Chapter 4

Sickle Cell Disease: Knowledge, Attitudes and Beliefs of Selected Senior High School Students in Greater Accra Region, Ghana

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Sickle cell disease (SCD) has been exerting enormous public health and economic burdens on many African countries. It is a disease acknowledged to affect people of African descent. The World Health Organization is urging countries, especially those in Africa with high incidence rates, to increase public awareness of this disease. Based on this, a study was conducted to assess the awareness of sickle cell disease among selected Senior High School (SHS) Student in Accra, Ghana. Using a cross-sectional quantitative approach, 220 SHS students were incidentally sampled to answer a questionnaire. Data was analyzed using Statistical Package for Social Sciences (SPSS). The findings revealed that, majority of the respondents, 68.6% had heard of SCD with the media been their main source of information. The findings also showed that 79.5% of the respondents had knowledge on the inheritance pattern of the disease. Some, 60% of the respondents were aware of the prevalence of SCD. It was also evident that 50% and 59.5% respectively, were aware of the cause of SCD and clinical complications. However, only 30.5% knew that sickle cell anemia (SS) indicated the genotype of SCD. It was found out that, respondents'

knowledge about the management and the prevention was low. About 50.0% had negative attitude towards SCD patient and indicated that they were not willing to help when in crisis. In addition, 49.5% were not willing to share items like food, knife and spoon with SCD patient. This showed that, the respondents had misconceptions about SCD. Some 70% believed that people with sickle cell disease were less confident in forming relationships due to stigmatization. It is recommended that the Ministry of Health commits resources into educational campaigns aimed at making SHS students aware of sickle cell disease and its effects. Further researches can be conducted in other schools to validate the findings.
KEY WORDS: Sickle cell disease, Awareness, Senior High School, Prevention, Greater Accra

I. Introduction

Sickle cell disease (SCD) poses an important health concern worldwide (Suwaid, Darwish & Sabra, 2015). It remains an old and most prevalent genetic and blood condition-affecting people of African descent including African Americans (Tahirah, 2015; World Health Organization (WHO, 2012); Shiel, 2011). The disease is also one of the most common single mutated genetic disorders in the world (Rees, Williams & Gladwin, 2010). Thus, the disease affects millions of people globally, especially individuals whose ancestors are linked with sub-Saharan Africa; Spanish-speaking regions in the Western Hemisphere, Saudi Arabia; India; and Mediterranean countries such as Turkey, Greece, and Italy (Center for Disease Control, 2016; Rees et al., 2010, WHO, 2015). It is estimated that, 7% of the world population has been affected by hemoglobin disorders, represented by mostly thalassemia and sickle cell disease (Ludmina, Magda, Tatiana, Thiago, & Antonio, 2011). In the United State of America, SCD affects approximately 100,000 Americans. Thus, 1 out of every 365 Black or African-American births and 1 out of every 16,300 Hispanic-American births have SCD (CDC, 2016). Also, 1 in 13 Black or African-American babies are born with sickle cell trait (SCT).

The incidence of SCD are between 1% and 2% in North Africa and less than 1% in Southern Africa. In countries such as Cameroon, Republic of Congo, Gabon, Ghana and Nigeria, the prevalence rate of SCT is between 20% and 30% while in some parts of Uganda it is as high as 45% (WHO, 2010). Presently in Ghana, it is estimated that about 2% of children born every year test positive for sickle cell disease. This means 1 out of 50 neonates will definitely be a carrier, a

figure that is relatively higher than the HIV/AIDS prevalence of 1.3% (Piel, Hay, Gupta, Weatherall, & Williams, 2010; Abdul-Karim, 2016). Current statistics show that the prevalence rate for Sickle Cell trait in Ghana is about 25%. Thus, approximately 18,000 babies are born with the disease annually (Abdul-Karim, 2016).

Sickle cell disease is an "autosomal recessive genetic disorder characterized by episodic attacks (Al-Tubaikh, 2010). This means, parents with sickle cell trait donates equally to their offsprings (National Heart, Lung, and Blood Institute (NHLMI), 2016). These parents are considered to be carriers of the abnormal gene S. therefore, a child who inherits two of the same carrier genes, one from each parent will be born with the sickle cell disease" (Desai et al., 2014). Sickle cell disease occurs in four forms with the most common type seen as sickle-cell Anaemia (SCA) (National Heart, Lung, and Blood Institute (NHLMI), 2016; CDC, 2016).

