KNOWLEDGE AND ATTITUDE OF SECONDARY SCHOOL STUDENTS TOWARDS SICKLE CELL DISEASE IN NSUKKA EDUCATION ZONE OF ENUGU STATE

BY

UZOR, GEORGE ONOCHIE

PG/MEd/15/77238

DEPARTMENT OF EDUCATIONAL FOUNDATIONS

FACULTY OF EDUCATION

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(GUIDANCE AND COUNSELLING UNIT)

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SUPERVISOR: PROF. M. A. OBIDOA

APPROVAL PAGE

This project has been approved for the Department of Educational Foundations, Faculty of Education, University of Nigeria, Nsukka

BY

13/11/17

PROF. M. A. OBIDOA
SUPERVISOR

INTERNAL EXAMINER

6/12/2017

EXTERNAL EXAMINER

PROF. NKEKOLONYE
HEAD OF DEPARTMENT

PROF. S. C. NWIZU
DEAN OF FACULTY

DEDICATION

This piece of work is dedicated to God Almighty for His grace, guidance and protection, and also to my wife Jennifer and my children, Irene and Michelle for their maximum support and encouragement.

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It is also my sincere wish, on a more personal note to express my heart-felt gratitude to my family most especially my wife and children as well as my friends and the research respondents for their understanding, support and encouragement.

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ABSTRACT

The study examined the knowledge and attitude of secondary school students towards sickle cell disease in Nsukka Education Zone of Enugu State. Nine research questions were formulated to guide the study. The design of the study was descriptive survey. The instrument for data collection was an achievement test and a questionnaire. A total of 420 students in the senior secondary school were sampled using multi-stage sampling technique and at each stage, random sampling technique was used for the study. The data collected was statistically analyzed using mean and standard deviation. Some of the major findings of the study were that the secondary school students had an above average knowledge of sickle cell disease, have positive attitude towards sickle cell disease as well as individuals suffering from the disease,that senior secondary school students are willing to go for premarital sickle cell counselling and screening, that the attitude of students towards sickle cell disease was not influenced by gender and location, and that the knowledge of senior secondary school students on sickle cell disease was not influence by school location and gender either. The study recomends that more awareness programmes on sickle cell disease as well as seminars and workshops on premarital sickle cell counselling and screening should be provided by both the government, professional personnels and schools to fully remedy the problem of sickle cell disease among the populace.

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CHAPTER ONE

INTRODUCTION

Background of the Study

The observed high occurrence of sickle cell disease and its trait in many parts of Nigeria coupled with high level of ignorance about the disorder displayed by both the high and low level placed citizens in the country is an issue of great concern that calls for an organized enlightenment programme regarding the disorder. This is because a great number of individuals among the populace are still not well informed regarding the nature, pathogenesis and control of the disease. According to World Health Organization (WHO, 2008), 200,000 infants are born with sickle cell diease in Africa every year, with Nigeria accounting for about three quarters of these births.

Sickle cell disease causes a lot of social and economic hardships among the people of Nigeria in particular and Africa in general, and yet not enough attention is paid to its control and management (Uzoegwu, 2007). The author further asserted that it is surprising to note that the disease is regarded as extinct at some governmental levels and as such many humanitarian organizations fail to include the disease in their list of African diseases requiring immediate control measures.

Sickle cell disease (SCD) is an autosomal recessively inherited disorder and one of the most common genetic conditions worldwide (Weatherall, 2008). It is considered as one of the most prevalent hereditary hematological disease worldwide (Lourerio & Rozenfeld, 2005). In the world, about 300 000 children are born with sickle cell disease every year (Okpala, Thomas, Westerdale, Jegede, Raj, Daley, Costello-Binger, Mullen, Rochester- Peart, Helps, Tulloch, Akpala, Dick, Bewley, Davies, & Abbs, 2002). One of the biggest health challenges to the human race is sickle cell disorder (WHO, 2008). According to Tierney, McPhee, & Papadakis, (2006) Sickle cell disease (SCD) is an autosomal recessive disorder in which abnormal hemoglobin leads to chronic hemolytic anemia with numerous clinical consequences. The term sickle cell disease (SCD) refers to a collection of hemoglobinopathies (inherited blood disorders) characterized by abnormal hemoglobin and produced through the homozygous inheritance of a sickle cell allele and individuals with SCD have a 50% chance of passing the gene to future offspring (Lourerio & Rozenfeld, 2005).

Sickle cell disease in the context of this study is an irreversible, manageable health problem seen amongst various tribes, worldwide. It is found in many parts of the world, particularly in people whose ancestors come from sub-saharan Africa, India, Saudi-Arabia and Mediterranean countries.

Sickle cell anaemia has been known in Africa before the twentieth century and the inhabitants have given it several names based on their understanding. They linked the disease with reincarnation and so it is called “Ogbanje” by the Igbo’s, “Abiku” by the Yoruba in Nigeria and “Banyangi” in Cameroon (Bazuaye and Olayemi, 2009). According to World Health Organization (WHO, 2008), sickle cell disorder contributes to 5% of under five deaths on the African continent; more than 9% of such deaths occur in West Africa and up to 16% of under-five deaths in individual West African countries.

In Africa three forms of sickle cell disease are present which include sickle cell anaemia (HbSS), sickle cell haemoglobin C (Hb-SC) and sickle cell thalasaemia (Hb-SSthal) (Anie, Akinyanju & Egujobi 2010). According to the authors, In Nigeria the prevalence of HbSS is 1-3% and it poses a severe burden on the affected individuals and their families. Akinyanju, (2009) states that about one hundred and fifty thousand children are born each year with sickle cell diseases and about 2-3% of Nigerians live with the disease while 25-30% of Nigerians carry the gene that can give rise to sickle cell disease (SCD). It is estimated that by the year 2025, a total number of 50,000 children born in Nigeria will be affected with sickle cell disorder, and this poses a great concern, (George, 2011). Based on World Health Organization [WHO] indices, Nigeria accounts for 75 percent of

infant sickle-cell cases in Africa and almost 80 percent of infant deaths from the disease in the continent (WHO, 2008).

Sickle cell disease is a major public health concern, as it can dramatically affect the health and quality of life of those diagnosed with the disease. People with sickle cell disease have a shortened life expectancy and when someone has it, they can experience a sickle cell "crisis". This crisis occurs when pain, often with a sudden onset occurs, because of decreased blood flow to tissues of the body and the sickle-shaped cells essentially "get stuck" in blood vessels, causing occlusions and tissue damage (Centers for Disease Control, 2008). According to Centers for Disease Control (2008), the main pathology in SCD is the trapping of sickle shaped red cells in small blood vessels resulting in blockages and this typically manifests as bone pain, which is one of the most distressing symptom in people affected by SCD.

The same process can result in other complications including, strokes and kidney failure, and some affected persons also have potentially stigmatizing signs including jaundice, leg ulcers, and short stature which is often precipitated by factors such as infection, dehydration, exhaustion and a change in body temperature which may often warrant hospitalization of the clients (Centers for Disease Control, 2008). Children born to two parents with sickle cell trait have a

25% chance of having SCD and a 50% chance of having SCT (Sickle Cell Trait) and therefore, it is highly important for people of reproductive age group to understand the genetics of SCD and know their own genotype (Anie, Akinyanju & Egujobi 2010). In this respect, if they carry the S gene, it will help them in advance in selecting future partners for marriage.

Sickle cell disease is a disease that requires a significant degree of comprehensive knowledge in order to prevent it as prevention method stands the only perfect medium its prevalence among children that are being born into this world could be controlled. Knowledge is the general awareness or information, gained true experience or education which helps an individual to get a clear understanding as well as detailed information about a situation or fact (Ferguson, 2010).

Knowledge in this context can refer to a theoretical or practical understanding of a subject. It can be implicit or explicit (as with the theoretical understanding of a subject); it can be more or less formal or systematic. Knowledge about sickle cell disease can be gained through information from educational and programmes on premarital counselling on sickle cell disease (Lockock & Joe, 2009). According the authors, this in turn establishes a health awareness programme in order to explain the benefits of premarital sickle cell

counselling and screening to the public and increase their awareness on the serious consequences of sickle cell disorder. Thus knowledge gained about premarital sickle cell counselling and screening will help to prevent SCD and the prevention will depend on the attitude of individuals towards the disease.

Having knowledge about SCD is vital but in order to get a full understanding the disease, there is the need to explore the attitude of non-sufferers towards affected persons. Attitude is the totality of those states that lead to a point towards some particular activity of the organism, (Ferguson, 2010). Attitude in this study is a set way of thinking or feeling typically reflected in a person's behaviour Attitude to sickle cell disease can be a dynamic element in human behaviour, and it can be positive or negative. People who have positive attitude about the benefits associated with premarital sickle cell counselling and screening may like to adhere to premarital counselling and screening, (Lockock & Joe, 2009). However few studies have demonstrated the relevance of stigmatizing attitudes in the lives of children with SCD and the focus mainly is on experiences of young people with SCD.

In a study conducted by Olarewaju, Olakunle, Enwerem, Adebimpe, and Olugbenga-Bello, (2013) on Knowledge and attitude of secondary school students in Jos, Nigeria on sickle cell disease, a total of 137 students were interviewed;

Majority (83%) of the respondents were aware of SCDs, as an inherited disorder (80%), affecting the red blood cells (83%) but only half (54%) knew that the disease can only be diagnosed through blood test. Also, only 59% knew their genotype and 11. 1% claimed AS genotype. More than one fourth (25%) had wrong belief that SCD is caused by evil spirit while 76% showed wrong attitude involving stigmatization towards individuals with sickle cell disease. The result showed that Comprehensive knowledge about SCD was found to be low despite good awareness among respondents, but only few knew their haemoglobin genotype. It is therefore inevitable that if sickle cell disease control strategies must yield any significant results, there is a need to raise awareness about SCD with regards to premarital counselling and screening, especially among students in secondary institutions in Nigeria.

Premarital counselling and screening should be the main focus of efforts at controlling SCD in developing countries because it is relatively cheap and far less invasive than Prenatal Diagnosis (PND). In order to prevent this disorder, genetic counselling with respect to sickle cell screening and testing has been recommended for couples before marriage (Akinyanju, 2009). Counselling can be defined as a helping profession involving the counsellor and the client in which the counsellor uses his professional knowledge and skills to assist the client to attain proper

development and maturity, improved functioning and improved ability to cope with life problems (Okeke, 2003).

In the context of this study, counselling is a professional psychological relationship in which two people are in contact, one the counsellor and the other the client, whereby the counsellor helps the client to achieve a better understanding of himself and his world.

Premarital sickle cell counselling and screening/testing has been defined by different people in different ways. According to Gharaibe and Mater (2009), they see premarital sickle cell counselling and screening as an important tool used by intending couples to minimize and prevent sickle cell disorders. Besides, the psychological and socioeconomic issues at stake are far easier to manage than when a couple must decide on PND and selective abortion. Though this aspect of control of the disease has not been given enough emphasis in Nigeria and other African countries, prevention of the disease through public education, awareness of one's carrier status and most especially pre-marital counselling and screening regarding marriage reproductive choices is certainly a better ethical and economic option than prevention through Prenatal Diagnosis (PND) and selective abortion of affected foetuses. Littleton and Engebretson (2010) see premarital sickle cell counselling and screening as a process of making couples aware of their status

genetically as well as screening couples going into marriage for genetic and blood transmitted diseases to prevent any risk of transmitting diseases to their children. Information about premarital sickle cell screening and counselling has become part of marriage course counselling and regular medical practice. It has also helped to achieve desired level of knowledge and a change in attitude. In this vein, adhering to pre-marital counselling and screening is the major way it can be remedied as it helps to educate people about inherited disorders.

Many people go into marriage without having insight into their genotype especially in developing countries where diagnosis is usually made when the individual presents him/herself in the clinic with severe complications, (Akinyanju, 2009). Although, WHO has repeatedly recommended several measures for the prevention of genetic diseases including sickle cell diseases through health education and improvement of community knowledge and attitude towards the control of this hereditary genetic disease (WHO, 2006), adherence to premarital sickle cell counselling and screening is still very low (Al kindi, Salha & Al kendi, 2012). WHO (2008) asserts that it is time we start ascertaining the compatibility of individual in an intimate relationship or intending couples to make relationships and marriages work better and on a more realistic grounds by way of premarital counselling and screening / testing.

Invariably in this study, sickle cell counselling and screening serves as a tool for diagnosis of SCD because it provides individuals in intimate relationships as well as intending couples with an accurate understanding of sickle cell inheritance and what it means to be at risk. There is need to encourage the practice of premarital sickle cell counselling and screening. Prevention of sickle cell disorder and risk minimization through counselling and screening remains the only realistic approach to reduce the impact of the disease.

Sickle cell disorder is irreversible, untreatable health problem which affects males and females equally, and it is responsible for increased morbidity and mortality in affected persons. Moreover, there is need to explore the gender difference of male and female senior secondary student's knowledge and attitude towards sickle cell disease. Gender is a range of physical, mental and behavioural characteristics distinguishing between masculinity and feminity. In a study conducted in the United States, Stewart, (2007) found that African American participants had a low perceived severity or seriousness of SCD. However, males were more likely to believe that SCD was not as serious compared to females (Stewart, 2007). Females had a higher level of knowledge about SCD compared to males. The study also found that younger participants had slightly better knowledge about SCD than the older participants (Stewart, 2007).

On the area of gender differences in attitude, a literature on attitudes toward people affected by SCD is limited. However, the few available studies show varied attitudes toward people with SCD. A study conducted with trainee teachers who were university students in Southern Nigeria, showed that participants had negative attitudes towards their classmates with SCD. For instance only 24% of the students believed their peers would invite fellow classmates with SCD to their birthday parties and 31.9% believed most of their peers would engage in study sessions with a fellow classmate with SCD. Fifteen to fifty three percent of the students believed that other students would not associate with their peers with SCD. The study found that gender and perceived negative family attitudes significantly influenced stigmatizing attitudes towards SCD. Males had more negative attitudes towards their 30 peers with SCD compared to females and stigmatizing attitudes increased with the person's perceived family negative attitude. This finding is concerned with the given high risk of negative attitude towards SCD among secondary school population, and shows the need for improved SCD education in schools.

School age children forms 25% of the world's population, approximately one-fifth of Nigerian population comprises of school age children (Ige, 2011). According to the author, secondary school education in Nigeria starts from JSSI (Junior Secondary School) until SSIII (Senior Secondary School) and both the JSS and SSS programme last for three years, from JSSI-JSSIII for Junior Secondary

School and SSI-SSIII for Senior Secondary School. Most students start at school the age of 10 or 11 and finish at the 17 or 18 years of age and students are required to sit for West African Senior Secondary Certificate Examination (WASSCE). Hence, to progress to the university students must obtain at least a credit in Mathematics, English and three other subjects in WASSCE (Ige, 2011).

Considering the burden of genetic diseases especially sickle cell disease in Nigeria, there is need to evaluate the level of knowledge and attitude towards SCD among the populace. The youths particularly senior secondary school students are possible and great target population for interventions aimed at preventing and controlling a genetic diseases such as SCD because most of them are either unmarried or preparing to get married and will procreate in the future. This is better done at this stage before they get emotionally involved with partners.

The school going age is a dynamic period of physical growth and development, when children undergo mental, emotional and social changes. The health status of school children varies from one location to another. Location is a place of settlement, activity or residence. Taking into account the nature of SCD, there is the need to examine the attitude and knowledge of students in the rural area with those in the urban areas. According to recent studies, rural dwellers have lower knowledge of SCD than urban settlers (Uzoegwu, 2007). According to the

author, this is due to the fact that most of the campaign and programmes on SCD usually take place in the cities and towns with little or no attention paid to the rural setting because of poor accessibility road network, proximity, financial constraint and so on. The author further stated that the attitude of rural dwellers on SCD is mostly superstitious as they view it as an ailment caused by evil spirits as earlier mentioned or a curse due to abomination committed by the individual suffering from the disease or his parents. According to the author, this is as a result of the fact that there is high number of uneducated people in the rural area unlike the urban setting where almost everyone is educated.

In Nigeria today, a lot of senior secondary school students engage in relationship which could lead to premarital sex and invariably pregnancy. This calls for concern as many of them do not have the full knowledge about SCD and how it can be prevent and controlled. Thus, exploring the knowledge about sickle cell disease among youths especially secondary school students could constitute an important variable that will influence their premarital attitude and behaviour. However, several studies have given different reports on the attitude and the level of students' knowledge towards SCD among the youth in other parts of the country but there is paucity of such studies in this Education Zone. Therefore there is need to assess the knowledge and attitude of senior secondary school students to SCD in Nsukka Education Zone of Enugu State.

