right to either participate in part or in the entire project, and withdraw at any stage without being forced in any way. However, participants were clearly informed about the importance of their participation and the need to complete the study.

Separate interviews were conducted with the pupils in each school. To ensure that pupils were comfortable enough to provide responses for various questions, the researcher tried as much as possible not to cluster all the children together but separated them during interviews. Additionally, to ensure that there was confidentiality, identifying details on the parents' consent forms were not disclosed to prevent easy identification. Written assent codes were used on the form instead of names and participants were asked not to mention their names during the interview to remain anonymous. Only relevant details that helped in answering the research questions were included as suggested by Creswell (2014).

3.4.3 Privacy and risk

Although interviews were conducted within the schools' premises during break times, they were often done in isolated places to ensure adequate privacy. In other words, the interviews took place in a location selected by the child that ensured that they were comfortable enough. Fortunately, no child suffered any emotional distress due to their participation in the study; however, this was a potential risk, which participants may encounter when recounting their experiences with their peers regarding their obese status. A child psychologist was made available to the pupils who needed counselling after the interviews.

3.5 Quantitative Study

3.5.1 Sources of Data

This study employs primary data obtained directly from the study areas (University of Ghana and Achimota Basic Schools) through the use of questionnaires and interview guides. An adopted and modified questionnaire from the second round of the Urban Physical Activity Study (Appendix E) conducted by the Regional Institute for Population Studies (RIPS), University of Ghana, was used (UPAS, 2016). It provided detailed responses that were used to examine the socio-demographic characteristics and the psychological issues of child obesity of children in Achimota Basic School and University of Ghana Basic School, Legon. Journals, research publications, articles and other relevant materials were also consulted along with relevant information from other researchers in the field to aid the refinement of the survey instrument.

3.5.2 Reliability and Validity

Various tests were carried out to ensure the effectiveness of the survey. First, in line with Sheatsley (1983), the questionnaire and interview guides were pre-tested with about 20 overweight and obese students purposively sampled at the Sakumono School Complex, Accra. The pre-testing was done to help determine the strengths and weaknesses of the survey instrument regarding reliability and validity before proceeding with the actual fieldwork. In addition, the pre-test was carried out to reveal any unanticipated problems with question wording, format, instructions to skip questions, and to make sure that the respondents understood the items and provided useful answers to develop and refine the instruments. A few revisions were made on the instrument before finally using it for the main survey. In addition, as a means of validity assessment, measures deemed valid in measuring important study variables such as self-esteem and BMI were used.

Regarding reliability of the scales, since the questionnaire employed the Likert scale, an internal consistency check of the 12 items measuring psychosocial wellbeing was performed using the Cronbach Alpha technique. Cronbach's alpha determines the internal consistency or average correlation of items in a survey instrument to gauge its reliability**.** According to Nunnally (1984), if the Cronbach's alpha is less than 0.7, then the indication is that the instrument being used has a low reliability, and that not all the items met reasonable standards of internal consistency and reliability.

Another means of assessing reliability includes training interviewers to similarly understand the questionnaires which allows a standardization of interviews so that questions are asked to respondents in the same way. For this study, four field interviewers, two young female and two young male master's degree holders were trained to administer the questionnaires to the children. The interviews were conducted as a group for each class. Thus, for each selected class, the researcher administered the questionnaires to the whole class. However, the

researcher explained sections in the questionnaires that were not clear to some of the students, especially those in primary four.

3.5.3 Sampling Technique

The University and Achimota Basic Schools were purposively selected. The sample included children between ages 8-16 years. The choice for the selected age group was purposive because during the pilot study for this work, it was observed that the younger children, that is, those in primary one to three, could not adequately provide the responses that the researcher needed but the older ones from primary four to Junior high school (JHS) three understood the questionnaire and provided the right responses that the researcher wanted so for that matter the younger group (below 8 years) were taken out from the sample. Secondly, the choice of Achimota and University of Ghana Basic Schools was based on a study by Abachinga (2001) that recorded 19.3% obesity prevalence in school-aged children in Legon and Achimota, suburbs of Accra. The study by Mohammed & Vuvor, (2012) also found the prevalence of obesity in the University of Ghana Basic School to be 10.9%, with higher prevalence in girls (15.0%) than in boys (7.2%). Thus, the selection of the schools for this study was because obesity prevalence rates seemed to be high in these schools as reported by these empirical studies.

A simple random sampling technique was used to choose the pupils in each of the classes visited. In each class, the names of the streams in the schools were written on pieces of paper and put into a box. The box was then shaken after which a piece of paper was drawn and set aside. The box was shaken again, and another paper drawn and set aside until the number of prescribed forms were selected. For each class, one stream was selected for the study. This was done to give each of the streams an equal chance of being part of the sample.

The next stage of the sampling process was the sampling of students from each of the selected forms. In order to increase the sample size for the study, since it is unclear how many obese children are in each form, a census was done. Thus, every child in the sampled form participated in the quantitative study. The calculation of the corresponding BMIs from the sample helped to determine the obese levels of the children in their respective forms.

For the purpose of analysis, the population of the obese children was divided into mutually-exclusive sub-groups using their age as the basis (obese children from 8-12 years and obese children from 13-16 years). Within each group, focus was also placed on gender. This was relevant since the amount of body fat changes with age while the amount of body fat differs between girls and boys (CDC, 2009).

More so, since the population size (for upper primary to Junior High School 3) for Achimota Basic School was about 2200 and that of University of Ghana Basic School was about 1542, a ratio of 0.6: 0.4 for Achimota Basic School and University of Ghana Basic School respectively was used. Thus, 272 children were drawn from Achimota Basic School while 180 were drawn from University of Ghana Basic School.

3.5.4 Inclusion/Exclusion criteria

All pupils attending both Achimota Basic School and University of Ghana Basic School, aged between 8-16 years were included in the study. Specifically, those whose parents signed the parental consent forms as well as children who signed the child assent forms. On the other hand, the exclusion criterion used to classify respondents as ineligible for participation in this study included pupils who met the inclusion criterion but had physical deformities that interfered with body measurements and subsequent determination of Body Mass Index (BMI). All the same, children who were not personally willing as well as those who were not given parental consent or assent were equally excluded from the study.

3.5.5 Survey Instrument

A well-designed and pre-tested four-paged structured questionnaire was used to obtain relevant information from the children. A pre-test of the questionnaire was carried out to ensure that the instructions and questions were clear, there were no problems in answering the questions and the duration of the interview was not unduly long (30 minutes). The instrument was structured into six sections with each section focusing on one objective of the study (see Appendix F). The content of the questionnaire was largely dependent on the review of the literature on child obesity and psychosocial dimensions. Parts of the questionnaire were adapted from existing questionnaires used in surveys on child obesity. The first section elicited information on their demographic characteristics (age, sex, religion, and ethnicity). The household characteristics of the children, including where and with whom they live, were covered in the second section of the questionnaire. This section was adopted from the Urban Physical Activity Study (UPAS) questionnaire by the Regional Institute for Population Studies (RIPS). The section also covered the marital status, occupation and educational backgrounds of the parent/guardian of the child, his/her number of siblings, etc. These variables were important to help examine research question two.

The third section of the questionnaire focused on the perception of the children about their outlook as well as how other persons perceived their looks. This section was also adopted from the RIPS Urban Schools Physical Activity Study questionnaire. Section four covered eating habits, and participation in physical education were also studied in this part of the questionnaire. Section 5 covered a number of items that were used as a representation for psychosocial wellbeing of children.

The researcher administered the questionnaire by reading the items to the children who then ticked the appropriate responses. Each child used approximately 40 minutes to answer all the questions in the questionnaire. A period of four weeks was used to collect the quantitative data.

3.5.6 Description of Study Variables

Variables used in analysing the data for this study are categorized into dependent and independent variables.

3.5.7 Dependent variable

The main dependent variable for this study is the psychosocial wellbeing which is an adopted and modified scale from Rosenberg's Self-Esteem Scale (RSE). The RSE psychometric scale is widely used as a proxy for psychosocial wellbeing in children and adolescents. The scale is simple and uncomplicated, and it captures items on both psychological and social issues. For instance, a study by Daniel (2010) used this scale to measure psychosocial implications among adolescent girls in high school in the Unites States of America and Uleanya, Aniwada, Okeke, Nwaoha, & Obionu (2018) also used the RSE scale to study psychosocial predictors of obese children in Nigeria. The original RSE has 10 items that relate to a child's self-esteem. The scale is believed to be unidimensional. All items on the scale are answered using a 4-point Likert scale format which ranges from strongly agree to strongly disagree. It uses a scale of 0–30 where a score less than 15 may indicate a problematic low self-esteem (Rosenberg, 1965). However, for the adapted and modified version, six of the items from the RSE were maintained and the remaining four removed. Conversely, additional 6 items adopted from the Rips Urban Physical Health Activity Study were added to the six items that were maintained, making it 12 items for the modified version of the scale. These 12 items touched on the child's general satisfaction with his/her life and attitude toward him/herself. 10 of the items that were worded in the negative form also had their responses ranging from the negative to the positive (strongly disagree through to strongly agree), with two other items, which were worded in the positive form, having their responses ranging from negative to positive. For that matter, items in the positive form were left untouched while the items that were asked in the negative form but had positive responses were recoded to change their responses from positive to negative (strongly

agree to strongly disagree). This was done so that all items on the scale moved in one direction. After this, a reliability test was conducted, and the Cronbach alpha value obtained was .875. Intra-class reliability estimates indicated that eleven of the items fell within the acceptable Cronbach alpha range except one item (Item 4), which had a lower Cronbach alpha .568. For that matter, item 4 was taken out, leaving 11 items on the psychosocial scale which was used to create a psychosocial wellbeing index. The psychosocial wellbeing index was measured on a scale ranging from 0-100, with scores ranging from 60-100 implying that a child has a good psychosocial outcome, and a score below 60 implying that a child has poor psychosocial wellbeing. This scale showed that respondents who scored higher marks saw themselves as having a better psychosocial wellbeing while those who scored lower marks had a poor psychosocial wellbeing.

3.5.8 Independent variables

The independent variables were child weight status (underweight, normal weight, overweight and obese) which were measured using the BMI status of the child and the perceived weight status (very slim, slim, somewhat plump, plump and very plump). With the actual weight status, the Body Mass Indexes of the children were estimated to determine their actual weight status. However, for the perceived weight status, the pupils were asked what they think about their body size. Generally, Body Max Index (BMI) is calculated as kg/m^2, where kg is the person's weight and m^2 is the person's height. That varies according to demographics (age and gender). A child below 5^{th} percentile is termed to be underweight, between 5^{th} and 85^{th} percentile is normal weight, 86^{th} to 94^{th} percentile is overweight and at or above the 95th percentile is obese (WHO, 2016). Hence, the use of age and gender were required to help calculate the BMIs of the children to determine the obesity prevalence level, as required by research question one.

3.5.9 Control Variables

The causes of overweight and obesity in children are complex. Studies indicate that dietary intake and genetic predispositions of the child such as age and gender, together with socioeconomic factors like parental employment, educational level and income status are the most attributable causes of childhood obesity (Mohammed, 2015). In addition, behavioural factors such as sedentary activities, physical activity pattern, and parental characteristics also compound the problem of obesity in children.

Therefore, in this study, these variables which are contributors of child obesity were controlled for, and are also part of the independent variables as shown in Table 3.1. They include: physical activity, dietary intake, sex, age, ethnicity, religion, living arrangement, marital status of parents, occupation of parent (The occupation classification was adapted from the classification from the international standard occupation code used by the Ghana Statistical Service (GLSS, 2010). 'Trade' workers include people who trade in various goods; the 'Service' workers include people who work as fashion designers, caterers, hairdressers, among others. Again, the 'professionals' are those in various professions such as teachers, health professionals (doctors, nurses), architects, managers, among others. The 'security' services also include people in security agencies and 'other' occupations include those who are pastors, politicians, among others), parental education, among others). These variables were used because studies have shown that such variables can influence obesity in a child (Dabrowska, 2014).

Table 3.1: Measurements of independent variables

Variable	Measurement
Age of respondent	1=8-12years 2=13-16 years
Sex	1= Male 0= Female
Measured weight status	BMI status classified into 1=underweight, 2=normal weight, 3=overweight,4= obese
Perceived weight status	1=Very Slim 2=Slim, 3=Somewhat Plump, 4=Plump, 5=Very plump

(1. How does you perceive you weight status? 2. How does your parent perceive you weight status? 3. How does your classmate perceive you weight status)	
Living arrangement of child:	1=Both parents, 2=Father only, 3=Mother only, 4=Step parents, 5=Other relative
Marital Status of parent/guardian:	1=Married 2=Separated 3=Divorced 4=Widowed 5=Never married
School of child	1= Achimota Basic School 2= University of Ghana Basic School
Mother's occupation	International standard occupation code
Ethnicity	1= Ga/Dangme 2= Akan 3=Ewe 4= Mole Dagbani
Father's occupation	1=Not working 2=Trade 3=Service and Sales 4=Professional 5=Security 6=Other
Mother's education	1= No education 2= Below secondary 3= Secondary and above
Father's education	1= No education 2= Below secondary 3= Secondary and above
Physical Activity	1= Yes 2= No
Frequency of soft drink intake	1=High 2=Moderate 3=Low
Frequency of sweet intake	1=High 2=Moderate 3=Low
Frequency of fruit intake	1= Daily 2=4 times a week 3=2 times a week 4=Once a week 5=Seldom
Religion	1=Christians 2= Non-Christians
Number of siblings	1=None 2=1-2 3=3-4 4=5+

Source: Computed from field data (2018)

3.5.10 Methods of Quantitative Data Analyses

Prior to analysing the data from the field, all administered questionnaires were adequately checked for completeness. Data cleaning and processing were duly carried out to identify errors in data recorded. The quantitative data gathered from the questionnaires were re-coded and entered into the data viewer window of the statistical analysis software, Statistical Product and

Service Solutions (SPSS), version 20. Quantitative analysis in this study involved the generation of descriptive and inferential statistics. Descriptive statistical analyses involving the generation of means, standard deviations and percentages were used to present the background characteristics of the respondents. The following variables were analysed as the child's background characteristics: Gender, Age, Religion, Grade/Class, and Ethnicity. The socio-economic variables cross-tabulated with obesity included: marital status of parents/guardian, occupation of parents/guardian, educational background of parents/guardian, number of siblings, persons with whom the child lives, dietary intake, and physical activity.

3.5.11 Univariate methods of analyses

For the univariate method of analyses, the prevalence of child obesity in the two schools was determined using frequencies, means and percentages. For the purpose of analysis, obesity was looked at in two forms: actual obesity which was determined by recoding the continuous BMI values into a variable with four categories (Underweight, Normal Weight, Overweight, Obese), and perceived obesity, also with four categories (Slim, Somewhat plump, Plump, Very plump).

3.5.12 Bivariate Analysis

Bivariate analysis was conducted using cross tabulation analysis. The cross-tabulation analysis using chi square was firstly conducted to test for association between behavioural factors, child characteristics and parental characteristics against the weight status of the child, and secondly to test the association between BMI status of child, child perceived weight, characteristics and parental characteristics and their psychosocial wellbeing. These variables were selected because they are known in studies as drivers of psychosocial outcome. For this study, the statistical analyses were performed at 5% significance level ($\alpha = 0.05$).

3.5.13 Multivariate analysis for child obesity and psychosocial wellbeing

For the multivariate analysis, a binary logistic regression analysis was conducted. For the purpose of the analysis, all children both obese and non-obese children were selected. The dependent variable in this case was '*psychosocial wellbeing.'* The dependent variable yielded a binary outcome as *'poor psychosocial outcome'* (categorized as 1) and *'good psychosocial outcome'* (categorized as 0). The binary logistic regression therefore predicted the probability that an obese child chosen at random from all the children would either have a poor psychosocial outcome or a good psychosocial outcome based on the selected predictors. The predictor variables included: BMI status of child, age, sex, ethnicity, living arrangement of child, and occupation of mother. For the purpose of the analysis, some of the variables were recoded. BMI status was recoded as normal weight, overweight and obese. Child perception on weight status was recoded as "slim, somewhat plump, and very plump", where slim and very slim were coded together and plump and very plump were also recoded as one variable. Child living arrangement was recoded as Mother only, Father only, and other relatives. Mother's occupation was also recoded as Not working, Trade, service/sales/security, and professional, and marital status of mother was recoded as married, never married, and formerly married. For this study, three models were conducted. The first model was conducted using the measured weight status and the psychosocial wellbeing of the child. The second model included the measured weight status of the child, the child's characteristics (age, sex, ethnicity, living arrangement, school of the child and child perception on his/her weight). Lastly, the third model included the measured weight, child characteristics and the mother's characteristics (marital status and mother's occupation).

For this study, all inferential statistical analyses were performed at 5% significance level ($\alpha = 0.05$).