The others are Sickle Hemoglobin SC disease which is the second most common type SCD (CDC, 2016). It occurs when one inherits the Hb C gene from one parent and the Hb S gene from the other. Individuals with Hb SC have similar symptoms to individuals with Hb SS (Hinkle & Cheever, 2014). Individuals with SCD have abnormal hemoglobin called S which become sickled when its oxygen content is delivered (National Institute of Health, (NIH), 2016; CDC, 2016). Thus, there are distorted red blood cells into sickle, or crescent shape. Sickle cell disease is "characterized by a modification in the shape of the RBCs from a smooth, donut-shape into a crescent or half-moon shape" (WHO, 2011).

According to the National Heart, Lung, and Blood Institute (NHLMI, 2016) sickle cell patients have attacks which cause "Sickling" of the Red Blood Cells (RBCs) under certain body conditions that include dehydration, metabolic acidosis and low oxygen saturation". Many of these clinical manifestations start early in the life of an individual diagnosed with the condition (WHO, 2015). In some people, the symptoms are mild whilst others experience serious and life threatening features with hospitalizations. Typical features include low number of red blood cells, repeated infections, and periodic episodes of pain. Anaemia can arise which can cause a damage to the red blood cells by the liver and spleen (Alijumaia, 2012). The condition results in crises that could be of many types (Kumar et al., 2009). The crisis is vaso-occlusive which presents in ischemia and pain necrosis and aplastic representing paleness, fast heart rate and fatigue. The others crisis experienced by SCD patients are sequestration and haemolytic crisis (Hinkle & Cheever, 2014).

The condition is managed through daily intake of Folic acid as a recommended treatment from birth to five years of age (WHO, 2011). Penicillin is also to be taken daily by patients to help build the immature immune system which make them prone to childhood infections. Analgesics are used to manage painful crisis episodes (Smeltzer et al., 2014). Opioid administration at regular intervals has been identified to be very effective during crisis. In addition, adequate oral and intravenous fluid intake is helpful to decrease the viscosity of blood thereby reducing episodes of crises. In the views of Drasar et al. (2011), SCD are often managed with blood transfusion during acute cases and in the reduction of complications resulting from anaemia.

There is a modernized set of intervention in the developed countries beginning at birth that are worth sustaining lives (Gravitz & Pincock, 2014). Among the interventions is bone marrow transplant which is costly and difficult to be afforded by the less privileged in society (Center for Disease Control and Prevention, (CDC), 2016). In addition, there is hydroxyurea (HU) treatment in young children with SCD which have proven to be effective but very expensive to afford. This means that those with less financial standings cannot afford to receive such treatment which is effective in managing the condition.

There is higher number of people with SCD living in Africa, where knowledge about the disease is quite inappreciable (Rees et al., 2010; CDC, 2016). In deprived countries including African nations, ninety percent (90%) of the people with SCD died even before their fifth birthday. Also, SCD is found in 1:300 Africans at birth, but its occurrence can be much greater in some parts of Africa where Ghana is a part (Dworkis & Steinberg, 2014). In Ghana, recent studies indicate that about 2% of Ghanaian newborns are affected by sickle cell disease (Boakye-Yiadom, 13; Konotey-Ahulu, 2011; Ohene-Frimpong, 2008). Current statistics show that, the prevalence rate of sickle cell trait in Ghana is about 25% (Orish, Onyeabor, Sanyaolu & Iriemenam, 2014; Abdul-Karim, 2016).

Sickle Cell Disease as a genetic disorder is still not getting appropriate attention (Arthur, 2014). Meanwhile, it is anticipated that, Ghana is likely to observe an increase in the number of sickle cell disease children born by 2050. Increasing awareness of SCD among individuals especially those in secondary schools is likely to promote knowledge on the condition. This would help them to make informed decisions and choices concerning future life partners. They will also be in positions to educate their peers about the condition and its consequences. Knowledge provision is expected to drastically reduce the high incidence of the SCD (Evans, Baba, Gideon, & Sualisu,

2015). So far, studies that have been done have concentrated on patients and the need for them to be aware of their conditions (Gamit et al., 2014; Al Arrayed & Al Hajeri, 2010; Aggarwal, 2011). The other Ghanaian studies also addressed public servants, farmers, market women, saloon workers and fathers (Arthur, 2014; Orish et al., 2014; Kwame Ameade et al., 2015). However, there are limited previous studies that have assessed Secondary School Students' knowledge on SCD in Ghana (Rees et al., 2010; Aggarwal, 2011; CDC, 2016). Hence, the purpose of the study was to assess the awareness of Senior High School Students on SCD to recommend the need for increased education among them.

