

CORRELATES OF PERCEIVED PEER VICTIMIZATION AMONG ADOLESCENTS WITH SICKLE CELL DISEASE IN ABAKALIKI NIGERIA

BY

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fulfillment of the requirements for the Degree of Master of Science of the University of
Ibadan**

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DECLARATION

I hereby declare that neither this study nor any part of it has been submitted for the award of any diploma, degree or any other examination

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SUPERVISORS' ATTESTATION

This is to certify that we have supervised and reviewed this dissertation.

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KEY TO ABBREVIATIONS (ACRONYMS)

BMI	Body mass index
CNS	Central nervous system
Cm	Centimetre
EBSU	Ebonyi State University
FETHA	Federal Teaching Hospital Abakaliki
HBAA	Haemoglobin AA
HBAS	Haemoglobin AS
HBSS	Haemoglobin SS
HOD	Head of Department
kg	Kilogram
RBC	Red blood cell
SCA	Sickle cell anaemia
SCD	Sickle cell disease

ABSTRACT

Background: Sickle cell disease is a hereditary haematological disorder which affects the haemoglobin inside the red blood cell (RBC). It is characterized by sickling of the red blood cell leading to obstruction of small vessels, impairment of blood flow, shortened RBC survival, anaemia and other complications. Bullying is defined as a discrete form of proactive antagonism characterized by a power imbalance between the perpetrator and victim that classically involves recurrence. Adolescents with sickle cell disease have markedly lower weights and height than matched controls (for age and gender). Studies have established a positive correlation between low self-esteem and peer victimization. Limited research has been conducted to explore the prevalence or potential experience of peer victimization among adolescents with sickle cell disease, a chronic disorder known to affect physical appearance and maturation among children and adolescents. However studies have shown that sickle cell disease is associated with a lot of stigma (Horselsenberg *et al.*, 2016; Linda et al, 2017) and a huge psychosocial burden both on individuals with sickle cell disease (Thomas and Taylor, 2002) and their families and caregivers (Adegoke and Kuteyi, 2012). Anecdotal evidence suggests teasing and bullying are common complaints among school going children with SCD about 23% of the study population (Ohaeri and Shokunbi, 2002). This study is aimed at filling this gap in knowledge on the subject matter.

METHODOLOGY: This was a comparative cross-sectional study. The cases were from the sickle cell clinic of the Federal Teaching Hospital Abakaliki (FETHA) while the controls were from Ebonyi State University (EBSU) Secondary School, Abakaliki. The participants were aged 10- 19 years. The groups consisted of 100 cases (47 males and 53 females) and 100 controls (49 males and 51 females). The weight and height of the participants were measured using weighing scale and stadiometer respectively. All participants were evaluated with the socio-demographic

and health questionnaire, the Rosenberg self-esteem scale and the Multidimensional Peer Victimization Scale. Data were analysed using SPSS version 21. Descriptive statistics was used to find the prevalence of peer victimization among the two groups (cases and controls). The cases were adolescents with sickle cell disease who were attending the sickle cell clinic at FETHA while the controls were adolescents with normal haemoglobin types from EBSU secondary school Abakaliki. The difference between the two groups (cases and control groups) for categorical variables like gender, religion, educational level of participants, marital status of parents, mother's occupation, family type was obtained using Chi square. The differences in the mean scores of outcome variables like age, height, weight, peer victimization scores and self-esteem scores were obtained using t-test. The multiple linear regression and Pearson correlation were used to find the associations between the independent (height, weight, body mass index (BMI), self-esteem) and the dependent variables. All calculations were based on a significance level of $p < 0.05$.

Results: The prevalence of perceived victimization among SCD respondents was 18% compared to 14% among the controls group. The mean total victimization scores were significantly higher among SCD group compared to control group (15.67 ± 8.11 versus 11.70 ± 6.94 , $p < 0.05$). Both verbal and physical victimization were significantly higher among SCD respondents compared to controls ($p < 0.05$). Victimization was significantly higher among females ($p < 0.05$) than their male counterparts.

Victimization was also found to be more among the younger SCD respondents between age range 10-12 years compared to controls of the same age range. Both males and females of the SCD group weighed significantly less than their control counterparts. Bivariate analysis showed a negative correlation between victimization scores and age of respondents with SCD (Pearson

correlations: -0.437, $p < 0.05$). Also, a significant negative value correlation was observed between victimization scores and weight of respondents with SCD (Pearson correlation: -0.395, $p < 0.05$).

The mean total self-esteem score was 27.58 ± 3.32 and was significantly lower among the SCD group compared to the control group ($p < 0.05$).

Conclusion: I am a paediatric resident doctor. During my day to day practice I come in contact with patients with sickle cell disease. I became interested in this study because of the numerous psychosocial concerns of my patients including most importantly teasing due to their body size, frequent absenteeism from school, frequent urination and need to drink plenty of water.

This prompted me to conduct this study to determine the correlates of peer victimization among adolescents with sickle cell disease in order to make a case for policy makers to make policies that will protect sickle cell adolescent from victimization and also institute interventions in schools, at home and in faith based organizations.

This study found that adolescents with sickle cell disease were more prone to victimization especially verbal and physical victimization compared to healthy adolescents with normal haemoglobin types. Victimization was also found to be more in those who were smaller in size, younger and females.

Though their self-esteem scores were lower than those of healthy controls, it was not found to predispose them more to victimization.

Key words: victimization, sickle cell disease (SCD), self-esteem, adolescents, anthropometry.

CHAPTER ONE

INTRODUCTION

1.1.0 Background of the study

Sickle-cell disease is a hereditary haematological disorder which affects haemoglobin inside the erythrocytes (WHO 2006). Sickle cell disease affects approximately 100,000 Americans. It occurs in about one out of every 365 Black or African-American births and in one out of every 16,300 Hispanic-American births (CDC 2016). It affects most of the countries in sub-Saharan Africa with a prevalence of 20 – 30% in the region. (WHO 2011). Sickle-cell disease is characterized by a change in the conformity of the erythrocytes from a smooth, bi-concave disc into a curved or sickle shaped cell. The deformed cells are not flexible and can lead to obstruction of small vessels, impairing blood flow. This disorder results in shortened red blood cell survival and subsequent anaemia, referred to as sickle-cell anaemia. Repeated episodes of prolonged obstruction of the small blood vessels results in injury to most organs, including the brain, kidneys, lungs, bones, and cardiovascular system (Rees *et al.*, 2010)

Bullying is defined as a discrete form of proactive antagonism characterized by a power imbalance between the perpetrator and victim that classically involves recurrence (Solberg and Olweus, 2003). It has also been defined as recurrent emotional, verbal, or physical attacks meted out on other persons or peers who are susceptible because of size, limited strength, being part of a minority group or other forms of inequities. Perpetrators of victimization can use physical force such as beating, pushing or kicking to exercise control or impact distress on their victims; they may also apply verbal aggression, threats, mocking, segregation, manipulation of social associations, and the internet against their victims (Craig *et al.*, 2009).

Studies have demonstrated the challenging effect of peer victimization (Cepeda *et al.*, 2000) . It is particularly predominant and harmful in junior secondary schools as during this period adolescents are defining themselves and establishing self-esteem (Graham and Juvonen, 1998; Milsom and Gallo, 2006; Mongold, 2006; Guerra, Williams and Sadek, 2011; Ibukun Adeosun *et al.*, 2015). For this reason, most of the research on peer victimization focuses on the age group 10 -15 years.

Adolescents with sickle cell disease have markedly lower weights and height than matched controls (for age and sex) (Cepeda *et al.*, 2000; Esezobor *et al.*, 2016; Odetunde *et al.*, 2016). They also have delayed sexual maturation compared to their peers who attain puberty around ages 10 – 15 years of age (Cepeda *et al.*, 2000), and this may coincide with the age at which adolescents are defining themselves. The estimated prevalence of peer victimization for chronic illness is 13.5% (Sentenac *et al.*, 2012).

Studies have established a positive correlation between peer victimization and low self-esteem (Devore, 2002a; Guhn *et al.*, 2013). There is however limited research into the correlates of peer victimization among adolescents with SCD. This study is aimed at filling this gap in knowledge on the subject matter.

1.2.0 Statement of the problem

Limited research has been conducted to explore the prevalence or potential experience of peer victimization among adolescents with sickle cell disease, a chronic disorder known to affect physical appearance and maturation among children and adolescents. However studies have shown that sickle cell disease is associated with a lot of stigma (Horselsenberg *et al.*, 2016; Linda et al, 2017) and a huge psychosocial burden both on individuals with sickle cell disease (Thomas and Taylor, 2002) and their families and caregivers (Adegoke and Kuteyi, 2012). Anecdotal evidence

suggests teasing and bullying are common complaints among school going children with SCD about 23% of the study population (Ohaeri and Shokunbi, 2002)

1.3.0 Justification and relevance of the study.

The growth patterns of individuals with sickle cell disease especially during the early adolescence period when peer victimization seems to peak have been shown to be markedly delayed compared to their age and gender matched counterparts (Cepeda *et al.*, 2000; Odetunde *et al.*, 2016). It is also known that self-esteem is closely associated with physical appearance and attainment of sexual maturity in the adolescence period of life (Shriver *et al.*, 2013).

Peer victimization/ bullying has been shown to be most prevalent in the early and middle adolescence period (Cepeda *et al.*, 2000). This is a stage when adolescents are defining themselves and establishing self-esteem and is usually a very challenging period for them. Adolescents with sickle cell anaemia face all these challenges faced by other adolescents and are also predisposed to more challenges due to peculiarities in their physical appearance that results from complications of sickle cell anaemia.

Studies have established a positive correlation between low self-esteem and peer victimization (Devore, 2002a; Guhn *et al.*, 2013) and impacts on the quality of life of the individual, and may contribute to the risk of developing mental disorders.

Even though previous findings suggest that adolescents with the sickle cell haemoglobin type HBSS are at high risk for delayed physical and sexual maturation (Odetunde *et al.*, 2016), it is not known whether in the Nigerian context, this (delayed development in HBSS) is in anyway associated with increased experience of peer victimization among them. It is not also known whether the delayed development is in anyway associated with low self-esteem among them.

There is limited study on the correlates of peer victimization among adolescents with SCD given their peculiarities and the challenges of adolescence.

This study is aimed at contributing to literature in this area (which is lacking) and at informing the development of appropriate interventions for this population in the Nigerian context.

1.4.0 Aim

To determine the experience of perceived peer victimization and its correlates among Nigerian adolescents with sickle cell disease.