3.6 Qualitative Study Design

3.6.1 Selection of participants

For the qualitative study, the participants were determined only after the initial analysis of the quantitative data. This was to determine the different levels of obesity among the respondents, since psychosocial issues associated with obesity could be influenced by the severity of the obesity level. To obtain the qualitative data from the obese children, quota sampling was used. Here, the population of the obese children was divided into mutually exclusive sub-groups using their obesity levels (high obesity, average obesity, low obesity). Within each quota, the selection process placed an emphasis on age and gender. Convenience sampling was then used to select obese children from each quota.

Purposive sampling was ultimately used to sample respondents from each category of children that were obese from each of the schools. Thus, the selection of the children was because they were identified as being eligible to take part in the study and could be conveniently accessed within the sampling design outlined. Ease of access refers to those who were eligible and willing to grant an interview readily and sincerely.

3.6.2 In-depth interviews

A collection of the relevant qualitative data for this study was done through in-depth interviews with the aid of interview guides (Appendix H). In this case, the guide was designed using open-ended questions to allow for further probing and discussions. The open-ended nature of the discussion presented the respondents the opportunity to voice out their experiences, feelings, opinions and views on how their obesity status is affecting their psychosocial wellbeing.

These in-depth interviews were conducted only with obese children to explore their psychosocial well-being and their lived experiences. Prior to the conduct of the interviews,

anthropometric measurements of sex, age, weight, height of the children were measured by standard methods. Age and sex-specific prevalence of obesity were determined by BMI-for-age Z-scores. Children deemed to be obese based on these measures were selected for the in-depth interviews.

For the in-depth interviews, 20 participants (10 from each of the schools) were selected and interviewed. The interviews were tape-recorded with the permission of the children and supported with notes taken by the researcher. The recording of the interviews was relevant to assist in the transcription of the qualitative data. The interviews lasted between 30 minutes to an hour. This was necessary to eliminate the boredom often associated with long interviews, including interviewer and respondent's fatigue. As a means of reciprocity for participating in the study, some souvenirs (exercise books and pens) were given to the children who participated in both the survey and the in-depth interviews.

A period of about two weeks was used in the collection of the qualitative data. The qualitative interviews were conducted within the schools' premises during break times and usually at an isolated area to enhance privacy.

3.6.3 Qualitative data analyses

This method of analysis was used to answer research question four. In relation to the analysis of the qualitative data from the interviews, audio transcription was performed, followed by thematic analysis. After the field study, both written and recorded materials were immediately transcribed, and this generated 20 transcripts.

The actual analysis began with reading through the transcribed responses and listening to the audio recordings in order to have a good grasp of all the information. The transcription was very detailed and captured features of talk such as emphasis, speed, tone of voice, timing and

pauses, since these elements can be crucial for interpreting data. The coding was then done. Key ideas and emerging themes were identified from all the age and gender groups using Atlas.ti version 7 software. The codes were then developed into themes (basic, organizing and global themes). The basic and organizing themes were pooled together and integrated into a common overarching/global theme. Thereafter, there was a generation of concepts for organizing the presentation of the findings.

3.7 Limitation of Study

It is likely that the younger children and female pupils may be more prone to under-report certain aspects of their lived experience of being obese due to its sensitive nature. Misreporting due to memory lapse was also a concern since some questions were about experiences the respondent had ever had or had had in the past few weeks preceding the survey. More so, pupils who did not know information about their parents may not give accurate answers to the questions asked pertaining to their parents. Notwithstanding the possibility for these errors, the information provided by the respondents were assumed accurate hence used for the study.

In addition, not being able to work when school was in session was quite difficult. Interviews could only be conducted during school time and even with that, whenever the schools had other engagements, the interviews had to be postponed or conducted at a less busy time. This negatively affected the anticipated time the interviews were to be completed. Extra days and time were added to complete all outstanding interviews

Lastly, measuring the genetic characteristics of the child which was indicated in the conceptual framework as a risk factor of childhood obesity was not possible. This is because the gene pool was more of a biological composition of the child.

CHAPTER FOUR

MAJOR FINDINGS

PREVALENCE OF OBESITY AMONG THE STUDY POPULATION

4.1 Introduction

The background characteristics of respondents of the study population are presented. The chapter also describes the socioeconomic and demographic characteristics of the respondents and how they correlate with obesity as well as presents results on the prevalence of childhood obesity in the two schools. The results of the data analysed are presented in this chapter in accordance with the following research questions:

1. What is the prevalence of child obesity in Achimota and University of Ghana basic schools?
2. What are the socioeconomic and demographic characteristics of child weight and their psychosocial wellbeing?

4.2 Prevalence of Obesity among the Respondents

This section presents results on the prevalence of obesity among the respondents and it required the height and weight of the children to be measured to calculate the BMI. Table 4.1 presents the results on the weight status of respondents.

Table 4.1 indicates that the prevalence of obesity in Achimota Basic School is 5.9% while that of University of Ghana Basic School is 13.3%. A combined overweight and obesity prevalence in Achimota is 15.8% while that of the University of Ghana Basic School is 29.9%.

Further analysis was conducted to determine obesity prevalence across the various socio-demographic characteristics of the students.

Table 4.1 Percent distribution on a comparative study between University and Achimota Basic schools.

Variable	Achimota Basic		University of Ghana basic		
	Frequency	**Percent (%)**	**frequency**	**Percent (%)**	**Total**
Underweight	35	12.8	20	11.1	55
Normal weight	194	71.3	115	63.8	309
Overweight	27	9.9	21	16.6	48
Obese	16	5.9	24	13.3	40
Total	**272**	**100**	**180**	**100**	**452**

Source: Computed from field data (2018)

4.3 Perceived Weight Status of Respondents

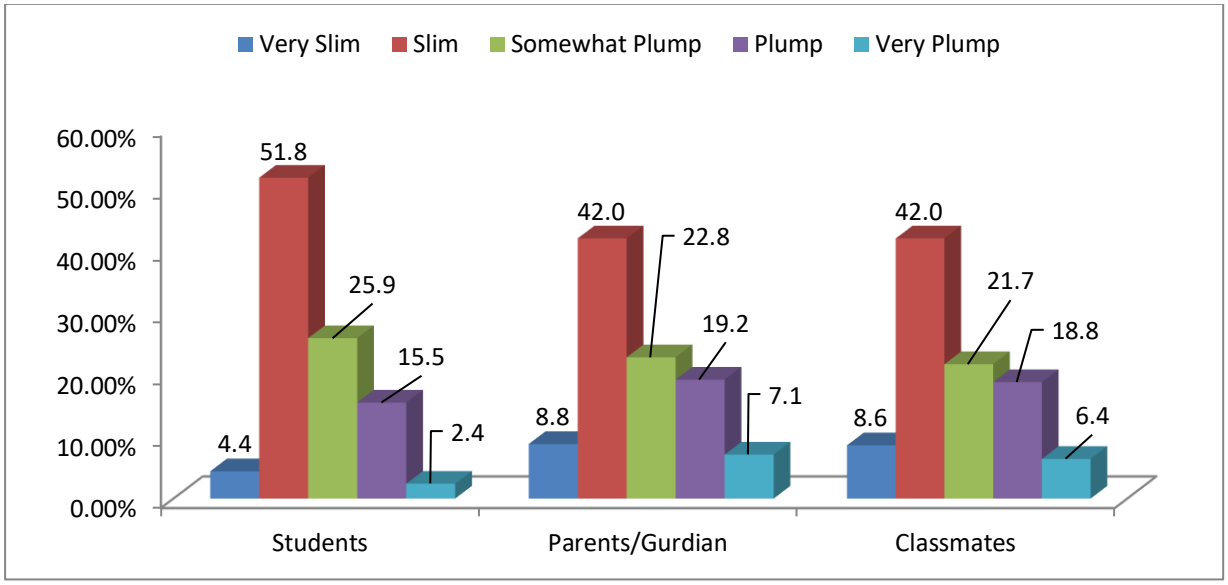
Research has shown that children usually misperceive their weight which may serve to protect themselves from certain psychological and social challenges that are associated with obesity like negative stigma, social isolation, bullying, among others (Brewis et al., 2011). Again, studies have shown that parental perception, therefore, has an important role to play in preventing weight-related problems in their children.

This section explores the perception of the students on their body structure. How their parents and classmates perceive their structure is also presented. A comparison between actual weight (obtained through BMI) and their perceived weight is further indicated. The distribution of respondents by their reported perceived weight is presented in Figure 4.1.

The results from Figure 4.1 shows that more than half (56.2%) of the students perceived themselves as very slim and slim while 41.4% perceived themselves as at least somewhat plump and plump. Similarly, a little over half of children stated that their parents/guardians

(50.8%) and classmates (50.6%) perceive them as very slim and slim. Generally, a greater share of the students, their parents and their classmates (all together) perceived them as slim. However, the proportion of those that perceived them as plump is also substantial.

Figure 4.1 Percent distribution of respondents by their reported perceived weight

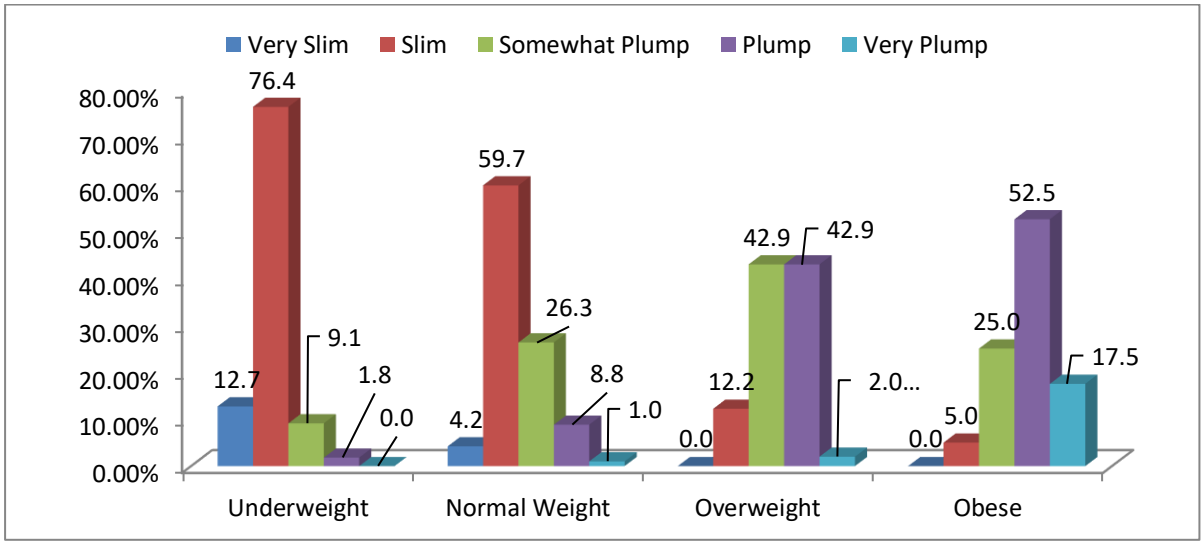


Source: Constructed from field data (2018)

Results from Figure 4.2 shows that, aggregately, a large proportion (89.1%) of the underweight students perceived themselves as very slim and slim while 10.9 percent perceived themselves as somewhat plump and plump. None of the underweight students perceived him/herself as very plump. Similarly, less than half (26.3) of the students with normal weight perceived themselves as slim while close to 10% perceived themselves as plump. Almost half (42.9%) of the overweight students and majority of the obese students perceived themselves as somewhat plump. None of the overweight and obese students perceived themselves as very slim. It is clear that the perception of the students regarding their structure is consistent with their actual weight. Thus, perceived obesity is statistically dependent on actual obesity, and students who

are actually obese are likely to perceive themselves as obese (plump). Additionally, those who are underweight are also likely to perceive themselves as underweight (slim). Similar trends were found for normal weight children.

Figure 4.2 Percent distribution of respondents by their actual weight and reported perceived weight



Source: Constructed from field data (2018)

The relationship between parental perception and actual weight status of the respondents was also investigated. The results are presented in Table 4.2. The results show that there is 99% significance level, which implies that there is a significant association between parental perception of child weight and actual weight of the child. The overall results show that higher proportions of normal weight children think their parents perceive them as very slim. Among obese and overweight children as well, higher proportions of their parents perceive them as plump, according to the children.

Table 4.2 Percent distribution of respondents across the two schools by reported parental perception and actual weight status

Variable		Actual weight status				
Parental perception of child' weight		**Underweight**	**Normal weight**	**Overweight**	**Obese**	**Total**
	Very slim	22.5	70.0	7.5	0.0	40
	Slim	17.9	79.5	1.1	1.6	190
	Somewhat plump	9.7	68.9	15.5	5.8	103
	Plump	2.3	46.0	25.3	26.4	87
	Very plump	0.0	56.2	18.8	25.0	32
	Total	55	308	49	40	452

Chi square= 124.2 P –value= 0.000***

Source: Computed from field data (2018)

The next table (Table 4.3) shows that there is a significant relationship between parental perception of child's weight and the child's perceived weight. The overall results show that higher proportions of children who perceive themselves as slim think their parents perceive them as very slim. In addition, a higher proportion of perceived overweight and obese children also think their parents perceive them as plump.

Table 4.3 Percent distribution of reported parental perception of child's weight and child perceived weight

Variable		Child's perceived weight					
Parental perception of child's weight		**Very slim**	**Slim**	**Somewhat plump**	**Plump**	**Very plump**	**Total**
	Very slim	35.5	57.5	10.0	0.0	0.0	40
	Slim	2.9	5.1	0.9	0.0	0.0	190
	Somewhat plump	2.9	18.4	73.8	2.9	1.9	103
	Plump	0.0	16.1	20.7	62.1	1.1	87
	Very plump	6.2	25.0	12.5	31.2	25.0	32
	Total	20	234	117	70	11	452

Chi square= 181.9 P –value= 0.000***

Source: Computed from field data (2018)

4.4 Behavioural factors of respondents

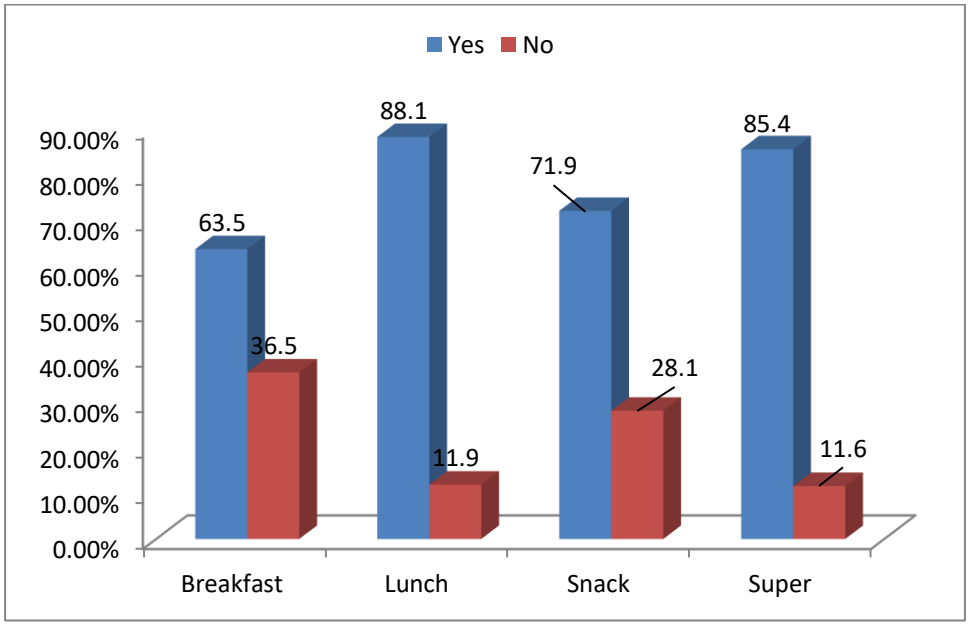
4.4.1 Dietary intake and eating habit of respondents

The eating habits of the pupils were studied since it could be medically correlated with their weight status. Research has shown that diet is a major contributor of child obesity. Children who eat foods that are calorie dense such as fizzy drinks, sweets, fried foods, fast foods, among others, have a higher chance of being obese. However, eating low calorie dense foods like fruits, and vegetables prevent children from obesity (CDCP, 2010).

Figure 4.3 shows the results of the eating habits of the respondents. More than half of the students eat breakfast (67.5%), snacks (77.9%), lunch (90.1%), and supper (89.4%). This indicates that a share of the respondents skip breakfast. Breakfast is seen as the most important

meal of the day. Skipping breakfast increases the intensity of hunger, which subsequently increases the volume of food consumed at lunch. This may lead to obesity in children in the long run (Umairah, 2012). Ortega et al. (2015) revealed that obese children more frequently skip breakfast than healthy weight children.