Statement of the Problem

Knowledge of the citizenry of a nation about SCD constitutes an important variable that influences the acceptability, practice and success of premarital genetic counselling. In Nigeria as earlier mentioned, senior secondary school students severally enter into relationships. This relationship may either lead to involvement in pre-marital sex and pre-marital pregnancies or eventually marriage in future. The issue of pre-marital counselling and screening may be of concern, as this may be affected by existing knowledge and attitude to SCD. This is central to prevention efforts since the disease is preventable. Therefore, understanding knowledge about sickle cell inheritance, its health and reproductive health implications as well as behaviour towards individual with SCD particularly among secondary school students is important regarding limiting the spread of the diseases. The aim of this study is therefore to assess the knowledge and attitude of senior secondary school students on sickle cell diseases.

Purpose of the Study

The broad purpose of this study is to examine the knowledge and attitude of senior secondary school students on sickle cell disease. The specific purpose include to determine:

1. The knowledge of senior secondary school students about sickle cell disease.
2. The attitude of senior secondary school students towards sickle cell disease.
3. The attitude of senior secondary school students towards individuals having sickle cell disease.
4. The willingness of senior secondary school students in attending premarital sickle cell counselling and screening.
5. The influence of gender on students' knowledge of sickle cell disease.
6. The influence of gender on students' attitude towards sickle cell disease.
7. The influence of school location in the knowledge of students on sickle cell disease.
8. The influence of school location in the attitude of senior secondary school students towards sickle cell disease.
9. The possible ways of preventing sickle cell disease among secondary school students.

Significance of the Study

It is hoped that the finding of this study will provide more insight into the existing theories and the knowledge and attitude of secondary school students on sickle cell disease.

Theoretically, the findings of this study will provide data that may be useful for a clear understanding of existing theories of the study which will prove the functionality or otherwise of the Theory of Reasoned Action (TRA) and Planned Behaviour (TPB) which held that an individual knowledge and attitude towards a particular behavior is determined by his/her intention to perform the behavior which if motivated will aid him/her the possibility to perform such behaviour.

The study will also be of practical help to individuals (Yet to be married), the Government, families and community, counselors, and health care providers. The information from this work will help the Government on the level of knowledge and attitude of secondary school students on sickle cell disease and some of the reasons that hinder them from adhering to premarital sickle cell counselling and screening despite the benefits associated with it. Government will also through the information institute policies to guide intending couples on premarital counselling and screening before marriage using the mass media to disseminate this information.

The study will be of benefit to the family and community health wise because it will serve as a guide to the youths and senior students in the family and community in making wise selections before marriage as it will lead to increase in their level of adherence to pre-marital counselling and screening thereby reducing high risk

marriages, birth of a child with sickle cell disorder, under five mortality and morbidity, divorce and frequent going in and out of the hospital in the family unit and the community at large. This is because information gathered will help to reduce the stigma and fear attached to premarital counselling and screening thus enhancing adherence of intending couples to screen before marriage through the mass media, conferences and workshops.

The information provided will serve as tools to healthcare providers in identifying areas of need. Such information will be used as a guide in health education campaigns and programs.

Also, findings from this study will be useful to counselors as it will provide them with information on how to help and guide senior secondary school students on relationship challenges with respect to their future marital decisions.

Finally, the findings of this study will also serve as a point of reference for future studies.

Scope of the study

The study was carried out in Nsukka Education Zone of Enugu State. The three Local Government areas in Nsukka Education Zone namely; Nsukka, Igbo-Etiti, and Uzowani Local Government Areas was covered. Only SSII students was

used in the study. The study also covered knowledge, and attitude to sickle cell disease.

Research Questions

The following research questions were posed to guide the study:

1. What is the knowledge of senior secondary school students on sickle cell disease?
2. What is the attitude of senior secondary school students towards sickle cell disease?
3. What is the attitude of senior secondary school students to individuals having sickle cell disease?
4. Are senior secondary school students willing to have premarital sickle cell counselling and Screening?
5. What is the influence of gender on senior secondary school students' knowledge of sickle cell disease?
6. What is the influence of gender on senior secondary school students' attitude towards sickle cell disease?
7. What is the influence of school location in the knowledge of senior secondary school students on sickle cell disease?

8. What is the influence of school location in the attitude of senior secondary school students towards sickle cell disease?
9. What are the possible ways of preventing sickle cell disease among secondary school students?

Hypotheses

To guide the study, the following null hypotheses have been formulated and were tested at 0.05 level of significance.

$H0_1$ There is no significant difference between the mean ratings of male and female secondary students on knowledge of sickle cell disease.

$H0_2$ There is no significant difference between the mean ratings of male and female secondary students on attitude towards sickle cell disease.

$H0_3$ There is no significant difference between the mean ratings of urban and rural school students on knowledge of sickle cell disease.

$H0_4$ There is no significant difference between the mean ratings of urban and rural school students on attitude towards sickle cell disease.

$H0_5$ There is no significant gender difference in students' willingness to have pre-marital sickle cell counselling and screening.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter deals with the review of literature related to the study and is organized under the following sub-headings; conceptual framework, theoretical framework, review of empirical studies and summary of literature.

Conceptual Framework:

Concept of **k**nowledge

Concept of **A**ttitude

Concept of **S**econdary **S**chool **S**tudent

Concept of **S**ickle **C**ell **D**isease

Concept of **G**ender

Theoretical Framework:

Theory of **R**easoned **A**ction (TRA) and **P**lanned **B**ehaviour (TPB), (Ajazen and Fishbein, 1980).

Theory of **S**ituational **A**wareness (Endsley, 1988).

Review of Empirical Studies

Studies Related to Knowledge and Attitude towards Sickle Cell Disease

Studies Related to Premarital Screening on Sickle Cell Disease

Studies Related to Preventive Measures on Sickle Cell Disease

Studies Related to Gender Differences in Sickle Cell Disorder

Summary of Literature Review

Conceptual Framework

In this section, the researcher reviewed some basic concepts of this present study.

Concept of knowledge

The content of one's knowledge may vary from person to person, as will the degree to which it may occupy the person's mind (frequency), the intensity of the knowledge, and the centrality of the information to that individual. Knowledge is a familiarity, awareness or understanding of someone or something, such as facts, informations, descriptions, or skills, which is acquired through experience or education by perceiving, discovering, or learning (Ferguson, 2010).

In many expressions of Christianity, such as Catholicism and Anglicanism, knowledge is one of the seven gift of the holy spirit. The Old Testament's tree of knowledge of good and evil contained the knowledge that separated man from God: "And the LORD God said, Behold, the man is become as one of us, to know good and evil..." (The Holy Bible, Genesis 3:22). In Islam, knowledge (Arabic: عِلم, *ʿilm*) is given great significance. "The Knowing" (*al-ʿAlīm*) is one of the 99 names reflecting distinct attributes of God. The Quran asserts that knowledge comes from God and various hadith encourage the acquisition of knowledge. Muhammad is reported to have said "Seek knowledge from the cradle to the grave"

and "Verily the men of knowledge are the inheritors of the prophets". Islamic scholars, theologians and jurists are often given the title alim, meaning "knowledgeable" (The Holy Quran, 2:239). In this study, Knowledge means a general awareness or possession of information, facts, ideas truths or principle. It helps an individual to get a clear awareness or explicit information about a situation or fact. It can also be seen as a familiarity or understanding gained through experience or study.

Complete knowledge about sickle cell disease is essential as it would help to aid pre-marital screening and prevent the risk of having sickle cell disease. Knowledge about premarital sickle cell screening is one of the strategies aimed at preventing sickle cell disease. Through knowledge, several medical, psychosocial marital problems are solved because it provides opportunity for intending couples to intervene accordingly in order to reduce the risk associated with the disease burden (Ferguson, 2010). Premarital interventions include counseling and testing before marriage. These have been found to be effective in a variety of ways, for example in decreasing the risk factors associated with SCD and later marital problems and increasing the quality of life for couples as well as for the children they bring to the world (Ferguson, 2010).

Concept of Attitude

An individual, in his life time, is bound to develop some attitudes. These attitudes may be favourable or unfavourable or both. The personality of a person is coloured by his attitudes. Attitudes determine ones personality. Gharaibe & Mater (2009), defined attitude as the totality of those states that lead to or point towards some particular activity of the organism. Attitude is therefore the dynamic element and the motive of activity in human behaviour. It can also be defined as susceptibility to certain kinds of stimuli and readiness to respond in a given way, which are possible towards the world and parts of it which impinges upon us (Ferguson, 2010). An attitude is an expression of favour or disfavour toward a person, place, thing, or event (Gharaibe & Mater, 2009).

Attitude can be negative or positive evaluation of people, objects, events, activities, and ideas; or just about anything in your environment (Gharaibe & Mater, 2009). In other words, it can be seen as negative or positive views of a person, place or thing. Positive attitudes refer to the people who view sickle cell disease as important and such adhere to premarital sickle cell counselling and screening. It means thinking positively about all situations in a person's life, for example positive attitude towards sickle cell disease will overlap with health

success and make life more successful, more creative and help people to cope better with life. (Gharaibe & Mater, 2009).

In this study, an attitude can be seen as a positive or negative evaluation of people, objects, events, activities, and ideas.

Negative attitude towards sickle cell disease will lead to non-adherence to premarital sickle cell counselling and screening and as such will make the acceptance and practice of sickle cell screening difficult. Attitude can be formed through learning and can be changed as a function of experience. Dissonance - reduction theory by Carlsmith and Festinger (2007), states that when the components of an attitude (belief and behaviour) are at odds, an individual may adjust one to match the other. Attitude can be changed through persuasion. There are some factors that may affect attitude like target characteristics, source characteristics and message characteristics. Additionally Ferguson, (2010), states that a number of studies worldwide showed that attitude towards sickle cell disease may be related to religious convictions. For instance, the report states that Muslim couples have been reported to refuse premarital sickle cell counselling and screening on the basis that it is against their religion. The low attitude of self risk associated with non-premarital screening as reported by Lockock and Joe (2009) may be influenced by so many factors. This may influence their readiness to act

not minding whether the action will benefit them or predispose them to disease. Such factors include belief/opinions; cultural diverse attitude, religious belief and loneliness in making decision.

Concept of Secondary School Student

Knowledge and attitude about sickle cell disease among youths could constitute an important variable that might influence premarital behaviour especially in senior secondary school student who are constantly engaging pre-marital relationships. A secondary student is one in an intermediate education level after primary education, that is, before tertiary education and this education is aimed at developing a child better than the primary level, because it is obvious that primary education is insufficient for children to acquire literacy, numeracy, and communication skills (Ige, 2011). The author further asserted that such education is provided in secondary school, and can be owned by government (state or federal), individuals or community and it is divided into two phases. The Junior Secondary school (JSS) and the Senior Secondary School (SSS). The Junior Secondary School is the first phase of secondary education which lasts for three years and then students sit for Junior Secondary School Certificate Examination (JSSCE). A successful completion of the JSS is a pre-requisite for the second phase which is the Senior Secondary School (SSS). Senior Secondary School

(SSS) also last for three years and at the end of its period, the students obtain the Senior Secondary School Certificate (SSSC) after passing the examination which is Senior Secondary School Examination (SSCE). A secondary school student is a high school student or a school student of corresponding grade ranking between a primary and a college or university (Ige, 2011).

In this study, a secondary school student is one intermediate in level between the elementary school and the tertiary institution and is usually for people between the ages of 11 and 18 years.

Concept of Sickle Cell Disease

Sickle cell disease (SCD) is a disease that affects millions of people throughout the world and as such demands to be given an urgent attention. Sickle cell disease is a recessive hereditary disorder, characterized by erythrocytes that contain sickled haemoglobin, (Kimkenneth, 2011). Sickle cell disease is a disease that can be attached to several worse situations. According to Akowe,(2010) Sickle cell disease can lead to various complications, which includes: Stroke that results from a progressive narrowing of blood vessels, preventing oxygen from reaching the brain, Cerebral infraction which occurs in children and cerebral hemorrhage in adults, Cholelithiasis (gall stone) and cholecystitis which may result from excessive biliribin production and precipitation due to prolonged haemolysis,

Avascular necrosis (aseptic bone necrosis) of the hip and other major joint problems which may occur as a result of ischeamia and decreased immune reactions due to hyposplenism (malfunctioning of the spleen) as well as Osteomyelitis is a common complication of SCD (Akowe, 2010). According to the author, the inheritance of the HbSS gene from both parents or HbSS with another variant of abnormal haemoglobin gene (HbC , Hb beta thalassemia) results in symptomatic SCD, while the inheritance of a single haemoglobin (HbSS) gene results in a healthy sickle cell carrier . Akowe, (2010) sees SCD as comprising of a genetic disorder characterized by the inheritance of haemoglobin S (HbSS), from both parents.

The disorder comes in different forms, they are sickle cell anaemia (SCA), Sickle haemoglobin C disease (HbSC), and Hb -Beta- thalassemia, other rare types of SCD are haemoglobin SD disease (HbSD), Sickle Beta zero thalassemia, haemoglobin SE (HbSE), and haemoglobin SO Arab disease. According to the authors, the most common one is Sickle-cell anaemia (SCA) (Anie, Akinyanju & Egujobis 2010). It is the most common because it causes continuous red blood cell haemolysis resulting in anaemia (low haemoglobin level). Other forms of the disease are named based on the abnormal kind of haemoglobin found in the blood, all these disorders have defects in haemoglobin causing red blood cells to distort into a sickle shape (Anie, Akinyanju & Egujobis, 2010).

However, in order to understand sickle cell disease well, it is necessary to become familiar with how sickle cell disease manifests signs in individuals. According to George, (2011), SCD has several signs and symptoms which include anaemia, episodes of pain, hand and foot syndrome, jaundice, frequent infection, and vaso occlusion etc.George, (2011), asserts that anaemia is very common because the cells when elongated are fragile and breaks apart easily to die leaving chronic shortage of red blood cells to carry oxygen to tissues. According to the author, anaemia can lead to fatigue, irritability, dizziness and light headiness with fast heart rate and difficulty in breathing when the body cannot get oxygen to energize the tissue. Episodes of bone pain develops when sickle –shaped red blood cell block blood flow through tiny blood vessels to chest, abdomen and joints and the pain can vary in intensity and last for few hours to few weeks(Kimkenneth, 2011). The pain occurs mostly in bones and some may experience only few episodes of pain, while others may experience a dozen or more crises in a year (Kimkenneth, 2011).

The episodes of sickle cell disease involves many complications. Hand and foot syndrome is a swelling that occurs in the hand and feet which arise when the sickled cells get stuck in the blood vessels blocking the flow of blood in and out of the hand and feet (Kimkenneth, 2011). Hand and foot syndrome is usually the first symptom in sickle cell disorder which is accompanied by pain and fever and is

frequently seen in children (Akowe, 2010). Jaundice is one of the clinical manifestations of sickle cell disorder that occur as a yellowish discolouration of the skin and eyes and the discolouration occurs as a result of liver damage or dysfunction (Kimkenneth, 2011). Occasionally people with sickle cell disorder have some degree of jaundice because the liver which filters harmful substances from the blood is overwhelmed by rapid breakdown of red blood cell (Akowe, 2010).

The way which sickle cell disease affects the body system especially the red blood cell is of great need to explore as it will help to expand our knowledge of the disease. Vaso occlusive crisis is caused by sickled red blood cells that obstruct capillaries and restrict blood flow to an organ, resulting in ischaemia, pain, and organ damage (Anie, Akinyanju & Egujobis, 2010). Because of its narrow vessels and function in clearing defective red blood cells, the spleen is frequently affected and it is usually infarcted before the end of childhood in individuals suffering from sickle-cell anaemia (Kimkenneth, 2011). According to Kimkenneth, (2011), frequent infections occur when a sickle shaped red blood cell damages the spleen which helps to fight infections, thus making the individual more vulnerable to infections. The author further stated that there is also stunted growth in such individuals because the red blood cell provides oxygen needed for growth and when there is shortage of healthy red blood cell, it can slow down growth in infants

and children and delay puberty in teenagers. This calls for the urgent need for pre-marital sickle cell counselling and screen because the success of any intimate relationship devoid of problems regarding the birth of a sickle cell disease child requires a lot as individuals involved usually come from different background, have different beliefs, history, among others.