1.5.0 Specific objectives

1. To determine the prevalence of perceived peer victimization among adolescents with sickle cell disease.
2. To determine the anthropometric characteristics of a sample of adolescents with sickle cell disease.
3. To determine the correlates of perceived peer victimization among adolescents with sickle cell disease.
4. To evaluate the association between perceived peer victimization and self-esteem among adolescents with sickle cell disease.

1.6.0 Hypothesis

1. Adolescents with sickle cell disease are likely to experience more peer victimization than adolescents without sickle cell disease.
2. There is an association between self-esteem and perceived peer victimization among Nigerian adolescents with sickle cell disease.
3. There is an association between anthropometric features and peer victimization among Nigerian adolescents with sickle cell disease.

1.7.0 Primary outcome measures

1. Peer victimization

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CHAPTER TWO

LITERATURE REVIEW

2.1.0 Sickle Cell Disease

2.1.1 An overview of sickle cell disease

Sickle-cell disease is a hereditary haematological disorder which affects haemoglobin inside the erythrocytes (WHO 2006). Haemoglobin is the oxygen carrying component of the blood. It consists of 2 alpha chains and 2 beta chains. When there is mutation in beta globin chain of haemoglobin where the sixth amino acid is changed from glutamic acid to valine, sickle cell disease is said to occur. Valine is hydrophobic causing the haemoglobin to collapse on itself occasionally (Ashley-Koch *et al.*, 2011). Sickle cell disease affects approximately 100,000 Americans. It occurs among about one out of every 365 Black or African-American births and in one out of every 16,300 Hispanic-American births (CDC 2016). It affects most of the countries in sub-Saharan Africa with a prevalence of 20 – 30% in the region (WHO 2011). Sickle-cell disease is characterized by a change in the conformity of the erythrocytes from a smooth, bi-concave disc into a curved or sickle shape cell. The deformed cells are not flexible and can lead to obstruction of small vessels, impairing blood flow. This disorder results in shortened red blood cell survival, and subsequent anaemia, referred to as sickle-cell anaemia. Repeated episodes of prolonged obstruction of the small blood vessels results in injury to most organs, including the brain, kidneys, lungs, bones, and cardiovascular system (Triplette *et al.*, 2009; Rees *et al.*, 2010).

2.1.2 Complications of sickle cell disease

A variety of complications manifest due to sequestration and lysis of the sickled red blood cells in small vessels, including but not limited to acute and chronic pain. Occlusion of the small blood vessels that supply the bones leads to infarction and ischemic pains, often seen in long bones of

extremities. Anaemia is commonly present, chronic, and haemolytic in nature, but may result from aplastic crisis usually due to infection with parvovirus B19 (Yates *et al.*, 2009).

The aplastic crisis is brief cessation of erythrocyte production. Because of the markedly shortened red cell survival time in patients with sickle cell disease, a precipitous drop in haemoglobin occurs in the absence of adequate red blood cell production. Splenic sequestration manifests as sudden onset of life-threatening anaemia with rapid increase in the size of the spleen and high reticulocyte count (Yates *et al.*, 2009). Splenic sequestration occurs after a lot of sickled red blood cells are trapped in the spleen. The spleen becomes enlarged, and so may not be as functional as usual, thus predisposing to serious, life-threatening infections and severe anaemia due to pooling of blood in the spleen.

Acute chest syndrome which manifests as chest pain, cough, fever, tachypnoea, increased white blood cell count, and pulmonary infiltrates in the upper lobes is a common complication (Howard *et al.*, 2015). Infections are commonly caused by encapsulated respiratory bacteria, particularly *Streptococcus pneumonia* (Steinberg, 2007; Navalkele *et al.*, 2017); and gram-negative organisms, especially *Salmonella* (Hann *et al.*, 2012). The risk of infection is usually due to auto-splenectomy which individuals with sickle cell anaemia have as they get older due to occlusion of the microvessels of the spleen and subsequent splenic infarction, ischemia and then loss of splenic functioning (Babadoko *et al.*, 2012). Individuals with sickle cell disease also experience eye disorders manifesting in ptosis, retinal vascular changes, proliferative retinitis. SCD can affect nearly all vessels in the eye and can lead to blindness in the advanced stages. Most ocular complications occur in the fundus and can be proliferative or non-proliferative retinal changes (Fadugbagbe *et al.*, 2010).

Growth retardation has also been observed in patients with sickle cell disease. They have reduced weight, height and delayed sexual maturation when compared to their age and sex matched counterparts (Esezobor *et al.*, 2016). Hand-foot syndrome is an early complication of sickle cell anaemia. It involves the inflammation of the digits of the hands and foot, usually bilateral and painful (Watson *et al.*, 1963). Pulmonary hypertension has also been increasingly documented as a serious complication of SCD (Onyekwere OC *et al.*, 2008). Avascular necrosis of the femoral or humeral head due to vascular occlusion is also commonly seen in SCA patients (Rao *et al.*, 1988). CNS involvement manifests as cerebrovascular accident in severe cases (Telfer P *et al.*, 2007).

Cardiac involvement can involve the enlargement of both ventricles and the left atrium (Nicholson GT *et al.*, 2011). Gastrointestinal complications include cholelithiasis which is common in children and also the liver may be involved (Ebert, Nagar and Hagspiel, 2010). Acute liver disorders causing right-sided abdominal pain include acute vaso-occlusive crisis, liver infarction, and acute hepatic crisis. Chronic liver disease might be due to haemosiderosis and hepatitis and possibly to SCD itself if small, clinically silent microvascular occlusions occur chronically. Black pigment gallstones caused by elevated bilirubin excretion are common. Their small size permits them to travel into the common bile duct but cause only low-grade obstruction, so hyperbilirubinemia rather than bile duct dilatation is typical. Abdominal pain is very common in SCD and is usually due to sickling of the RBC and obstruction of the enteric blood vessels, which resolves with supportive care.

Genitourinary complications manifest as loss of renal concentrating ability leading to hyposthenuria and priapism (Ashley-Koch *et al.*, 2011). They are prone to chronic painful leg ulcers due to obstruction to flow of blood by sickled red blood cells, resulting in ischaemia and subsequent necrosis of the affected area (Minniti *et al.*, 2010). Vaso-occlusive crisis result from occlusion of small blood vessels which may be due to hypoxemia, dehydration, infections, and changes in body

temperature, and manifests as painful crisis (CDC, 2016). The recurring pain and difficulties produced by the disease can affect many aspects of the patient's life, including education, employment and psychosocial development (Rees *et al.*, 2010).

2.1.3 The burden of sickle cell disease

Sickle cell disease (SCD) affects 20–25 million individuals worldwide, and 50–80% of children born with sickle cell disease in Africa die before the age of 5 years (Odame, 2010). SCD affects mainly people in sub-Saharan Africa, parts of the Middle East, and Asia. However, the migration of populations to North America, Brazil, the Caribbean, Central America, and Europe largely explains the occurrence of sickle cell disease in these areas (Odame, 2010).

It has been projected that the number of newborns with sickle cell anaemia (SCA) globally will increase from 305,800 in 2010 to 404,200 in 2050 (Piel *et al.*, 2013). Potential contributory factors to this increase could include improved survival of people with sickle cell disease, a result of improvement in prenatal diagnosis and early interventions such as of routine drugs, malarial prophylaxis, antibiotics and vaccinations. These interventions have been projected by researchers to decrease mortality due to SCA from 90% to 50% in low- and middle-income countries and from 10% to 5% in high-income countries, and could prolong the life of more than five million newborns with SCA by 2050. The WHO has projected that about 220,000 babies are delivered annually with sickle cell disease in Africa. It has also estimated that sickle cell disease is responsible for up to 16% of mortality of children under the age of 5 years in some African countries (Piel *et al.*, 2013). Sickle cell occurs in 2% of the population of children in Nigeria (Fleming *et al.*, 1979).

2.1.4 Sickle cell disease and developmental patterns

The growth and development of children with sickle cell disease varies from that of their healthy counterparts (Odetunde *et al.*, 2016). In his study conducted at the University of Nigeria Teaching Hospital, Enugu, he found significantly lower weight in patients with sickle cell anaemia aged 11-15 years of age, compared to controls ($p < 0.05$). Similarly, patients with SCA aged below 11 years of age (6-10 years) had smaller standing height compared to controls.

2.2.0 Peer victimization

2.2.1 Overview of peer victimization

Peer victimization has been described variously according to type (Kljakovic, Hunt and Jose, 2015). Types of victimization vary widely and have included physical, verbal, relational/social, and sexual victimization. Physical victimization includes hitting, kicking, pushing, pinching, and beating. Verbal victimization includes repeated derogatory remarks, name-calling, intimidation, verbal threats, and teasing. Relational/social victimization refers to more subtle behaviours that are intended to significantly damage peer relationships and reduce the feeling of inclusion in the peer group. Examples of relational/social victimization include social exclusion, withdrawal of friendship or acceptance in order to hurt or control someone, and spreading unkind rumours. Physical victimization is usually considered to be a direct form of victimization as it involves face-to-face confrontation, while relational or social refers to an indirect form of victimization, as it usually occurs via a third party.

Nansel *et al* also studied the occurrence of various types of victimization as well as psychosocial adjustment of students who bully or who are bullied. Verbal bullying was most prominent for both males and females, with students being recipients of negative comments about their appearance in addition to being recipients of sexual comments and being targets of rumours. Interestingly,

negative comments about race or religion were rarely reported. More males than females reported being victims of physical bullying, indicating they had been hit, slapped, and pushed (Nansel *et al.*, 2003).

2.2.2 Prevalence of victimization

According to a study on victimization done in Lagos Nigeria, more than half (56.8%) of the students have been victims of bullying in the past month (Adeosun *et al.*, 2015). Though rates of bullying victimization vary widely across studies possibly due to cultural differences in reporting and methodological differences such as the definition of what constitutes bullying and time- frame assessed, evidence consistently indicate that bullying is a significant problem among school children globally. A school-based multi- national survey of students from five African countries; Namibia, Uganda, Zimbabwe, Zambia and Swaziland found that 27 to 50% (average of 42%) were victims of school based violence in the past year (Brown *et al.*, 2008). Another larger scale multi-national survey of bullying among students from 40 countries in North America and Europe reported 2-months prevalence rates ranging from 9% in Sweden to 45% in Lithuania (Craig *et al.*, 2009).

2.2.3 Risk factors for victimization in chronic diseases affecting children and adolescents

In a study by Wei *et al.* (2017), it was discovered that students with chronic diseases might be predisposed to a bigger risk of peer victimization (Wei *et al.*, 2017). They examined the relationship between several chronic diseases (obesity, asthma, allergy, epilepsy, and diabetes) and the experience of physical, verbal, and relational victimization. A sample of 6,233 fourth-grade students from 314 elementary schools in Taiwan was recruited for the analysis. Peer victimization was reported more among children with asthma, allergy, and epilepsy and also among those who took

daily medications. The study concluded that chronic diseases are risk factor for peer victimization among children.