Figure 4.3 Percent distribution of respondents by eating habit



Source: Constructed from field data (2018)

The results of the distribution of the eating habit of respondents (in percentages) is presented in Table 4.4. The results indicate that almost 40% of the children drank soft drinks at a high rate. This implies they take soft drinks either on a daily basis or at most four times in a day. Also, almost a quarter of them drank soft drink on a moderate rate of once a week. Again, about 40% of them drank these soft drinks at a low rate (occasionally). With regards to the intake of sweets, a little above 30% took sweets at a high rate. However, close to 20% of the children ate sweet at a moderate rate and about 50% had a low intake of sweets (toffees, lollipops). Sugary drinks are another factor that has been examined as a potential contributing factor to obesity. Sugary drinks are less filling than food, and can be consumed quicker, which results in a higher caloric intake (CDCP, 2010). Anderson & Butcher (2006) found that consumption

of sugary beverages increased BMI. Therefore, a good share of the respondents would be predisposed to overweight and obesity with this trend. Regarding the eating of fruits, 35.6 percent ate fruits daily while 37.3 percent ate fruits weekly. Less than 20 percent (17.7%) seldom ate fruits. These results suggest that generally, majority of the students constantly eat fruits.

Table 4.4 Percent distribution of respondents by frequency of dietary intake

Variable	Percentages (%)	Frequency
Frequency of drinking minerals:		
High	38.5	174
Moderate	23.0	104
Low	38.5	174
Total	**100**	**452**
Frequency of eating sweets:		
High	32.1	145
Moderate	18.6	84
Low	49.3	223
Total	**100**	**452**
Frequency of eating fruits:		
Daily	35.6	161
4 times a week	18.1	82
2 times a week	19.2	87
Once in 2 weeks	9.3	42
Seldom-Once a month	17.0	80
Total	**100**	**452**

Source: Computed from questionnaire (2018)

4.4.2 Level of physical activity by respondents

This section focuses on the involvement of the students in physical activities. Studies have shown that physical activity is as important as energy intake. Children who live a sedentary lifestyle have a higher chance of being obese. However, being physically active helps prevent obesity in children (Bhuiyan et al., 2013).

It can be seen that Table 4.5 presents the distribution (in percentages) of respondents by physical activity participation.

Table 4.5 Percent distribution of respondents by physical activity participation

Variable	Percentages (%)	Frequency
PE Attendance:		
Yes	65.7	293
No	34.3	159
Total	**100**	**452**
Number of times in a week:		
1-2 times	63.5	186
3-4 times	5.0	15
5 times	7.5	22
Seldom-Once a month	24.0	70
Total	**100**	**293**
Activeness during PE:		
Never	0.6	2
Hardly ever	1.0	3
Sometimes	5.8	17
Quite often	13.6	40
Always	46.4	136
Don't know	32.4	95
Total	**100**	**293**

Source: Computed from questionnaire (2018)

The results from Table 4.5 indicate that most of the children (65.7%) participated in physical education (PE) class. About 34% did not attend PE. Over 76% of those who participated in PE did so at least once a week, and about 59% of them were often active. This implies that a good proportion of the children were physically active.

4.5 Background Characteristics of Respondents

4.5.1 Child Characteristics

In all, 452 pupils both male and female with their ages ranging from of 8-16 years participated in the quantitative study. Out of the 452 students, 272 (60.0%) were from Achimota Basic

School while 182 (40.0%) were from University of Ghana Basic School, and from this number, 20 pupils were selected to partake in the qualitative study. The distribution of respondents (in percentages) by demographic information is presented in Table 4.6.

The Table shows that a little over half (51.5%) of the respondents are male. Thus, the proportion of males that participated in the study was 2.5 percent more than the females. Therefore, the sample is almost equally represented across gender. This is essential to help determine how the gender of the respondents relates to their obesity status as well as their psychological and social well-being within the context of obesity.

The results from Table 4.6 show that the ages of respondents were averagely 12 years (mean = 11.86, Standard Deviation = 1.89). There was no respondent younger than 8 years or older than 16 years. Also, a little over 60 percent (60.8%) of the respondents were in the age range of 8-12 years.

With regards to ethnicity, the results show that majority of the children belong to the Akan ethic group, followed by Ga/ Dangme, then the other ethnic groups.

Ghana presently has a 6-3 basic education system. Children are expected to enter the first year of primary school by age 6. The nine years that make up basic education consists of primary education of 6 years and 3 years of Junior high school. The table shows that more than half of the respondents (58.63%) were in upper primary (class 4-6) while 41.37 % were in Junior High School. Further analysis shows that all (100.0%) of the respondents in Class 4 were aged 8-12 years.

Finally, majority (92.3%) of the respondents being Christian followed by Muslims and the other religious groups.

It can be noticed from the table that, quite a number of the children (41%) were an only child and about 42% of them had either one or two sibling(s). More so, with regards to education of

both mother and father, most of the children said their parents had tertiary education, followed by secondary education, and a few had basic education.

Again, the table shows that majority (77.3%) of the respondents were living with their parents. Just a few were living with guardians such as adopted parents, grandparents, relatives, among others. Majority of the parents of the children (81.1%) were married.

Table 4.6 Percent distribution of respondents by child characteristics

Variable	Percentages (%)	Frequency
School of child		
ABS	40.0	272
UBS	60.0	182
Age (in years):		
Below Teen (8 – 12)	60.8	275
Teen (13 – 16)	39.2	177
Total	**100**	**452**
Gender:		
Male	51.5	232
Female	48.5	220
Total	**100**	**452**
Ethnicity:		
Akan	47.1	213
Ewe	25.0	113
Ga Dangme	19.7	89
Other	8. 2	37
Total	**100**	**452**
Religion:		
Christian	92.3	417
Non-Christian	7.7	35
Total	**100**	**452**
Class:		
Upper Primary	58.6	265
Junior High School	41.3	187
Total	**100**	**452**
Living arrangements:		
Both parents	77.3	350
Mother only	4.4	20
Father only	14.2	63
Other relatives	4.1	19

Total	**100**	**452**
Number of siblings:		
None	41.6	32
1-2	42.0	69
3-4	15.5	78
5+	0.9	273
Total	**100**	**452**

Source: Computed from questionnaire (2018)

4.5.2 Parental characteristics.

This section explores the parental characteristics of the respondents by investigating the marital status of their parents/guardians, and the occupation of parents/guardians. The educational backgrounds of their parents/guardians were also investigated. According to Broyles et al. (2015), any effort to address child obesity must account for such characteristics.

The study also examined the occupation of the respondents' parents or guardians.

It can be seen that Table 4.6 shows that most of the mothers of the children work in the 'professionals' category, followed by trading. Having most of the mothers in the 'professionals' category was expected as it corresponds with the mothers' educational background (which showed that most of the mothers had a tertiary level of education). Again, almost a quarter of the mothers were into sales and service work (23%).

For the fathers' occupations, it can be observed that about half were professionals, followed by craft and related trade (18.4%). Comparatively however, the figures from GSS (2012) indicated that most of the men engaged in craft and related trade followed by skilled agricultural/fishery workers (those into growing and harvesting crops, rearing livestock and those into fishing). Professionals was the fifth highest occupation fathers engaged in among the general populace. Research has found that a parent's occupation has an association with obesity. Usually, parents

who spend more hours at work than at home, like professionals (doctors, nurses, lecturers, etc), do not have enough time to supervise the food eating behaviour of their children. Such children usually depend on non-parental figures like housemaids for their food intake. The high rate of non-compliance from such children can result in child obesity (Al-Agha, 2017; Fertig et *al.*, 2005).

The results of the distribution of parental characteristics (in percentages) of respondents is presented in Table 4.7.

Table 4.7 Percent distribution of parental characteristics of children.

Variable	Percentages (%)	Frequency
Educational level of mother/female guardian:		
Don't know	7.9	32
Basic	15.3	69
Secondary	17.3	78
Tertiary	60.5	273
Total	**100**	**452**
Educational level of father/male guardian:		
Don't know	5.9	27
Basic	6.4	29
Secondary	11.5	52
Tertiary	76.2	344
Total	**100**	**452**
Marital Status of parent/guardian:		
Never married		
Married	6.7	31
Separated	81.1	366
Divorced	4.9	22
Widowed	6.6	30
Total	0.7	3
	100	**452**
Occupation of mother:		
Not Working		
Trade	1.5	7
	34.1	154

Service and sales	23.0	104
Professional	35.2	159
Security services	1.8	8
Other occupation	1.3	6
Don't know	3.1	14
Total	**100.0**	**452**
Occupation of father:		
Not Working	2.4	11
Trade	18.4	83
Service and sales	6.2	28
Professional	51.5	233
Security services	1.8	8
Plant and machine operator	8.4	38
Other occupation	5.1	23
Don't know	6.2	28
Total	**100**	**452**

Source: Computed from field data (2018)

4.6 Association between behaviour factors, child and parental characteristics and the psychosocial wellbeing of the children.

This section presents the results of the association behaviour factors, child and parental characteristics and the psychosocial wellbeing of the children.

From Table 4.8, it can be seen that a child's BMI status does not have any significant association with their psychosocial wellbeing. Though there is evidence that there is an association between child BMI status and their psychosocial wellbeing, this analysis proved otherwise.

Table 4.8 Association between child BMI status and psychosocial wellbeing

BMI Status	Psychosocial wellbeing		
	Good	Poor	Total
Underweight	47.3	52.7	55
Normal	46.1	53.9	308
Overweight	63.3	36.7	49
Obese	57.5	42.5	40
Total	**222**	**230**	**452**

Computed from field data (2018)

Chi square: 6.243 P-value: 0.065 * p<.1; ** p<.05; *** p<.01

Table 4.9 shows the association between child's perceived weight and their psychosocial wellbeing. The results show that there is no significant association between a child's perceived weight and their psychosocial wellbeing. This implies that a child's psychosocial wellbeing is not dependent on how they perceive their weight.

Table 4.9 Association between children's perceived weight and their psychosocial wellbeing

Child perceived weight	Psychosocial wellbeing		
	Good	Poor	Total
Very slims/slim	40.2	50.8	254
Somewhat plump	49.6	50.4	117
Plump/ Very plump	48.1	51.9	81
Total	**222**	**230**	**452**

Computed from field data (2018)
Chi square: 0.014 P-value: 0.921 * p<.1; ** p<.05; *** p<.01

From Table 4.10, the results from the crosstabulation show that a child's age is associated with his/her psychosocial wellbeing, and this was significant at 95% significance level. The results show that the older age group (13-16) had a poor psychosocial wellbeing, compared to those aged between the ages 8-12 years. In other words, almost 60% of the children in the older age group had a poor psychosocial wellbeing. Reilly et al. (2003) in his study for instance, noted that the risk of psychological morbidity and wellbeing of child obesity increases with age.

Table 4.10 Association between child's age and their psychosocial wellbeing

Age	Psychosocial wellbeing		
	Good	Poor	Total
8-12 years	46.2	46.2	275
13-16 years	41.8	58.2	177
Total	**222**	**50.1**	**452**

Computed from field data (2018)
Chi square: 6.125 P-value: 0.013** * p<.1; ** p<.05; *** p<.01

More so, Table 4.11 shows that there is no significant association between sex of a child and their psychosocial wellbeing. This implies that a child's psychosocial outcome is not dependent on his/her sex.

Table 4.11 Association between child sex and their psychosocial wellbeing

Sex	Psychosocial wellbeing		
	Good	Poor	Total
Male	51.7	48.3	222
Female	46.4	53.6	230
Total	**222**	**230**	**452**

Computed from field data (2018)
Chi square: 1.298 P-value: 0.255 * p<.1; ** p<.05; *** p<.01

Again, Table 4.12 showed that there is a significant association between children's living arrangement and their psychosocial wellbeing. This association was significant at 95% significance level. Children who lived with other relatives had a poor psychosocial wellbeing compared with all the other categories. Almost 80% of the children who lived with other relatives had a poor psychosocial wellbeing. This is followed by those who lived with their mothers only and their fathers only. Those who lived with both parents had a better psychosocial wellbeing.

Table 4.12 Association between child's living arrangement and their psychosocial wellbeing

Living arrangement of child	Psychosocial wellbeing		
	Good	Poor	Total
Both parents	51.7	48.3	350
Mother only	40.0	60.0	20
Father only	45.3	54.7	64
Other relatives	22.2	77.8	18
Total	**222**	**230**	**452**

Computed from field data (2018)
Chi square: 7.190 P-value: 0.023** * p<.1; ** p<.05; *** p<.01

Again, Table 4.13 showed that Children in Achimota Basic School experienced poor psychosocial wellbeing compared to those in University of Ghana Basic School. Close to 60%

of the children experience a worsening psychosocial outcome whereas close to 60% of the children in University school experience good psychosocial wellbeing. This association was significant at 95% level of significance.

Table 4.13 Association between the child schools' and their psychosocial wellbeing

School of child	Psychosocial wellbeing		
	Good	Poor	Total
Achimota Basic School	44.1	55.9	272
University of Ghana Basic School	56.7	43.3	180
Total	**222**	**230**	**452**

Computed from field data (2018)
Chi square: 6.825 P-value: 0.009** * p<.1; ** p<.05; *** p<.01

In addition, Table 4.14 shows that marital status has a significant association with a child's psychosocial wellbeing. This was at a 95% significance level. Comparatively, about 80% of the children whose parent were formerly married had a poor psychosocial wellbeing compared to the other categories. It is interesting to know that children whose parents were never married had a good psychosocial wellbeing compared to those whose parents were married.

Table 4.14 Association between parental marital status and their psychosocial wellbeing

Marital status	Psychosocial wellbeing		
	Good	Poor	Total
Married	44.8	55.2	29
Never married	53.4	46.6	365
Formerly married	24.1	75.9	58
Total	**222**	**230**	**452**

Computed from field data (2018)
Chi square: 17.404 P-value: 0.004** * p<.1; ** p<.05; *** p<.01

Lastly, Table 4.15 shows that Child's parental occupation has no association with the children's psychosocial wellbeing. Though it is proven that occupation of mother can influence a child's psychosocial outcome, this result proved otherwise.

Table 4.15 Association between child's parental occupation and their psychosocial wellbeing

Occupation of mother	Psychosocial wellbeing		
	Good	Poor	Total
Not working	37.0	63.0	27
Trade	49.4	50.6	154
Service/security	50.0	50.0	112
Professional	50.3	49.7	159
Total	**141**	**878**	**435**

Computed from field data (2018)
Chi square: 1.706 P-value: 0.430

4.7 Chapter Summary

This chapter examined the prevalence of obesity in Achimota and University of Ghana Basic Schools. It also investigated the relationship between the perceived weight and actual weight status of the children in both schools and described the background characteristics of the respondents.

The findings show that the overall prevalence of obesity in the two schools is high (8.8%). The combined overweight and obesity prevalence is also very high (19.6%). Achimota basic school had an obesity prevalence to be 5.9 % while that of University of Ghana Basic Primary School is 13.2%. A combined overweight and obesity prevalence in Achimota Basic School is 15.8%, while that in the University of Ghana Basic School is 29.9%. These figures have increased when compared with related past studies in the study area and other places in Ghana. There is a relationship between actual and perceived obesity among children in the study area. About 89.1% of the underweight students perceived themselves as slim. Over 87.8% of the overweight students and 95.0% of the obese students perceived themselves as plump. None of

the overweight and obese students perceived themselves as very slim. It is clear that the perception of the students regarding their structure is consistent with their actual weight status.

Again, child's BMI status did not influence their psychosocial outcomes at the bivariate level of analysis. Furthermore, child's perceived weight did not influence the child's psychosocial wellbeing. These psychosocial outcomes are exacerbated by the age, living arrangement of child, school of the child and marital status of parents.

CHAPTER FIVE

EFFECT OF OBESITY ON THE PSYCHOSOCIAL WELLBEING OF CHILDREN

5.1 Introduction

This chapter presents results from inferential statistical analyses conducted to determine the effect of obesity on the psychosocial wellbeing of children in University and Achimota Basic Schools. The objective was to determine whether measured weight and height calculated as body mass index (BMI) would significantly predict psychosocial well-being while controlling for covariates (age, sex, and other socio-economic variables). Secondly, the analysis was conducted to determine whether perceived obesity and other characteristics of the child such as age, sex, ethnicity, school and child living arrangement would significantly predict poor psychosocial wellbeing in the child. Third, the analysis determined whether BMI and the child's characteristics and parental characteristic (occupation of mother and parental marital status) would also significantly predict psychosocial challenges in children.