The need for pre-marital sickle cell counselling and screen is inevitable because it stands as the only sure means of controlling the spread of SCD in Nigeria and the world at large. Pre-marital sickle cell counselling and screening/testing has been defined by different people in different ways. Lockock and Joe (2009) defined premarital sickle cell counselling and screening as a science career that enables couples to seek the services of a genetic psychologist and scientist in order to check inheritable disorders and its trait. According to the author, it is the ability of couples (intending couple) to get counselled, screen themselves and know their haemoglobin genotype before marriage. Anionwu (2009) is of the opinion that genetic counselling and screening can be used to reduce the risk of serious illness caused by inherited abnormal haemoglobin. The counselling and screening does not only help them to know their genotype but differentiate those who have the trait from non-carriers. Sickle cell counselling and screening according to Littleton and Engebretson (2010) consists of one or more encounters with the psychological and laboratory scientist by couples with

the objective of providing information about their genetic diseases. The authors believe that it includes an assessment of psychosocial family dynamics of the couples which is an integral part of a genetic disease and an exploration of feelings and perceptions often elicited by the newly obtained knowledge. Genetic counselling and screening allows the genetic diagnosis of vulnerabilities to inherited diseases, and can also be used to determine a child's parentage or a person's ancestry (Anionwu, 2009). In addition most of the results of genetic testing identify changes in chromosomes, and most a times testing is used to find changes that are associated with inherited disorders (Littleton and Engebretson, 2010). The result of a genetic disorder can be used to determine a person's chance of developing or passing on a genetic disorder. This type of testing will help to provide information about an increased risk of specific genetic condition. If both parents are tested, the test can provide information about a couple's risk of having a child with a genetic condition like sickle cell disorder but this depends largely on their willingness to engage in such test (Anionwu, 2009).

In spite of the great efforts geared towards the eradication of SCD, sickle cell diseases are still very common in our society as majority of people in Nigeria do not dim it fit to go for premarital sickle cell counselling and screening. Adherence to premarital sickle cell counselling and screening has been viewed by many in several ways. According to Littleton and Engebreston (2010), adherence

to premarital sickle cell counselling and screening is when an individual sticks firmly and accepts to go for counselling and screening test before going into marriage.

Adherence to premarital sickle cell counselling and screening consists of ensuring that activities undertaken agree with both the latter and the spirit of the standard laws / and or regulation that governs an activity and the internal policies and procedures set down by the people concerned for its own activities (Lockock and Joe, 2009). According to the authors, it is the willingness of any adult to agree and accept to be counselled and screen himself to know his genotype before marriage. The authors further asserted that the counselling and screening does not only help them to know their genotype but differentiate those who have the trait from non-carriers.

People's acceptance of premarital sickle cell counselling and screening can be improved through creation of awareness and education of people about inheritable disorders and the process of inheritance and this provide early recognition of the disease and creates awareness which leads to identification of carriers of genetic diseases for the purpose of maximizing parenthood planning option (Littleton & Engebretson, 2010). The authors further stated that with premarital counselling and screening, health care professionals offer support to

people who are affected by genetic disorders as concerned parents will be cancelled and given accurate information on implication of their children inheriting a particular disorder.

Undertaking pre-marital counselling and screening can help individuals in many ways especially the ones that are in a relationship. Anionwu (2009), is of the opinion that through genetic counselling and screening the risk of serious illness caused by inheritance of abnormal haemoglobin will be reduced as it helps to prevent such conditions that can cause serious health problems, for example, sickle cell disease. He went further to say that genetic counselling could improve the general health of the family through the use of the result to make better informed decisions regarding their future health; for instance, if one finds himself / herself to be a carrier, it will enable him make an informed decision before marriage.

Other benefits of premarital counselling and screening as outlined by Anionwu (2009) are as follows; firstly, healthier children can potentially have decreased rate of absenteeism in hospitals and will also be more productive. Secondly adherence to premasrital counselling and screening can lead to decrease in getting an affected child with long lasting debilitating illness. Thirdly, It can also eliminates health and cost of frequenting the hospital for treatment and finally, will equally reduce the number of children with sickle cell disorder as well as

reduce high rate of infant mortality and morbidity faced by this children. Amani and shaikha (2009), in their study on premarital counselling and screening stated that adherence to premarital sickle cell counselling and screening will explain the risk of the marriage to the couple by helping them to have a clear view of the risk before they make informed decisions. According to the authors, prospective control of sickle cell disease by heterozygote detection through premarital counselling and screening plays a vital role in the identification of couples at risk as it helps one to understand the full consequences of people living with SCD. Premarital counselling and screening plays a Major role on the health of all individual as it helps to explain the underlying nature of these genetic disorders especially where there is lack of understanding (Amani and shaikha, 2009).

Although premarital sickle cell counselling and screening programs has a high potential to reduce the incidence of SCD in an adult population, many people do not adhere to it thereby leaving the spread of SCD on the rise. Non adherence means failure or refusal to adhere to instructions with regard to premarital counselling and screening (Akande, 2010). The author defined it as a behaviour a person engages in when he fails to comply with a health promoting or therapeutic plan agreed upon by him/her and the care giver. The reasons for non-adherence according to Akande, (2010), include emotional, social or financial consequences of the test result. According to the author, people most often feel angry, depressed,

anxious or guilty about their results and in some cases the premarital counselling and screening creates fear among couples because the result can reveal information about other family members in addition to the person who is being tested. The possibility of genetic discrimination in marriage, and insurance is also a concern as some individuals may wish to avoid genetic counselling and screening out of fear and that it will affect their possibility of getting married because some churches do not currently allow couples who are carriers to continue with the marriage (Littleton and Engebreston, 2010). In addition, the believe is that genetic counselling and screening provides only limited information about an inherited condition, but often cannot determine if a person will show symptoms of the disorder, how severe the symptoms will be or whether the disorder will progress over time (Akande, 2010).

Premarital counselling and screening creates an opportunity for people to take informed decision on the genetic predisposition of their unborn children if the awareness is properly disseminated. Another reason for non-adherence to premarital counselling and screening according to Akande, (2010) is lack of treatment strategies for many genetic disorders once they are diagnosed. He further stated that lack of governmental regulation and the potential misinterpretation of genetic information, makes some people to be deluded about their personal health. Again the potential discrimination that a child with SCD will face far outweighs

any benefits the knowledge will give, because the concerned individual may not be able to deal with all the psychological ramifications that accompany the screening process for instance, if the test reveals that the person has the gene, the person may have a difficult time watching his future knowing for "certain" that the same fate would befall his/her children (Akande, 2010). Other reasons for non compliance according to Akande, (2010) include: Probability / Reliability: - A more substantive criticism of the procedure centres on the probabilities of developing a genetic disease or condition. Even if reliable tests indicate a predisposition towards a certain illness, there is the probability that the tested individual is not always certain to develop the disease. However, with the most genetic conditions, the presence of a certain defect only gives the individual a probability that the disease will develop and the choice between individuals is based on mere probabilities and seems suspicious and discriminatory.

Sickle cell disease is the most common problem encountered by couples who fail to adhere to premarital sickle cell counselling and screening before marriage. The disorder when transferred from parents to their offspring poses a problem to both the couple and their children (Bridges, 2008). The author, state that frequent sickle cell crisis often interrupts the education of people, disrupts their concentration and interferes with learning, leading to educational difficulties like under-education and under-employment. The problem of under-education and

under-employment can lead to depression, from depression to low self-esteem and antisocial behaviours, thus making the patient to withdraw from family and loved ones (Bridges, 2008). SCD has led to about one fifth of marriages ending in separation or divorce because the couple in the process of trying to get a child without the disease or its trait may end up having more than one affected child with no surviving normal children, (Akinyanju, 2009). According to the author, it can also lead to polygamy where by the man will try to marry another wife and refuse to take care of the former wife and the separation on the other hand can create a self-perpetuating scenario of low achievement and low expectation, and parental frustration is also common with adolescent and young adults.

In this context, Sickle Cell Disease (SCD) means a chronic disease with acute, painful exacerbations that often results in a shortened life expectancy as the lives of persons with SCD are characterized by frequent and unpredictable pain episodes (resulting from lack of oxygen owing to the occlusion of blood vessels by sickle-shaped red blood cells), numerous hospitalizations for pain or other complications of SCD, and a host of economic and familial burdens.

Concept of Gender

In Nigeria, youths especially adolescents behave based on their gender differences. Gender refers to is a psychological term describing behaviours and

attributes of expected of individuals on the basis of being either a male or female (Bassow, 2001). Gender according to Keller (2011) is a cultural construct that distinguishes the role, behavior, mental and emotional characteristics between males and females developed by a society. Okeke (2000) asserts that gender refers to socially constructed roles and socially learned behaviours and expectations associated with males amd females.

In the context of this study, gender refers to the different role, rights and responsibilities of man and woman and relations between them. Gender does not simply refer to man and woman but to the way their qualities, behavior and identities are determined through the process of socialization. Gender is not fixed biologically, but constitutes aspects of the wide division of labour. This in turn is rooted in the condition of production and reinforced by cultural, religious and ideological systems prevailing in the society (Usman, 2004).

In the society, there is always a variation in man and woman power relation. Gender relations are constructed by a range of institution such as the family, legal system, or the market. These relations are hierarchical relations of power between a man and woman seems to be at a disadvantage. These hierarchies are accepted as “natural” but are socially determined relations, culturally biased and subject to change overtime (Eke, 2000). These variations in role and hierarchies that

differentiate masculinity and feminity also show the rate at which sickle cell disease manifest its symtoms, as well as crisis in males and females who are sicklers.

THEORETICAL FRAMEWORK

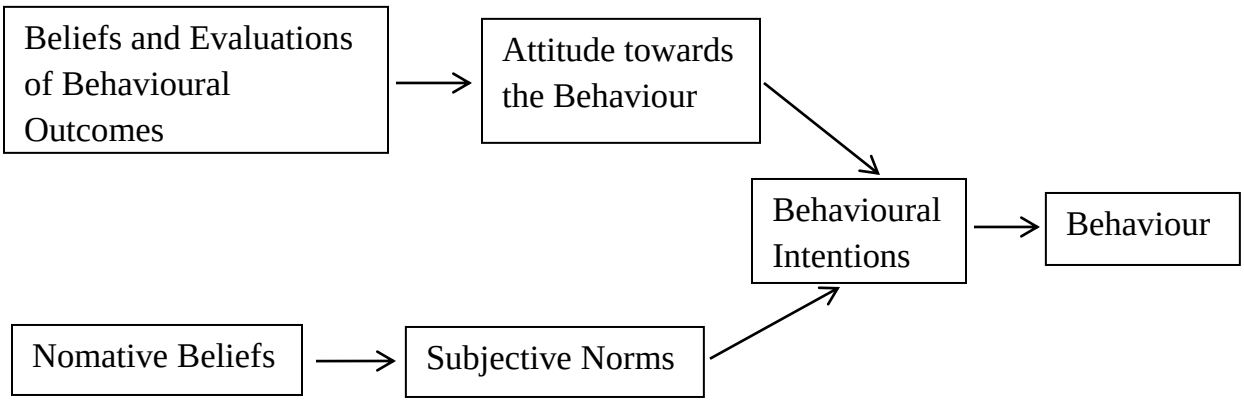
In this study, theories that deal with attitude and behavior as well as awareness are relevant for the development of this work. However, the Theory of Reasoned Action (TRA) and Planned Behaviour (TPB) by Ajazen and Fishbein, (1980) and the Theory of Situation Awareness Endsley, (1988) are been reviewed here for this study. This study is anchored on the Theory of Reasoned Action (TRA) and Planned Behaviour (TPB) by Ajazen and Fishbein, (1980) because of its relevance to the study.

Theory of Reasoned Action (TRA) and Planned Behaviour (TPB)

Theory of Reasoned Action (TRA) and Planned Behaviour (TPB) was propounded by Icek Ajazen and Martin Fishbein in 1980. This resulted from attitude research from the Expectancy Value Models. Ajzen and Fishbein formulated the TRA after trying to estimate the discrepancy between attitude and behaviour.

Theory of reasoned action suggests that a person's behaviour is determined by his/her intention to perform a particular behaviour and that this intention is in turn, a function of his/her attitude toward the behaviour and his / her subjective norm. The best predictor of behaviour is intention. Intention is the cognitive representation of a person's readiness to perform a given behaviour, and is considered to be the immediate antecedent of behaviour. This intention is determined by three things: their attitude towards the specific behaviour, their subjective norms and their perceived behavioural control. The theory holds that only specific attitudes towards the behaviour in question can be expected to predict that behaviour. In addition to measuring attitudes toward the behaviour, we also need to measure people's subjective norms – their beliefs about how people they care about will view the behaviour in question. To predict someone's intentions, knowing these beliefs can be as important as knowing the person's attitudes. Finally, perceived behavioural control influences intentions. Perceived behavioural control refers to people's perceptions of their ability to perform a given behaviour. These predictors lead to intention. A general rule, the more favourable the attitude and the subjective norm, the greater the perceived control and the stronger should the person's intention to perform the behaviour.

Figure 1: Diagrammatic representation of the theory of reasoned action and planned behaviour by Ajzen and Fishbein (1980).



This theory suggests that a person's intention to perform a particular behaviour is a function of his attitude towards the behaviour and his subjective norms. This is related to this study in the sense that attitude towards a specific action will help the senior student in Nsukka Education Zone of Enugu State to decide on what will happen if they are aware of sickle cell disease and consequently engage in premarital sickle cell screening. Whether the screening test will bring a desirable effect on them like reduction in high risk marriages, reducing the disease burden to it barest minimum, as well as reduction in under five mortality and morbidity rate. Furthermore, the senior students before they voluntarily decide to go in for the screening will as well look at the undesirable effect they could encounter like stigmatization, fear of losing their loved ones and exposing genotype their to the public. In other words, this theory is relevant to this

present study because it highlights the need to access the intentions behind a particular behavior performed towards someone or something which is one of the focus area of the study.

Theory of Situational Awareness

The theory of Situational Awareness was propounded by Mica Endsley in 1988. The Theory of Situational Awareness or situation awareness (SA) focuses on the perception of environmental elements and events with respect to time or space, the comprehension of their meaning, and the projection of their status after some variables has changed, such as time, or some other variables, such as a predetermined event. Situation awareness involves being aware of what is happening in the vicinity to understand how information, events, and one's own actions will impact goals and objectives, both immediately and in the near future. One with an adept sense of situation awareness generally has a high degree of knowledge with respect to inputs and outputs of a system, an innate "feel" for situations, people, and events that play out because of variables the subject can control. Lacking or inadequate situation awareness has been identified as one of the primary factors in accidents attributed to human error. Thus, situation awareness is especially important in work domains where the information flow can be quite high and poor decisions may lead to serious consequences.

Situation Analysis (SA) can be described in terms of a holistic framework of SA Systems, States, and Processes. The three facets of SA that have been in focus in research are namely SA States, SA Systems, and SA processes. SA States refers to the actual awareness of the situation. SA Systems refers to the distribution of SA in teams and between objects in the environment, and to the exchange of SA between system parts. SA Processes refers to the updating of SA States, and what guides the moment-to-moment change of SA. SA descriptions usually focus on one of the three aspects, or on combinations. Also there are three steps to SA formation as provided by Mica Endsley. They include; perception, comprehension, and projection.

Perception (Level 1 SA): The first step in achieving SA is to perceive the status, attributes, and dynamics of relevant elements in the environment. Thus, Level 1 SA, the most basic level of SA, involves the processes of monitoring, cue detection, and simple recognition, which lead to an awareness of multiple situational elements (objects, events, people, systems, environmental factors) and their current states (locations, conditions, modes, actions).

Comprehension (Level 2 SA): The next step in SA formation involves a synthesis of disjointed Level 1 SA elements through the processes of pattern recognition, interpretation, and evaluation. Level 2 SA requires integrating this information to

understand how it will impact upon the individual's goals and objectives. This includes developing a comprehensive picture of the world, or of that portion of the world of concern to the individual.