2.2.4 Potential risk factors for victimization in sickle cell disease

There is little research on the risk factors of victimization in sickle cell disease. However some attributes that may predispose people more to victimization includes being seen as different from peers (e.g. overweight, underweight, wear their hair differently, wear different clothing or wear glasses, come from a different race or ethnicity), being seen as weak or unable to defend themselves, being depressed, anxious or having low self-esteem, having fewer friends or being less popular, not socializing well with others, having an intellectual or developmental disability (Wei *et al.*, 2017).

Some of these attributes may be found more in sickle cell patients due to their unique body build, their tendency to being underweight, and the likelihood of low self-esteem. Some may also be very anxious and others depressed due to frequent complications and crises associated with the disease and the fear of death. These factors may predispose them more to peer victimization. Bullying involves physical or psychological threat to the well-being of the victim, thereby constituting a psycho-social stressor or risk factor for emotional distress. Studies have shown that the presence of emotional problems increase the likelihood of being bullied (Kubwalo *et al.*, 2013). Bully perpetrators tend to target students who are fearful, withdrawn, and lonely as their victims. In view of the evidence from longitudinal studies that bullying negatively impacts on emotional well-being, the latter finding indicates that victims of bullying who develop emotional problems are vulnerable to further re-victimization (Bond *et al.*, 2001).

2.3.0 Adolescence

2.3.1 Overview of Adolescence

Adolescence is defined by World Health Organization as any person between ages 10 -19 years. This age range falls within WHO's definition of young people which refers to individuals between ages 10 and 24 years. It is a very challenging period characterized by physical, psychological, emotional, social and physiological changes ('WHO | Adolescent development', 2017). Adolescence is the period following the onset of puberty during which a young person develops from a child into an adult. It is a transitional stage of physical and psychological development that generally occurs during the period from puberty to legal adulthood.

2.3.2 Adolescence and growth in the sickle cell context.

Studies have shown that children and adolescents with sickle cell disease have impaired growth as compared to normal controls (Ashcroft, Serjeant and Desai, 1972; Cepeda *et al.*, 2000; Rhodes *et al.*, 2009). Growth delay though commences in childhood becomes more obvious in adolescence (Mukherjee and Gangakhedkar, 2004). Mukherjee and Gangakhedkar in their study reported that the deficit was more in weight than height.

2.3.3 Sickle cell disease in adolescence

Adolescents with sickle cell disease face a lot of challenges as a result of their condition. The frequency of their crises makes them loose time and concentration in school and this affects their performance. Absenteeism as a result of illness retards their academic progress. Studies have shown increased anxiety, depression, social withdrawal, aggression, poor relationships and introversion among patients with SCD (Brown *et al.*, 1993).

Adolescents with sickle cell disease experience problems in social relationships due to absences from school and physical complications. They experience a longer period of conflict between

dependency and independence. Overdependence on parents or caregivers and medical personnel becomes a source of self-hatred. Many stresses such as academic failure or loss of school time, uncontrollable bouts of pain, fear of death, altered self-image and social solitude and ineptness. Adolescents with SCD experience frustrating psychological adjustments in their normal physical, psychological and social functioning (Winn, 1990). This may lead to poor self-esteem and difficulty in forming satisfying interpersonal relationships (Harris *et al* , 2012). An adolescent with insufficient self-goal realization is easily prone to forms of victimization and other forms of alienations and discrimination. While peers become more independent adolescents with SCD require help in physiological and psychological functioning because of illness and physical fragility. Some even experience delayed puberty of around 2.5 years which creates significant psychological issues in the affected adolescents (Okpala *et al.*, 2002).

2.4.0 Self-esteem

2.4.1 Overview of self-esteem

Rosenberg defined self-esteem as “the assessment which an individual makes and usually maintains towards himself or herself: it expresses an attitude of approval or disapproval towards oneself” (Baumeister *et al.*, 2003). It is one’s self evaluation of one’s self worth, character and qualities. It includes one’s attitude and disposition in relation to others. Other aspects of self-esteem includes what one thinks about one’s achievement, success and capability which in turn translates to one’s sense of self-assessment of level of happiness, social, economic and political position (Amac *et al.*, 2002).

While high self-esteem shows in one's self confidence, poise and extroversion, low self-esteem is manifested in timidity, poor self- confidence, low self -worth and introversion. Low self-esteem has been associated with depression, anxiety and underachievement (Addeo *et al*, 1994).

People with high self-esteem are more disposed to higher self- worth, importance and reputation than otherwise. Kahne 1996 described self-esteem as the conscious appreciation of our own worth or importance. Some think self- esteem is an entitlement of personhood and should be equated with self-respect. But kahne does not believe self- esteem could become a unifying concept (Kahne, 1996).

Self-esteem has also been defined as the sense of contentment and self- acceptance that results from a person's appraisal of one's own worth, attractiveness, competence, and ability to satisfy one's aspirations (Robson, 1989).

The most popular instrument for assessment of esteem which is a narrow one dimensional scale despite excellent psychometric properties, does not capture fully self- esteem in its complexity (Baumeister *et al.*, 2003).

2.4.2 Victimization and self-esteem.

Devore in his thesis, 'low self -esteem: an invitation for victimization', examined the link between self- esteem and victimization. He found that people with low self- esteem are more likely to be victimized. It showed that physical appearance especially as perceived by peers, is an important determinant of self- esteem (Devore, 2002a). One strength of this study is that it studied children in first grade showing that this link between self- esteem and peer victimization can be dated back to childhood though it becomes most prominent during adolescence. One weakness of this study is the small sample size (n=32) which makes it difficult to extrapolate from the study.

2.5.0 Potential risk factors for victimization in adolescents with sickle cell disease

Studies have established the anthropometric variables of children with sickle cell disease and compared their findings to healthy controls and found that the weight and height of people with sickle cell disease was significantly lower than the control group (Cepeda *et al.*, 2000; Odetunde *et al.*, 2016).

A pilot study of stigma in sickle cell disease done in the USA and Ogbomosho in Nigeria found that more stigma was reported in Nigeria than USA (Linda *et al.*, 2017). Participants from both countries however "feared their significant others would reject 'me' if they learn more about my illness". This study also found that people with sickle cell disease were treated as out-casts, as if they are fragile and were believed to be lazy and a burden to their family. They found that stigma reduces social support and this could affect the quality of life and self-esteem. One strength of this pilot study was its novel focus on stigma in this population, although it utilized a convenience sampling.

2.6.0 Study instruments

2.6.1 The socio -demographic and health questionnaire (Omigbodun *et al.*, 2008):

This consisted of questions relating to socio-demographic characteristics adapted from a questionnaire used in previous study on adolescents in rural and urban Ibadan (Omigbodun *et al.*, 2008). It contained items like age, gender, religion, educational level of participants, marital status of mother, mother's occupation, family type (Appendix i).

2.6.2 Multidimensional peer victimization scale:

Victimization was assessed using the Multidimensional peer victimization scale (MDPVS). The MDPVS has been validated in Ibadan Nigeria (Balogun and Olapegba, 2007).

The Multidimensional Peer Victimization Scale is a self-report measure, designed to assess four types of peer victimization (social manipulation, attacks on property, verbal victimization, and physical victimization). Items 6,7,8, and 9 assesses physical victimization. Items 1,4,5 and 16 assesses verbal victimization. Items 2,11,13 and 14 assesses social manipulation. Items 3,10,12 15 assesses attacks on property. The scale has good reliability and validity. (Internal reliability for each subscale: Physical victimization = 0.85, verbal victimization = 0.75, social manipulation = 0.77, property attacks = 0.73). (Mynard, H., & Joseph, 2000).

Anonymous self-report measures are considered one of the best ways to gain a more reliable understanding of the frequency of peer victimization. This scale also benefits from containing items that address both direct and indirect forms of victimization. The items cover four aspects of peer victimization, namely physical victimization (e.g. 'hurt me physically in some way'); social manipulation (e.g. 'tried to make my friends turn against me'); verbal victimization (such as 'made fun of me because of my appearance); and attack on property (e.g. 'deliberately damaged some property of mine). Participants were required to indicate how often (0 = 'Not at all', 1 = 'Once', 2 = 'More than once') during the school year they had experienced 16 victimizing experiences. Scores on the total scale have a possible range of 0 to 32, and a possible range of 0 to 8 on each of the four subscales (Maynard, H., & Joseph, 2000). However, for this study, victimization was defined as 1 S.D above the mean victimization scores (Appendix ii).

2.6.3 Rosenberg self- esteem scale:

A 10-item scale that measures global self-worth by measuring both positive and negative feelings about the self. The scale is believed to be uni-dimensional. It is scored on a four-point Likert scale from Strongly disagree (1 point) to Strongly Agree (4 points). Half of the items are scored in the reverse other. A total of 40 points is the maximum and higher scores indicate higher self-esteem 21-30 (Baumeister *et al.*, 2003). This has been used severally in Nigeria for assessing self-esteem (Onyeaso, 2003; Salami, 2010; Oshodi *et al.*, 2014). For the purpose of this study mean score was used to assess self-esteem. 1 SD above the mean score was used to define high self-esteem and 1 SD below the mean score was used to define low self-esteem (Appendix iii).

2.6.4 Stadiometer

A standard instrument for measuring height.

3.6.4 Bathroom weighing scale

A standard instrument for measuring weight.

2.7.0 Significance of the study

This study will help to determine whether adolescents with sickle cell disease are more prone to perceived peer victimization and to determine if there is a link between their self-esteem and anthropometric features and perceived peer victimization.

CHAPTER THREE

METHODOLOGY

3.1.0 Study location

This study was carried out in Abakaliki. Abakaliki is the capital of Ebonyi State in the south-eastern part of Nigeria. It is made up of 2 Local Government Areas, Abakaliki and Ebonyi. It lies between latitude 6°19'N and longitude 8°11'E of the Greenwich meridian and has an area of 452sq kilometres. It is located 77Km southeast of Enugu, Enugu state, Nigeria. It lies at the intercept of Enugu, Afikpo and Ogoja roads.

The inhabitants are mainly Igbo-speaking although other ethnic groups may be found within the city. Abakaliki people like other south-eastern Nigerians are predominantly Christians however there is a sprinkling of other religious faithful like Muslims and traditionalists. The metropolis has a total population of 438,700 according to 2015 city population study. Its inhabitants are of different educational attainment and religion; majority are farmers, civil servants and politicians.