For this study, binary logistic regression models were mainly used to examine the probability that an obese child when chosen at random would experience a poor psychosocial outcome. The outcome variable which is psychosocial wellbeing was coded as good psychosocial wellbeing (0) whilst those who experienced poor psychosocial wellbeing was coded (1). The Model summary was also described (see Table 5.1). Table 5.1 shows results for the binary logistic regression using the omnibus tests of Model coefficient

Table 5.1 Binary logistic regression Models showing obesity and psychosocial wellbeing with covariates among children in Achimota and University of Ghana Basic Schools

	Model 1			Model 2			Model 3		
Variables	EXP	95% C.I for EXP β	P-Value	EXP	95% C.I for EXP β	P- Value	EXP	95% C.I for EXP β	P-Value
BMI Status			0.106			0.150			0.043
Normal *(RC)*	1.00			1.00			1.00		
Under weight	0.95	0.54-1.70	0.695	1.01	0.55-1.86	0.970	1.03	0.56-1.91	0.919
Over weight	0.49	0.27-0.93	0.926	0.49	0.24-1.00	0.050	0.38	0.18-0.81	0.013
Obese	0.63	0.33-1.23	0.230	0.49	0.22-1.09	0.083	0.42	0.18-0.96	0.040
Child Perceived Weight						0.109			0.108
Very slim/slim (*RC)*				1.00			1.00		
Somewhat plump				1.01	0.62-1.66	0.966	1.09	0.65-1.80	0.752
Plump/Very plump				1.97	1.01-3.82	0.046	2.06	1.04-4.07	0.038
Age						0.014			
8-12 *(RC)*				1.00			1.00		0.255
13-16				1.66	0.62-1.98	0.010	1.61	1.07-2.43	0.023
Sex						0.157			0.030
Boy *(RC)*				1.00			1.00		
Girl				1.33	0.90-1.96	1.160	1.36	0.91-2.43	0.130
School						0.011			
Achimota Basic (*RC)*				1.00			1.00		
University of Ghana basic				0.58	0.38-0.88	0.011	0.61	0.39-0.95	0.030
Ethnicity						0.390			0.377
Ga/Dangme *(RC)*				1.000			1.00		
Akan				1.047	0.62-1.78	0.864	1.03	0.60-1.77	0.915
Ewe				0.722	0.39-1.31	0.284	0.69	0.38-1.28	0.241
Mole-Dagbani				0.708	0.31-1.58	0.402	0.71	0.31-1.61	0.410

Living arrangement								0.522
Both parents *(RC)*				1.00		0.179	1.00	
Mother only				1.76	0.664.71	0.254	1.37	0.51-3.69	0.531
Father only				1.14	0.65-2.70	0.640	0.65	0.33-1.28	0.217
Other relatives				3.14	0.99-10.01	0.052	0.69	0.16-2.95	0.620
Mothers occupation									0.003
Not working *(RC)*							1.00		
Trade							0.59	0.24-1.51	0.275
Sale/service/security							0.61	0.24-1.51	0.300
Professional							0.71	0.29-1.80	0.480
Marital status									0.661
Never married (*RC)*							1.00		
Currently married							0.59	0.26-1.35	0.211
Formerly married							2.28	0.88-7.56	0.085
Constant	1.169		0.172	0.923		0.836	2.26		0.220
Model% Correct prediction			50.9			62.8			65.7
Chi square(df)		4.73(1)	0.003		14.72(8)	0.065		9.91(1) 0.225	
-2 Log Likelihood			620.17 0.014			593.89 0.070		579.82	0.098
Observation					452				452 452

Computed from field data (2018) (RC = Reference Category)

The general observation from Model 1 is that obesity, by itself, does not predict any psychosocial outcome in children, as shown in Table 5.1. The observed p-value of 0.923 implies that the measured BMI status does not significantly affect the psychosocial well-being of children.

In Model 2, child perceived weight, age of the child and school of the child predicted psychosocial well-being in children however, sex, ethnicity and living arrangement predicted not any psychosocial outcome in children. Children who perceived themselves to be plump/very plump were 1.968 times as likely as slim children to experience poor psychosocial wellbeing. It is interesting to note that age of the child also played a significant factor in psychosocial outcomes of obese children. Particularly children within the adolescent developmental stages. Children between the ages of 13-16 years were 1.66 times as likely as children aged 8-12 years to experience poor psychosocial well-being. This indicates that the older the child the poorer their psychosocial wellbeing. Furthermore, children who attended University of Ghana basic School were 0.61 times

as likely as children who attended Ac0himota Basic School children to develop poor psychosocial challenges. This study did not test for what actually accounted for the differences between both schools.

Model 3 revealed that child measured weight (BMI), child's weight perception, age of child, and school of child significantly predict a child's psychosocial wellbeing. Children who were overweight were 0.38 times as likely as normal weight children to develop poor psychosocial challenges. Similarly, obese children were 0.42 as likely as normal weight children to develop poor psychosocial. This implies that overweight and obese children had a lower chance of experiencing poor psychosocial challenges. Studies have stipulated that obesity affects the psychosocial wellbeing of a child (Carpenter et al., 2000; Janicke et al., 2007; Kornilaki, 2014; Renman et al., 2007; Wardle & Cooke, 2005). The implication of this result is that obesity on psychosocial well-being or outcomes in a population must be considered in the sociocultural context. This is because depending on the background the child is coming from, obesity might be seen as either desirable or not. In the Ghanaian context, children who are obese may consider themselves as socially desirable because being plump or fat is linked to one's wealth or socioeconomic status. These children are usually affirmed as being beautiful and this makes them feel confident in themselves (Appiah, Otoo, & Steiner-Asiedu, 2016; Duda, Jumah, Hill, Seffah, & Biritwum, 2007; Duda et al., 2008; Benkeser, Tuoyire, Kumi-Kyereme, Doku, & Amo-Adjei, 2018). This can be linked to the social exchange theory, because once a child feels the society is giving him/her a meaningful life and is being accepted for who they are, the begin to exhibit positive traits regarding their wellbeing such as being confident, having high self-esteem, feeling happy, among others.

Again, children who perceived themselves to be plump or very plump were 2.06 times as likely as slim children to develop poor psychosocial challenges. This result was expected because studies have shown that weight perception has a harmful effect on a child's psychosocial wellbeing. Studies have revealed that children who perceive themselves to be overweight or obese are very conscious of themselves and tend to develop some emotional challenges such as low self-esteem, anxiety, and fear among others. Some engage in unhealthy weight control activities which usually cause them to experience poor psychosocial wellbeing (Frankova, 2000; Robinson et. al., 2015; Sonneville et. al., 2016). This implies that once a child feels that a particular behaviour, whether negative or positive, favours his/her current state of mind, the child tends to change towards that.

More so, children who belong to the older age group were 1.61 times as likely as children who belong to the younger age group to be susceptible to psychosocial challenges.

This implies that the older an obese child is, the more vulnerable or susceptible he or she is to psychosocial effects of obesity. Franklin, Denyer, Steinbeck, Caterson & Hill (2006) postulated that obese adolescents are at more risk of marginalization and victimization during their teen years. For girls, these effects such as self-esteem are noticeable at the age of puberty. Again in a related study, Ravens-Sieberer, Redegeld, & Bullinger (2001) found that participants older than 13 years of age had significantly worse physical, self-esteem and school functioning outcomes compared with younger children. Also, Swallen et al. (2005) reported that health-related quality of life scores in the social, emotional and school functioning of 12-14 year old overweight or obese adolescents were low compared to older adolescents. Lastly, children who attended University of Ghana Basic School were 0.61 as likely as those in Achimota Basic School to develop poor psychosocial challenges. With regard to the attachment theory used for this study, it showed that when a child is close to his or her attachment figure which is usually the primary caregiver, the child tends to

be more confident and in turn exhibits certain positive traits such as high self-esteem, boldness, among others, and in most instances they do not care much about what other people think or say about them. This is because they know that their attachment figure is always around to defend and encourage them. With regards to the two schools, Achimota Basic School has a boarding facility. Results showed that children in this school had a poorer psychosocial wellbeing. This could be because they do not have their attachment figure close to them at school, so they tend to feel insecure, which makes them become very concerned about what people say about their weight status. They thereby exhibit certain negative traits such as feeling less confident, being distressed psychologically, having low self-esteem, among others, when they are being teased or bullied because of their weight status. However, with regards to University of Ghana Basic School being a day school, probably because the children stay with their attachment figure (primary caregiver), they are usually encouraged to love themselves, and they also feel secured because they know they have someone who is always there to defend them. This affects their wellbeing positively, and this is evident in the qualitative findings.

Sex of the child, marital status of parent and mother's occupation did not predict a child's psychosocial wellbeing. Nonetheless, the sex of the child being a significant covariate that did not predict the psychological wellbeing of the children is contrary with the findings of Gray & Leyland (2008). Their study showed that girls become very aware of their body changes especially during their teen years, and are very concerned about what others say about their body size. As such, when they are negatively affirmed because of their body size it affects their wellbeing negatively. Their results showed that psychological distress in girls was higher than boys in Scotland. Again, a study conducted in Nigeria found that obese females were 3 times more susceptible to anxiety symptoms than obese boys (Uleanya et al., 2018).

Studies from Norway and other high income countries have shown that family structure and an increasing proportion of cohabiting and divorced parents, might affect the prevalence of childhood overweight and obesity issues (Biehl et al., 2014; Byrne, Cook, Skouteris, & Do, 2011; Chen & Escarce, 2010; Hesketh, Crawford, Salmon, Jackson, & Campbell, 2007). More so, these usually contribute to social and cognitive problems (poorer academic performance anxiety, depression, among others) of children from such homes (Emery 1999; Amato, 2001; Pappa, 2013). However, the reverse was true for this study. Children whose parents were divorced or separated rather showed decreased likelihood of poor psychosocial outcomes. Research has also shown that this association is statistically significant (Biehl et al., 2014). The divergent findings most probably reflect a lack of agreement in terms of categorisation. Marital status does not tell whether a single-parent family is the result of divorce, separation or death or indeed whether a two-parent family is cohabiting or married. Accordingly, it does not form a solid basis for examining whether changing family structures or divorce stress during childhood may affect a child's psychosocial wellbeing (Biehl et al., 2014).

With regards to mothers' occupation, other studies have revealed that mothers who work long hours or run evening and night shifts usually get home stressed, which can distract them from their parenting roles. This in a way can undermine the atmosphere at home, and thereby introduce stress into children's lives, which can eventually cause psychological distress in these children. This is usually the case with low-income parents who are most likely to work in stressful, low-quality jobs that feature low pay, little autonomy, inflexible hours, and few or no benefits (Adusei, 2014; Heinrich, 2014).

Finally, it can be concluded that since the first hypothesis was not consistent with the study findings, the hypothesis was rejected. However, the second hypothesis was accepted because it was consistent with the study results.

5.2 Chapter Summary

In summary, three Models were run using binary logistic regression analysis. The first Model showed that BMI status does not predict a child's psychosocial wellbeing. The second Model however predicted that child perceived weight, age, and the school the child attended predict the child's psychosocial wellbeing. Model 3 showed that about 13 percent of the variation in the dependent variable is explained by the independent variable. The results of that Model showed that BMI status, perceived weight status of the child, age of the child, and school the child attended predict child's psychosocial outcome. It was also found that children who perceive themselves to be obese significantly predict poor psychosocial wellbeing. Sex, ethnicity, living arrangement of child, marital status of parents, and mother's occupation did not predict any psychosocial outcome among study participants.

CHAPTER SIX

LIVED EXPERIENCES OF THE OBESE CHILDREN

6.1 Introduction

This chapter presents findings from analysing the qualitative data collected through in-depth interviews with obese children who were selected purposively for this study. This chapter covers the psychological and social issues children in Achimota and University of Ghana Basic Schools face due to their obese status. The psychological and social effects of obesity on children may go a long way to affect them even into adulthood (Luttikhuis et. al., 2009), compounding on the physical health issues some of these children already face because they are obese. The focus of the findings was on psychological wellbeing, social challenges, general health and suggested support, as indicated by the respondents.

6.2 Background Characteristics of the Respondents

Table 6.1 shows the characteristics of the respondents. Their ages ranged from 9 to 16 years. About seven of the respondents were boys and 13 were girls. The children were between class 4 and Junior High School 3. About 17 of them were Christians and three were Muslims. Also, the dominant ethnic group was Akan (14 pupils) followed by Mole Dagbani (3 pupils), Ewe (2 pupils), and Ga-Dangme (1 pupil). The BMI of the respondents ranged from 22.10 to 31.70 kg/m^2.

Table 6.1: Characteristics of obese respondents

Characteristics	Number of observations
Sex of respondents	
Male	7
Female	13
Age	
9-12	11
13-16	9
Grade/ class	
Class 4	2
Class 5	2
Class 6	4
Jhs 1	4
Jhs 2	4
Jhs 3	4
Religion	
Christian	17
Non-Christian	3
Ethnicity	
Akan	14
Ga –Dangme	3
Ewe	2
Mole Dagbani	1
Total	**20**

Source: Computed from field data (2018)

6.3 Thematic Network of Psychological and Social Effects of Child Obesity

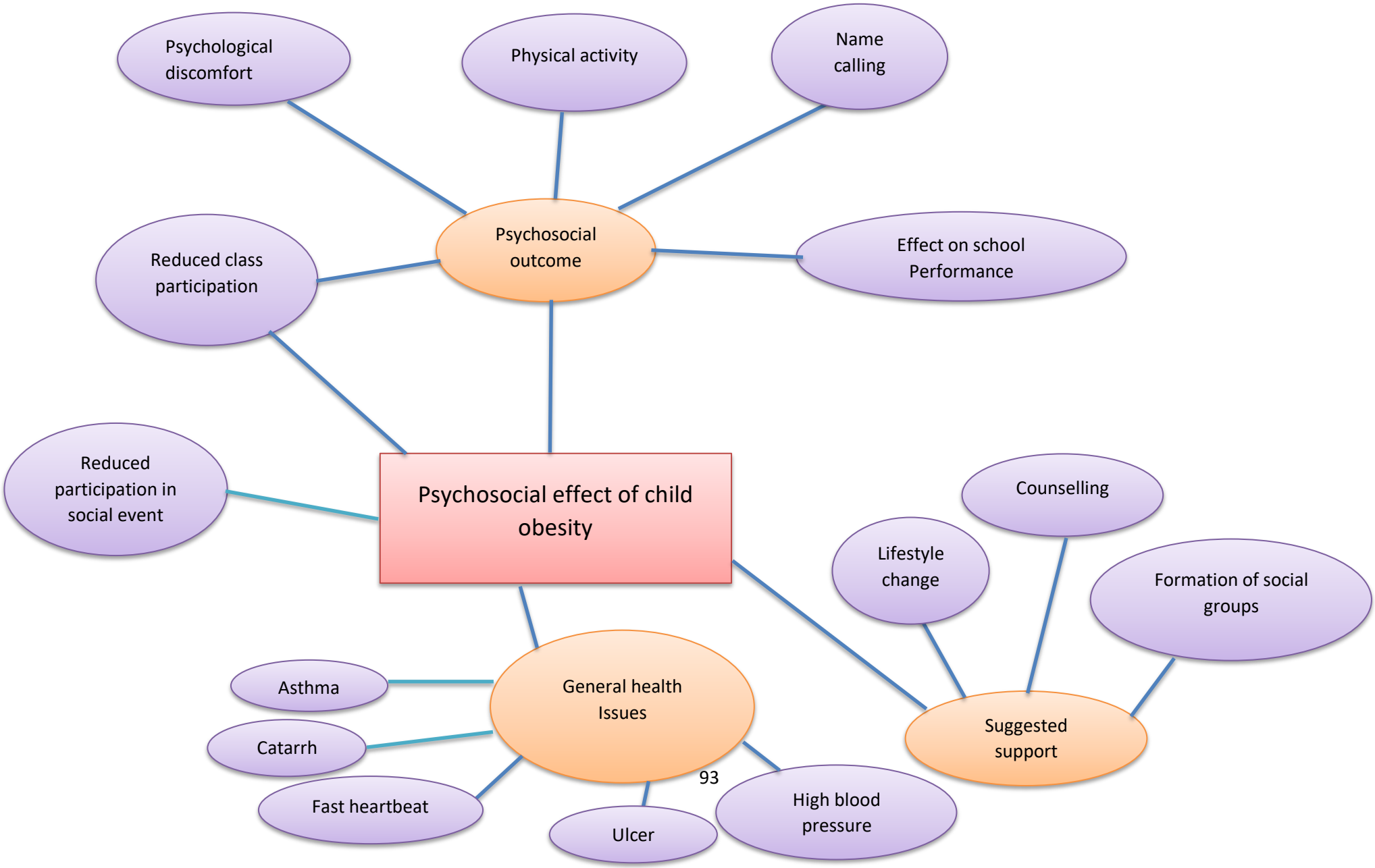
Psychological and social wellbeing entails the positive relationships that the respondents have with others, personal mastery, autonomy, and a feeling of having a purpose in life. The obese participants described their lived experiences with regards to their body weight. Themes derived

from the textual data are structured and illustrated at three different levels (Attride-Stirling, 2001); global themes, organising themes, and basic themes. The basic theme is actually the basic or the lowest order theme that is derived from the textual data. This is followed by the organizing themes, which organises the basic themes into clusters of similar issues, then the global themes follow. The global theme integrates all the other themes into a common overarching theme.