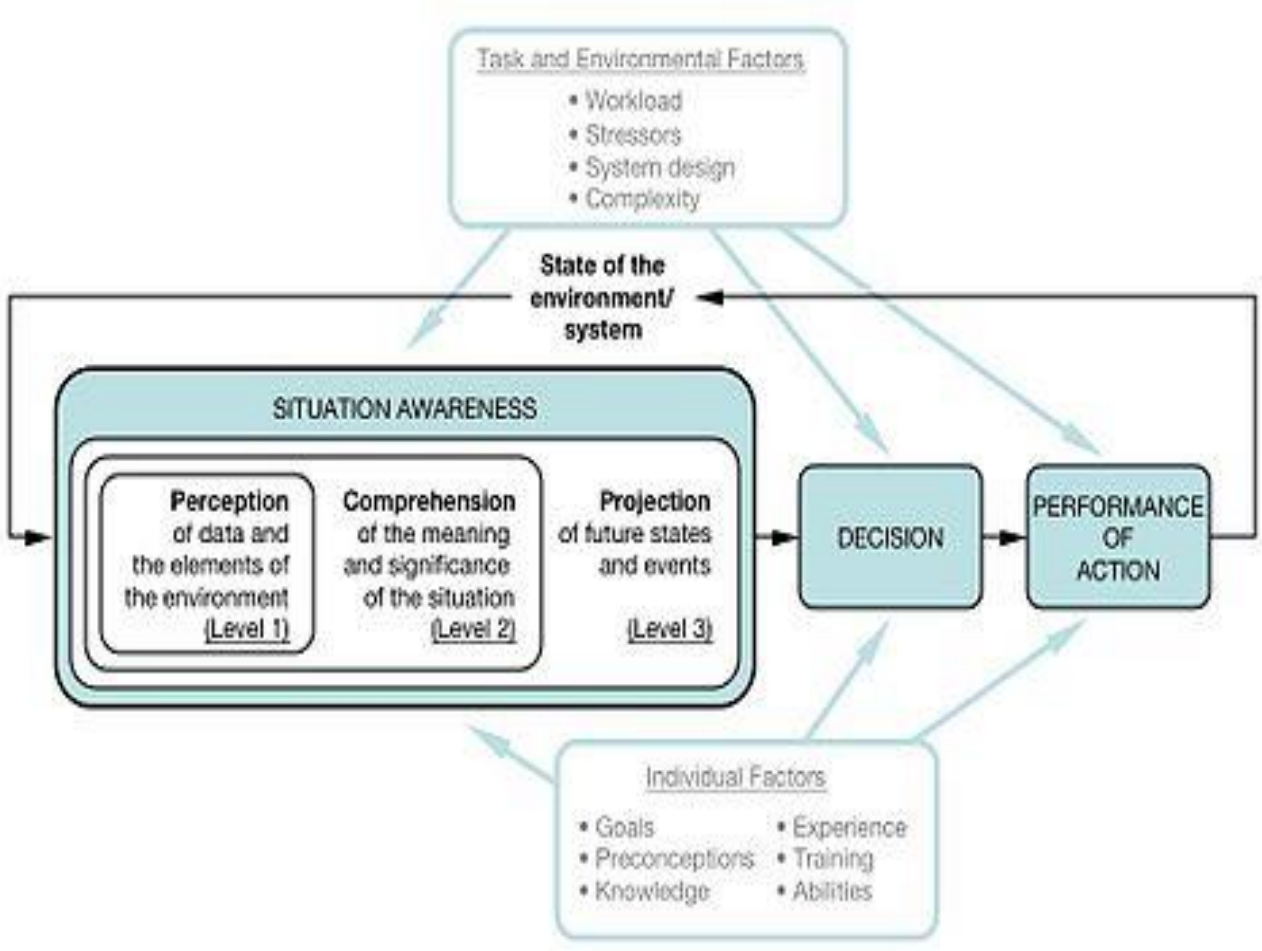
Projection (Level 3 SA): The third and highest level of SA involves the ability to project the future actions of the elements in the environment. Level 3 SA is achieved through knowledge of the status and dynamics of the elements and comprehension of the situation (Levels 1 and 2 SA), and then extrapolating this information forward in time to determine how it will affect future states of the operational environment.

Endsley's model shows how SA provides the primary basis for subsequent decision making and performance in the operation of complex, dynamic systems. Although alone it cannot guarantee successful decision making, SA does support the necessary input processes (e.g., cue recognition, situation assessment, prediction) upon which good decisions are based.

Situation Awareness also involves both a temporal and a spatial component. Time is an important concept in SA, as SA is a dynamic construct, changing at a tempo dictated by the actions of individuals, task characteristics, and the surrounding environment. As new inputs enter the system, the individual incorporates them into this mental representation, making changes as necessary in

plans and actions in order to achieve the desired goals. SA also involves spatial knowledge about the activities and events occurring in a specific location of interest to the individual. Thus, the concept of SA includes perception, comprehension, and projection of situational information, as well as temporal and spatial components.

Figure 2: Diagrammatic Representation of The theory of Situational Awareness Theory by Mica Endsley (1988).



The Theory of Situational Awareness when applied on the study of knowledge and attitude towards sickle cell disease in Nsukka Education will help senior students of the secondary school to know what the resultant effect would be if they engage in relationships that may lead to pre-marital sex resulting in pregnancy that might lead to the birth of a child with SCD. The Theory will help senior students to acknowledge that the decision they make with regards to SCD will either impact the environment positively or negatively and that they need to think twice before taking any drastic decision. This will invariably expose them to the need of pre-marital counseling involving sickle cell screening which will lead to the prevention of SCD thereby resulting in its reduction and possibly extinction from the human race. In other words, the theory is relevant to this study because of the fact that it explains how the resultant effect of either being fully aware or not being fully aware of SCD can impact the environment either negatively, positively or otherwise.

Review of Empirical Studies

Some studies have been carried out or conducted in some places at different times on sickle cell disease. This section of the chapter has the purpose of examining such studies which are related to this work.

Studies Related to Knowledge and Attitude towards Sickle Cell Disease

Williams-Smith (2015) conducted a study to examine the factors that contribute to the knowledge, health beliefs, attitudes, and behaviors regarding sickle cell disease among college students in The University of Texas at Arlington. The overall purpose of the study was to assess the factors that contribute to knowledge, health beliefs, and attitudes about SCD, and screening behaviors among college students to provide pertinent information for SCD prevention. A non-experimental, cross-sectional research design using a convenience sample of college students was used for the study. Descriptive statistics, such as frequency distributions and percentages were used to describe the sample. MANOVA was used to determine if there were any group differences in the knowledge, health beliefs, attitudes, and behaviors about SCD. Finally, linear and multiple regression analyses were conducted to determine the predictive value of gender, race/ethnicity, family history, and familiarity with SCD as it relates to the knowledge, health beliefs, attitudes, and behaviors about SCD. Regression analyses were also used to determine the strength of the relationship between knowledge, health beliefs, attitudes, and behaviors about SCD. An important finding from this study is that there was a significant relationship between knowledge, health beliefs, and attitudes regarding SCD even after controlling for

demographic factors. Race/Ethnicity was the best predictor of knowledge about SCD.

The study is relevant to this study as it covered variables related to this work such as knowledge and attitude but was carried out among college students and not in Nigeria. This is therefore the gap this work intends to fill.

A work was carried out by Olatona, Odeyemi, Onajole, and Asuzu , (2012) to investigate the effect of health education programme on the knowledge and attitudes to sickle cell disease and its screening among unmarried NYSC members in Lagos State. It was a quasi-experimental study. Multistage sampling technique was used to determine 239 respondents in the intervention and 212 in the control groups. Baseline information was followed by health education programme on sickle cell disease and screening; after which genotype screening was offered free of charge for willing participants in the intervention group. Three months later, post intervention data using the same questionnaire was collected from both groups. At baseline, the proportion of the respondents who had good level of knowledge was low (25%), while the attitudes of the respondents were positive to most aspects of the disease considered as well as individuals with the disease. Post-intervention, the level of knowledge of sickle cell disease increased (64.1%), attitudes improved in most aspects considered and the proportion who knew their

genotypes increased by significantly (11.9%) only in the intervention group. Health education of youth corps members was significantly effective in improving their level of knowledge, attitude to sickle cell disease and screening uptake. Sustained health education through school curriculum, mass media and health institutions is relevant to influence new graduates to have better knowledge and attitudes towards sickle cell disease as well individuals with the disease; hence enable them to make informed decisions about pro-creation later in life.

The study is related to the present study because it was conducted using quasi-experimental design and also it has to do with knowledge and attitude to SCD but was carried out on unmarried NYSC members as well as in Lagos State, and these are the gaps this study hopes to fill.

A study was conducted by Harrison (2011) to investigate the knowledge and attitude to sickle cell trait and disease among African-American college students. The purpose of the study was to examine knowledge and attitude to SCT and SCD and to identify whether current procedures for trait notification in North Carolina effectively convey information about trait status, as well as its health and reproductive implications. Participants were recruited through Experimentrak, an online system for collecting demographic data for the purpose of identifying potential subjects and for collecting research data. A large sample of African-

American college students (N = 258) completed questionnaires assessing knowledge of SCT and SCD. Participants reported their trait and disease status, the status of family members, and sources of sickle cell knowledge. Results indicated that participants were most likely to have received information about sickle cell from school. Though participants were generally familiar with the terms "sickle cell disease" and "sickle cell trait," many lacked knowledge regarding the genetic transmission of SCD, common symptoms, and treatment. A majority of participants were uncertain of their SCT status. Unfortunately, reported trait status of the participants could not be verified due to missing records. Nonetheless, participants who indicated that they had SCT or "thought" they had SCT scored higher on a measure of trait knowledge. Participants who had received information about sickle cell from their families showed greater trait knowledge than those who had not. Females were more likely than males to desire to know their trait status. Females also displayed higher levels of trait and disease knowledge than males. The study explored variables like knowledge and attitude to SCD which are related to this study but was carried out among college students and also outside Nigeria, hence these are the gaps which this study intends to fill.

Lawrence (2010) carried out a study on the athlete and coach knowledge, attitudes, and perceptions of sickle cell trait and national collegiate athletic association mandated testing in the United States. The purpose of the mixed

methods study was threefold. It was necessary to determine perceptions of sickle cell trait (SCT) and National Collegiate Athletic Association's (NCAA) mandated SCT testing from college coaches and athletes' points of view to determine the necessary components of the sickle cell orientation and education (S.C.OR.E) intervention that will be developed to educate intercollegiate athletes, as well as their coaches, about sickle cell trait from pre-participation screening to sickle cell trait diagnosis, and to highlight the potential implications of an NCAA policy that mandates SCT testing. The precede-proceed (pre-pro) model of program planning was utilized to determine the necessary components of the intervention. Constructs of the health belief model (HBM) and critical race theory (CRT) were utilized as the theoretical framework for this study. It was found that knowledge, perceived importance of an athlete knowing his/her SCT status, perception of NCAA 3c resulting in unfair treatment of athletes, perception of receiving less playing time, and perception of risk of having SCT were all associated with athletes' outlooks on SCT and NCAA SCT testing. Overall, athletes and coaches did not perceive that athletes with SCT would be discriminated against. The study was relevant to this study as it explored variables such as knowledge and attitude which are the key words of this study but focused on SCT instead of SCD and was carried out on coaches and also not in Nigeria. This is therefore the gap this study intends to fill.

Moronkola and Fadairo (2009) conducted a study on the knowledge and attitude of University students in Nigeria towards sickle cell disease and genetic counseling before marriage. This was a cross-sectional survey of University of Ibadan Christian Pentecostal Students of 2002/2003 academic session. Simple random sampling was used to select the subjects and the instrument for the study was questionnaire. The findings showed that majority of the study respondents (63.3%) knew their genotype, had a high knowledge level about sickle cell disease and screening, knew the benefits of sickle genetic counseling, had a positive attitude towards sickle cell screening, and access to genetic counseling, especially for students in tertiary institutions of Nigeria. The study was on knowledge and attitude to SCD which is why reviewing it is essential because it is related to this study but it was not carried out in secondary school, hence this is the gap this study intends to fill.

Studies Related to Preventive Measures on Sickle Cell Disease

Jaffer, Amrallah, Ali, Mohammed, Hasan and Humood (2009) examined the knowledge and attitude of Bahraini adult sickle cell patients towards the preventive measures of sickle cell crisis. The objective is to establish baseline data and to utilize the findings in designing awareness programs that would assist the sickle cell patients to prevent the sickling crisis. A convenient sample of 84 Bahraini adult sickle cell patients achieved. Structured interview approach was used to

assess the subjects' knowledge and attitudes toward the preventives measures of sickle cell crisis. The results indicated that the sample was moderately knowledgeable about the sickling preventive measures (Mean of Knowledge score = 55%) and moderately compliant (Mean of Attitudes score = 63%). The subjects' knowledge (about the preventive measures) was found to be moderately and positively correlated (r = 0.57, r2 = 0.32, p = 0.000) with their attitudes toward crisis prevention. Designing awareness programs regarding the preventive measures of sickle cell crisis is an evident need for these patients. The study was on knowledge and attitude as well as prevention but focused on Adult Sickle Cell Patients and was carried out only on female students of the university and not in Nigeria, hence this is the gap this study intends to fill.

Adewoyin, Alagbe, Adedokun, and Idubor (2015) conducted a work on knowledge, attitude and control practices of sickle cell disease among youth corps members in Benin City, Nigeria. This was an analytic, cross-sectional study among 370 new tertiary graduates (youth corps members) in Benin City, Nigeria. Bio-data, data on knowledge, their attitude and control practices of sickle cell disease were obtained using a structured questionnaire. Association between the mean level of knowledge and other variables such as age, gender, course of study, etc were tested using one way analysis of variance. Most of the study participants were aged 22 - 29 years. A large proportion (63.5%) of the respondents was females.

Only 17.8% of the respondents had a good knowledge of SCD despite high level of awareness (98.4%). Those who studied courses related to medical sciences had significantly higher mean knowledge score. About 94.6% of the respondents knew their SCD carrier status and 80.8% were willing to avoid carrier marriages. Only 38.1% will accept prenatal diagnosis/selective abortion if locally available. The study covered variables related to this study such as knowledge, attitude and control measures but was carried out among youth corps member and not in Nsukka Education Zone, hence this is the gap this study intends to fill.

Abubakar, Lawan, Mijinyawa, Adeleke, and Sabiu (2010) conducted a work on Perceptions about Sickle Cell Disease and its Prevention among Undergraduates of Tertiary Institutions in Kano State, Nigeria. Methods Three hundred undergraduate students from Bayero University Kano and Federal College of Education, Kano were selected using a multi-stage sampling technique. Structured self-administered questionnaires were administered to respondents that agreed to participate in the study to assess their perceptions regarding sickle cell disease and its prevention. Data entry and analysis was done using EPI-Info software. Results Majority (81%) of the respondents fell within the age group 15-24. School teachers and lecturers constituted the major source of information (49%), and only 17% of the respondents got their information about SCD from health workers. Most of the respondents, 219 (73%), chose inheritance from parents as the correct way of SCD

transmission. Up to 27.3% of respondents had poor knowledge of SCD prevention, and there was a statistically significant association between gender, religion and marital status with good level of knowledge of SCD and its prevention.

The study was on sickle cell disease and its prevention measures and as such is vital to this study but was carried out among undergraduate students and also not in Nsukka Education Zone. This is therefore the gap this study intends to fill.

Studies Related to Premarital counselling and Screening on Sickle Cell Disease

Al kindi, Salha and Al kendi (2012) conducted a study on knowledge and attitude of university students of Sultanate of Oman towards premarital sickle cell program. This is a cross-sectional study conducted at the students' clinic. Information was elicited from the students using a self-administered questionnaire. A total of five hundred and ninety unmarried adult students of both gender were used for the study. The result shows that majority of the students (79%) were aware about the availability of premarital screening and thought that it is important to carry out premarital sickle cell screening, however majority (36%) that have heard about it heard it in schools/college, this is followed by media (35%) but its utilization among students is still very low due to different believes of the student.

The study is vital to this work as it explored related variables such as knowledge and attitude as well as premarital sickle cell program but was not carried out in Nigeria and not in secondary school, hence this is the gap which this study intends to fill.

Another study was conducted by Awatif (2006), to investigate the knowledge, attitude and practice of female students of king Saud University towards the implementation of premarital screening in Saudi Arabia. The survey was conducted in two months and nine months after the compulsory implementation of premarital screening (PMS) in the kingdom of Saudi Arabia. The female students of King Saud University were given health education lectures before the survey. The first survey was done with a designed close ended questionnaire distributed at pre and post stages of health education lectures. The result showed that of the total of 140 university female students, a total of 112 out of 132(84.8%) in the pre and 111 out of 128(86.7%) in the post-test were single and of the married students 7/20 (35.0%) and 7/17 (41.2%)in pre and post lectures had previously had PMS Screening. The attitude of students towards PMS was generally positive.108 (81.8%) in the pre-test and 110(85.9%) in the post-test saw the importance of PMS in controlling the commonest hereditary disease. In spite of the positive attitude of all the students in the pre and post-tests, few expressed fears

towards the confidentiality of the PMS test result and it was felt that social and psychological problems will ensue from abnormal results.

The study was on knowledge and attitude as well as pre-marital screening which makes it relevant to this study but was carried out on female students of the university and not in Nigeria, hence this is the gap this study hopes to fill.

Gharaibe and Mater, (2009), conducted a study on attitude, knowledge and perception to premarital sickle cell screening among young Syrian adults in Jordan. Descriptive cross –sectional design was utilized, and stratified random sampling technique was used to recruit nine hundred and forty-two students for the study. Findings showed that although the students had a considerable knowledge of premarital screening, they had a limited knowledge about certain aspects. Although they had some positive attitude and will like to go for premarital screening, about 38 % of the students still had negative attitude and perception towards other aspects of premarital counseling and testing. The study covered knowledge and attitude as well as pre-marital sickle cell screening which makes it vital for this study but was carried out outside Nigeria. This is the gap this study intends to fill.