It hosts the Federal Teaching Hospital Abakaliki (FETHA) which has largely contributed to the affordability of public care delivery in the city and in the state. FETHA is a 720- bed capacity Teaching Hospital with a retinue of consultants and other specialists in various specialties. The centre has full accreditation for the training of resident doctors for both National and West African Colleges in various specialties including paediatrics and psychiatry.

Currently the centre serves the College of Health sciences Ebonyi State University where medical students are trained. Effort is in high gear to also serve the College of Health sciences Ndufu-Alike Ikwo Ebonyi State.

The Hospital provides primary, secondary and tertiary Health care to the populace of Ebonyi State and other neighbouring States. It has a full- fledged sickle cell and haematology clinics for both paediatrics and adult patients.

Ebonyi university secondary school is a coeducational school which was established to cater for children of staff of the university. However, it admits students from the entire population of the town.

This study was carried out in FETHA and EBSU Secondary school Abakaliki.

3.2.0 Study design

This was a comparative cross-sectional study.

3.3.0 Study population

The participants were adolescents with sickle cell disease attending the sickle cell clinic at Federal Teaching Hospital Abakaliki (FETHA) aged 10 -19 years enrolled as cases, as well as controls with normal haemoglobin genotypes from Ebonyi State University (EBSU) Secondary School Abakaliki aged 10 – 19 years.

The total number of adolescents who attend sickle cell clinic in FETHA are 200 consisting of 108 females and 92 males (Feb-April 2018) while the total number of students who attend Ebonyi State University (EBSU) secondary school are 804 students consisting of 374 males and 430 females (April 2018).

3.3.1 Sample size selection:

Cases were selected first from adolescents with sickle cell disease aged 10-19 years who attended sickle cell clinic in FETHA.

Controls were selected from adolescents with normal haemoglobin types with ages and gender corresponding approximately with ages and gender of participants from sickle cell clinic.

Each group consisted of 100 cases (47 males and 53 females) and 100 controls (49 males and 51 females). The genotypes of the participants were confirmed from the hospital records and the school records for cases and controls respectively. All the cases had a genotype of Hb SS and 65 of the controls were Hb AA while 35 were Hb AS.

3.3.2 Inclusion criteria

Cases

1. Adolescents aged 10 – 19 years attending the sickle cell clinic at FETHA who have documented evidence of diagnosis with sickle cell disease, who gave assent and whose parents or caregivers gave written informed consent for them to participate in the study.

Controls

2. Healthy adolescents from EBSU secondary school, who gave assent to participate and whose parents or caregivers gave written consent to participate in the study.

3.3.3 Exclusion criteria

1. Presence of any other co- morbid chronic disease, including diabetes mellitus, asthma, malignancy, cardiovascular disorder, renal pathology or skeletal deformity that may affect height or weight in both cases and control adolescent groups.

3.4.0 Sample size calculation for comparing mean

$$n = \frac{2(Z_{\alpha} + Z_{1-\beta})^2 S^2}{d^2}$$

S (Standard deviation) = 6.85

D (minimum difference to be detected) =5

$Z_{\alpha} = 1.96$ at $\alpha = 5\%$

$Z_{1-\beta} = 1.28$ at $\beta = 0.1$ (90% power)

$$n = \frac{2(1.96 + 1.28)^2 \times 6.85^2}{5}$$

n = 80

Adjusting for non-response (15%)

$\frac{80}{1 - 0.15}$

= 95 approximately 100 for each group.

3.5.0 Sampling technique

The study employed a consecutive sampling technique. Adolescents with SCD aged 10-19 years who met the inclusion criteria were selected from the sickle cell clinic in FETHA as cases as they visited the clinic until the targeted sample size was reached.

Controls were then selected from adolescents with normal haemoglobin types with ages and gender corresponding approximately with ages and gender of participants from sickle cell clinic who attended EBSU secondary school.

3.6.0 Study Instruments:

The study instruments that were used for this study included:

3.6. 1. The socio-demographic and health questionnaire. (Appendix i)

3.6.2. Multidimensional peer victimization scale. (Appendix ii)

3.6.3 Rosenberg self -esteem scale. (Appendix iii)

3.6.4. Stadiometer.

3.6.5. Weighing scale.

3.6.1 The socio -demographic and health questionnaire (Omigbodun *et al.*, 2008):

This consisted of questions relating to socio-demographic characteristics adapted from a questionnaire used in previous study on adolescents in rural and urban Ibadan (Omigbodun *et al.*, 2008). It contained items like age, gender, religion, educational level of participants, marital status of mother, mother's occupation, family type (Appendix i).

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Victimization was assessed using the Multidimensional peer victimization scale (MDPVS). The MDPVS has been validated in Ibadan Nigeria (Balogun and Olapegba, 2007).

The Multidimensional Peer Victimization Scale is a self-report measure, designed to assess four types of peer victimization (social manipulation, attacks on property, verbal victimization, and physical victimization) (Mynard, H., & Joseph, 2000). Anonymous self-report measures are

considered one of the best ways to gain a more reliable understanding of the frequency of peer victimization. This scale also benefits from containing items that address both direct and indirect forms of victimization. The items cover four aspects of peer victimization, namely physical victimization (e.g. 'hurt me physically in some way'); social manipulation (e.g. 'tried to make my friends turn against me'); verbal victimization (such as 'made fun of me because of my appearance'); and attack on property (e.g. 'deliberately damaged some property of mine). Participants were required to indicate how often (0 = 'Not at all', 1 = 'Once', 2 = 'More than once') during the school year they had experienced 16 victimizing experiences. Scores on the total scale have a possible range of 0 to 32, and a possible range of 0 to 8 on each of the four subscales (Maynard, H., & Joseph, 2000). However, for this study, victimization was defined as 1 S.D above the mean victimization scores (Appendix ii).

3.6.3 Rosenberg self- esteem scale:

A 10-item scale that measures global self-worth by measuring both positive and negative feelings about the self. The scale is believed to be uni-dimensional. It is scored on a four- point Likert scale from Strongly disagree (1 point) to Strongly Agree (4 points). Half of the items are scored in the reverse other. A total of 40 points is the maximum and higher scores indicate higher self-esteem 21-30 (Baumeister *et al.*, 2003). This has been used severally in Nigeria for assessing self- esteem (Onyeaso, 2003; Salami, 2010; Oshodi *et al.*, 2014). For the purpose of this study mean score was used to assess self-esteem. 1 SD above the mean score was used to define high self- esteem and 1 SD below the mean score was used to define low self-esteem (Appendix iii).

3.6.5 Stadiometer

A standard instrument for measuring height.

3.6.6 Bathroom weighing scale

A standard instrument for measuring weight.

3.7.0 Study procedure

I obtained consent from both the patients and parents or caregivers of those who participated in the study. Consent was also obtained from the healthy controls from Ebonyi State University (EBSU) secondary school and their parents or caregivers. The hospital and school records were used to ascertain the genotypes of the participants. The students on admission into the school check their genotype as part of medical fitness examination in EBSU staff clinic.

Standing height in Centimetres (Cm) was measured with a stadiometer. Care was taken to ensure that hair and turbans did not affect the actual height of participants by removing the turbans or head gear and pressing down the head piece of the stadiometer flat to the hair. Each height was measured with the measuring rod attached to the balanced beam scale, ensuring that the upper part of the measuring rod was straight and vertical. The stadiometer height rule was taped vertically to the hard-flat wall surface with the base at floor level. It was ensured that the floor surface next to the calibrated height rule was hard and horizontal. Participants were asked to remove their shoes, and hair ornaments. They were asked to stand with their backs to the height rule. The back of the heads, backs, buttocks, calves and heels were ensured to be touching the wall surface, feet together and medial malleoli apposed. The top of the external auditory meatus was ensured to be level with the inferior margin of the bony orbit (NIHR and Biomedical Research Centre, 2017). The participant

was then asked to look straight. The head piece of the stadiometer or the sliding part of the measuring rod was lowered so that the hair, if present was pressed flat. Recordings were approximated to the nearest 0.5cm. For participants taller than the researcher, the researcher/ measurer had to stand on a platform to be able to read the height rule.

Weight in kilograms was taken with subjects in light clothing and barefoot, holding onto nothing, using a normal *Hanson* bathroom weighing scale. The scale was calibrated to ensure that it gave correct readings for standard test weights. Zero error and parallax error were also taken care of by making sure that while the scale was not loaded the scale was at zero and the researcher's eyes were perpendicular to the pointer of the scale while taking a reading respectively. The scale was placed on a hard floor surface which was horizontal. Participants were made to stand on the centre of the scale with body weight evenly distributed to both feet. The weight was read off the scale and recorded for each participant to the nearest 0.5kg. The researcher did not accept self- reported weights and heights.

BMI was calculated using the formula; $\text{weight (kg)} / [\text{height (m)}]^2$ during data analysis.

All participants were evaluated with the socio-demographic and health questionnaire, the Rosenberg self-esteem scale and the Multidimensional Self-esteem Scale.

3.8.0 Data Analysis

Data was analysed using SPSS version 21. Descriptive statistics was used to find the prevalence of peer victimization among the two groups (cases and controls). The difference between the two groups (cases and control groups) for categorical variables like gender, religion, educational level of participants, marital status of parents, mother's occupation, family type was obtained using Chi square. The differences in the mean scores of outcome variables like age, height, weight, peer

victimization scores and self-esteem scores were obtained using t-test. The multiple linear regression and Pearson correlation was used to find the associations between the independent (height, weight, BMI, self-esteem) and the dependent variables. All calculations were based on a significance level of $p < 0.05$.

3.9.0 Ethical Considerations.

This study was carried out in accordance with the ethical principles enshrined in the Helsinki Declaration and the national human research ethical code (World Medical Association, 2013).

Ethical approval was obtained from the ethics committee of the Federal Teaching Hospital Abakaliki (Appendix VI). Permission was also obtained from the secondary education board of the State Ministry of Education, Ebonyi State (Appendix VII). Also informed consent was obtained from all participants and their parents or caregivers (Appendix IV and Appendix V respectively). Permission was also obtained from the doctors- in- charge of the sickle cell clinic and the school principal before the commencement of the study.

3.9.1 Autonomy

The purpose of this study was clearly explained to the participants in simple language in order to enable informed decision making. They were also appropriately informed that they had the freedom to decide whether to participate in the study or not and they had the free will to withdraw from the study at any time with no consequences.

3.9.2 Beneficence to participants:

Each participant had his/her weight, height and BMI assessed. Participants also received medical and psychological support where necessary. There was no monetary inducement for participating in the study. Snacks were provided for participants after the collection of data.

3.9.3 Confidentiality of data collected from respondents:

The data collected including height, weight, BMI and other data collected with questionnaire had no names or any form of personal identification. The participants were assured that all information obtained would be kept in strict confidence.