Using the thematic network analysis approach, four organizing themes emerged. These are: 1) psychological challenges, 2) social challenges, 3) general health, and 4) suggested support, with the global theme being effect of child obesity.

For the first organizing theme, psychological challenges, the children were asked some questions about some psychological challenges they face because they are obese and there were six basic themes that emerged namely: psychological discomfort, name-calling, effect on engaging in physical activity, reduced class participation and effect on school performance. The next organizing theme, which is social challenge, encompassed the social challenges the obese children faced. Two basic themes emerged and these were: reduced participation in social activity and reduced class participation. Suggested support involved the support the obese children thought could help them lose or reduce their weight and live a healthy life. These brought out three basic themes, which were: lifestyle change, counselling and formation of social groups. The last organizing theme is general health. Children were asked if they had any health issues as a result of their weight and out of this, five basic themes emerged which were: fast heartbeat, ulcer, high blood pressure, asthma and catarrh.

Figure 6.1: Thematic network for psychosocial effect of child obesity



6.4 Psychosocial challenges of child obesity

Participants' interview narratives on the effects of their obese status focused on six broad categories: 1) psychological discomfort; 2) reduced class participation; 3) name calling; 4) effects on school performance; 5) effect on engaging in physical activities, and 6) reduced participation in social events.

6.4.1 Psychological discomfort

Participants mentioned that being obese makes them experience psychological discomforts from family members, classmates, teachers and other students. These psychological discomforts include unhappiness, sadness, fear, loneliness, panic attacks, shame, nervousness, distress, mood swings, etc. Many of the participants described how difficult it was for them to interact with other students as a result of their weight. Some also mentioned that they usually felt nervous when they were with friends or people who are 'slim'.

> *I: And how does your body size make you feel or behave when you are left out of an activity?*
>
> *R: I really feel sad. I wish I was slim so I can also do what my friends are doing.* ***[Boy, UBS, Class 6]***

> *I: And how does your body size make you behave in the midst of others...*
>
> *R: I feel unhappy. I am afraid to go into the midst of people. I wish I could also do what the slim people are doing. So for me what I do is to read a book so I don't get too worried* ***[Girl, UBS, Class 4]***

In addition, four of the students mentioned that their body size frightens them because they could not fit into the clothes that they liked. These children discussed how they wish they could lose

some weight so that they would be able to do things that slim people do. Some described how they 'entered' into different moods from time to time as a result of their obese status.

> *I: Has there been a time where you were frightened or nervous because of your body size? If there has please give me one instance.*
>
> *R: Yes, there was a day when my cousins and I were going out. They all fit in their dresses except me and it was my favourite dress too, but I couldn't fit in. It made me frightened that I am growing too big. You see, if I was slim like I won't have this problem.* ***[Girl, APS, Class 6]***

> *Hmmmm, sometimes I wish I will lose weight and become slim because certain things they do, I can't do.* ***[Girl, UBS, Junior High School 1]***

On the other hand, a few of them mentioned that their obesity status had no psychological effect on them. These set of students either love the way they look, do not care about what people say about them, or do not perceive themselves as 'fat'. As a result, they are able to interact well with other students. This was evident in some of their responses:

> *If you laugh at me when talking to me, I don't care. I love the way I look. I don't think I'm fat.* ***[Girl Ubs, Junior High School 2]***

6.4.2 Reduced class participation

The children were asked to describe how relaxed they were in their classrooms and the extent to which they could talk with classmates, answer questions posed by their teachers or go to the board to solve problems. Some of the students mentioned that they could not attend some school programs that could benefit them and were afraid or lacked the confidence to participate in class discussions. Additionally, some generally felt uncomfortable in school because of their obese status. These students wished that the school authorities will enforce strict punishment to those who make fun of people who are obese.

> *Some other time too in school I was recording marks for my Twi teacher and one girl said see the way I am fat I shouldn't worry them. And it made me feel sad and quite nervous because I was scared to even talk again before they call me names again.* ***[Girl, APS, Junior High School 2]***

> *Yes. In class when I want to talk and I look at the people then I panic so I always look into my book when talking because if I look at them then I start making mistakes.* ***[Boy, UBS, Junior High School 2]***
>
> *Comfortable? It is actually difficult to associate with people because of my weight so it is a bit uncomfortable. They always make me feel uncomfortable because of how they laugh and tease me. Sometimes I even don't want to come to school because of how my classmates make me feel.* ***[Boy, UBS, Junior High School 2]***

On the other hand, some of them were comfortable to participate in class discussions; they were comfortable in school and able to talk and solve questions in class.

> *I: How comfortable are you when you are with your classmates and teacher?*
> *R: I feel ok.*
> *I: How please? Explain further.*
> *R: I like to learn aunty, but I don't allow my body size to cause me to feel uncomfortable in class* ***[Girl, UBS, and Class 4]***

> *I: So, in school how comfortable are you when you are with your classmates and teachers. Are you able to talk in class?*
> *R: Yes, I do. I am comfortable and I also talk in class* ***[Girl, APS, Junior High School 1]***
> *I: So how comfortable are you when you are with your classmates and teachers? Are you able to talk freely in class?*
>
> *R: Yes, very comfortable. But I don't like talking because of the way my friends like teasing me* ***[Girl, UBS, Class 5]***

6.4.3 Name calling

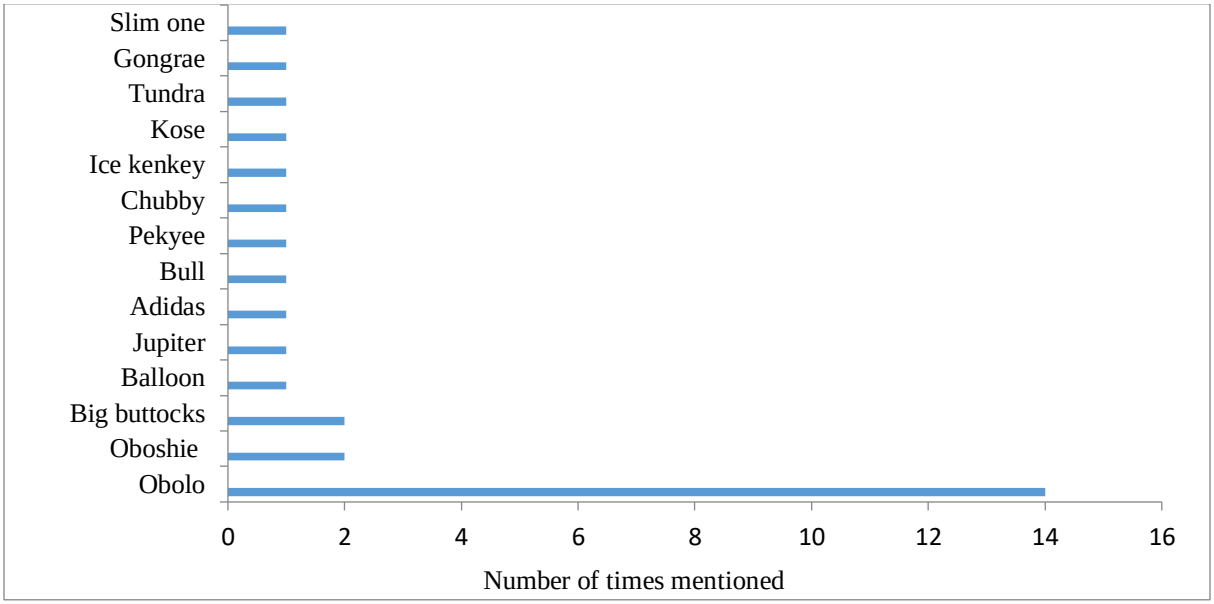
Some of the children mentioned that they were being given 'funny' names either by friends, colleagues or family members. Particularly, the narratives of the participants showed that the dominant nickname given to them was "Obolo". They mentioned that being called "Obolo" was one of the daily experiences they go through as they interact with their colleagues and family members. For example, a student from Achimota School indicated this:

> *I: But were there times they made fun of you or called you some names or maybe the teacher called you in front of the class and they all started laughing?*
> *I: Tell me about it?*
>
> *R: My madam called me, and I did a wrong thing and my teacher called me to come and do the right thing and all my friends started calling me (.) Obolo, Obolo.* ***[Girl, APS, Class 6]***

Further, other names given to the obese children included “oboshie”, and “big buttocks”. Due to these names, the children mentioned that the coping mechanisms they have adopted include not eating, turning deaf ears to the comments, crying, sleeping, indulgence in food, reduction of food intake, listening to music, punching walls, and using negative words on those people who called them ‘names’. Some mentioned that they bullied those who passed negative comments towards them in school.

> *Sometimes they call me “Oboshie”, “balloon”, “obolo”. My teacher too calls me adidas saying I only eat and sleep.* ***[Girl, APS, Junior High School 1]***
>
> *Some call me Jupiter and a teacher said they should call me BB because I have big buttocks* ***[Girl, APS, Junior High School 2]***

Figure 6.2: Percent distribution of the number of times respondents were called by obesity-derived nicknames



Source: Constructed from field data (2018)

Figure 6.2 shows the various names children were called and the frequency these names were mentioned. The figure shows that in all, 14 different names were mentioned by the children as names they were mostly called or referred to. The name that was mostly used by others to make fun of these obese children was "obolo" followed by "oboshie", "big buttocks", through to "slim one".

6.4.4 Effect on school performance

Respondents were asked how their body weight has affected their performance in school. The interview narratives showed that some of the students found it difficult to make contributions in class and this affected their confidence level as well as their school performance.

> *I: Has your body size affected your confidence level in anyway or has it affected you being bold?*
>
> *R: In a way, sometimes I feel shy* ***[Girl, APS, JUNIOR HIGH SCHOOL 1]***
>
> *I: Has your body size affected your ability to be smart (.) As in to do well in school?*
>
> *R: Yes madam. Because I am big I don't feel like coming to school because I don't come to school and I miss classwork and test.* ***[Boy, APS, Class 6]***

> *.. It even encourages me, the reason being that because of my body weight they don't think that I should do well so that even gives me the courage to learn hard. I do well than most of the people in my class who make fun of me* ***[Boy, Ubs, Junior High School 2]***
>
> *...It has not affected me in anyway. I still do well.* ***[Girl, UBS, Class 4]***

On the other hand, fourteen of the respondents mentioned that their stature has not affected their performance or ability to do well in school and in certain instances indicated that it had even challenged them to put in much effort to do better than their slim counterparts.

6.4.5 Effect on engaging in physical activity

Respondents described how their stature has in one way or the other affected their abilities to get involved in physical activities be it in school or at home, and the consequences of such activities. Majority of the respondents had challenges participating in physical activities either because they got tired easily, or because people laughed at them when they do so or based on doctor's recommendations. Particularly, fourteen of the respondents mentioned that being big had affected their involvement in physical activities because they easily get tired and feel uneasy when they do so.

> *I: How is your usual mood with regards to being physically active? Are you able to jump, run about, and squat among others?*
>
> *R: I don't like doing them because it makes me get tired*. ***[Girl, Ubs, Junior High School 1]***

> *I can't run, because when I run, I just get tired it is like I can't breathe.* ***[Boy, UBS, Junior High School 2]***
>
> *When I walk from a far distance (..)I feel tired and sometimes I become sick.* ***[Boy, APS, Class 6]***

Some mentioned that their non-involvement in physical activities was not just because they get tired easily, but due to the mockery and frustrations they received from other students.

When I do them, I get tired easily and they laugh at me, so I don't even do them at all. ***[Boy, UBS, Junior High School 1 80]***

Yes. I am unable to do things like running because I feel I might fall and people will laugh at me. ***[Girl, UBS, Class 4]***

Most at times it is my body weight that prevents me from doing them. For example, if I try to even jog then they will be laughing at you that I can't do it. So, because of that it has discouraged me, and I usually escape PE. So, I don't like engaging in ant P.E ***(Boy UBS, Junior High School)***

One respondent mentioned that her non-participation in physical activities was based on doctor's recommendations.

I: How has your body size affected your ability to do physical activity?

R: It has not affected me much, but I have asthma, so Doctor said I should not do too much exercise. ***[Girl, UBS, Class 4]***

On the contrary, six of the respondents mentioned that their stature has not affected their participation in physical activities as their slim counterparts by indicating this:

I: Has your body size affected your ability to be physically active?

R: Not at all. ***[Boy, UBS, Class 6]***

I: How would you describe your mood in terms of your ability to do physical activities?

Does your bodyweight prevent you from running or squatting?

R: I can do it. ***[Girl, APS, Junior High School 2]***

6.4.6 Reduced participation in social events

Participants were asked to describe the challenges they face from peers, friends and family members while participating in sport activities, religious activities, and other social events. Many of them mentioned that they were either neglected or denied participating in certain activities. This was evident in some of the students' narratives:

> *When we are going to play ball, they tell me that I am obolo so I cannot play it.* ***[Girl, UBS, Junior High School 1]***
>
> *For example, football. We were playing football then they will leave me out because I am fat and slow, so I cannot play so because of that I don't play football.* ***[Boy, UBS, Junior High School 2,]***
>
> *It was sports competition between the boys and girls. And the girls said I can't play and they started laughing at me.* ***[Girl, APS, Class 6]***

Further, some also had difficulties participating in Church activities or programmes because of their body size.

> *At church they had a choreography and I wanted to be part of it but when they saw how big I am they said I can't take part, so they did not include me.* ***[Girl, APS, Junior High School 3 BMI 63]***

One of the participants particularly mentioned that even though her friends sometimes told her not to take part in certain activities, she ignored them and forced herself to participate in these activities.

> *...Me, if my friends are doing something like playing or games and they say they won't let me take part I force myself to do it.* ***[Girl, APS, Junior High School 1 BMI 98]***

On the contrary, some of them mentioned that they have not encountered any difficulties participating in social events. The said that what has helped them not to have this restriction was because their friends were also obese.

> *No. Most of my friends are big like me so we do things together.* ***[Boy, UBS, Junior High School 1 BMI 70]*** *Aunty please my friends don't do that. We always do things together.*

6.5 Suggestions on how to improve Health Status of Respondents

This theme focuses on participants' suggestions on what their friends and families can do to enhance their psychological state, increase their participation in social events and eventually help them reduce their weights. This focused on three broad themes: 1) lifestyle change; 2) counselling, and; 3) formation of social support group.

6.5.1 Lifestyle change

Participants mentioned that their friends and families can help them reduce their weight by giving them healthy foods (including fruits), giving them small portion sizes, and helping them engage in rigorous physical activities. Particularly, about half of the participants said that parents and school canteen should desist from giving them oily foods, but should provide more fruits and vegetables.

> *They should stop preparing oily foods, they should advise us to eat more vegetables and smoothies.* ***[Girl, APS, Junior High School 1]***
>
> *They should avoid selling oily foods to us and give us good foods that are not oily foods and more vegetables and fruits is good* ***[Boy, UBS, Class 5 BMI 55]***

6.5.2 Counselling

Some mentioned that they have lost their confidence as a result of being obese. They suggested that there is a need to organise counselling for such people.

> *Most fat people tend to be antisocial because of how they look so I think they should provide counselling for people like that* ***[Girl, Aps, Junior High School 2]***
>
> *With the school they can help children with weight problems by bringing counsellors to advise children.* ***[Girl, Aps, Junior High School 3]***

6.5.3 Social support group

Some of the participants mentioned that forming and organizing clubs for obese people can help them in a lot of ways. Their narratives suggested that these clubs/social support groups should be a place where obese people can get tips and advice on how to lose weight and maintain a healthy lifestyle. Additionally, they mentioned that this group should be a place where they could advise each other regarding the appropriate dietary intake and portion sizes.

> *They can organize a club with big people to advise us on the measures on how to lose weight.* ***[Girl, APS, Junior High School 1]***
>
> *Maybe they have talents that they want to show to people like our type but because of their weight they are not able to express their feelings, so they can form a club for them or something.* ***[Girl, UBS, Junior High School 2]***

6.5.4 General health concerns

Respondents were asked if they had any health issues pertaining to their weight. Two of them indicated that they had high blood pressure. One mentioned she had asthma, another mentioned ulcer and another mentioned chronic catarrh. Research has shown that childhood obesity has been linked to numerous medical conditions. These conditions include, but are not limited to, fatty liver disease, sleep apnea, Type 2 diabetes, asthma, hepatic steatosis (fatty liver disease), cardiovascular disease, high cholesterol, cholelithiasis (gallstones), glucose intolerance and insulin resistance, skin conditions, menstrual abnormalities, impaired balance, and orthopedic problems (Niehoff, 2009; American Academy of Pediatrics, 2014)

> Do you have any health issues with regards to your weight?
>
> R: I have high blood pressure so I am now on medication ***(Boy, UBS Junior High School 2)***

6.6 Discussion of Results

6.6.1 Psychological outcome of obesity

Various psychological outcomes were mentioned by the respondents that were as a result of their obese status. Some of the outcomes included: psychological discomforts (sadness, loneliness, nervousness etc), name calling, reduced class participation, effect on academic performance and effect on physical education. For the majority, they concluded that their body weight caused them some psychological discomfort and this involved a negative sense of self. The strength of the way they behave when interacting with people as result of being obese was further showed by the language used which was often highly sensitive such as “sad”, “unhappy” and “not getting close to others”, among others. The minority, however, felt that their weight had no or little impact on

the way they behave when interacting with others. They used words like “I don’t care” and “I feel normal”. Again, with regards to how the children felt personally about their body size, most of them asserted that their body size made them feel “sad”, “scared” and “nervous”. They felt if probably they were slimmer like others, they would not have such negative sentiments towards their body size.