Eshidk, Dorgham, and Sharbini (2007), conducted a study on the knowledge and practice of couples towards premarital screening in Egypt. The study was conducted using survey method. A well structured questionnaire was used to

collect data from the respondents. The result showed a great lack of knowledge in the first study, even among educated respondents about the actual term premarital screening, while in subsequent studies, premarital screening had gained acceptance in that the number of people who sought genetic investigation increased within the second year. Meanwhile 91.8% of them (couples) were self-referred. This indicates increased level of knowledge and acceptance of couples towards premarital genetic screening. The study covered some major variables that are relevant to this study such as knowledge and pre-marital screening but was carried out on couples and not in Nigeria. This is therefore the gap this study intends to fill.

Another study was conducted by Odeola, Adisa and Akintola (2010), to investigate the knowledge of premarital genetic screening among students of Osun state polytechnic. A descriptive survey research design was used in the study and a self-developed structured questionnaire modified in four point rating scale was used as an instrument for collection of data. Sample size of one thousand, one hundred and sixty five higher national diploma students were selected using a multistage sampling technique. Findings revealed that male student of the institution have more knowledge about premarital screening than female students of the same institution with a mean value of 34.31.

The study explored variables related to this work such as knowledge and premarital genetic screening but was carried out on polytechnic student and not in Nsukka Education Zone. This is the gap this study hopes to fill.

Studies Related to Gender Difference in Sickle Cell Disorder

A study was conducted by Ilesanmi (2013) to examine the Gender Differences in Sickle Cell Crises and its Implications for Genetic Counselling and Psychotherapy. The need for this research is to attempt to examine the differences in crises as well as proffer solutions for the genetic and mental health implications of these disorders. The study adopted a cross-sectional quantitative survey research design. A total of 40 adolescents (Male=20, Female =20) who have sickle cell disorders {age 15-18; mean age=16.35, SD=1.11} from three randomly selected SCD clubs in three different Local Governments areas {through fish bowl method} out of a larger number of seven purposively selected LGAs which had SCD Clubs in Lagos States, Nigeria participated in the study. Initially, a total of the 50 participants (25 boys and 25 girls) indicated their willingness to participate in the study, but only 40 returned useable instruments. The SCD Pubertal and Priapism Questionnaire was developed and validated through face to face validation for the purpose of the study and was administered to 40 {Male=20, 50% and Female=20, 50%} respondents who were members of three SCD clubs in Lagos State. The instrument consisted of three sections. Section A sought respondents

demographical variables, Section B which is for Boys only sought information on priapism crises and onset of pubertal changes in adolescence, while Section C (-girls only) sought information on SCD crises in relation to Menstruation and general attitudes of respondents towards pregnancy. Percentages were calculated for statistical analysis using SPSS version 17. Results obtained from the study indicated that 17(85%) adolescent boys had experienced priapism (stuttering=8, 47% and major priapism =9,53%); and that 12(71%) had been admitted at one point in time in the hospital for the treatment of priapism. 80% of the female respondents had attained menarche; with the following variations on their age: 14 years=3(18.75%); 15 years=7(43.75%); 16 years=4(25%); and 17 years=2(12.5%). The findings also showed that 13(81%) of the girls who had attained menarche have had severe painful crises during menstruation and that 62% have experienced severe pains on monthly basis, 23% quite often and 15% once in a while. 9(69%) of the girls had been hospitalized for SCD crises during menstrual flow in the past; and that 11(55%) of the girls had negative attitude towards pregnancy.

The study relates to the variables of this study such as sickle cell crisis, gender and premarital counseling but was carried out outside Nsukka education Zone, hence this is gap this study intends to fill.

Akre, Sukhsohale, Kubde, Agrawal, Khamgaokar, Chaudhary, and Dhoble (2013) carried out a research on whether gender differences do influence the prevalence of sickle cell disorder and related morbidities among school children in rural central India. The study was undertaken to estimate the prevalence of sickle cell disorder and associated morbidities and also to assess the gender differences in rural school children of central India. A cross-sectional study was carried out among 735 school going children studying in 5th to 10th standard of Sevanand High School, Mahadula village, Koradi road district Nagpur. Detailed information regarding socio-demographic profile was inquired. Each student was subjected to thorough general and systemic examination. Also, haemoglobin estimation and sickling test was performed. In addition, Haemoglobin electrophoresis was done in students with positive sickling test. Out of total 735 students, 56.2 % were male and 43.8% were female students belonging to different caste. 6.7% students showed sickling test positive with 30 (7.3%) males and 19 (5.9%) females. Majority of sickle positive students were males and belonged to schedule caste (mahar). All sickling test positive children were found to be sickle cell trait on haemoglobin electrophoresis. Mean haemoglobin level and mean quetelet index was found to be significantly lower in sickle cell trait students ($p<0.001$). Related morbidities like lymphadenopathy, upper respiratory tract infection, joint pain and

otitis media were found in Hb AS students with greater prevalence among male students as compared to female students.

The study explored variables relevant to this study such as sickle cell disorder and gender and was carried out among school children but outside Nigeria, this is the gap this study intends to fill.

Summary of Literature Review

This chapter reviewed available literature relevant to the study under three major headings; conceptual frame work, theoretical frame work and review of empirical studies. Under conceptual frame work; meaning and concept knowledge, attitude, secondary school student, sickle cell disease, as well as the need for pre-marital sickle cell counselling and screening and adherence to pre-marital sickle cell disease counselling and screening were discussed. The literature showed that a person's acceptance to premarital sickle cell counselling and screening in advanced society depends on individual's knowledge and attitude towards sickle cell disease. People that have positive attitude may go along to accept and practice while people with negative attitude may not accept to do the counselling and screening.

Theory of reasoned action and planned behavior propounded by Ajzen and Fishbein (1980) as well as the Theory of Situational Awareness by Mica Endsley

(1988) were discussed in theoretical frame work. The theories were applied to the study to enable us understand why individuals decide to accept or make rational use of the information available to them not minding the implications.

In the review of literature with empirical background, the previous works of other researchers on attitude and knowledge of students and above on sickle cell disease as well as works on its prevention measure, pre-marital sickle cell counselling and screening and gender were reviewed. In other words, the empirical studies gathered information on studies related to the present study. However, none of these studies investigated knowledge and attitude of secondary school students towards sickle cell disease in Nsukka Education Zone. It appears that in Enugu State and in Nsukka Education Zone in particular, the knowledge and attitude of secondary school students towards sickle cell disease has not been given very serious research attention. Therefore, the researcher dimmed it necessary to carry out a research study on the knowledge and attitude of secondary school students towards sickle cell disease in Nsukka Education Zone of Enugu State.

CHAPTER THREE

RESEARCH METHOD

This chapter deals with the following areas; research design, area of study, population of the study sample and sampling techniques, instrument for data collection, validation of the instrument, reliability of the instrument, and method of data analysis.

Design of the Study

The design of this study is descriptive survey. Nworgu, B. G. (2015) explained that descriptive survey is aimed at collecting data on, and describing in a systematic manner the characteristics, features or the fact about a given population. The author asserted that descriptive survey concerns itself with describing events as they are, without any manipulation of what caused the event or what is being observed. The researcher adopted descriptive survey research design because the study intends to use representative sample of opinions to investigate the problem under study.

Area of the Study

The study was carried out in Nsukka Education Zone of Enugu State. The study covered the three Local Government areas in Nsukka Education Zone. The three Local Government Areas are; Nsukka, Igbo-Etiti, and Uzowani Local

Government Areas. People from this area are mostly farmers, civil servants and traders. Nsukka Education Zone was chosen for the study because of large number of young adults (adolescents) of reproductive age that abound the area.

Population of the Study

The population for this study consists of all the SSII secondary school students in Nsukka Education Zone. Nsukka local Government Area has 29 secondary schools and a total of 2456 SSII students, Igbo-Etiti has 15 secondary schools and a total of 1108 SSII students and Uzowani has 14 secondary schools and a total of 670 SSII students. There are 58 secondary schools and 4234 SSII students in the three Local Government Areas in Nsukka Education Zone.

Sample and Sampling Techniques

The sample for this study was 420 students. Multi-stage technique was adopted and at each stage, random sampling technique was used for this study. The sample was restricted to SSII class only to ensure that only students who are above the age of puberty participated in the study. One tenth of the total population was used to find the percentage sample. Nine schools were used for the sample. 140 students were used as sample in each zone.

Instrument for Data Collection

The instrument to be used for this study is an achievement test and a structured Questionnaire. Both instruments were self-developed by the researcher. Questions were drawn based on the stated objectives, purposes and literatures reviewed for this study. The achievement test was made up of only two sections. Section A provided demographic information such as gender and location while the section B contained information on students' knowledge of sickle cell disease. The questions in the achievement test comprise of multiple answers from which the respondents will choose. The questionnaire was also made up of two sections. In section A, the respondents were required to provide the demographic information such as gender, and location. Section B contained information on attitude to sickle cell disease, prevention ways, and premarital sickle cell counselling and screening, and they were arranged in clusters ranging from cluster A to cluster D.

In the questionnaire, a four point rating scale that ranged from Strongly Agree (SA) = 1, Agree (A) = 2, Disagree (D) =3, to Strongly Disagree (SD) = 4, will be used to measure the response of respondents.

Validation of the Instrument

To establish the validity of the instrument the questionnaire was subjected to face validation by the researcher's supervisor and three specialists, two specialists from Guidance and Counselling unit of Educational Foundations and one from Measurement and Evaluation unit of Science Education all in the Faculty of Education University of Nigeria, Nsukka. The Questionnaire was structured as advised by the expert from measurement and evaluation. Also other corrections from the other two experts were effected before the final version of the instrument was produced.

Reliability of the Instrument

Kudder-Richardson formular (K-R20) and Cronbach Alpha were used in determining the internal consistency of the Questionnaire items. The achievement test and questionnaires was administered to a sample size of 20 respondents comprising 10 male and 10 female students of SSII in Boys secondary school Oba in Udenu Local Government Area in Enugu State. Their responses were subjected to Kudder-Richardson formular (K-R20) and Cronbach Alpha reliability test. Kudder-Richardson formular (K-R20) reliability indices of 0.64 was gotten for the achievement test and reliability indices of 0.80, 0.49, 0.75, and 0.58, was gotten for each of the clusters of the questionnaire.

Method of Data Collection

The achievement test and questionnaire was administered and collected personally by the researcher and two research assistants who the researcher briefed on what to do. Collection of the completed achievement test and questionnaire was done within a week to enhance maximum return rate.

Method of Data Analysis

The data collected for the study was analyzed using mean and standard deviation to answer the research questions. In taking decision on the questionnaire items, the criterion used is that mean score of 2.50 and above was accepted as Agreed, while mean score of below 2.50 was accepted as disagreed. In taking decision for the achievement test items, the criterion used is that score of 50% and above was regarded as having knowledge of SCD while score of below 50% was regarded as not having knowledge about SCD. The t-test statistic was used to test the five null hypotheses at 0.05 level of significance.

CHAPTER FOUR

RESULTS

This chapter presents the results of data analysis based on data collected for the study. The presentation follows the sequence of the research questions and the null hypotheses that guided the study.

Research Question One

What is the achievement mean score of senior secondary school students on knowlwedge of sickle cell disease?

Table 1: Mean ratings and standard deviations of responses on the achievement mean score of senior secondary school students knowledge on sickle cell disease

Variable	N	Mean	SD	Decision
Sickle Cell Disease	420	61.67	8.09	Above Average

The result of the study as presented in Table 1 (Mean ratings and standard deviations of responses on the achievement mean score of senior secondary school students knowledge on sickle cell disease) shows the mean score and standard deviations of respondents on the knowledge of senior secondary school students on sickle cell disease. Result shows that the achievement mean score was 61.67 with a standard deviation of 8.09. This means that the knowledge of senior secondary school students on sickle cell disease was above average. This also means that the secondary school students had good knowledge of sickle cell disease.

Research Question Two

What is the attitude of senor seconeary school students towards sicklecell disease?

Table 2: Mean ratings and standard deviations of responses on the attitude of senor seconeary school students towards sickle cell disease

S/N	Item Statement	$\bar{x}$	SD	Dec
1.	Sickle cell disease is not as serious as people take it to be	1.61	0.48	D
2.	It is useful for one to know whether he/she has sickle cell S gene.	3.37	0.48	A
3.	Having a child with sickle cell disease would be very scary	3.40	0.49	A
4.	If one is told by his doctor that he is a carrier of sickle cell S gene, is it advisable for him tell his relatives, friends and classmates.	1.80	0.40	D
5.	Sickle cell disease could happen in anyone's' family	3.30	0.45	A
6.	Ones' friends may be a carrier of sickle cell S gene trait	3.20	0.40	A
7.	Sickle cell disease is a condition caused as a result of the cures placed on one for the sins committed.	1.60	0.49	D
8.	Sickle cell disease test is very expensive that one cannot afford	1.70	0.45	D
9.	Sickle cell disease testing can be very painful and difficult	1.60	0.49	D
10.	Knowing that one has sickle cell disease by the public will reduce his/her chances of getting married.	3.30	0.45	A
11.	Sickle cell disease is a condition that affects one only when he/she commits an abomination	1.90	0.30	D
12.	My religious beliefs do not accept that sickle cell disease is a medical condition but sees it as a spiritual spell inflicted on people by wicked individuals.	1.60	0.49	D
	Cluster Mean	2.36	0.11	**D**

N = 420

The result of the study as presented in Table 2 (Mean ratings and standard deviations of responses on the attitude of senor seconeary school students towards sickle cell disease) shows the mean ratings and standard deviations of responses on the attitude of senor seconeary school students towards sickle cell disease. The result shows that items 2, 3, 5, 6 and 10 had mean ratings of 2.50 and above set as criterion for accepting an item, this means the respondents agreed that; it is useful for one to know whether he/she has sickle cell S gene, having a child with sickle cell disease would be very scary, and that sickle cell disease could happen in anyone's' family etc. However, the respondents disagreed on items 1, 4, 7-9 and 11-12 which the mean ratings are set below 2.50 criterion level. The cluster mean of 2.36 with a standard deviation of 0.11 show that senior secondary school students' disagreed that; sickle cell disease is not as serious as people take it to be, sickle cell disease test is very expensive,painful and difficult, and that sickle cell disease is a condition that affects one only when he/she commits an abomination.

Research Question Four

Are senior secondary school students willing to have premarital sickle cell counselling and screening?

Table 4: Mean ratings and standard deviations of responses on senior secondary school students willingness to have premarital sickle cell counselling and screening

S/N	Item Statement	$\bar{x}$	SD	Dec
27	Premarital sickle cell counselling and screening is necessary once one is in a serious relationship with another.	3.34	0.39	A
28	Engaging in premarital sickle cell counselling and screening is one of the ways to reduce Sickle cell disease burden in the family	3.42	0.49	A
29	Premarital sickle cell counselling and screening should be made mandatory for every individual of reproductive capability before marriage	3.40	0.51	A
30	Going for premarital sickle cell counseling and screening will exposed one's genetic status to the public	1.80	0.45	D
31	Premarital sickle cell screening is against our religious/cultural beliefs and as such should be rejected	1.73	0.45	D
32	Premarital sickle cell counselling and screening can bring conflict between two people who are in a conjugal relationship	1.60	0.40	D
33	Premarital sickle cell counselling and screening will increase the chances of one not getting married.	1.70	0.42	D
34	Premarital sickle cell counselling and screening is a waste of time and resources.	1.80	0.40	D
35	I prefer not to know if anything is wrong with me before marriage.	1.80	0.45	D
	Cluster Mean	2.29	0.38	**D**

N = 420

The result of the study as presented in Table 4 (Mean ratings and standard deviations of responses on senior secondary school students willingness to have premarital sickle cell counselling and screening) shows the mean ratings and standard deviations of responses on willingness to have premarital sickle cell counselling and screening by secondary school students. The results show that the respondents agreed on items 27 - 29 because the mean ratings are above 2.50 set as criterion for accepting an item, this means that premarital sickle cell counselling and screening is necessary once one is in a serious relationship with another, engaging in premarital sickle cell counselling and screening is one of the ways to reduce Sickle cell disease burden in the family and premarital sickle cell counselling and screening should be made mandatory for every individual of reproductive capability before marriage. However, the respondents disagreed on items 30 – 35 because the mean ratings are below 2.50 criterion level. The cluster mean of 2.29 with a standard deviation of 0.38 shows that senior secondary school students are willing to go for premarital sickle cell counselling and screening.

Research Question Five

What is the influence of gender on senior secondary school students' knowledge of sickle cell disease?

Table 5: Mean ratings and standard deviations of responses on the influence of gender on senior secondary school students' knowledge of sickle cell disease

Gender	N	Mean	SD	Decision
Male	245	61.27	8.225	Above Average
Female	175	62.23	7.890	Above Average

N = 420

The result of the study as presented in Table 5 (Mean ratings and standard deviations of responses on the influence of gender on senior secondary school students' knowledge of sickle cell disease) shows the mean score and standard deviations of respondents on the influence of gender on senior secondary school students' knowledge of sickle cell disease. Result shows that the achievement mean score for the male students was 61.27 with a standard deviation of 8.22, while the mean score for the female students was 62.23 with a standard deviation of 7.89. The result shows that the female students perform slightly higher than the male students. This means that the knowledge of both male and female senior secondary school students on sickle cell disease was above average. This also means that both the male and female secondary school students had good knoledge of sickle cell disease.