3.9.4 Non-maleficence to the participants

The risks and inconveniences to the participants in this study were minimized by ensuring that the time of data collection was most convenient for them that is during their routine clinic visits and data collection from the participants did not involve any invasive process or collection of physical biological samples.

3.9.5 Justice

All adolescents with SCD who met the inclusion criteria had equal opportunity to participate in the study. Adolescents with normal haemoglobin types of ages and gender corresponding approximately to participants from sickle cell clinic were selected as controls.

3.9.6 Voluntariness

Participants were not coerced against their freewill to participate or unduly favoured on account of participating in the study.

CHAPTER FOUR

RESULTS

4.1.0 Socio demographic characteristics of respondents.

The research participants' ages ranged from 10- 19 years with mean ages of 14.0 ± 2.7 years for SCD and 13.8 ± 1.9 years for controls. The groups consisted of 100 cases (47 males and 53 females) and 100 controls (49 males and 51 females). There was no statistically significant difference in the age and gender of the cases and the control groups.

The genotypes of the participants were confirmed from the hospital records and the school records for cases and controls respectively. Both were deemed reliable. All the cases had a genotype of Hb SS and 65 of the controls were AA while 35 were AS.

Majority of the respondents' mothers were married (78.8% for SCD group) and (91% for control group).

Most of the respondents were secondary level students (76.3% for SCD group) and (100% for control group). About 7.2% of the SCD respondents were tertiary institution students and 16.5% of the SCD respondents were still in primary school.

Mothers' occupations were varied. About 46.5% of the mothers of the SCD group were traders/business women, 22.2% were teachers and 20.2% were civil servants while 11.1% were professionals. Mothers' of the control group were more of professionals (38.8%), civil servants (22.5%), teachers (17%) and traders or business women (14%).

Most of the respondents were Christians (98% for SCD group) and (89.8% for control group).

81.7% of the SCD respondents were from monogamous families while 94.9% of control group were from monogamous families (Table 4.1).

The mean ages of the participants' mothers for cases and control were (38.9± 9.5) years and (43.1± 6.0) years respectively. The difference in mean ages was statistically significant. ($p < 0.05$)

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Table 4.1: Socio-demographic characteristics of study participants.

Description	SCD group (n= 100)	Control group (n=100)	Total n (%)	χ^2 (t-test)	p-Value
Gender					
Male	49.0 (49.0)	47 (47.0)	96.0 (48.0)	0.080	0.777
Female	51.0 (51.0)	53 (53.0)	104.0 (52.0)		
Marital status of mother					
Currently married	78.0 (78.8)	91.0 (91.0)	169.0 (84.9)	12.329	0.002
Currently unmarried	21.0 (21.2)	9.0 (9.0)	15.0 (7.5)		
Educational level of participants					
Primary	16.0 (16.5)	0	16.0 (8.1)	28.664	<0.001
Junior Secondary	39.0 (40.2)	63.0 (63.0)	102.0 (51.8)		
Senior secondary	35.0 (36.1)	37.0 (37.0)	72.0 (36.5)		
Tertiary	7.0 (7.2)	0	7.0 (3.6)		
Mothers' occupation					
Professional	11.0 (11.1)	31.0 (38.8)	42.0 (23.5)	22.212	<0.001
Civil servant	20.0 (20.2)	18.0 (22.5)	38.0 (21.2)		
Trade/business	46.0 (46.5)	14.0 (17.5)	60.0 (33.5)		
Teacher	22.0 (22.2)	17.0 (21.2)	39.0 (21.8)		
Religion					
Orthodox Christianity	60.0 (60.0)	53.0 (54.1)	113.0 (57.1)	5.871	0.053
Pentecostal Christianity	38.0 (38.0)	35.0 (35.7)	73.0 (36.9)		
Others	2.0 (2.0)	10.0 (10.2)	12.0 (6.1)		
Genotype					
AA	0	65.0 (65.0)	65.0	-	-
AS	0	35.0 (35.0)	35.0	-	-
SS	100.0 (100)	0	100.0		
Family type					
Monogamous	76.0 (81.7)	94.0 (94.9)	170.0 (88.5)	8.272	0.004
Polygamous	17.0 (18.3)	5.0 (5.1)	22.0 (11.5)		
Age (years) (mean + SD)					
Age (years)	14.0 ± 2.7	13.8 ± 1.9	13.9 ± 2.4	(-0.727)	0.469
Age (years) of mother	38.9 ± 9.5	43.1 ± 6.0	40.6 ± 8.5	(3.048)	0.003

4.2.0 Clinical characteristics of adolescents with SCD

The mean age at diagnosis for sickle cell disease in cases was 4.5 ± 3.4 years. The mean age for enrolment into the sickle cell clinic was 6.0 ± 4.6 years. The mean number of hospital admissions per year is 2.1 ± 3.4 years.

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Table 4. 2: Clinical characteristics of adolescents in the SCD group

Description	Total n=100 (Mean \pm SD)
Age(years) at first contact with the clinic	6.0 \pm 4.6
Age(years) of first diagnosis	4.5 \pm 3.8
Frequency of admission (per year)	2.1 \pm 3.4

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4.3.0 Summary of anthropometric measurements of respondents

Table 4.3a shows the anthropometric measurements of the study respondents. Results showed that the control group had a significantly higher mean body weight (44.4 ± 12.6) kg compared to their SCD counterparts' mean weight ($p < 0.001$). There was no significant difference in the mean height between both groups ($p > 0.05$). The difference between the mean height for the sickle cell disease group and the control group between ages 12,13 and 14 was statistically significant.

However, the mean BMI scores in kg/m^2 was significantly lower among the SCDs compared to the controls ($p < 0.001$).

The difference between the mean height for the sickle cell disease group and the control group between ages 12,13 and 14 was statistically significant (Table 4.3.1).

Table 4.3.1: Comparison of mean weight and height between cases and control

Description	Group		t-test	p Value
	SCD group Mean (SD)	Control group Mean (SD)		
Weight (kg)	36.3 (10.0)	44.4 (12.6)	5.049	<0.001
Height (cm)	151.7 (10.8)	153.2 (32.6)	0.444	0.658
BMI	15.5 (2.6)	17.2 (3.9)	3.610	<0.001

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Table 4.3.2: Weight differences according to gender and age

Description	Group		t-test	p Value
	SCD group Mean weight (SD)	Control group Mean weight (SD)		
Gender				
Male	34.7 (8.9)	44.8 (15.0)	4.027	<0.001
Female	37.9 (10.8)	44.2 (10.2)	3.041	0.003
Age				
10 years	25.8 (3.21)	33.5 (7.8)	2.768	0.014
11 years	26.0 (3.94)	37.8 (8.8)	3.690	0.002
12 years	29.5 (7.33)	36.8 (7.4)	2.551	0.017
13 years	31.7 (5.01)	35.6 (11.5)	1.317	0.198
14 years	38.0 (4.8)	49.7 (10.0)	3.475	0.003
15 years	42.6 (4.0)	52.4 (8.2)	2.583	0.017
16 years	40.5 (6.3)	57.1 (9.4)	5.405	<0.001
17 - 19 years	43.4 (8.3)	54.3 (10.3)	2.581	0.019

* Mean weight (kg).

* p value < 0.05 significant.

Table 4.3.3: Height differences according to gender and age

Description	Group		t-test	p Value
	SCD group Mean height (SD)	Control group Mean height (SD)		
Gender				
Male	149.9 (10.4)	147.4 (46.6)	-0.381	0.705
Female	153.4 (10.9)	158.4 (7.9)	2.668	0.009
Age				
10 years	137.4 (7.9)	145.0 (4.2)	1.302	0.213
11 years	145.2 (8.4)	147.8 (7.0)	0.730	0.476
12 years	143.5 (7.6)	154.7 (6.5)	4.164	<0.001
13 years	153.2 (4.4)	159.5 (8.8)	2.141	0.040
14 years	151.3 (4.4)	165.4 (6.1)	6.140	<0.001
15 years	157.6 (1.3)	154.2 (38.5)	-0.194	0.848
16 years	156.5 (9.2)	136.6 (67.0)	-1.147	0.263
17 - 19 years	158.6 (3.1)	167.6 (9.5)	2.430	0.047

*Height (cm)

*p value < 0.05 significant.

4.4.0 Victimization among respondents

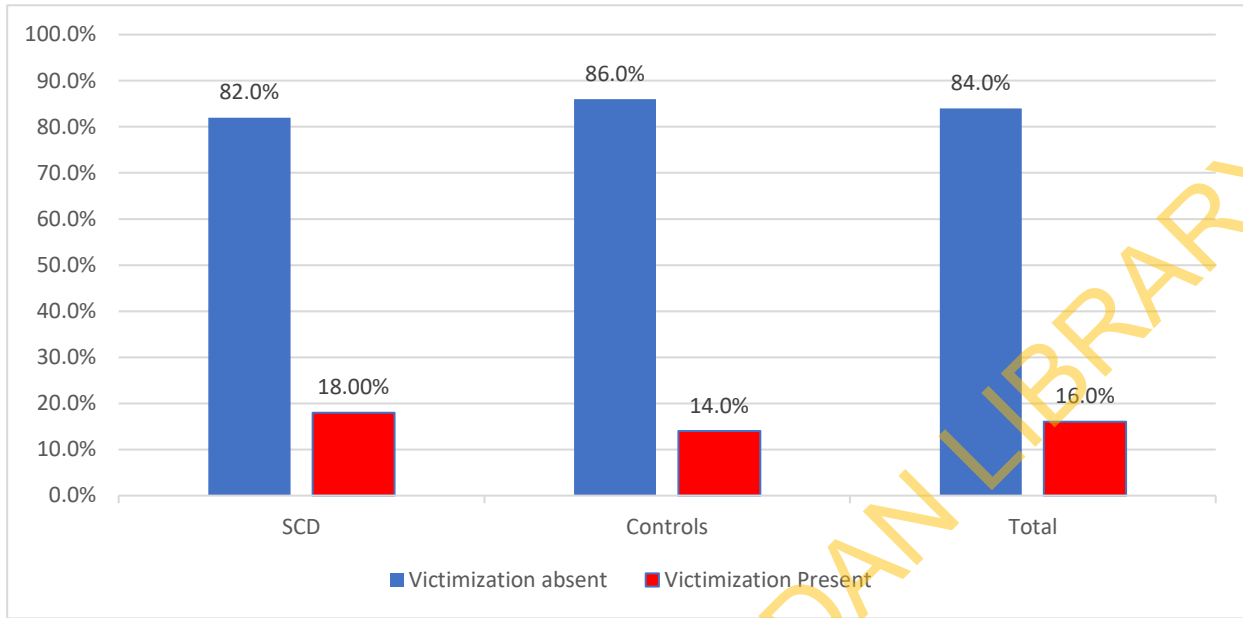
The prevalence of victimization is shown in Figure 4.1. Results showed that 18.0% of the SCD respondents reported being victimized compared to 14.0% of the controls.