Previous research from most developed countries such as the United States and some European countries have emphasized the fact that being obese as a child can cause some psychological discomfort to children. This can affect the way a child behaves when interacting with others and can cause one to have a negative image of how one’s self. Experiencing low self-esteem can translate into feelings of shame about their body size, making them hate the way they look using words like “sad”, “unhappy”, “disgust”, “afraid”, among others. This can lead to a lack of self-confidence causing these obese children to feel sad or unhappy about themselves and sometimes they tend to have suicidal thoughts as well (Pulgaron, 2013; McClanahan et al., 2009; Grilo, 1994). Comparatively, it can be noted that the psychological discomfort of children found in studies conducted in the Western world is similar to the results from this study. In both contexts, children usually have a negative emotional feeling about themselves concerning being obese. Some of these feelings include unhappiness, low self-esteem, and sadness when interacting with others. However, studies also revealed that children in developed countries might become extremely depressed about their body weight, which can also lead to them suffering from sleep disorders, negative self-esteem, anxiety, and suicidal thoughts because of the emotional problems they face when interacting with others. Whilst, a majority of those in this present study expressed negative feelings such as feeling unhappy, sad, and isolation, some however, did not care about the way they looked

when interacting with others, which made them indifferent. In effect, therefore, the negative psychological effects, though present in this context, were less severe than in western contexts.

Further, the results of this study showed that the children felt their obese nature had reduced their participation in class and school activities. Some of the children showed that they were uncomfortable in class because of their weight. They feared that when they talk in class they will be laughed at when answering questions and that had affected their confidence levels, making them shy and nervous in class. In addition, some of the children go to the extent of even absenting themselves from school programs that are beneficial to them with the fear of being laughed at. Nevertheless, a few children participated in school and class activities irrespective of their body weight.

A few studies have attributed obesity directly with a child's comfort in school. It showed that obese children are usually shy to talk in class with the fear of being teased or made fun of and this in a way affects their confidence level, making some perform badly in their academic work in school (Carey et. al., 2015; Gibson, 2008). Again, a longitudinal study conducted by Gibson (2011) in the US showed that obese children were more likely to be socially isolated and less likely to be nominated as friends by their peers, compared to average-weight students. These obese children were more likely to be teased or bullied by their peers in school, making them isolate themselves from their friends in school and causing them discomfort in school at times. In some cases, some children skipped school with the fear of being teased and this sometimes affected their academic outcome in general (Kovalskys et *al.*, 2016). The findings from studies in developed countries are similar to the responses of the respondents in this present study. In both settings the children were uncomfortable in school with the fear of being teased and this caused some to be shy, socially isolated from peers and experience poor academic performance, to mention a few.

Furthermore, the participants described their experiences with being called funny names by others as a result of being obese. The use of language such as “obolo”, “bull”, “oboshie” and “the fat one”, among others, to describe them made them feel uncomfortable about the way they looked. The children again mentioned how they were subjected to negative comments and hurtful teasing about the way they looked from siblings, parents, classmates and peers. Such comments can affect them psychologically, resulting in awkward behaviour. Some of the outcomes of the negative comments included: being angry, sad, aggressive, and bullying others. A study by Clementi (2010) is similar to this present study where obese children were called names like “bulb”, “freak”, among others. Also, research has shown that sometimes, obese children become aggressive and bullies as a defence mechanism when they are being teased (Rankin et al., 2016). Negative comments can also cause depression in children, which sometimes brings about suicidal thoughts because the comments make them feel worthless. One distinct difference between the results from children studied in the Western world and those in this study is that the children in this study did not disclose that they became depressed or had thoughts of suicide when they heard negative comments about themselves compared to the children in developed countries. Furthermore, a few, of the children in this study did not care about the names they were being called because they had verbal affirmation from their parents, and so they were quite confident in themselves. Traditionally, in the Ghanaian setting, being big is associated with beauty and wealth. This is in contrast with a study by McClure et. al.,(2010) where parents in western countries preferred thinner children and actually ridiculed their own children for being obese, causing greater damage to their child's self-esteem.

A majority of the participants described that their weight did not prevent them from being physically active. However, a minority described how their weight prevented them from being

physically active. Some asserted that they easily get tired when they run. Others too exempted themselves from physical activity in school to prevent them from being laughed at. Studies are in line with these findings, which showed that obese children are less likely to engage in healthy behaviours such as physical activities. They do this because some do not have the stamina to do vigorous activities, while others also avoid it to prevent them from being teased by peers and others (Rankin et al., 2016; Boan et. al., 2004). However, in actual sense, comparing the physical activity opportunities in the developed counties to the developing countries of which Ghana is inclusive, there seem to be fewer opportunities for physical activity as parks, green spaces and bike paths are fewer in lower income neighbourhoods, thus limiting the opportunity for outdoor physical activities (Opuni-Frimpong, 2015).

6.6.2 Social outcome of obesity

Participants, again, described how their obese status had caused them to be socially isolated and neglected by classmates and others. The majority reported that the reactions of others and even their expected reactions of others left them feeling neglected and stigmatized. They also stated how they were being harshly judged, and that their friends felt certain activities such as sports were open to only thinner people. A minority, however, described how that they did not feel neglected but rather they felt friends and family had been caring and supportive. Previous research has described a series of ways in which obesity generates enacted stigma. Also, negative stereotypes attached to obesity can result in the obese children feeling isolated, neglected and stigmatized. Again, studies from developed countries such as the USA have shown that obese children usually see themselves as the target of criticism, leading them to withdraw from peer activities. These things are potential risk factors for later suicidal thoughts and mental health problems such as

depression and anxiety, to name a few (Tiggemann, 2005;Clementi, 2010; Tiggemann & Rothblum, 1988; Matz, Foster, Faith & Wadden, 2002).

Also, the participants talked about their interaction with others. The results showed that most of the children had a good and friendly interaction with their friends and families. They believed that their weight status has not affected their interaction with others. They deemed their families and friends to be supportive and caring regardless of their obese status. Research has shown that not all obesity experiences are negative. Some people have friends who are supportive and caring. Some also felt confident within themselves and were able to interact freely with others regardless of their weight status (Ayloo, Thompson and Choudhury, 2015; Clementi, 2010). This is something that cuts across both developed and developing countries.

6.6.3 Suggested support to improve health status

This theme examines the strategies that respondents deem appropriate in helping those who are obese to deal with their condition with regards to support from family, schools, and individuals who have similar stature. Three main themes emerged from the data. They are; lifestyle, counselling and social support groups.

Concerning lifestyle, majority of the children indicated that nutrition and sedentary life was a major cause of obesity. They suggested that their school serve them with nutritious foods, such as meals that contain more vegetables and not oily foods. Again, participants suggested that physical activity be made compulsory for all. Similarly, for the family they suggested their parents and guardians feed them with more vegetables and fruits and avoid oily food and also reduce their food portions. They also suggested their families should encourage them to exercise more. For the individual suggestions they suggested that the obese children need to encourage themselves to be bold and also eat good food and exercise a lot.

Some suggested that there is a need for their schools to organise counselling sessions for obese children with psychosocial challenges. Lastly, participants mentioned that forming and organizing clubs for obese people can help them in many ways. Their narratives suggested that these clubs/social support groups should be a place where obese people can get tips and advice on how to lose weight and maintain a healthy lifestyle. Additionally, they mentioned that this group should be a place where they could advise each other regarding the appropriate dietary intake and portion sizes.

The results imply that there is no standard support system available for these children to help in managing their obese status, unlike in the developed world where there are support systems such as professional counsellors, rehabilitation homes, among others, are readily available to help children manage their obese nature.

6.6.4 General health concerns

Respondents were asked if they had any health issues pertaining to their weight. Two of them indicated that they had high blood pressure. One mentioned she had asthma, another mentioned ulcer and another mentioned chronic catarrh. Research has shown that childhood obesity has been linked to numerous medical conditions. These conditions include, but are not limited to, fatty liver disease, sleep apnoea, Type 2 diabetes, asthma, hepatic steatosis (fatty liver disease), cardiovascular disease, high cholesterol, cholelithiasis (gallstones), glucose intolerance and insulin resistance, skin conditions, menstrual abnormalities, impaired balance, and orthopaedic problems (Niehoff, 2009)

In this study however, just a few children had some NCDs and other health issues in relation to their obese nature. But children in the developed countries have a number of NCDs and other health issues with regard to their obese nature.

6.7 Chapter Summary

There seem to be some similarities and differences with regards to these challenges when compared to other studies conducted on children in the Western world. As such, in dealing with obesity in the Ghanaian setting, different interventions should be applied due to the differences in the psychosocial outcomes of the children.

In summary, it can be said that majority were females and the age group with the highest participants were those aged between 12-16 years. Most of the participants belonged to the Akan ethnic group, followed by Ga/Dangme and the other ethnic groups. Majority of the participants were Christians.

Three main organising themes emerged from this study on psychosocial effects of obesity of children in Achimota and University of Ghana Basic Schools. They were "psychosocial challenges" (psychological and social issues), "suggested support" and "general health", with each of them having a number of basic themes linked to them.

With regards to psychosocial challenges faced by the obese children, they stated that being obese made them feel sad, nervous, unhappy, prevented them from engaging in school and class activities and some even said it had affected their academic performance, among others, and all these are similar to what has been found on psychosocial effects of child obesity, as discussed above. However, there were some differences in what this study found. Some studies have found that being obese can cause children to develop high levels of depression and in some cases, children develop suicidal thoughts because of how they are being treated by others for being obese. Nevertheless, these findings from research did not come out in this present study. With regards to

suggested support that can help obese children maintain a healthy weight status, three main themes emerged which were; lifestyle, counselling and social support groups. They believed that this can help obese children live a healthy life, and this is in line with what other studies have also found.

It can be seen that these findings are in line with the theories and framework underpinning this study. Firstly, with regards to nutrition transition theory which looks at changes or shifts in our dietary pattern which has also contributed to the onset of some diseases like obesity, and from the views of the children with regards to what they think can improve their health under suggested support, it was revealed that most of the children linked obesity to lifestyle changes, mainly to poor diet and sedentary lifestyle. The children revealed that calorie-dense foods and being physically inactive are two of the main causes of obesity and even suggested that in order to live a healthy life, it is very important they were fed with healthy meals both at school and at home and also be encouraged to engage in physical activity. With regards to healthy behaviour change which says that individuals are more likely to display a behaviour if they hold favourable attitudes or perceptions towards performing the behaviour (Wang et al., 2008). The study again showed that obese children tend to behave in a certain manner once they are being treated in a manner that is not favourable to them. This can also be linked to the findings of the quantitative study where how parents perceive their children and how the children also perceive themselves predict psychosocial challenges in obese children. Furthermore, the attachment theory helps in understanding social relationships and the relevance of such relationships on the social, emotional, cognitive and psychological development of obese children. This study showed that children who did not feel attached or accepted by their social environment (friends and families) tend to develop certain negative emotions towards themselves which in a way affects the way they behave and act. With regards to the social exchange theory, this qualitative study revealed that children are indeed only

attracted to persons who grant them a well and meaningful life. Some of these children did not associate themselves with people who did not grant them any meaningful life, so they either resort to being lonely or being around friends who accepted them for who they are, although a few mentioned that they were accepted by their friends for who they are because their friends were in the same weight range as them. This therefore shows that the theories and framework used in this study are linked to the findings of the study.

CHAPTER SEVEN

SUMMARY OF MAJOR FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction

This chapter concludes the study by providing a summary of the major findings and conclusions from the study. These findings serve as a basis for policy and research recommendations.

This present study sought to understand the psychosocial challenges children face due to being obese in University and Achimota Basic Schools in Accra. The main objective was to examine the effect of childhood obesity on the psychological and social wellbeing of children in University and Achimota Basic Schools in Accra. A mixed method research approach was undertaken for the study.

First, quantitative data were collected by administering a structured questionnaire to 452 boys and girls from the ages of 8 to 16 years in the two schools. The prevalence of child obesity in the two schools was determined using frequencies, means and percentages. The BMI, based on the height and weight of the children, was used as a measure of obesity. For the purpose of analysis, obesity was looked at in two forms: actual obesity which was determined by recoding the BMI variable into four categories (Underweight, Normal Weight, Overweight, Obese) and children's perceived obesity was also categorized into four groups (Slim, Somewhat plump, Plump, Very plump).

In investigating the relationship between the socioeconomic and demographic characteristics of children and psychosocial wellbeing, crosstabulations between the relevant variables were conducted and the statistical significance of these crosstabulations were used to test for independence between the variables. The demographic and socio-economic variables were the independent variables. A bivariate analysis was used to test for association between child BMI

status, child perceived weight, age, sex, living arrangement, school, parental marital status and mother's occupation against their psychosocial outcome.

The binary logistic regression analysis was performed to determine if childhood obesity was significantly associated with the psychosocial well-being of the children.

7.2 Summary of Major Findings

For the first objective, *Prevalence of obesity among children in Primary four to Junior High School three in University and Achimota schools,* Firstly, the overall prevalence of obesity alone in the two schools is 8.8%. However, the combined overweight and obesity in the two school was 19.6%, with University of Ghana Primary School having a higher prevalence than Achimota School.

With regards to perceived weight, aggregating the results shows that, more than half of the students perceived themselves as slim while close to two quarters perceived themselves as plump. With regards to the second objective, *Association between the child's characteristics and parental characteristics and the children's psychosocial wellbeing*, the findings show that age of child, school of child, living arrangement of child and parental marital status has a significant association with the child's psychosocial wellbeing.

The relationship between respondents' weight status and their psychosocial wellbeing, objective four, the binary logistic regression results showed that the measured weight status (BMI) of the child predicts their psychosocial wellbeing**.** Lastly, for the final objective, *The lived experience of obese children concerning their psychosocial wellbeing,* tFourthly, from the qualitative results, three main organizing themes emerged: Psychosocial challenges (psychological and social challenges), Suggested support and General health. With psychosocial challenges, six basic themes emerged, with suggested support three basic themes emerged and lastly with general health issues, five main themes emerged. All the themes were in line with what other studies have found with regards to obesity and

psychosocial challenges of children. However, there were a few findings that were peculiar to studies in the developed countries as compared to those in this study.

7.3 Conclusion

This study set out to investigate the relationship between obesity (actual and perceived) and children's psychosocial wellbeing, and it was conducted in two selected schools in Accra, Ghana. Most studies conducted on child obesity and its psychosocial consequences have revealed that obese children face some emotional disorders which can be detrimental to their wellbeing and these studies have been predominantly conducted in the developed countries where there is high prevalence of child obesity with just a few in developing countries, of which Ghana is inclusive, where obesity is now an emerging issue. The main aim of this study was therefore to use both quantitative and qualitative methods to elicit information on how obesity and other factors are likely to affect a child's psychosocial life, and also to understand the lived experience of these obese children. At the end, this aim was accomplished in spite of the limitations faced.

The overall prevalence of obesity in the two schools is high. The combined overweight and obesity prevalence is also very high. This prevalence can be compared to rates in the United States of America. According to CDC (2017) the rate of obesity in the United States of America is 18.6% and that of this present study was 19.7%, which indicates that indeed there is high prevalence of obesity in these two schools.

More so, the study showed that actual obesity predicted good psychosocial wellbeing among the obese children. Nevertheless, how children perceive their weight status, especially those who perceived themselves to be plump and very plump, tend to have poorer psychosocial wellbeing. This implies that having a poor psychosocial wellbeing is more dependent on how children perceive their weight than their actual BMI status.

The age and school of the child also predicted poor psychosocial wellbeing of the children. Nevertheless, ethnicity, child living arrangement, parental marital status and mother occupation, did not predict any form of psychosocial outcome in the children

In addition, children in Achimota and University of Ghana Basic Schools suffered from these psychosocial challenges: 1) psychological discomfort; 2) reduced class participations; 3) name calling; 4) effects on school performance; 5) effect on engaging in physical activities, and 6) reduced participation in social events.