Research Question Six

What is the influence of gender on senior secondary school students' attitude towards sickle cell disease?

Table 6: Mean ratings and standard deviations of responses on the influence of gender on senior secondary school students' attitude towards sickle cell disease

S/N	Item Statement	Male			Female		
		$\bar{x}$	SD	Dec	$\bar{x}$	SD	Dec
1.	Sickle cell disease is not as serious as people take it to be	1.60	0.49	D	1.63	0.48	D
2.	It is useful for one to know whether he/she has sickle cell S gene.	3.36	0.48	A	3.40	0.49	A
3.	Having a child with sickle cell disease would be very scary	3.43	0.49	A	3.36	0.48	A
4.	If one is told by his doctor that he is a carrier of sickle cell S gene, is it advisable for him tell his relatives, friends and classmates.	1.71	0.45	D	1.92	0.27	D
5.	Sickle cell disease could happen in anyone's' family	3.26	0.43	A	3.36	0.48	A
6.	Ones' friends may be a carrier of sickle cell S gene trait	3.17	0.37	A	3.24	0.42	A
7.	Sickle cell disease is a condition caused as a result of the cures placed on one for the sins committed.	1.60	0.49	D	1.60	0.49	D
8.	Sickle cell disease test is very expensive that one cannot afford	1.74	0.43	D	1.64	0.48	D
9.	Sickle cell disease testing can be very painful and difficult	1.69	0.46	D	1.48	0.50	D
10.	Knowing that one has sickle cell disease by the public will reduce his/her chances of getting married.	3.31	0.46	A	3.28	0.45	A
11.	Sickle cell disease is a condition that affects one only when he/she commits an abomination	1.86	0.35	D	1.96	0.19	D
12.	My religious beliefs do not accept that sickle cell disease is a medical condition but sees it as a spiritual spell inflicted on people by wicked individuals.	1.66	0.47	D	1.52	0.50	D
	Cluster Mean	**2.36**	**0.11**	**D**	**2.37**	**0.12**	**D**

N = 420

The result of the study as presented in Table 6 (Mean ratings and standard deviations of responses on the influence of gender on senior secondary school students' attitude towards sickle cell disease) shows the mean ratings and standard deviations of responses on the influence of gender on senior secondary school students' attitude towards sickle cell disease. The result shows that both male and female students agreed on items 2, 3, 5, 6 and 10 with mean ratings of 2.50 and above set as criterion for accepting an item, this means that both the male and female respondents agreed that; it is useful for one to know whether he/she has sickle cell S gene, having a child with sickle cell disease would be very scary and that sickle cell disease could happen in anyone's' family etc. However, both male and female respondents disagreed on items 1, 4, 7-9 and 11-12 because the mean ratings are below 2.50 criterion level. The cluster means of 2.36 for male students and 2.37 for female students show that the attitude of students towards sicklecell disease was not influenced by gender.

Research Question Seven

What is the influence of school location on senior secondary school students' knowledge of sickle cell disease?

Table 7: Mean ratings and standard deviations of responses on the influence of school location on senior secondary school students' knowledge of sickle cell disease

Location	N	Mean	SD	Decision
Urban	245	61.80	8.04	Above Average
Rural	175	61.49	8.17	Above Average

N = 420

The result of the study as presented in Table 7 (Mean ratings and standard deviations of responses on the influence of school location on senior secondary school students' knowledge of sickle cell disease) shows the mean scores and standard deviations of respondents on the influence of school location on senior secondary school students' knowledge of sickle cell disease. Result shows that the achievement mean score for the students in urban schools was 61.80 with a standard deviation of 8.04, while the mean score for the students in rural schools was 61.49 with a standard deviation of 8.17. The result shows that the students from urban schools performed just slightly higher than the students from rural schools. This means that the knowledge of senior secondary school students on sickle cell disease was not influence by school location.

Research Question Eight

What is the influence of school location on senior secondary school students' attitude towards sickle cell disease?

Table 8: Mean ratings and standard deviations of responses on the influence of school location on senior secondary school students' attitude towards sickle cell disease

S/N	Item Statement	Urban $\bar{x}$	Urban SD	Urban Dec	Rural $\bar{x}$	Rural SD	Rural Dec
1.	Sickle cell disease is not as serious as people take it to be	1.61	0.48	D	1.61	0.49	D
2.	It is useful for one to know whether he/she has sickle cell S gene.	3.38	0.48	A	3.37	0.48	A
3.	Having a child with sickle cell disease would be very scary	3.43	0.49	A	3.36	0.48	A
4.	If one is told by his doctor that he is a carrier of sickle cell S gene, is it advisable for him tell his relatives, friends and classmates.	1.80	0.40	D	1.80	0.40	D
5.	Sickle cell disease could happen in anyone's' family	3.29	0.45	A	3.32	0.46	A
6.	Ones' friends may be a carrier of sickle cell S gene trait	3.17	0.37	A	3.24	0.42	A
7.	Sickle cell disease is a condition caused as a result of the cures placed on one for the sins committed.	1.51	0.50	D	1.72	0.45	D
8.	Sickle cell disease test is very expensive that one cannot afford	1.66	0.47	D	1.76	0.42	D
9.	Sickle cell disease testing can be very painful and difficult	1.66	0.47	D	1.52	0.50	D
10.	Knowing that one has sickle cell disease by the public will reduce his/her chances of getting married.	3.23	0.42	A	3.40	0.49	A
11.	Sickle cell disease is a condition that affects one only when he/she commits an abomination	1.94	0.23	D	1.84	0.36	D
12.	My religious beliefs do not accept that sickle cell disease is a medical condition but sees it as a spiritual spell inflicted on people by wicked individuals.	1.60	0.49	D	1.60	0.49	D
	Cluster Mean	**2.35**	**0.11**	**D**	**2.38**	**0.12**	**D**

N = 420

The result of the study as presented in Table 8 (Mean ratings and standard deviations of responses on the influence of school location on senior secondary school students' attitude towards sickle cell disease) shows the mean ratings and standard deviations of responses on the influence of school location on senior secondary school students' attitude towards sickle cell disease. The result shows that both students from urban and rural schools agreed on items 2, 3, 5, 6 and 10 with mean ratings of 2.50 and above set as criterion for accepting an item, this means that both students from urban and rural schools agreed that; it is useful for one to know whether he/she has sickle cell S gene, having a child with sickle cell disease would be very scary, sickle cell disease could happen in anyone's' family, ones' friends may be a carrier of sickle cell S gene trait and knowing that one has sickle cell disease by the public will reduce his/her chances of getting married. However, both students from urban and rural schools disagreed on items 1, 4, 7-9 and 11-12 because the mean ratings are below 2.50 criterion level. The cluster means of 2.35 for students from urban schools and 2.38 for students from rural schools shows that the attitude of students towards sicklecell disease is not influecne by school location.

Research Question Nine

What are the possible ways of preventing sickle cell disease among secondary school students?

Table 9: Mean ratings and standard deviations of responses on the possible ways of preventing sickle cell disease among secondary school students

S/N	Item Statement	$\bar{x}$	SD	Dec
20	Sticking to medical advice of experts irrespective of ones beliefs is one sure method of controlling Sickle cell disease	3.10	0.40	A
21	Knowing ones genetic status by going for pre-marital sickle cell screening will help to reduce the number of sickle cell born children in the communities as well as the world at large.	3.44	0.49	A
22	Dissemination of information through workshops and seminars on Sickle cell disease by government and health workers is vital to controlling the disease	3.33	0.49	A
23	Pre-marital genetic counselling is also a very effective method of controlling and preventing Sickle cell disease	3.50	0.50	A
24	Going for Sickle cell disease testing before engaging in any intimate or sexual relationship will help to checkmate the birth of children with the disease	3.42	0.50	A
25	Attending seminars and workshops on Sickle cell disease is another possible way of preventing the disease among the populace	3.40	0.49	A
26	Going for prenatal diagnosis and selective abortion can assist in reducing the birth of children with Sickle cell disease	3.50	0.50	A
	Cluster Mean	**3.38**	**0.27**	**A**

N = 420

The result of the study as presented in Table 9 shows the mean ratings and standard deviations of responses on the the possible ways of preventing sickle cell disease among secondary school students. The result shows that the respondents agreed on all the items in Table 9 (Mean ratings and standard deviations of

responses on the possible ways of preventing sickle cell disease among secondary school students) as possible ways of preventing sickle cell disease among secondary school students because the mean ratings are above 2.50 set as criterion for accepting an item, this mean that; sticking to medical advice of experts irrespective of ones beliefs is one sure method of controlling Sickle cell disease, knowing ones genetic status by going for pre-marital sickle cell screening will help to reduce the number of sickle cell born children in the communities as well as the world at large, dissemination of information through workshops and seminars on Sickle cell disease by government and health workers is vital to controlling the disease and pre-marital genetic counselling is also a very effective method of controlling and preventing Sickle cell disease among others. The cluster mean of 3.38 with a standard deviation of 0.27 means the respondents agreed that all the items in Table 9 are possible ways of preventing sickle cell disease among secondary school students.

Hypothesis One

There is no significant difference between the mean ratings of male and female secondary school students on knowledge of sickel cell disease.

Table 10: t-test Analysis of the significant difference between the mean ratings of male and female secondary school students on knowledge of sickel cell disease

Gender	N	$\bar{x}$	SD	t-cal	Df	Sig	Dec
Male	245	61.25	8.22	-1.20	418	0.23	NS
Female	175	62.23	7.89				

Note: α = 0.05, NS = Not Significance

Result in Table 10 (t-test Analysis of the significant difference between the mean ratings of male and female secondary school students on knowledge of sickel cell disease) shows the t-test analysis of the significant difference between the mean ratings of male and female secondary school students on knowledge of sickel cell disease. Result shows that a t-value of -1.20 with a degree of freedom of 418 and a significant value of 0.23 were obtained. The significant value of 0.23 is greater than 0.05 set as level of significant for testing the hypothesis, this means the null hypothesis which stated that there is no significant difference between the mean ratings of male and female secondary school students on knowledge of sickel cell disease is not rejected. Inference drawn therefore is that there was no significant difference between the mean ratings of male and female secondary school students on knowledge of sickel cell disease.

Hypothesis Two

There is no significant difference between the mean ratings of male and female secondary school students on attitude toward sickel cell disease.

Table 11: t-test Analysis of the significant difference between the mean ratings of male and female secondary school students on on attitude toward sickel cell disease

Gender	N	$\bar{x}$	SD	t-cal	Df	Sig	Dec
Male	245	2.36	0.10	-0.07	418	0.95	NS
Female	175	2.37	0.12				

Note: α = 0.05, NS = Not Significance

Result in Table 11 (t-test Analysis of the significant difference between the mean ratings of male and female secondary school students on on attitude toward sickel cell disease) shows the t-test analysis of the significant difference between the mean ratings of male and female secondary school students on attitude toward sickel cell disease. Result shows that a t-value of -0.07 with a degree of freedom of 418 and a significant value of 0.95 were obtained. The significant value of 0.95 is greater than 0.05 set as level of significant for testing the hypothesis, this means the null hypothesis which stated that there is no significant difference between the mean ratings of male and female secondary school students on attitude toward sickel cell disease is not rejected. Inference drawn therefore is that there was no significant difference between the mean ratings of male and female secondary school students on attitude toward sickel cell disease.

Hypothesis Three

There is no significant difference between the mean ratings of urban and rural school students on knowledge of sickle cell disease

Table 12: t-test Analysis of the significant difference between the mean ratings of urban and rural school students on knowledge of sickle cell disease.

Location	N	$\bar{x}$	SD	t-cal	Df	Sig	Dec
Urban	225	61.80	8.05	0.38	418	0.69	NS
Rural	195	61.49	8.17				

Note: α = 0.05, NS = Not Significance

Result in Table 12 (t-test Analysis of the significant difference between the mean ratings of urban and rural school students on knowledge of sickle cell disease) shows the t-test analysis of the significant difference between the mean ratings of urban and rural school students on knowledge of sickle cell disease. Result shows that a t-value of 0.38 with a degree of freedom of 418 and a significant value of 0.69 were obtained. The significant value of 0.69 is greater than 0.05 set as level of significant for testing the hypothesis, this means the null hypothesis which stated that there is no significant difference between the mean ratings of urban and rural school students on knowledge of sickle cell disease is not rejected. Inference drawn therefore is that there was no significant difference between the mean ratings of urban and rural school students on knowledge of sickle cell disease.

Hypothesis Four

There is no significant difference between the mean ratings of urban and rural school students on attitude towards sickle cell disease

Table 13: t-test Analysis of the significant difference between the mean ratings of urban and rural school students on attitude towards sickle cell disease

Location	N	$\bar{x}$	SD	t-cal	Df	Sig	Dec
Urban	225	2.35	0.11	-1.98	418	0.04	S
Rural	195	2.37	0.12				

Note: $\alpha = 0.05$, S = Significance

Result in Table 13 (t-test Analysis of the significant difference between the mean ratings of urban and rural school students on attitude towards sickle cell disease) shows the t-test analysis of the significant difference between the mean ratings of urban and rural school students on attitude towards sickle cell disease. Result shows that a t-value of -1.98 with a degree of freedom of 418 and a significant value of 0.04 were obtained. The significant value of 0.04 is less than 0.05 set as level of significant for testing the hypothesis, this means the null hypothesis which stated that there is no significant difference between the mean ratings of urban and rural school students on attitude towards sickle cell disease is rejected. Inference drawn therefore is that there was a significant difference between the mean ratings of urban and rural school students on attitude towards sickle cell disease.

Hypothesis Five

There is no significant gender difference in students' willingness to have pre-marital sickle clell counselling and screening.

Table 14: t-test Analysis of the significant gender difference in students' willingness to have pre-marital sickle clell counselling and screening

Location	N	$\bar{x}$	SD	t-cal	Df	Sig	Dec
Urban	245	2.92	0.39	-0.39	418	0.69	NS
Rural	175	2.94	0.36				

Note: α = 0.05, NS = Not Significance

Result in Table 14 (t-test Analysis of the significant gender difference in students' willingness to have pre-marital sickle clell counselling and screening) shows the t-test analysis of the significant gender difference in students' willingness to have pre-marital sickle clell counselling and screening. Result shows that a t-value of -0.39 with a degree of freedom of 418 and a significant value of 0.69 were obtained. The significant value of 0.69 is greater than 0.05 set as level of significant for testing the hypothesis, this means the null hypothesis which stated that there is no significant gender difference in students' willingness to have pre-marital sickle clell counselling and screening is not rejected. Inference drawn therefore is that male and female student had the same opinion on willingness to have pre-marital sickle cell counselling and screening. The difference in their responses was not statistically significant.

Findings of the Study

From the analysis of data and interpretation of results, the following findings emerged:

1. Secondary school students had good knowledge of sickle cell disease.

2. The result of the study shows that senior secondary school students' attitude towards sickle cell disease is positive.

3. The findings of the study show that senior secondary school students have postive attitude to individuals having sickle cell disease.

4. Senior secondary school students need premarital sickle cell counselling and screening.

5. The finding of the study show that both the male and female secondary school students had good knoledge of sickle cell disease.

6. The attitude of students towards sickle cell disease was not influecne by gender.

7. The result of the study shows that the knowledge of senior secondary school students on sickle cell disease was not influence by school location.

8. The findings of the study show that the attitude of students towards sickle cell disease was not influecne by school location.

9. The respondents agreed that all the items in Table 9 are possible ways of preventing sickle cell disease among secondary school students.

10. There was no significant difference between the mean ratings of male and female secondary school students on knowledge of sickel cell disease.

11. The result of the study shows that there was no significant difference between the mean ratings of male and female secondary school students on attitude toward sickel cell disease.

12. There was no significant difference between the mean ratings of urban and rural school students on knowledge of sickle cell disease.

13. The finding of the study shows that there was a significant difference between the mean ratings of urban and rural school students on attitude towards sickle cell disease.

14. The result of the study shows that both male and female student had the same opinion on willingness to have pre-marital sickle clell counselling and screening. The difference in their responses was not statistically significance.

CHAPTER FIVE

DISCUSSION OF THE FINDINGS, CONCLUSION, RECOMMENDATIONS AND SUMMARY

In this chapter, the results presented in chapter four are discussed based on the research questions and the null hypotheses that guided the study. The chapter is organized based on the following sub-headings: discussion of the findings, conclusion, educational implications of the findings of the study, recommendations, limitation of the study, suggestion for further studies and Summary of the study.