Table 4.4 shows the total victimization and sub-domain scores (Assessed by the multidimensional peer victimization scale) comparing the SCD and control groups. Results showed that the mean victimization score was significantly higher among the SCD group compared to the controls (15.7 ± 8.1 versus 11.7 ± 6.9 ; p value <0.005).

Results also revealed that the most common victimization experienced by respondents was verbal victimization, followed by social manipulation, and attacks on property; while physical victimization was least experienced by the respondents. Furthermore, both verbal and physical victimization were significantly higher among the respondents with SCD compared to the controls ($p < 0.05$) [Table 4.4.1].

Further findings show the victimization scores distributed by age and gender. Results showed that victimization was significantly higher among the females ($p < 0.05$), compared with their male counterparts [Table 4.4.2]. Victimization was also significantly higher among respondents with SCD compared to the controls ($p < 0.05$) among the younger ages (between 10 to 12 years), while no significant difference was observed in the older ages (13 to 18 years).

percentage



prevalence of victimization

Figure 4.1: Prevalence of Victimization among study respondents

Table 4.4.1: Mean total scores of the forms of victimization

Description	Group SCD group	Control group	t-test	p Value
Physical victimization	3.3 (2.8)	2.1 (2.32)	-3.102	0.002
Verbal victimization	4.9 (2.5)	3.0 (2.3)	-5.210	<0.001
Social manipulation	3.8 (2.8)	3.3 (2.3)	-1.191	0.235
Attacks on property	3.6 (2.3)	3.4 (2.4)	-0.732	0.465
Total Score	15.7 (8.1)	11.7 (6.9)	-3.471	0.001

*p value < 0.05 significant.

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Table 4.4.2: Comparison of Total victimization scores between controls and SCD respondents distributed by age and gender

Description	Group		t-test	p Value
	SCD group	Control group		
Gender				
Male	11.9 (9.5)	13.4 (7.8)	0.834	0.406
Female	12.6 (10.0)	9.1 (6.1)	-2.124	0.037
Age				
10 years	15.7 (5.2)	0.5 (0.7)	-4.067	0.001
11 years	17.7 (7.14)	8.0 (8.3)	-2.708	0.015
12 years	17.8 (9.81)	11.4(5.4)	-2.240	0.034
13 years	14.1 (11.7)	11.6 (6.6)	-0.691	0.503
14 years	12.5 (10.1)	14.1 (5.0)	0.456	0.655
15 years	11.4 (13.0)	10.0(7.3)	-0.319	0.753
16 years	11.2 (8.01)	12.2 (7.3)	0.321	0.751
17 - 19 years	8.5 (10.0)	15.5 (12.1)	1.387	0.182

*p value < 0.05 significant.

4.5.0 Self-esteem among respondents

Self-esteem (Assessed by the Rosenberg self-esteem questionnaire) among the respondents. Results showed that the mean total self-esteem score was 27.6 ± 3.3 , and was significantly lower among the SCD group 26.6 ± 2.9 compared to the controls 28.6 ± 3.4 ($p < 0.05$).

Further findings, displayed in Table 4.5.1 show the self-esteem scores distributed by age and gender. Results showed that there was no significant relationship between self-esteem scores and gender ($p > 0.05$). Self-esteem score was only significantly associated with SCD participants that were 12 years of age, as lower self-esteem scores were observed among respondents with SCD aged 12 years, compared to the controls ($p < 0.05$). There was no relationship observed among other ages ($p > 0.05$).

Table 4.5.1: Comparison of Rosenberg self-esteem scores between SCD respondents and controls distributed by age and gender

Description	SCD group	Group Control group	t-test	p Value
Gender				
Male	26.0 (4.4)	26.6 (9.0)	0.396	0.693
Female	26.7 (3.4)	27.7 (5.0)	1.210	0.229
Age				
10 years	26.3 (2.1)	25.0 (1.4)	-0.876	0.395
11 years	26.4 (2.0)	25.7 (9.4)	-0.232	0.819
12 years	26.1 (1.6)	28.5 (2.6)	2.759	0.010
13 years	25.0 (1.6)	27.0 (3.2)	1.862	0.072
14 years	26.5 (2.0)	29.0 (4.7)	1.578	0.131
15 years	27.2 (2.4)	27.8 (7.5)	0.168	0.868
16 years	26.8 (4.3)	24.2 (12.3)	-0.768	0.450
17 - 19 years	28.2 (1.9)	25.9 (12.5)	-0.662	0.517

*p value < 0.05 significant.

4.6.0 Bivariate analysis showing the association between victimization and socio-demographic factors

Table 4.6.1 shows the association between victimization scores and socio-demographic characteristics. In both groups combined, results showed a significant negative correlation between victimization scores and the age of respondents (Pearson correlation: -0.217, $p = 0.002$).

A significant negative association was observed between victimization scores and age of respondents with SCD (Pearson correlation: -0.437, $p < 0.05$), however no significant correlation was observed among the controls ($p > 0.05$).

4.6.1 Association between victimization and socio-demographic/ clinical characteristics in SCD

Correlation of victimization scores with:	SCD group (Pearson Corr.; p value)	Control group (Pearson Corr.; p value)
Age	-0.437; <0.05	0.190; 0.060
Age at contact with clinic	0.107; 0.311	-
Age at first diagnosis	0.019; 0.850	-
Frequency of admission	-0.018; 0.855	-

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Table 4.6.2 Relationship between victimization and socio demographic characteristics among SCD respondents

Description	Victimization Present n (%)	Victimization Absent n (%)	χ^2	p Value
Gender				
Male	9 (18.4)	40 (81.6)	0.009	0.925
Female	9 (17.6)	42 (2.4)		
Marital status of parents				
Currently married	16 (20.5)	62 (79.5)	1.343	0.246
Currently unmarried	2 (9.5)	19 (90.5)		
Educational level of participants				
Primary	4 (25.0)	12 (75.0)	0.712	0.870
Junior Secondary	9 (23.1)	30 (76.9)		
Senior secondary	5 (14.3)	30 (85.7)		
Tertiary	0	7 (100)		
Mothers occupation				
Professional	2 (18.2)	9 (81.8)	3.810	0.283
Civil servant	4 (20.0)	16 (80.0)		
Trade/business	11 (23.9)	35 (76.1)		
Teacher	1 (4.5)	21 (95.5)		
Religion				
Orthodox Christianity	7 (11.7)	53 (88.3)	4.798	0.091
Pentecostal Christianity	10 (26.3)	28 (73.7)		
Others				
Family type	1 (50.0)	1 (50.0)		
Monogamous	14 (18.4)	62 (81.6)	0.432	0.511
Polygamous	2 (11.8)	15 (88.2)		

*p value < 0.05 significant.

4.7.0 Bivariate analysis showing the association between victimization and anthropometric measurements.

Table 4.7 shows the association between victimization scores and anthropometric measurements. Results showed a significant negative correlation between victimization scores and the height of respondents with SCD, (Pearson correlation: -0.426, $p < 0.005$), a significant positive correlation was however, observed among the control group (Pearson correlation: 0.262, $p < 0.009$).

Similarly, a significant negative association was observed between victimization scores and weight of respondents with SCD (Pearson correlation: -0.395, $p < 0.05$), while no significant correlation was observed among the controls ($p > 0.05$).

4.7. Association between victimization and anthropometric characteristics.

Correlation of victimization score with:	SCD group (Pearson Corr.; p value)	Control group (Pearson Corr.; p value)
Weight	-0.395; <0.05	0.108; 0.285
Height	-0.426; <0.05	0.262; 0.009
BMI	-0.058; 0.564	0.031; 0.759

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4.8.0 Bivariate analysis showing the association between victimization and self-esteem.

The association between victimization scores and self-esteem scores showed a weak positive correlation between victimization scores and the self-esteem scores of both respondents with SCD and the control group, however the relationship was not statistically significant (Pearson correlation: 0.021 and 0.033, respectively; $p > 0.05$).

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4.9. Multiple linear regression showing predictors of victimization among the SCD respondents.

A multiple linear regression model was performed for the predictors of victimization among the SCD respondents using the victimization scores (Table 4.9).

Results shows the variables explored – age, weight, height and body mass index (BMI) – were not significant predictors of victimization.

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Table 4.9 Multiple linear regression showing predictors of victimization among SCD respondents

	Unstandardized Coefficients		Standardized Coefficients	95.0% Confidence Interval for B	p value
	B	Std. Error	Beta		
Age	.010	.024	.060	-.038 – 0.059	.670
Weight	.010	.008	.377	-.006 – 0.026	.228
Height	.001	.001	.119	-.001 – 0.003	.270
BMI	-.026	.023	-.310	-.072 – 0.020	.267

CHAPTER FIVE

5.1 DISCUSSION

This study was a case control study conducted among sickle cell adolescents who attended sickle cell clinic in Federal Teaching Hospital Abakaliki (FETHA) to ascertain the correlates of perceived peer victimization among SCD adolescents with controls from Ebonyi State University (EBSU) Secondary School. All participants were evaluated with the socio-demographic and health questionnaire, the Rosenberg self-esteem scale and the Multidimensional Self-esteem Scale.

This study was aimed at determining the prevalence of perceived peer victimization among adolescents with sickle cell disease, their anthropometric characteristics and also to ascertain if there was any association between peer victimization and the socio-demographic and anthropometric measurements among adolescents with SCD. It was also aimed at determining whether there was any association between perceived peer victimization and self-esteem among adolescents with SCD.

5.1.1 Sociodemographic characteristics of respondents

The research participants' ages ranged from 10- 19 years with mean age of 14.0 years for SCD. This was similar to the age of participants with sickle cell disease in the study done by Bakare and Omigbodun on the psychological complications of childhood chronic physical illness in Nigerian children and their mothers: the implication for developing paediatric liaison services (Bakare *et al.*, 2008). The mean age of the control group was 13.8 years and this was similar to the mean age of the sickle cell disease group.

There were more female participants than males in this study. This differs from the gender ratios in a study among adolescents in western countries where more males were enrolled in the study than females (Sentenac *et al.*, 2013). This may be due to the higher proportion of females in the studied population, disagreeing with the initial expectation that more males would be enrolled into the study

because in the environment where the study was carried out, males tend to be preferentially taken to hospitals during illnesses (Nwokocha, 2007).