In conclusion, it can be said that the children who are obese face fewer psychosocial challenges. Child perceived weight status rather was found to predict poor psychosocial wellbeing. Further, age and school also contribute to children having psychosocial challenges.

7.4 Policy Recommendations

From the findings and conclusions of the study, the following recommendations are made:

First, the study revealed a high prevalence of overweight/obesity in the two schools, it is therefore recommended that the schools develop school-based intervention programs aimed at reducing child obesity. The schools should strengthen physical education and nutrition related courses in the curricula of the students. This will help the children to understand the benefit of eating well and being physically active. It is also important to teach children coping skills to overcome psychological stresses created by peers both at home and in school

Secondly, it is recommended that these basic schools should improve nutrition by including healthy food options in their menu at the canteens and eliminate the sale of unhealthy foods that are likely to cause obesity in the children. In addition, to improve activity, there is the need for the school to integrate activities that involve both obese and non-obese children.

It is further recommended that a professional child psychologist or trained counsellor be stationed or made available in each of the schools (specifically University of Ghana Basic School, since the children in that school have a poorer psychosocial wellbeing than Achimota Basic School) to periodically screen and counsel the obese children, especially those in their teens and girls who suffer from greater psychosocial challenges.

Furthermore, for policy implications, the study recommends that government and public policymakers should mandate school-based health literacy such as healthy eating and daily physical education, as well as school programs that promote an anti-teasing and bullying environment. This will help improve the psychosocial wellbeing of the children.

Finally, the researcher recommends the need for further studies to be conducted to find out how parents are managing the psychosocial challenges faced by their obese children. An appropriate standard should also be developed to accurately measure perceived weight status of children, and research should be extended to other schools across the country to obtain first-hand information about the psychosocial challenges obese children face.

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APPENDICES

APPENDIX A

Parental Consent Form

UNIVERSITY OF GHANA BASIC

Official Use only
Protocol number

Ethics Committee for Humanities (ECH)

PARENTAL CONSENT FORM

Section A- BACKGROUND INFORMATION

Title of Study:	Child Obesity and its Associated Social and Psychological Effects of children in Basic Schools in Ghana
Principal Investigator:	Lily Owusu, Regional Institute for Population Studies, P. O. Box LG 96, Legon, Mobile: 0242144197 Email: lyni1987@gmail.com
Certified Protocol Number	

Section B– CONSENT TO PARTICIPATE IN RESEARCH

General Information about Research

My name is Lily Owusu from the Regional institute for Population Studies, University of Ghana basic, Legon. I am doing a study entitled: Child Obesity and its Associated Social and Psychological effects of Children in Basic Schools in Ghana. You are being asked to kindly allow your ward to take part in this research because I am trying to learn more about the psychological and social problems children face as a result of being obese.

If you agree to allow your ward to take part in this study, your ward will be interviewed for about 40 minutes to an hour. I will ask your ward some questions about his or her body image and the social and psychological effect it has on you as a child. Everything we discuss with your ward will be kept private and will not be shared with a third party.

You will also be asked to sign on this form. You will be given a copy of this form. This consent form might contain some words that may not be familiar with you. Please ask me to explain anything you may not understand.

Benefits/Risk of the study

The issues that will be discussed with your ward in this study will help to gain a better understanding of the psychological and social challenges that he/she encounters due to their obesity status. This would help to ensure that psycho-social needs as far as their obesity status is concerned are addressed. In this study, your ward will not be involved in any situation that will be harmful. However, your ward may become emotional when recounting his/her experiences with his/her peers regarding his/her obese status. Apart from this, we do not think there are any other risks associated with participation in this study.

Confidentiality

The information collected will be kept confidential. No one will be able to know how he/she responded to the questions apart from the interviewer. Identity numbers will be used instead of names. Your ward will not be named in any reports. The right way will be followed to protect his/her information. All the data collected will be kept in a secured data base for at least five years and discarded. Access will be limited to the researcher.

Compensation

If you agree for your ward to be interviewed, your ward will receive a gift of stationery (an exercise book and pens) at the end of the interview

Withdrawal from Study

You are free to decide if you want your ward to be in this research. His/her participation is entirely voluntary. Your decision will not affect any service and benefits your ward would normally receive.

Contact for Additional Information

If you have any concerns regarding this study, you may contact: Lily Owusu, Regional Institute for Population Studies, University of Ghana basic on 0302-500-274 or 0242144197.

If you have any questions about your rights as a research participant in this study you may contact the Administrator of the Ethics Committee for Humanities, ISSER, University of Ghana basic at ech@isser.edu.gh / ech@ug.edu.gh or 00233- 303-933-866.

SECTION C- VOLUNTEER AGREEMENT

I have read all of the above, asked questions, received answers regarding the participation of ward in this study, and am willing to give consent for him/her to participate in the study. I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to my ward. Upon signing this consent form, I will receive a copy for my personal records.

_____

Name of Participant

_____ _____

Signature of Participant Date

If participants cannot read and or understand the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

_____

Name of witness

_____ _____

Signature of witness /Mark Date

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

APPENDIX B

Child Assent Form

UNIVERSITY OF GHANA BASIC

Official Use only
Protocol number

Ethics Committee for Humanities (ECH)

CHILD ASSENT FORM

Section A- BACKGROUND INFORMATION

Title of Study:	Child health and wellbeing among basic school students in Accra, Ghana
Principal Investigator:	Lily Owusu, Regional Institute for Population Studies, P. O. Box LG 96, Legon, Mobile: 0242144197 Email: lyni1987@gmail.com
Certified Protocol Number	ECH 005/17-18

Section B– CONSENT TO PARTICIPATE IN RESEARCH

General Information about Research

I am Lily Owusu from the Regional institute for Population Studies, University of Ghana basic, Legon. I am doing a study entitled: Child health and wellbeing among basic school students in Accra, Ghana. You are being asked to take part in this research because I am trying to learn more about the physiological and social problems children face as a result of your body weight.

If you agree to be in this study, you will be interviewed for about 40 minutes to an hour. I will ask you some questions about your body image and the social and psychological effect it has on you as a child). Everything we have discussed will be kept private and will not be shared with another person.

You will also be asked to sign on this form. You will be given a copy of this form. This assent form might contain some words that may not be familiar with you. Please ask me to explain anything you may not understand.

Benefits/Risk of the study

The subject that will be discussed will help give a better understanding into child obesity and the psychological and social challenges children face. Findings from this study will be recommended to the government and interested non-governmental bodies to formulate policies and programmes that will help children overcome psychological and social challenges as a result of body image. Participation in this study involves minimal risk. Some of the things that will be discussed with you may be a little uncomfortable because they involve questions about you and your body weight. If you become uncomfortable because of this interview, we will pause for a few minutes and allow you to compose yourself. You will be reminded that you can choose not to answer any question or even stop the interview altogether. The interview will only continue if you agree to go on with it.

Confidentiality

Your information will be kept confidential. No one will be able to know how you responded to the questions apart from the interviewer. Identity numbers will be used instead of names. You will not be named in any reports. The right way will be followed to protect your information. All the data collected will be kept in a secured data base for at least five years and discarded. Access will be limited to the researcher.

Compensation

You will receive a small gift of stationery (an exercise book and pens) as a token of appreciation for your participation and contribution to this study, at the end of this interview.

Withdrawal from Study

You are free to decide if you want to be in this research. Your participation is entirely voluntary. Your decision will not affect any service and benefits your ward would normally receive.

Contact for Additional Information

If you have any concerns regarding this study, you may contact: Lily Owusu, Regional Institute for Population studies, University of Ghana basic on 0302-500-274 or 0242144197.

If you have any questions about your rights as a research participant in this study you may contact the Administrator of the Ethics Committee for Humanities, ISSER, University of Ghana basic at ech@isser.edu.gh / ech@ug.edu.gh or 00233- 303-933-866.

SECTION C- VOLUNTEER AGREEMENT

I have read all of the above, asked questions, received answers regarding the participation of ward in this study, and am willing to give my assent to participate in the study. I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to me. Upon signing this consent form, I will receive a copy for my personal records.

_____

Name of Child

_____ _____

Signature of Child Date

If participant cannot read and or understand the form themselves, a witness must sign here:

I was present while the benefits, risks and procedures were read to the volunteer. All questions were answered and the volunteer has agreed to take part in the research.

_____

Name of witness

_____ _____

Signature of witness /Mark Date

I certify that the nature and purpose, the potential benefits, and possible risks associated with participating in this research have been explained to the above individual.

APPENDIX C

UNIVERSITY OF GHANA
REGIONAL INSTITUTE FOR
POPULATION STUDIES

Ref. No.:.....

October 9, 2016

The Headteacher
Universty Basic School
P.O.Box LG 15
Legon,Accra

Dear Sir/Madam,

LETTER OF INTRODUCTION

This is to introduce you to Lily Owusu a third year Doctor of Philosophy (PhD) candidate in Population Studies at the Regional Institute for Population Studies (RIPS), at the University of Ghana.

Ms. Owusu is writing her thesis on the topic *'Child Obesity and its Associated Social and Psychological effect on Children in Basic Schools in Ghana'*. We would be grateful if you allow her collect data in your school.

We are available for any clarification you may require and are counting on your kind co-operation.

Yours sincerely,

Prof. Samuel Nii Ardey Codjoe
Director

COLLEGE OF HUMANITIES
• P. O. Box LG 96, Legon, Accra, Ghana. • Telephone: +233 (0) 302 500 274 / 0303 976 266 / 0289 601 806
• Email: rips@ug.edu.gh • Website: www.rips-ug.edu.gh

APPENDIX D

UNIVERSITY OF GHANA
REGIONAL INSTITUTE FOR
POPULATION STUDIES

Ref. No.:.....

October 9, 2016

The Headteacher
Universty Basic School
P.O.Box LG 15
Legon,Accra

Dear Sir/Madam,

LETTER OF INTRODUCTION

This is to introduce you to Lily Owusu a third year Doctor of Philosophy (PhD) candidate in Population Studies at the Regional Institute for Population Studies (RIPS), at the University of Ghana.

Ms. Owusu is writing her thesis on the topic *'Child Obesity and its Associated Social and Psychological effect on Children in Basic Schools in Ghana'*. We would be grateful if you allow her collect data in your school.

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APPENDIX E

URBAN SCHOOLS PHYSICAL ACTIVITY STUDY

QUESTIONNAIRE

IDENTIFICATION		
STUDENT ID _____ ACADEMIC YEAR _____ SCHOOL _____		☐☐☐☐☐ DAY ☐☐ MONTH ☐☐ YEAR 2016 INT CODE ☐☐
SUPERVISOR NAME _____ ☐☐ DATE _____		KEYED BY ☐☐

PART II		
We are going to ask you some questions. Please do not write your name anywhere on this questionnaire. For each question, select the **one** response you find best suits you and write the corresponding number in the boxes provided on the right. Where there is a dash please write out clearly the response. Thank you for your time.		
SECTION 1: TELL US ABOUT YOURSELF		
Q. NO	**QUESTION**	**RESPONSE**
100.	Are you a boy or girl? **1.** Boy **2.** Girl	☐

102.	When is your date of birth?	Day ☐☐ Month ☐☐ Year ☐☐☐☐
103.	How old are you?	☐☐
104.	Last academic year, were you a student in this school? **1.** Yes **2.** No	☐
105.	What class/form are you in right now?	**Class** ☐☐ **Form** ☐☐
106.	Which class/form were you in last academic year?	**Class** ☐☐ **Form** ☐☐
107.	What ethnic group do you belong to? **1.** Ga **2.** Akan **3.** Ewe **4.** Mole-Dagbani **5.** Other _____	☐

SECTION 2: TELL US ABOUT YOUR HOUSEHOLD – WHERE YOU LIVE MAJORITY OF THE TIME AND THE PEOPLE YOU LIVE IN THE SAME HOUSE WITH

201.	Do you live with your biological mother? **1.** Yes **2.** No	☐
202.	Do you live with your biological father? **1.** Yes **2.** No	☐
203.	Is your biological mother married to your biological father? **1.** Yes **2.** No	☐
204.	Is your biological mother married? **1.** Yes **2.** No	☐
205.	Is your biological father married? **1.** Yes **2.** No	☐
206. 206a. 206b. 206c.	How many brothers and sisters do you have? How many are younger than you? How many live with you? How many are older than you?	☐☐ ☐☐ ☐☐ ☐☐
207.	What work does your mother do? **1.** Not working **2.** Trading **3.** Hairdressing **4.** Sewing **5.** Selling food **6.** Other _____	☐
208.	What work does your father do?	☐

	1. Not working **2.** Trading **3.** Fishing **4.** Other _____	
209.	Is your main guardian (the person who takes care of you most of the time) someone other than your biological mother or father? 1. Yes 2. No	☐
209a.	Who is that person? **1.** Sister **2.** Brother **3.** Grandmother **4.** Grandfather **5.** Aunt **6.** Uncle **7.** Stepmother **8.** Stepfather **9.** Cousin **10.** Other relative **11.** Non-Relative	☐
209b.	What work does that person do? **1.** Not working **2.** Trading **3.** Fishing **4.** Other _____	☐
210.	What language do you speak at home most of the time? **1.** Ga **2.** Akan **3.** English **4.** Other_____	☐
211.	What other language do you speak at home? **1.** Ga **2.** Akan **3.** English **4.** Other_____	☐
212.	Do you live with your grandmother? **1.** Yes **2.** No	☐
213.	Do you live with other relatives? **1.** Yes **2.** No	☐
213a.	Who? _____ _____	
214.	How many rooms are there in your house?	☐☐
215.	How many people live in your household?	☐☐
216.	Does anyone in your household own a bicycle? **1.** Yes **2.** No	☐
217.	Does anyone in your household own a motorcycle? **1.** Yes **2.** No	☐
218.	Does anyone in your household own a car?	☐

	1. Yes **2.** No	
219.	Does anyone in your household own a boat/canoe? **1.** Yes **2.** No	☐
220	Does anyone in your household own a mobile phone? **1.** Yes **2.** No	☐
221	Does anyone in your household own a laptop/computer? **1.** Yes **2.** No	☐
222.	Is there a radio in your house? **1.** Yes **2.** No	☐
223.	Is there a television in your house? **1.** Yes **2.** No	☐
224. 224a.	Do you have books in your house? **1.** Yes **2.** No About how many books? **1.** 1 book **2.** 2 books **3.** 3 books **4.** 4 books **5.** 5 books **6.** 6 – 10 books **7.** More than 10 books	☐ ☐
225. 225a. 225b. 225c.	Do you yourself own any books? **1.** Yes **2.** No How many textbooks? **1.** 1 book **2.** 2 books **3.** 3 books **4.** 4 books **5.** 5 books **6.** 6 – 10 books **7.** More than 10 books How many other books? **1.** 1 book **2.** 2 books **3.** 3 books **4.** 4 books **5.** 5 books **6.** 6 – 10 books **7.** More than 10 books How often do you read at home? **1.** Hardly ever **2.** Sometimes **3.** Often	☐ ☐ ☐ ☐
226.	Does anyone in your house read the newspaper? **1.** Yes **2.** No **3.** Do not know a. How often? 1. Daily 2. Few times a week 3. Once in a while	☐ ☐
227. 227a.	Does anyone in your household help you with your homework? **1.** Yes **2.** No Who helps you most often? **1.** Mother **2.** Father **3.** Brother **4.** Sister **5.** Grandparent **6.** Aunt/Uncle **7.** Other _____	☐ ☐ ☐

227b.	Who else helps you? **1.** Mother **2.** Father **3.** Brother **4.** Sister **5.** Grandparent **6.** Aunt/Uncle **7.** Other _____	
228.	Where does your household most often get water to drink? **1.** Pipe at home **2.** Pipe outside home **3.** Sachet water **4.** Borehole **5.** Other _____	☐
229.	What fuel do you use to cook at home most often? **1.** Gas **2.** Electricity **3.** Firewood **4.** Charcoal **5.** Other _____	☐
230.	Do you have a toilet inside your house? **1.** Yes **2.** No	☐
	SECTION 3: TELL US MORE ABOUT YOURSELF AND THE THINGS YOU ENJOY	
301.	Do you enjoy coming to school? **1.** Yes **2.** No **3.** Do not know	☐
302.	What is your favourite subject? **1.** English **2.** Math **3.** Science **4.** Other_____	☐
303.	What is your least favourite subject? **1.** English **2.** Math **3.** Science **4.** Other_____	☐
304.	Do you find it difficult to understand what your teachers are teaching you? **1.** Never **2.** Not often **3.** Sometimes **4.** Very often	☐
305. 305a.	Do you have difficulty concentrating in the classroom? **1.** Never **2.** Not often **3.** Sometimes **4.** Very often Why do you have difficulty concentrating? (Choose up to 3) **1.** Hunger **2.** Sleepiness **3.** Things happening outside the classroom **4.** Difficulty understanding the teacher **5.** Other _____	☐ ☐☐☐
306.	Have you been caned in school this term? **1.** Yes **2.** No	☐