Discussions of the Findings

The findings of the study are discussed in line with the topics of the research questions and hypotheses that guided the study.

The Knowledge of Senior Secondary School Students about Sickle Cell Disease

The result from this study showed that secondary school student had an above average knowledge about sickle cell disease with mean of 61.67%. This means majority of the secondary school student had good knowledge about sickle cell disease and as a result are aware of the disease. In addition the result of hypothesis one also showed that, there was no significant difference between the

mean ratings of male and female secondary school students on knowledge of sickel cell disease.

The findings of this study also agrees with Olatona, Odeyemi, Onajole, and Asuzu, (2012) who investigated the effect of health education programme on the knowledge and attitudes to sickle cell disease and its screening among unmarried NYSC members in Lagos State. The result of the study was a mean score of 64.1% level of knowledge about sickle cell disease which implies a good understanding of sickle cell disease. The mean score of 64.1% level of knowledge among NYSC members after treatment was in 2012, now in 2017 mean score of 61.67% level of knowledge among secondary school students without treatment according to this present study means that knowledge about SCD has spread tremendously. The study also agrees with the work conducted by Lawrence (2010) on the athlete and coach knowledge, attitudes, and perceptions of sickle cell trait and national collegiate athletic association mandated testing in the United States. The result of the study showed that the athlete and coach had good knowledge of sickle cell trait as well as perceived importance of an athlete knowing his/her SCT status. Finally, the study is consistent with the study conducted by Moronkola and Fadairo (2009) on the knowledge and attitude of University students in Nigeria towards sickle cell disease and genetic counseling before marriage. The findings of the study showed that majority of the study respondents (63.3%) had high knowledge level about

sickle cell disease. Thus, knowledge about SCD was confirmed at higher levels, now at secondary school level with mean score of 61.67% level of knowledge on SCD according to this study, there is every belief to say that SCD is gaining considerable good awareness in secondary schools.

The Attitude of Senior Secondary School Students towards Sickle Cell Disease

The assessment of the attitude of senior secondary students towards SCD showed that there was a positive attitude towards sickle cell disease, because the result shows that items 2, 3, 5, 6 and 10 that had mean ratings of 2.50 and above set as criterion for accepting an item was accepted by the respondents, this means that the respondents agreed that; it is useful for one to know whether he/she has sickle cell S gene, having a child with sickle cell disease would be very scary, sickle cell disease could happen in anyone's' family, ones' friends may be a carrier of sickle cell S gene trait and knowing that one has sickle cell disease by the public will reduce his/her chances of getting married. However, the respondents disagreed on items 1, 4, 7-9 and 11-12 which the mean ratings are set as below 2.50 criterion level. This means that respondents disagreed that; SCD is not as serious as people take it to be, SCD is a condition caused as a result of the curse placed on one for the sins committed, SCD test is very expensive that one cannot afford and can be very painful and difficult, SCD is a condition that affect one only when he/she commits an abomination and so on. The findings from hypotheses two shows that

there was no significant difference between the mean ratings of male and female secondary school students on attitude toward sickel cell disease.

The above findings is consistent with the findings of the study conducted by Williams-Smith (2015) to examine the factors that contribute to the knowledge, health beliefs, attitudes, and behaviors regarding sickle cell disease among college students in The University of Texas at Arlington. The result of the study shows that there was a positive attitude regarding SCD even after controlling for demographic factors. This was supported by the findings of the study conducted by Olatona, Odeyemi, Onajole, and Asuzu, (2012) to investigate the effect of health education programme on the knowledge and attitudes to sickle cell disease and its screening among unmarried NYSC members in Lagos State which revealed that the attitudes of the respondents were positive to most aspects of the disease considered at baseline and increased significantly by 11.9% at Post-Intervention state. These findings are also similar to the findings of the study conducted by Moronkola and Fadairo (2009) on the knowledge and attitude of University students in Nigeria towards sickle cell disease and genetic counselling before marriage which showed that students had a positive attitude towards sickle cell disease among students of tertiary institutions in Nigeria. All the findings of the studies above confirmed that attitude to SCD was positive in higher levels, thus this present study also

acknowledges the same thing showing that towards SCD in secondary school are positive.

The Attitude of Senior Secondary School Students towards Individuals having Sickle Cell Disease

The result of the attitude of senior secondary school students towards individuals having sickle cell disease has a cluster mean of 1.59 which shows that senior secondary school students have postive attitude to individuals having sickle cell disease because it is commensurate with the mean rating of below 2.50 set as the criterion level.

The study agrees withthe findings of the study conducted by Lawrence (2010) on the athlete and coach knowledge, attitudes, and perceptions of sickle cell trait and national collegiate athletic association mandated testing in the United States. This is because the study shows that overall, athletes and coaches did not perceive that athletes with SCT would be discriminated against. However, the study is similar to study conducted by Olatona, Odeyemi, Onajole, and Asuzu, (2012) to investigate the effect of health education programme on the knowledge and attitudes to sickle cell disease and its screening among unmarried NYSC members in Lagos State. According to the authors, sustained health education through school curriculum, mass media and health institutions is relevant to

influence new graduates to have better attitudes towards individuals with the disease; hence enable them to make informed decisions about pro-creation later in life. Thus, the attitudes of the respondents were positive to individuals with sickle cell disease.

The Willingness of Senior Secondary School Students in attending Premarital Sickle Cell Counselling and Screening

The result of the study on the willingness of senior secondary school students in attending premarital sickle cell counselling and screening shows that senior secondary school students are will to go for premarital sickle cell counselling and screening as an overall cluster mean of 2.29 was gotten. This is because the results show that the respondents agreed on items 27 - 29 as the mean ratings for accepting an item is set as above 2.50 criterion level. However, the respondents disagreed on items 30 – 35 as the mean ratings are set at below 2.50 criterion level. Moreso, the findings of the hypotheses shows that there is no statistically significance between the male and female students' willingness to have pre-marital sickle cell counselling and screening.

This finding is supported by the finding of a study conducted by Al-kindi, Salha & Al –kendi, (2012), in their study among study on knowledge and attitude of university students of Sultanate of Oman towards premarital sickle cell program

where the vast majority of the participants thought it was important to do premarital sickle cell counselling. It was also observed that (79%) percentage of the students, in this study intends to go for premarital sickle cell screening while (36%) percentage of students do not intend to do the test. The findings of this study also agrees with the finding of a study conducted by Gharaibe and Mater (2009), on attitude, knowledge and perception to premarital sickle cell screening among young Syrian adults in Jordan which revealed that the students had considerable knowledge of premarital screening. The study is consistent with the findings of the study conducted by Eshidk, Dorgham, and Sharbini (2007 on the knowledge and practice of couples towards premarital screening in Egypt. The findings of the study showed that although there was a great lack of knowledge, even among educated respondents about the actual term premarital screening, in subsequent studies, premarital screening gained increased acceptance in that the number of people who sought genetic investigation increased within the second year. Thus, willingness to do genetic counselling could therefore be related to comprehensive knowledge of SCD.

The Influence of Gender on Students' Knowledge of Sickle Cell Disease

The result on the influence of gender on students' knowledge of sickle cell disease revealed that both the male and female secondary school students had good

knowledge of sickle cell disease although there were a slight diference with the female students achievement mean score higher than that of the male students. This is because the result shows that the male students has an average mean score of 61.27 with a standard deviation of 8.22, while the mean score for the female students was 62.23 with a standard deviation of 7.89.

Although the findings of the study disagrees with the findings of the study conducted by Ilesanmi (2013) to examine the Gender Differences in Sickle Cell Crises and its Implications for Genetic Counselling and Psychotherapy which shows that 85% of the male adolescents as well as while 81% of female adolescents have knowledge of Sickle Cell Crises. The findings of the study in other words revealled that both the male and female had an above average level of knowledge of sickle cell crisis with the males slightly higher which is in tandem with this study, though the knowledge of females on sickle cell crisis was slightly higher.

The Influence of Gender on Students' Attitude towards Sickle Cell Disease

The result of the influence of gender on students' attitude towards sickle cell disease has cluster means of 2.36 for male students and 2.37 for female students which show that the attitude of students towards sickle cell disease was not influenced by gender although the females has a slightly higher mean.

The findings of the study is similar to the study conducted by Ilesanmi (2013) to examine the Gender Differences in Sickle Cell Crises and its Implications for Genetic Counselling and Psychotherapy. The findings of the study show that both the male and females adolescents exhibit the same attitude towards the sickle cell disease.

The Influence of School Location in the Knowledge of Senior Secondary School Students on Sickle Cell Disease

The result on the influence of school location in the knowledge of senior secondary school students on sickle cell disease shows that the students from urban schools performed slightly higher than the students from rural schools. This can be seen in the achievement mean score of the students in urban schools which is 61.80 with a standard deviation of 8.04, while the mean score for the students in rural schools is 61.49 with a standard deviation of 8.17. Although, there is limitation on studies on the influence of location in the knowledge of students on SCD, this study established that the knowledge of senior secondary school students on sickle cell disease is not influenced by school location.

The findings from the hypotheses shows that there is no significant difference between the mean ratings of urban and rural school students on knowledge of sickle cell disease.

The Influence of School Location in the Attitude of Senior Secondary School Students towards Sickle Cell Disease

The result of the influence of school location in the attitude of senior secondary school students towards sickle cell disease shows that the attitude of students towards sicklecell disease is not influecned by school location because a cluster means of 2.35 was gotten for students from urban schools and 2.38 for students from rural schools. The result revealed that both students from urban and rural schools agreed on items 2, 3, 5, 6 and 10 with mean ratings of 2.50 and above set as criterion for accepting an item, this means that both students from urban and rural schools agreed that; it is useful for one to know whether he/she has sickle cell S gene, having a child with sickle cell disease would be very scary, sickle cell disease could happen in anyone's' family, ones' friends may be a carrier of sickle cell S gene trait and knowing that one has sickle cell disease by the public will reduce his/her chances of getting married. However, both students from urban and rural schools disagreed on items 1, 4, 7-9 and 11-12 as the mean ratings are set below 2.50 criterion level. Although, there are limitaions on studies on the influence of location in the attitude of students towards SCD, this study established that the attitude of senior secondary school students towards sickle cell disease is not influenced by school location.

The finding of the hypotheses shows that there is no significant difference between the mean ratings of urban and rural school students on attitude towards sickle cell disease.

The Possible Ways of Preventing Sickle Cell Disease among Secondary School Students

The result of the study on the possible ways of preventing sickle cell disease among secondary school students has a cluster mean of 3.38 which is above mean ratings of 2.50 set as the criterion level and shows that the respondents agreed that the possible ways of preventing sickle cell disease among secondary school students are as follow; sticking to medical advice of experts irrespective of ones beliefs is one sure method of controlling Sickle cell disease, knowing ones genetic status by going for pre-marital sickle cell screening will help to reduce the number of sickle cell born children in the communities as well as the world at large, dissemination of information through workshops and seminars on Sickle cell disease by government and health workers is vital to controlling the disease and pre-marital genetic counselling is also a very effective method of controlling and preventing Sickle cell disease among others.

The findings of the study is agrees with the finding of the study conducted by Jaffer, Amrallah, Ali, Mohammed, Hasan and Humood (2009) to examine the

knowledge and attitude of Bahraini adult sickle cell patients towards the preventive measures of sickle cell crisis. The results indicated that the sample was moderately knowledgeable about the sickling preventive measures. The subjects' knowledge (about the preventive measures) was found to be moderately and positively correlated (r = 0.57, r2 = 0.32, p = 0.000) with their attitudes toward crisis prevention. The findings of the study is also consistent with the finding of the study conducted by Abubakar, Lawan, Mijinyawa, Adeleke, and Sabiu (2010) on Perceptions about Sickle Cell Disease and its Prevention among Undergraduates of Tertiary Institutions in Kano State, Nigeria which revealed that most of the respondents had good knowledge of SCD and only about 27.3% of respondents had poor knowledge of SCD prevention.

Conclusion

Based on the findings of this study, the following conclusions were drawn.

1. Senior secondary school students' attitude towards sicklecell disease is positive.
2. Senior secondary school students have postive attitude to individuals having sickle cell disease.
3. Senior secondary school students need premarital sickle cell counselling and screening.
4. The attitude of students towards sickle cell disease was not influecne by gender.

5. The knowledge of senior secondary school students on sickle cell disease was not influence by school location.
6. The attitude of students towards sickle cell disease was not influecne by school location.
7. The respondents agreed that all the items in Table 9 are possible ways of preventing sickle cell disease among secondary school students.
8. There was no significant difference between the mean ratings of male and female secondary school students on knowledge of sickel cell disease.
9. There was no significant difference between the mean ratings of male and female secondary school students on attitude toward sickel cell disease.
10. There was no significant difference between the mean ratings of urban and rural school students on knowledge of sickle cell disease.
11. There was a significant difference between the mean ratings of urban and rural school students on attitude towards sickle cell disease.
12. Both male and female students had the same opinion on willingness to have pre-marital sickle clell counselling and screening. The difference in their responses was not statistically significance.

Educational and counselling implication of the findings of the study

The findings of the study have some implications as outlined below:

The finding of the study indicated that there was an above average knowledge about Sickle cell disease among secondary school students in Nsukka Education Zone but there could still be improved upon since it is not 100%. The implication of this finding is that relevant guidance and counselling strategies should be designed to assist students to fully understand the nature, the pathogenesis and control of the disease thereby enhance their overall behavior toward the disease as well as individuals with the disease.

The study further revealed that there was a positive attitude towards sickle cell disease as well as individuals with the disease but at a slightly above average level. This has implications on the roles the guidance counsellors, health workers, and teachers have roles to play towards proper education of students to have positive attitude towards sickle cell disease and individual having the disease. In this regard, the guidance counsellors, health workers, as well as the teachers should provide necessary supportive counselling services, health related activities and indoor and outdoor classroom activities that can impact positively on the behaviour of the students towards sickle cell disease and individuals having the disease. Thus, if the students must cultivate good behaviours towards individuals having the

disease, they need counselling interventions and programmes that can change their behaviours positively.

In addition the findings of the study indicate that though there is student willingness to attend pre-marital sickle cell counselling and screening, more efforts are still needed in that area. The implication is that government should provide the necessary tools and resources needed for carrying out proper premarital sickle cell counselling and screening activities in Nsukka Education Zone of Enugu State. This can be achieved by way of providing seminars and workshops where students will be taught on the importance of premarital sickle cell counselling and screening as well as have access to free testing on sickle cell disease using counsellors and health workers.

Recommendations

Based on the findings of the study, these recommendations are made:

1. More funds should be allocated to the health sector by the Federal, State and Local governments to take care of the children/individuals suffering from Sickle Cell Disease. In this respect, adequate provision of personnel services, facilities and resources needed for the treatment and upkeep of these individual should be provided and made to reach both the urban and rural sectors using the appropriate personnels'.

2. Guidance Counsellors and Health workers should intensify their public enlightment campaign to address the issue of stigma and discrimination among people living with sickle cell diseases.
3. Government should also institute strict policies on premarital sickle cell screening to ensure that individuals of reproductive age knew their status before they engage in relationships that could lead to pregnancies and marriage and as such make wise decisions regarding future life partners.
4. Guidance Counsellors and Health workers should see to it that more health education is provided in the schools as well as the communities to promote the knowledge of sickle cell disease as well as the importance of premarital sickle cell counselling and screening, among people in the rural area who may not have been opportuned to have the knowledge.
5. Further research should be sponsored on other content areas of sickle cell disease not covered by this study by relevant governmental agencies, individuals and professional bodies.

Limitations of the study

Research of this nature involving human elements could be subject to some limitations. Limitations experienced by the researcher include;

1. It was tasking administering and retrieving the achievement tests and questionnaires from some respondents in the remote areas where the roads

were not motorable. This delayed the completion of the work and increased cost.

2. The unco-operative attitudes of some of the respondents also constituted a problem as it really took time to convince them to fill the achievements test and questionnaires. This again caused delays.

Suggestions for further studies

Based on the limitations of the study, the following suggestions were made for further studies.

1. There is need to replicate the study with a larger population and in different geographical areas.
2. Another area of interest for further studies is in the development of a more current instrument for measuring students' attitude towards sickle cell disease.
3. Replicating the study in higher institutions of learning would generate more data that may yield different result.

Summary of the study

The main purpose of the study was to examine the knowledge and attitude of senior secondary school students on sickle cell disease in Nsukka Education Zone of Enugu State. Specifically, the study sought to determine:

1. The knowledge of senior secondary school students about sickle cell disease.
2. The attitude of senior secondary school students towards sickle cell disease.