The majority of the respondents especially in the sickle cell disease group were Christians. Among the population studied, people say positive things about themselves and would deny their experience of any bad thing. E. g when a bad thing is said about them, they will exclaim 'It is not my portion', 'I am strong' when they are sick. This was found to affect the evaluation of self-esteem which according to the researcher was a lot higher in the study participant compared to participant in similar studies. For instance, this findings of comparatively higher self – esteem in this study is in contrast to a study by Devore done in Western countries on self - esteem, where people say things exactly the way it is and participants were found to have lower self – esteem (Devore, 2002a). However, this finding is similar to findings in similar studies done in Nigeria on self – esteem where the participants were also noted to say positive things about themselves (Abdulrahman, 2016).

It was noted that most of the adolescents with sickle cell disease were brought to the clinic by their mothers. This could be attributed to the fact that in the setting where this study was carried out, women were the primary caregivers and men were breadwinners. In some extreme cases, the fathers may say it is the fault of the mothers. These findings are similar to findings from similar studies in Nigeria on psychosocial burden of sickle cell disease by caregivers by Ohaeri and Shokunbi (Ohaeri and Shokunbi, 2002).

The adolescents with SCD who participated in this study had mixed background including upper, middle and lower socioeconomic class. This informed the choice of EBSU secondary school for the controls because adolescents from different socioeconomic class attend the school and also some of the adolescents with SCD attend EBSU secondary school.

5.1.2 Prevalence of victimization among adolescents with SCD compared to controls

Victimization was assessed using the Multidimensional peer victimization scale (MDPVS). The MDPVS has been validated in Ibadan Nigeria (Balogun and Olapegba, 2007).

The prevalence of victimization among the adolescents was 16.0 %, and stratified into various domains, the commonest type of victimization experienced by respondents was verbal victimization followed by social manipulation and attack on property while physical victimization was least experienced by respondents. The overall low victimization prevalence reported in this study was in contrast with previous studies, which have reported much higher victimization rates among adolescents in both developed and developing countries. For example, while some African studies have reported victimization rates ranging from between 27.0 % to 50.0 % in Uganda, Zimbabwe, and Zambia (Brown et al., 2008), much higher victimization rates have been reported by Adeosun et al., (2015) in Lagos, Nigeria, who showed that victimization was prevalent in more than half (56.8%) of the adolescents sampled from different secondary schools.

The very low prevalence rates reported in this study may not be unconnected to the difference in methodological approach to categorizing victimization; whereas in this study victimization was defined as 1 S.D above the mean victimization scores, other studies have only merely reported the prevalence of victimization as single individual items (Adeosun *et al.*, 2015).

Findings from this study also showed that the prevalence of victimization among the SCD respondents was 18.0 %, compared to 14.0 % in the control group; and while there was no significant difference in the prevalence of defined victimization between the SCDs and controls, the mean total victimization scores were significantly higher among the SCD group compared to the controls. As with most chronic diseases, SCD adolescents have been reported to experience increased risk of peer victimization compared with others. This finding was similar to the study by

Sentenac *et al.*, 2013 where victimization was found to be higher among adolescents with chronic illnesses in 11 western countries.

In this study, the most common type of victimization experienced by respondents was verbal victimization. This is similar to finding from studies of victimization in adolescents with chronic medical conditions (Van Cleave and Davis, 2006). This is probably due to teasing that these adolescents with SCD are more prone to as a result of their peculiarities.

Also in our study, physical victimization was higher among the SCD group compared with the controls, as has been similarly reported in studies conducted among young people in difficult circumstances (Sullivan, Farrell and Kliewer, 2006). This may be as a result of the adolescents with SCD being perceived as weaker due to their smaller stature and peculiarities in their physique (Odetunde *et al.*, 2016). As individuals perceived to be different or weaker are more predisposed to victimization (Wei *et al.*, 2017).

5.1.3 Anthropometric characteristics of the respondents.

The control group had a higher mean weight compared to the SCD counterpart. This was in keeping with the finding by Odetunde and others of lower weight among adolescents with sickle cell anaemia compared with adolescents with normal Haemoglobin genotypes (Odetunde *et al.*, 2016). This weight difference might result from recurrent adverse health conditions, and malnutrition, as well as the increased risk of repeated infections and chronic pain in SCD. Both males and females of the SCD group weighed significantly less than their control counterparts.

The SCD group weighed less than the control group across ages 10 – 17 years and this difference in weight was found to be statistically significant. There was a statistically significant difference in the height of the SCD group compared to the control group at ages 12-14 years, but not at other age

points. This finding is similar to a study done in India (Mukherjee and Gangakhedkar, 2004) and has been purported to be probably due to delayed growth spurt in adolescents with sickle cell disease (Rhodes *et al.*, 2009). This delay is usually temporary as they later catch up with their peers as they get older.

5.1.4 Victimization and Anthropometric characteristics of adolescents with SCD.

Anthropometric characteristics including weight, height and body mass index (BMI) play a major role in the prevalence of victimization among adolescents in many different settings. In a study conducted among adolescents with SCD in the University of Nigeria Teaching Hospital Enugu Nigeria it was reported that adolescents with SCD had lower weight, height and BMI compared to their counterparts with normal haemoglobin types (Odetunde *et al.*, 2016). This is similar to findings in this study and from other studies (Mukherjee and Gangakhedkar, 2004).

Adolescents in school-based settings with outlying anthropometric characteristics are more prone to victimization compared to colleagues (Wei *et al.*, 2017). Findings from our study showed a significant negative correlation between victimization scores and both the weight and height of respondents with SCD. A possible explanation may be the fact that adolescents with significantly shorter heights or lower weight compared to their counterparts, are usually perceived to be smaller, weaker, and consequently more prone to victimization including physical and verbal assault on account of their peculiarities as observed by Wei (Wei *et al.*, 2017).

On the other hand, however, the significant positive correlation observed between victimization and height among the control group may be attributed to the tendency for bigger and taller adolescents to be perceived as big and not fit for their ages, thus predisposing them as easy prey for verbal victimization. This finding is similar to findings from other studies on victimization and BMI (Adams and Bukowski, 2008; Rhodes *et al.*, 2009; Giletta *et al.*, 2010). It was noted that the

victimization experienced by these taller adolescents may be limited to mainly verbal victimization as most of these bigger students were more prone to a lot of teasing like “overgrown baby elephant”, “big for nothing” and so on because of their peculiarities of having greater heights and sometimes size compared to their counterparts of same age (Wei *et al.*, 2017). No significant correlation was observed between victimization and the BMI of either the SCD group or the controls. This was contrary to other studies on victimization and BMI where a positive correlation was found between victimization and BMI (Pearce, Boergers and Prinstein, 2002; Janssen *et al.*, 2004).

5.1.5 The self- esteem profile of respondents

The mean total self-esteem score was significantly lower among the SCD group compared to the control group. This could be attributed to consciousness of the body deformity that often accompanies sickle cell disease. In addition, the recurrent victimization may be a predisposition for the development of low self-esteem in this group. Studies have shown that self-esteem is often low in sickle cell disease patients (Edwards *et al.*, 2000). It has also been shown that HBSS and the associated low self-esteem can predispose to development of anxiety disorders in some adolescents (Simon *et al.*, 2009).

There was no significant relationship between self-esteem scores and gender in this study although there was higher self- esteem among the females compared to the males. Other studies have conflicting outcomes (Mullis and Chapman, 2000). However, the differences in self-esteem among gender has been related majorly to cultural factors and this may be responsible for the non-uniformity in outcome of different studies (Frey and Carlock, 1989; Kling *et al.*, 1999).

5.1.6 Victimization and Self-esteem among adolescents with SCD

Self-esteem was assessed with Rosenberg self-esteem questionnaire among the respondents. Expectedly, findings from this study showed that the mean total self-esteem score was significantly lower among the SCD group compared to the control group. Apart from consciousness about body deformity, the comparatively low self-esteem score among the SCD adolescents may be attributed to the challenges associated with school transitions, including moving from one school arm to another as this may also further place strenuous demands on these SCD adolescents who may find it difficult to cope with the stress. This has also been alluded to by several studies which have suggested that the SCD condition was associated with several physical and psychological challenges, including low self-esteem which further generally predisposes them to being victims of taunting, bullying and other victimization (Anie, 2005; Forgeron *et al.*, 2010). According to Devore *et al.* low self-esteem was an invitation for victimization, and adolescents with a low self-esteem might also display poor assertiveness, depressive symptoms, poor self-regulation, as well as expect and accept negative feedback more than people with high self-esteem (Devore, 2002b).

Findings from this study also showed that there was no significant correlation between self-esteem and victimization either among the SCD respondents or the control. This was in contrast with studies conducted by Devore *et al.*, (2002) among first grade students in the United States whose findings showed a negative correlation between self-esteem and victimization. Although, Devore *et al.*, (2002) have previously asserted that high self-esteem might be a coping mechanism for dealing with threats and daily stressors of life among these adolescents, a possible explanation for the non-significant correlation in this study might be that these adolescents are dealing with the daily life stressors including victimization threats through other means apart from through the self-esteem pathway. Other possible reasons for our findings may be the fact that people in this study area are known to say positive things about themselves by default, that may not reflect their true situation.

Furthermore, Nigerians are also known to be optimistic with positive influences drawn from their cultural and religious beliefs.

5.2.0 STRENGTHS OF THE STUDY.

The strengths of this study are as follows.

To the best knowledge of the researcher, this is the first study to ascertain the correlates of perceived peer victimization among adolescents with sickle cell disease (SCD).

This study compared adolescents with SCD with a group of healthy, non-SCD adolescents in the same sociocultural environment, increasing the likelihood that the findings could be largely attributed to SCD status.

5.3.0 Limitation of the study

Data collection from the adolescents with SCD depended solely on their attendance at clinic visits, as the researcher had to use a consecutive sampling technique.

Confirmatory genotype testing was not done for the study participants and so the researcher relied on hospital and school records. These were however deemed to be reliable.

The exclusion of children with skeletal deformities may be a limitation to this study as those children with skeletal deformities as a result of complications of sickle cell disease may be at more risk of peer victimization and may have lower self-esteem. This exclusion was done to avoid being confounders in the research as deformities might be congenital.

5.4.0 CONCLUSION

I am a paediatric resident doctor. During my day to day practice I come in contact with patients with sickle cell disease. I became interested in this study because of the numerous psychosocial concerns

of my patients including most importantly teasing due to their body size, frequent absenteeism from school, frequent urination and need to drink plenty of water.

This prompted me to conduct this study to determine the correlates of peer victimization among adolescents with sickle cell disease in order to make a case for policy makers to make policies that will protect sickle cell adolescent from victimization and also institute interventions in schools, at home and in faith based organizations.