☐

306a. 306b.	How often? **1.** Almost daily **2.** Once or twice a week **3.** Once in a while What was the common reason? **1.** Lateness **2.** Disobedience **3.** Not doing classwork or homework **4.** Other_____	☐
307. 307a. 307b.	Do you sometimes stay at home instead of coming to school? **1.** Yes **2.** No How often? **1.** Very often **2.** Quite often **3.** Once in a while What do you do when you do not attend school? **1.** Play **2.** Work at home **3.** Work outside home **4.** Other_____	☐ ☐ ☐
308.	Do you think you are a good student? **1.** Yes **2.** No **3.** Do not know	☐
309.	How far in school do you want to go? **1.** Primary **2.** JHS **3.** SHS **4.** University **5.** Do not know	☐
310.	What work do you want to do when you grow up? _____	
311. 311a.	Do you know anyone currently who does that work? **1.** Yes **2.** No If yes, who? **1.** Relative **2.** Friend **3.** Neighbour **4.** Youth group leader **5.** Fictional character **6.** Celebrity	☐ ☐
312.	Read the following statement and circle the answer you feel describes you best **1.** Strongly disagree **2.** Disagree **3.** Agree **4.** Strongly agree a. I feel less important than others. …… b. I am very concerned about what other people (friends, teachers etc.) think about me. … c. I often think or say negative things about myself. …… d. I dislike trying new challenges or activities…… e. I am very concerned about my appearance (face, height, weight dressing etc.)……	☐ ☐ ☐ ☐ ☐

	f. I often feel sad…… ☐ g. I feel I have a number of good qualities. …… ☐ h. I take a positive attitude towards myself. …… ☐ i. I am fearful that I will do or say something that will make me look stupid. …… ☐ j. I feel I do not have much to be proud of. …… ☐ k. I find it difficult to hear criticism about myself…… ☐ l. I have been told I'm too sensitive. …… ☐ m. I am easily discouraged. …… ☐ n. On the whole I am satisfied with myself. …… ☐ o. I am easily embarrassed. …… ☐ p. I feel that I'm a person of worth, at least on an equal level with others around me. …… ☐

SECTION 4: TELL US A BIT ABOUT YOUR LIFE OUTSIDE OF SCHOOL		
401.	Do you belong to any youth groups or community clubs? **1.** Yes **2.** No	☐
401a.	How many? _____	☐☐
402.	How often do you attend religious services at church or the mosque? **1.** More than once a week **2.** Once a week **3.** Once or twice a month **4.** Once in a while **5.** Never	☐
403.	How long does it take you to get to school? **1.** Not long **2.** Quite long **3.** Very long	☐
404.	Do you walk to school every day? **1.** Yes **2.** No	☐
405.	How often do you drink minerals/ soft drinks on average? **1.** Daily **2.** Very often **3.** Sometimes **4.** Once in a while	☐
406.	How often do you eat sweets on average? **1.** Daily **2.** Very often **3.** Sometimes **4.** Once in a while	☐

407.	How often do you eat fruits on average? **1.** Daily **2.** Very often **3.** Sometimes **4.** Once in a while	☐
408.	Do you normally eat breakfast before school? **1.** Yes **2.** No	☐
409.	Do you normally eat lunch during/after school? **1.** Yes **2.** No	☐
410.	Do you normally eat supper after school? **1.** Yes **2.** No	☐
411. 411a.	Do you normally spend time before or after school doing housework? **1.** Yes **2.** No About how many minutes? _____	☐ ☐☐
412. 412a.	Do you normally spend time after school playing? **1.** Yes **2.** No About how many minutes? _____	☐ ☐☐
413 413a.	Do you normally spend time after school studying/doing homework? **1.** Yes **2.** No About how many minutes? _____	☐ ☐☐
SECTION 5: TELL US ABOUT THE THINGS YOU DO TO KEEP FIT		
501. 501a. 501b.	This term, have you been attending physical education (PE) classes? **1.** Yes **2.** No If yes, how many times a week usually? **1.** 0 times **2.** 1-2 times **3.** 3-4 times **4.** 5 times During your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)? **1.** Never **2.** Hardly ever **3.**Sometimes **4.** Quite often **5.** Always	☐ ☐ ☐
502.	In the last 7 days, what did you do most of the time during break time? **1.** Sat down (talking, reading, doing schoolwork) **2.** Stood around or walked around **3.** Ran or played a little bit **4.** Ran around and played quite a bit **5.** Ran and played hard most of the time	☐
503.	Were you sick last week, or did anything prevent you from doing your normal physical activities? **1.** Yes **2.** No a. If yes, what? _____	☐
504.	Do you do any of the following activities in your spare time (after school and weekends)? About how many times a week? **1.** 0 times **2.** 1-2 times **3.** 3-4 times **4.** 5-6 times **5.** 7 or more times	

	a. Skipping…… ☐ b. Rowing/canoeing …… ☐ c. Playing ampe …… ☐ d. Walking for exercise …… ☐ e. Bicycling …… ☐ f. Jogging/running …… ☐ g. Swimming …… ☐ h. Table Tennis…… ☐ i. Football …… ☐ j. Dance …… ☐	
505.	Which one of the following describes you best for the last 7 days? **1.** All or most of my free time was spent doing things that involve little physical effort **2.** I sometimes (1 — 2 times last week)did physical things in my free time (e.g. played sports, went running, swimming, bike riding etc) **3.** I often (3 — 4 times last week) did physical things in my free time **4.** I quite often (5 — 6 times last week)did physical things in my free time **5.** I very often (7 or more times last week) did physical things in my free time	☐
506.	Have you ever heard of the following: **1.** Yes **2.** No a. Heart disease …… ☐ b. Stroke? …… ☐ c. Diabetes? …… ☐ d. Hypertension (High blood pressure)? …… ☐ e. Cancer or a malignant tumor (breast, prostate, etc)? …… ☐ f. Arthritis? …… ☐ g. Liver disease? …… ☐ h. HIV/AIDS? …… ☐	

APPENDIX F

CHILD OBESITY AND ITS ASSOCIATED SOCIAL AND PSYCHOLOGICAL EFFECTS

In-depth interview for children

My name is Lily Owusu. I am conducting a study on Child Obesity. This study is designed for academic purpose to explore the psycho-social challenges children encounter regarding their body image**.** You are kindly requested to volunteer information by responding to this interview. You are however assured that information provided to complete this interview would be treated with the strictest confidentiality.

Start time: …… End time: ……

IDENTIFICATION		
STUDENT ID: _____ GRADE/CLASS: _____ SCHOOL Code: _____ HEIGHT (M): …….. WEIGHT (KG): ……		DAY MONTH YEAR 2 0 1 8 INT CODE
SUPERVISOR ☐☐ NAME _____ DATE _____		KEYED BY ☐☐

We are going to ask you some questions. Please do not write your name anywhere on this questionnaire. For each question, select the <u>one</u> response you find best suits you and circle the corresponding number. Thank you for your time.		CODE
	SECTION 1: TELL US ABOUT YOURSELF	
Q.NO	QUESTIONS	
QI1	Are you a boy or girl? 1. Boy 2. Girl	
QI2	What is your date of birth? (Write in full) d d m m y e a r	
QI3	How old are you now?	

QI4	What ethnic group do you belong to? 1. Ga/Dangme 2. Akan 3. Ewe 4. Mole-Dagbani 5. Other Specify……	
QI5	What is your Religion? 1. Christian 2.Muslim 3. Traditional 5. No Religion 6.Other specify ……	
	SECTION 2: TELL US ABOUT YOUR HOUSEHOLD – WHERE YOU LIVE MAJORITY OF THE TIME AND THE PEOPLE YOU LIVE IN THE SAME HOUSE WITH	
QI6	Whom do you live with? 1.Both parents (with or without siblings) (If circled 5 or 6 skip to question QI8) 2.Father only (with or without siblings) 3.Mother only (with or without siblings) 4.Step parent 5.Other relative 6. Other specify……..	
QI7	Marital status of Parent(s): 1. Never married 2. Married 2.Divorced 3. Separated 4.Widowed	
QI8	Marital status of Gurdian: 1. Never married 2. Married 2.Divorced 3. Separated 4.Widowed	
QI9	How many brothers do you have? Number [ ] , If Zero enter 0	
QI10	How many sisters do you have? Number [ ] , If Zero enter 0	
QI11	Where do you stay? …….	
QI12	What is your mother's/female guardian's educational background? 1. No education 2. Primary 3. Middle 4. Secondary 5. Tertiary	
QI13	What is your father's/ male guardian's educational background? 1. No education 2. Primary 3. Middle 4. Secondary 5. Tertiary	
QI14	What work does your mother do? 1. Not working 2. Trading 3. Hairdressing 4. Sewing 5. Teaching 6. Other specify_____	
QI15	What work does your father do? 1. Not working 2. Trading 3. Teaching 4. Other Specify_____	
QI16	What work does your female guardian do? 1. Not working 2. Trading 3. Hairdressing 4. Others specify___	
QI17	What work does your male guardian do? 1. Not working 2. Trading 3. Fishing 4. Other specify _____	
	Section 3 GENERAL INFORMATION ABOUT YOURSELF.I am going to ask you some questions about yourself. Please circle the one that best describes you. Thank you	
G1	What do you think about the way you look? Do you think you are? 1. Very Slim 2.Slim 3.Somewhat Plump 4. Plump 5. Very plump	
G2	What do your parents/Gurdian say about the way you look? Do they think you are? 1. Very Slim 2.Slim 3.Somewhat Plump 4. Plump 5.Very plump	
G3	How about your classmates? Do they think you are? 1. Very Slim 2.Slim 3.Somewhat Plump 4. Plump 5. Very plump	

G4	Do you enjoy coming to school? 1. Yes 2. No 3. Do not know? Why(Explain)…….…… ……	
G5	What is your favourite subject? 1. English 2. Math 3. Science 4. Creative Arts 5. Citizenship Education 6. ICT 7.Other specify_____	
G6	What is your least favourite subject? 1. English 2. Math 3. Science 4. Creative Arts 5. Citizenship Education 6. ICT 7. Other specify……_____	
G7	Do you belong to any youth groups in school, church or in your community? 1. Yes 2. No **(IF NO SKIP TO G10)**	
G8	How many? _____	
G9	Which ones do you belong to? State them ……..	
G10	How often do you attend religious services? (At church, mosque, etc) 1. More than once a week 2. Once a week 3. Once or twice a month 4. Once in a while 5. Never	
G11	How long does it take you to get to school? 1. Less than 10minutes 2. 10 – 20 minutes 3. 30 minutes – 1 hour 4. More than 1 hour	
G12	Do you walk from home to school every day? 1. Yes 2. No	
	Instruction: The following questions talk about your eating habits. Answer them exactly as it applies to you.	
G13	How often do you drink minerals/ soft (e.g. Coke, Fanta) drinks on average? a. Daily b. 4 times a week c. 2 times a week d. Once in two weeks e. Seldom- once a month	
G14	How often do you eat sweets (e.g. toffee, lollipops) on average? a. Daily b. 4 times a week c. 2 times a week d. Once in two weeks e. Seldom- once a month	
G15	How often do you eat fruits on average? a. Daily b. 4 times a week c. 2 times a week d. Once in two weeks e. Seldom- once a month	
G16	Do you normally eat breakfast before school? 1. Yes 2. No	
G17	Do you normally eat snack during school? 1.Yes 2.No	
G17	Do you normally take lunch during school? 1. Yes 2. No	
G18	Do you normally eat supper after school? 1. Yes 2. No	
G19	Do you normally spend time before or after school doing housework? 1. Yes 2. No IF NO SKIP TO G21	
G20	About how many minutes/hours? _____	
G21	Do you normally spend time after school playing? 1. Yes 2. No IF NO SKIP TO G24	
G23	About how many minutes/hours? _____	
	Instruction: The following question are about your participation in physical education activities. Answer them exactly as it applies to you.	

G24	This term, have you been attending physical education (PE) classes? 1. Yes 2. No IF NO SKIP TO G27	
G25	If yes, how many times a week usually? a. 0 times b. 1-2 times c. 3-4 times d. 5 times	
G26	During your physical education (PE) classes, how often were you very active (playing hard, running, jumping, throwing)? 1. Never 2. Hardly ever 3. Sometimes 4. Quite often 5. Always	
G27	In the last 7 days, what did you do most of the time during break time? 1. Sat down (talking, reading, doing schoolwork) 2.Stood around or walked around 3. Ran or played a little 4. Ran around and played quite a bit 5. Ran and played hard most of the time	
G28	Did anything prevent you from doing your normal physical activities? 1. Yes 2. No If yes Why (Explain)……. ……	

G29. Do you do any of the following activities in your spare time (after school and weekends)? **For each statement tick [√] the answer you feel describes you best.**

	Item	0 times	1-2 times	3-4 times	5-6 times	7 or more time
G29a	Skipping					
G29b	Rowing/canoeing					
G29c	Playing ampe					
G29d	Walking for exercise					
G29e	Bicycling					
G29f	Jogging/running					
G29g	Swimming					
G29h	Table Tennis					
G29i	Football					
G29j	Dance					
G30k	Watching TV					
G30l	Playing video games					
G30m	Piano lessons					
G31n	Sleeping					
G32o	Reading					

SECTION C PSYCHOLOGICAL WELL-BEING (Self-esteem)					
The following statements talk about your Self-esteem (how you value yourself). For each statement tick [V] the answer you feel describes you best. 1. STRONGLY DISAGREE 2. DISAGREE 3. NEUTRAL 4. AGREE 5. STRONGLY AGREE					
	1	2	3	4	5
SE1 I feel less important than others.					
SE2 I am very concerned about what other people (friends, teachers etc.) think about me					
SE3 I often think or say negative things about myself					
SE4 I dislike trying new challenges or activities					
SE5 I am very concerned about my appearance (face, height, weight dressing etc.)					
SE6 I often feel sad					
SE7 I feel I have a number of good qualities.					
SE8 I take a positive attitude towards myself.					
SE9 I am fearful that I will do or say something that will make me look stupid.					
SE10 I feel I do not have much to be proud of					
SE11 I find it difficult to hear criticism about myself					
SE12 I have been told I'm too sensitive.					

Thank you for agreeing to Participate in this Research

APPENDIX G

Dependent Variable

Adopted Rosenberg Self- Esteem Scale

>> Rosenberg's Self-Esteem Scale

	STATEMENT	Strongly Agree	Agree	Disagree	Strongly Disagree
1.	I feel that I am a person of worth, at least on an equal plane with others.				
2.	I feel that I have a number of good qualities..				
3.	All in all, I am inclined to feel that I am a failure.				
4.	I am able to do things as well as most other people.				
5.	I feel I do not have much to be proud of.				
6.	I take a positive attitude toward myself.				
7.	On the whole, I am satisfied with myself.				
8.	I wish I could have more respect for myself.				
9.	I certainly feel useless at times.				
10.	At times I think I am no good at all.				

Reset

Your score on the Rosenberg self-esteem scale is: .

Scores are calculated as follows:

- *For items 1, 2, 4, 6,* and *7:*

Strongly agree = 3

Agree = 2

Disagree = 1

Strongly disagree = 0

- *For items 3, 5, 8, 9,* and *10* (which are reversed in valence):

  Strongly agree = 0

  Agree = 1

  Disagree = 2

  Strongly disagree = 3

The scale ranges from 0-30. Scores between 15 and 25 are within normal range; scores below 15 suggest low self-esteem.

Appendix H

Qualitative Interview guide

How are you when you are with your family members? Do you feel comfortable, relaxed, and confident with them?

5. How do you feel about your body size/shape when compared to your classmates, siblings and other family members?

6. How, comfortable, are you when you are with your classmates and teachers? Do you talk in class? Do you answer questions? Do you go to the board to solve problems?

7. In what ways do you think your weight/the way you look has affected your ability to do well in school (smartness), go in front of the class and voice your opinions (confidence/boldness).

Psychological Distress

8. How do you think your body shape/size that is being big in

size affects your behaviour generally?

9. How would you describe your usual mood regarding your shape?

10. How would you describe your mood regarding your ability to be physically active?

11. How do you behave when you hear negative comments about your body shape/size?
How often do you attempt to protect yourself from these negative comments from classmates, teachers, family members?

12. Does your body size make you feel when you are in the midst of people?

Probe for the following separately;

a. Nervous

b. Panicked

c. Frightened

13. Describe your experience with regards to feeling nervous, panicked, frightened, and afraid and anxious about your shape when in the mist of people be it your class mates, family members, strangers etc

General

14. Tell be about any health issues you have which you suspect are due to your weight.

15. What are some ways you think Schools and Families can support children with health issues regarding their weight and size?

16. What are things young people can do to support themselves with regard to health issues regarding their weight and size?

17. Is there anything else you want to tell me?