3. The attitude of senior secondary school students towards individuals having sickle cell disease.

4. The willingness of senior secondary school students in attending premarital sickle cell counselling and screening.

5. The influence of gender on students' knowledge of sickle cell disease.

6. The influence of gender on students' attitude towards sickle cell disease.

7. The influence of school location in the knowledge of students on sickle cell disease.

8. The influence of school location in the attitude of senior secondary school students towards sickle cell disease.

9. The possible ways of preventing sickle cell disease among secondary school students.

In literature review, available literature relevant to the study was reviewed under three major headings; conceptual frame work, theoretical frame work and review of empirical studies

The research design for this study was a descriptive survey research design. The study was carried out in Enugu State, Nigeria. The state is located in South Eastern Nigeria and has 21 Local Government Areas. The population of the study was 4234 SSII students comprising males and females. The sample for the study was 420 respondents. The sample represents 10% of the population.

The instrument for data collection was an achievement test and a questionnaire developed by the researcher titled; "Knowledge of Secondary School Students on

Sickle Cell Disease Achievement Test (Kssssscdat)" and "Attitude of Students towards Sickle Cell Disease Questionnaire (ASSCDQ)". In order to ascertain the validity of the instrument, the instrument was subject to face validated by three experts: One from Science Education, and two from Department of Educational Foundations (Guidance and Counselling unit) all in faculty of Education, University of Nigeria, Nsukka. The experts were requested to ascertain the adequacy and appropriateness of the instrument in eliciting responses from the respondents in answering the research questions and in testing the hypotheses. The instrument was trial tested and the reliability coefficient of 0.64 was gotten using Kudder-Richardson formular (K-R20) for the Achievement Test and for the Questionnaire, reliability coefficient of 0.80, 0.49, 0.75, and 0.58, was gotten using Cronbach's Alpha formular.

The researcher adopted the direct approach in administration and retrieval of both the achievement test and the questionnaire from the respondents. Data were arranged according to the nine research questions that guided the study. Percentages and frequency counts as well as Mean and Standard Deviations were used to answer the research questions while the hypotheses formulated were tested using Chi-square and t-test statistics at 0.05 levels of significance. Results of the study revealed among others that: there was an above average knowledge about Sickle cell disease. It was also found that there was a positive attitude towards

sickle cell disease as well as individuals with the disease but at a slightly above average level. Furthermore, it was also found that though there is student willingness to attend pre-marital sickle cell counselling and screening, more efforts are still needed in that area.

The implications of the above findings were examined and it was recommended among others that guidance counsellors, health workers, teachers, and even the government should try to identify this and as such develop strategies, carry out counselling programme and activities as well as provide the necessary resources geared towards enhancing full awareness of sickle cell disease, increase attitude towards the disease and also address the issue of stigma and discrimination among people living with sickle cell disease. The limitations of this study were highlighted and suggestions were made for further studies.

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APPENDICES

KNOWLEDGE OF STUDENTS ON SICKLE CELL DISEASE

ACHIEVEMENT TEST (KSSCDAT)

SECTION A: PERSONAL INFORMATION

Instruction: Please tick [✓] in the following:

Gender: Male [ ] Female [ ]

Location: Urban[ ] Rural [ ]

SECTION B

Instruction: Please answer each question by ticking a [✓] on your choice of answer.

Questions

K1. What is sickle cell disease?

- ❖ It is a disorder that primarily affects intelligence
- ❖ It is a disorder that primarily affects the red blood cells
- ❖ It is a disorder that primarily affects the ability to walk
- ❖ It is a disorder that primarily affects the lungs
- ❖ None of the above
- ❖ I don't know

K2. How do people get sickle cell disease?

- ❖ It is infectious and can be caught like cough
- ❖ Nobody knows the reason
- ❖ It is inherited from parents to offspring

- None of the above
- I don’t know

K3. What does it mean to be a sickle cell carrier (AS)?

- It is where someone is a carrier of sickle cell trait and could perhaps pass it on their children.
- It is a less severe form of sickle cell trait.
- It is where one half of the family has sickle cell trait and one half does not.
- It is where someone has sickle cell trait as a child, but eventually grows out of it.
- None of the above.
- I don’t know.

K4. Which of the following people can be a carrier of sickle cell traits (AS)?

- People of African descent.
- People of Mediterranean descent.
- People of Indian descent
- People of Middle Eastern descent
- All of the above.
- None of the above.
- I don’t know.

K5.which of the following hemoglobins can be found in the red blood cell of people who are carriers of sickle cell trait.

- Hemoglobin A.
- Hemoglobin D.
- Hemoglobin S.
- Hemoglobin E.
- All of the above.
- None of the above.
- I don’t know.

K6. How can you tell if you are a carrier of sickle cell trait (AS)?

- ❖ It is not possible to find out.
- ❖ By having a urine test.
- ❖ By having a genotype and blood test.
- ❖ By having a radiograph.
- ❖ None of the above.
- ❖ I don’t know.

K7. In the case where one parent is a carrier of the sickle cell trait (AS) and the other parent does not carry the trait (AA), what are the chances for each pregnancy that the parents will have a child with sickle cell disease (SS)?

- ❖ 1 in 2 (50%) of the children will have sickle cell disease (SS).
- ❖ 1 in 4 (25%) of the children will have sickle cell disease (SS).
- ❖ 1 in 10 (10%) of the children will have sickle cell disease (SS)
- ❖ All of the above.
- ❖ None of the above.
- ❖ I don’t know.

K8. In cases where both parents are carriers of sickle cell trait (AS), what are the chances for each pregnancy that the parents will have a child with sickle cell disease (SS)?

- ❖ 1 in 2 (50%) of the children will have sickle cell disease (SS).
- ❖ 1 in 4 (25%) of the children will have sickle cell disease (SS).
- ❖ 1 in 10 (10%) of the children will have sickle cell disease (SS).
- ❖ All of the above.
- ❖ None of the above.
- ❖ I don’t know.

K9. Only one of the statements below is true. Please indicate which statement you think it is.

- ❖ People with sickle cell disease usually live long lives untroubled by their illness.
- ❖ People with sickle cell disease (SS) have a fatal illness which usually kills them in childhood.

- ❖ The effects of sickle cell disease (SS) vary from one person to another but are constant throughout a sickler's life.
- ❖ The effects of sickle cell disease (SS) vary from one person to another and vary throughout a sickler's life.
- ❖ All of the above
- ❖ None of the above.
- ❖ I don't know.

K10. All of following are ways by which sickle cell disease can be passed down to an offspring except_____.

- ❖ By any man who is a carrier of sickle cell trait (AS).
- ❖ By any woman who is a carrier of sickle cell trait (AS).
- ❖ By both the man and the woman who are carriers of sickle cell trait (AS).
- ❖ By anyone who is a carrier of sickle cell trait (SS).
- ❖ All of the above
- ❖ By anyone that has AA gene trait

Attitude of Students towards Sickle Cell Disease Questionnaire (ASSCDQ)

SECTION A: PERSONAL INFORMATION

Instruction: Please tick [✓] in the following:

Gender: Male [ ] Female [ ]

Location: Urban[ ] Rural [ ]

SECTION B

Please tick as appropriate in the columns provided using the following code:

SA = Strongly Agreed (SA)

A = Agreed (A)

D = Disagreed (D)

SD = Strongly Disagreed (SD)

Cluster: A Students' Attitude towards Sickle Cell Disease

S/N	Item Statement	SA	A	D	SD
1	Sickle cell disease is not as serious as people take it to be.				
2	It is useful for one to know whether he/she has Sickle cell S gene.				
3	Having a child with Sickle cell disease would be very scary				
4	If one is told by his doctor that he is a carrier of sickle cell S gene, is it advisable for him tell his relatives, friends and classmates.				
5	Sickle cell disease could happen in anyone's family.				
6	One's friend may be a carrier of Sickle cell S gene trait.				
7	Sickle cell disease is a condition caused as a result of the curse placed on one for the sins committed.				
8	Sickle cell disease test is very expensive that one cannot afford.				
9	Sickle cell disease testing can be very painful and difficult.				
10	Knowing that one has sickle cell disease by the public will reduce his/her chances of getting married.				
11	Sickle cell disease is a condition that affects one only when he/she commits an abomination.				
12	My religious beliefs do not accept that sickle cell disease is a medical condition but sees it as a spiritual spell inflicted on people by wicked individual.				

Cluster: B Attitude to individuals having Sickle Cell Disease

S/N	Item Statement	SA	A	D	SD
13	Individuals that have sickle cell disease are affected socially, psychologically and otherwise. It is therefore not advisable to have any association with such individuals as it could be harmful.				
14	Living with individuals with Sickle cell disease can be dangerous to our health.				
15	If I find out that my friend has sickle cell disease, the best thing for me to do is to distance myself from him.				
16	Sickle cell disease can be infectious. Therefore it is best that individuals with the disease are isolated from others.				
17	It is best not to eat food from the same plate with an individual who has sickle cell disease in order not to be infected by the disease.				
18	Using of objects and things together with individuals that have sickle cell disease is not good for one's health				
19	Sickle cell disease is an air bone disease and as such it is not advisable to sit close to an individual living with the disease as one might inhale it unknowingly.				

Cluster: C Possible Ways of Preventing the Sickle Cell Disease

S/N	Item Statement	SA	A	D	SD
20	Sticking to medical advice of experts irrespective of ones beliefs is one sure method of controlling Sickle Cell Disease.				
21	Knowing ones genetic status by going for pre-marital sickle cell screening will help to reduce the number of sickle cell born children in the communities as well as the world at large.				
22	Dissemination of information through workshops and seminars on Sickle cell disease by government and health workers is vital to controlling the disease.				
23	Pre-marital genetic counselling is also a very effective method of controlling and preventing sickle cell disease.				
24	Going for Sickle cell disease testing before engaging in any intimate or sexual relationship will help to checkmate the birth of children with the disease				
25	Attending seminars and workshops on Sickle cell disease is another possible way of preventing the disease among the populace.				
26	Going for Prenatal diagnosis and selective abortion can assist in reducing the birth of children with Sickle cell disease.				

Cluster: D Students' willingness to have Premarital Sickle Cell Counselling and Screening

S/N	Item Statement	SA	A	D	SD
27	Premarital sickle cell counselling and screening is necessary once one is in a serious relationship with another				
28	Engaging in Premarital sickle cell counselling and screening is one of the ways to reduce sickle cell disease burden in the family.				
29	Premarital sickle cell counselling and screening should be made mandatory for every individual of reproductive capability before marriage.				
30	Going for premarital sickle cell counselling and screening will expose one's genetic status to the public.				
31	Premarital sickle cell screening is against our religious / cultural beliefs and as such should be rejected.				
32	Premarital sickle cell counselling and screening can bring conflict between two people who are in a conjugal relationship.				
33	Premarital sickle cell counselling and screening will increases the chances of one not getting married				
34	Premarital sickle cell counselling and screening is a waste of time and resources.				
35	I prefer not to know if anything is wrong with me before marriage.				

RELIABILITY OF INSTRUMENT

Kudder-Richardson Formular (K-R20) Reliability

Cases	N	%
Valid	19	100.0
Excluded[a]	0	0
Total	19	100.0

A Listwise deletion based on all variables in the procedure.

Reliability Statistics

K-R 20	No of Items
.641	10

Cronbach's Alpha Method Reliability

Scale: All Variables

Case Processing Summary

Cases	N	%
Valid	19	100.0
Excluded[a]	0	0
Total	19	100.0

A Listwise deletion based on all variables in the procedure.

Cluster A
Reliability Statistics

Cronbach's Alpha	No of Items
.801	12

Cluster B
Reliability Statistics

Cronbach's Alpha	No of Items
.492	7

Cluster C
Reliability Statistics

Cronbach's Alpha	No of Items
.754	7

Cluster D
Reliability Statistics

Cronbach's Alpha	No of Items
.577	9

POPULATION FIGURES OF SSS2 STUDENTS IN NSUKKA EDUCATION ZONE

TABLE A: NSUKKA LOCAL GOVERNMENT AREA

S/N	NAMES OF SCHOOLS	SSS TWO (2)		T. NO OF STUDENTS	NO OF TEACHERS
		MALE	FEMALE		
1	St. Teresa's College, Nsukka	56	-	56	1
2	Nsukka High School, Nsukka	146	-	146	2
3	Queens of Rosary Sec. Sch., Nsukka	-	138	138	2
4	Opi High Sch., Opi	95	73	168	1
5	Comm. Sec. Sch., Isienu	85	97	182	1
6	Comm. Sec. Sch., Lejja	51	47	98	1
7	Comm. Sec. Sch., Edem	87	79	166	1
8	Urban Girls' Sec. Sch., Nsukka	-	151	151	1
9	Comm. High Sch. Umabor	58	62	120	1
10	Comm. Sec. Sch., Ehandiagu	45	47	92	1
11	Comm. Sec. Sch., Ede-Oballa	17	13	30	1
12	Comm. Sec. Sch., Ibagwa-Ani	43	45	88	1
13	Comm. Sec. Sch., Okpuje	21	31	52	1
14	Comm. Sec. Sch., Obukpa	52	50	102	2
15	Comm. Sec. Sch., Obimo	29	26	55	1
16	Comm. Sec. Sch., Ezebunagu	37	35	72	1
17	St. Cyprian Girls Sec. Sch., Nsukka	73	72	145	1
18	Comm. Sec. Sch., Nru	50	46	96	1
19	Model Sec. Sch., Nsukka	45	48	93	1
20	Comm. Sec. Sch., Alor-Uno	31	25	56	1
21	Comm. Sec. Sch., Opi-Agu	9	16	25	1
22	Lejja. High Sch., Lejja	48	49	97	1
23	Urban Boys Sec. Sch., Nsukka	62	-	62	1
24	Comp. Sec. Sch. Opi	23	20	43	1
25	Agu Umabor Com. Sec. Sch. Umabor	19	17	36	1
26	Comm. Sec. Sch., Akpotoro-Obimo	10	11	21	1
27	Comm. Sec. Sch., Breme	7	8	15	1
28	Okutu Comm. Sec. Sch., Okutu	19	15	34	1
29	Comm. High Sch. Ajuona-Obimo	7	10	17	1
TOTAL	**29**	**1225**	**1231**	**2456**	**32**

Source: Planning, Research and Statistic, Post Primary School and Management Board (PPSMB) Statistical Unit, Nsukka Education Zone (November, 2016).

TABLE B: IGBO-ETITI LOCAL GOVERNMENT AREA

S/N	NAMES OF SCHOOLS	SSS TWO (2)		T. NO OF STUDENTS	NO OF TEACHERS
		MALE	FEMALE		
1	Premier Sec. Sch., Ukehe	87	86	173	1
2	Boys Sec. Sch., Aku	22	-	22	1
3	Comm. High Sch., Ukehe	30	36	66	1
4	Comm. Sec. Sch., Ozalla	25	35	60	1
5	Girls Sec. Sch., Aku	-	40	40	1
6	Comm. High Sch., Ekwegbe	39	41	80	1
7	Comm. Sec. Sch., Ohodo	61	81	142	1
8	Comm. Sec. Sch., Aku	64	35	99	1
9	Orinandu Com. Sec. Sch., Ukehe	17	23	40	1
10	Comm. Sec. Sch., Ohebe-Dim	43	30	73	1
11	Comm. Sec. Sch., Umunko	67	81	148	1
12	Comm. Sec. Sch., Umuna	29	39	68	1
13	Akutara Com. Sec. Sch., Ohodo	-	10	10	1
14	Igbo-Etiti Sec. Sch., Ikolo	20	17	37	1
15	Comp. Sec. Sch. Diogbe	25	25	50	1
TOTAL	**15**	**529**	**579**	**1108**	**15**

Source: Planning, Research and Statistic, Post Primary School and Management Board (PPSMB) Statistical Unit, Nsukka Education Zone (November, 2016).

TABLE C: UZO-UWANI LOCAL GOVERNMENT AREA

S/N	NAMES OF SCHOOLS	SSS TWO (2)		NO OF STUDENTS	NO OF TEACHERS
		MALE	FEMALE		
1	Adada Sec. Sch., Nkpologu	24	20	44	1
2	Attah Memorial High Sch., Adaba	29	26	55	1
3	Girls' Sec. Sch., Umulokpa	-	26	26	1
4	Uzo-Uwani Sec. Sch., Adani	40	30	70	1
5	Comm. Sec. Sch., Abbi-Ugbene	65	45	110	1
6	Comm. Sec. Sch., Ukpata	13	11	24	1
7	Comm. Sec. Sch., Nimbo	46	48	94	1
8	Comm. Sec. Sch., Ogurugu	21	19	40	1
9	Uvuru Sec. Sch., Uvuru	18	25	43	1
10	Welfare Sec. Sch., Opanda	8	2	10	1
11	Comm. High Sch., Nrobo	30	32	62	1
12	Comm. Sec. Sch., Ugbene-Ajima	44	48	92	1
TOTAL	**12**	**338**	**332**	**670**	**12**

Source: Planning, Research and Statistic, Post Primary School and Management Board (PPSMB) Statistical Unit, Nsukka Education Zone (November, 2016).