This study found that adolescents with sickle cell disease were more prone to victimization especially verbal and physical victimization compared to healthy adolescents with normal haemoglobin types. Victimization was also found to be more in those who were smaller in size, younger and females.

Though their self- esteem scores were lower than those of healthy controls, it was not found to predispose them more to victimization.

5.5.0 RECOMMENDATIONS.

1. It is recommended that subsequent researchers should do further research on victimization among younger children aged less than 10 years to ascertain if they are more prone to victimization than adolescents since victimization has been found to be associated with younger age in this study.
2. I also recommend that they should also do a random sampling of adolescents with SCD in further studies where possible.
3. Potentially, adolescents with SCD at age range 10-12 years, and those with significantly affected weight and height development could be targeted for supportive interventions by

organizations and mental health professionals to mitigate the effects of potential victimization that they may be more at risk of.

4. It is recommended that government and especially schools should develop policies that would protect weaker and/ or disadvantaged adolescents especially those with SCD against victimization.
5. Adolescents with SCD should be encouraged to report all cases of abuse, victimization and /or bullying to authorities and cases should be dealt with promptly by the authorities to deter perpetrators and give confidence to victims.
6. Support groups should be formed in schools to create awareness against victimization and/ or bullying of adolescents with SCD.
7. Supportive intervention measures should be initiated in cooperation with religious organizations, voluntary agencies and philanthropic organizations to alleviate the pains and disadvantages suffered by adolescents with sickle cell disease.
8. It may help if government and policy makers put in place a programme specifically to provide psychological and mental health support to adolescents with sickle cell disease and other chronic diseases in schools and communities.

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APPENDIX I

CORRELATES OF PERCEIVED PEER VICTIMIZATION AMONG ADOLESCENTS WITH SICKLE CELL DISEASE IN ABAKALIKI NIGERIA.

Socio demographic questionnaire

SOCIO-DEMOGRAPHIC QUESTIONNAIRE FOR THE CHILD

1. Age of the child (in years) []
2. Date of birth of the child (in years) []
3. Gender ----- Male [] Female []
4. Educational Level -----
5. What is the position of the child among his/her siblings children []
6. Age of child at contact with the clinic (years) []
7. Age when first diagnosed with sickle cell disease (years) []
8. Place when diagnoses was made []
9. Frequency of hospital admission/year []

SOCIO-DEMOGRAPHIC QUESTIONNAIRE FOR THE MOTHER

1. How old are you []
2. What is your date of birth (Day/Month/Year)?
3. Where do you live (Address of present abode) -----
4. Do you practice any religion? No [], Yes [],
5. Please write down the exact place you attend for worship ----- (a) Islam (b)
Orthodox Christian (c) Pentecostal Christian (d) Traditional Religion (e) Others
6. Marital Status: Single [], Married [], Separated [], Divorced [], Widowed []
7. If married, what is your age (in years) at marriage []

8. Type of family_____ Monogamous [], Polygamous []
9. Educational level, Please specify
10. You Employment status Unemployed [], Employed []
11. Your occupation
12. Your Monthly income
13. If employed, what is the effect of caring for this child on your work, please specify_____
14. Educational level of your husband, please specify _____
15. Employment status of your husband Unemployed [], Employed []
16. Occupation of your husband
17. Monthly income of your husband
18. No of your children [please specify]

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APPENDIX II

CORRELATES OF PERCEIVED PEER VICTIMIZATION AMONG ADOLESCENTS WITH SICKLE CELL DISEASE IN ABAKALIKI NIGERIA.

Multidimensional peer victimization scale

Please mark your answers below with an “x”. Example: X

How often during the last school year has another pupil done these things to you?

1. Called me names

Not at all

Once

More than once

2. Tried to get me into trouble with friends

Not at all

Once

More than once

3. Took something of mine without permission

Not at all

Once

More than once

4. Made fun of me because of my appearance

Not at all

Once

More than once

5. Made fun of me for some reason

- Not at all
- Once
- more than once

6. Punched me

- Not at all
- Once
- More than once

7. Kicked me

- Not at all
- Once
- More than once

8. Hurt me physically in some way

- Not at all
- Once
- More than once

9. Beat me up

- Not at all
- Once
- More than once

10. Tried to break something of mine

- Not at all
- Once
- more than once

11. Tried to make my friends turn against me

- Not at all
- Once
- More than once

12. Stole something from me

- Not at all
- Once
- More than once

13. Refused to talk to me

- Not at all
- Once
- More than once

14. Made other people not talk to me

- Not at all
- Once
- More than once

15. Deliberately damaged some property of mine

- Not at all
- Once
- More than once

16. Swore at me

Not at all

Once

More than once

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APPENDIX III

CORRELATES OF PERCEIVED PEER VICTIMIZATION AMONG ADOLESCENTS WITH SICKLE CELL DISEASE IN ABAKALIKI NIGERIA.

ROSENBERG SELF-ESTEEM SCALE

Instructions: Below is a list of statements dealing with your general feelings about yourself. For each question, indicate your level of agreement by ticking in the corresponding space. You can only tick one answer.

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

APPENDIX IV

ASSENT FORM

Title of study: Correlates of perceived peer victimization among adolescents with sickle cell disease in Abakaliki Nigeria.

I am an M S c student in centre for child and adolescent mental health who is interested in carrying out the above titled study on adolescents with sickle disease aged 10-19years.

A lot of studies have been carried out across the world on peer victimization/bullying but little work has been done to assess peer victimization among sickle cell patients.

The purpose of this study is to determine the prevalence and correlates of perceived peer victimization among adolescents with sickle cell disease.

This study involves filling of some questionnaires, measuring your height and weight.

Your participation in the study is voluntary and you are free to withdraw from the study at any time.

None of these procedures are painful or cause body harm and there is no consequence for refusal to participate in this study.

Your identity will be concealed and all the information obtained in the course of this study will remain in the sole custody of the researcher.

For any further clarification/questions, the researcher can be reached. You may also contact the Chairman Research and Ethics Committee Federal Teaching Hospital Abakaliki. (former FMC Abakaliki).

Thank you.

Principal Investigator.

I (initials) having read the assent form or having listened to same interpreted to me in Igbo language of my own free will and without inducement or coercion accept that I will participate in this study

.....
Name of researcher

.....
initials of participants

By signing here you consent to participating in this study.

APPENDIX V

INFORMED CONSENT FORM

CORRELATES OF PERCEIVED PEER VICTIMIZATION AMONG ADOLESCENTS WITH SICKLE CELL DISEASE IN ABAKALIKI NIGERIA.

I am a Senior registrar in the department of Paediatrics, doing M Sc in child and adolescent mental health in the University of Ibadan.

This study is aimed at determining the prevalence and correlates of perceived peer victimization in sickle cell patients.

In the course of this study you will be asked some personal questions, your height and weight will also be measured. The questionnaire will take about 15-25mins to complete. Your participation in this research will not cost you anything, but if we discover any sign of mental health problems in the course of the study, you will benefit from free consultation from the researcher. If the need arises, however you may be referred to the appropriate specialist. Your identity will be concealed and all the information obtained in the course of this study will remain in the sole custody of the researcher. Your participation in this research is voluntary and you are free to withdraw from the study at any time.

None of these procedures are painful or cause body harm and there is no consequence for refusal to participate.

I have fully explained this research to and have given significant information including about risks and benefits, to make an informed decision.

This study has been ethically approved by the RECs of the Federal Teaching Hospital, Abakaliki and the researcher can be contacted.

You may also contact The Chairman Research and Ethics Committee Federal Teaching Hospital Abakaliki (former FMC Abakaliki)

Thank you

I (initials) having read the assent form or having listened to same interpreted to me in Igbo language of my own free will and without inducement or coercion accept that I will participate in this study

.....

Name of researcher

.....

initials of participants

By signing here you consent to participating in this study.

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APPENDIX VI

FEDERAL TEACHING HOSPITAL ABAKALIKI

P.M.B. 102, ABAKALIKI, EBONYI STATE, NIGERIA Website: www.fetha.ng Email: info@fetha.ng

DR. ONWE EMEKA OGAH
MB.BS, FWACP
Chief Medical Director

DR. ROBINSON CHUKWUDI ONOH
MBBS Nig, FWACS, FMCOG, FICS,
FMAS, DMAS, C-ART, PGD (Pub Admin)
Chairman, Medical Advisory Committee



CHIEF C.C. OGBU JP, KSM
B.Sc. (Hons), MBA, MSc,
FCAI, FNIMN, FHAM, MNIM
Director of Administration

FETHA/REC/VOL1/2017/623

19th December, 2017

REC PROTOCOL NUMBER 03/12/2017 - 05/12/2017
REC APPROVAL NUMBER 05/12/2017- 19/12/2017

Department of Paediatrics,
Federal Teaching Hospital,
Abakaliki.

APPROVAL LETTER

RE: Correlates of Perceived Peer Victimization among Adolescents with Sickle Cell Diseases in Abakaliki Nigeria

I have the pleasure to inform you that Research and Ethics Committee (REC) on 19th December, 2017, reviewed your research proposal on: "Correlates of Perceived Peer Victimization among Adolescents with Sickle Cell Diseases in Abakaliki Nigeria" and has granted full approval for the study.

This approval dates from 19th December, 2017 to 18th December, 2018, if there is delay in starting the research, please inform the REC so that the dates of approval could be adjusted accordingly. All informed consent form must carry the REC approval number and duration of study.

No changes are permitted in the research without prior approval by the committee. The committee reserves the right to conduct compliance visit to your research site without previous notification.

On completion of the study, a copy of the write-up must be made available to Research and Ethics Committee.

Yours Sincerely,

Rev. Fr. Dr. Chidi Obasi
Ag. Chairman, Research & Ethics Committee

APPENDIX VII

GOVERNMENT OF EBONYI STATE OF NIGERIA
SECONDARY EDUCATION BOARD

Telegram
Telephone: 043-221238

HEADQUARTERS
ABAKALIKI

OFFICE OF THE EXECUTIVE CHAIRMAN

Your Ref:
Our Ref:

Date:
5th March, 2018.

(All replies to be addressed to the Executive Chairman)

Sir


TO WHOM IT MAY CONCERN

**LETTER OF PERMISSION TO CONDUCT RESEARCH FROM
SELECTED SECONDARY SCHOOLS IN ABAKALIKI
METROPOLIS.**

The bearer is a post graduate student of University Ibadan currently carrying out a research on "correlates of perceived peer Victimization among sickle cell adolescents in Secondary School."

You may wish to give her all the necessary assistance to facilitate the study.

Thanks


Ogalagu S.I
HOD PRS
For: Chairman

..... Salt of the Nation