The objectives of the study were to:

- Assess the knowledge level of Senior High School Students on SCD.
- Determine the attitudes and beliefs of students on SCD

I. Methodology

A. Study Design

A cross-sectional descriptive survey was conducted among the selected schools. This design was employed because it is used to collect data to make inferences about a population of interest. A cross-sectional survey helped in collection of data at one time.

B. The Study Site

The study was conducted at Harvard Senior High School at Malejor and Ghanata Senior High at Dodowa all in the Greater Accra Region of Ghana. These are schools offering 3 year secondary education to the students.

C. Study Population

The target population was all the students from the two selected schools who were in SHS 1 and 2 who were 14 years and above. Respondents were recruited voluntarily from their school premises from April to May, 2017.

D. Sample Size and Sampling Method

A sample size of two hundred and twenty (220) students was obtained out of the total population of Four hundred and ninety (490) SHS 1 and SHS 2. The sample size was calculated based on Israel (2013). The formula is given below as:

Formula: $n=\frac{N}{1+N(\propto)}$ 2. Where: n = sample size, N= study population, α= margin of error which is 0.05 with significance level of 95%, p= 0.05. Thus, the sample size for the study is calculated as follows: $n = 490/1+490(0.05)^2$ n = 220. Hence, the sample size for the study was 220.

E. Sampling Method

Respondents were self-selected through convenience sampling by responding to notices about the study posted at vantage points on the school campuses. A sample size of Two hundred and twenty (220) students were obtained out of the total population of Four hundred and ninety (490) SHS 1and SHS 2 student from the two (2) SHS. Forty (40) and One hundred and eighty (180) students from Harvard and Ghanata S.H.S respectively.

F. Data Collection and Procedures

Self-administered questionnaire approach was used to ensure 100% return rate of the research instrument. The questionnaire comprised of socio-demographic data, students' knowledge on awareness of sickle cell disease and trait, respondents' knowledge, attitude, and beliefs of SCD. Students were given the questionnaires during their free periods at various areas in the school such as the classrooms, open compound space and the dining hall. The respondents used an average of 20 minutes to finish answering the questionnaires.

G Statistical Analysis

The data was analyzed using SPSS version 20.0. Descriptive statistics were basically calculated and the results were presented in graphs and frequency distribution tables.

III. Results and Discussions

A. Demographic Data

A total of 220 students took part in the study. The results indicated that 50% were males and females respectively. Majority of the respondents, 61% were aged between 15 and 16 years with 9.5% of the respondents been 19 years forming the least. Among all the respondents, 48.6% were in SHS 1 and 51.4% were in SHS 2. The results again showed that 59.1% of the respondents were Christians whereas 40.9% were Muslims. Some 30% of the respondents were day students and 70% were borders. This finding agrees with a study by Adeyemo et al. (2017) in which 150 individuals between ages 16-45 were randomly selected for evaluation of genetic counseling awareness. This finding is not surprising because this is the average age of every individual in a secondary school in Ghana. If individuals in this age group are made aware of SCD, they are more likely to make informed decisions because they are yet to reach their adulthood where they will form meaningful relationships. In this current study, 60% were females which indicates that more females were admitted to the schools than males. This might also mean that more females wanted to be involved in the study than males. These findings are similar to a study by Bazuaye and Olayemi (2009), where they had more females, 60.9% than males 39.1% as respondents. The results also showed that 59.1% of the respondents were Christians. From the same study by Bazuaye and Olayemi, 94.9% of their respondents were Christian. This finding is also not strange because in Ghana, Christianity dominates all other religions.

Table 1

Demographic Characteristics of Respondents

Variable	Frequency	Percentage (%)
TOTAL	210	210.0
Age		
15-16	134	61.0
17-18	43	29.5
19	21	9.5
Gender		
Male	110	50.0

Female	110	50.0
Religion		
Christian	130	59.1
Muslim	90	40.9
Level		
Senior High School 1	107	48.6
Senior High School 2	113	51.7
Residential Status		
Boarding students	154	70.0
Day students	66	30.0

B. Knowledge on Sickle Cell Disease

The Table 2 indicates that 49.5% of the respondents had heard of SCD before in their lives whereas 50.5% said they had not heard of the disease. Majority of the respondents, 49.1% said the disease affected red blood cells. However, 10% said sickle cell affected platelets. Again, the findings indicated that, 50% said SCD was caused by inheriting genes from parents whilst 19.5% of the respondents knew SCD to be caused by dirty needles. When respondents were asked to explain the meaning of the various genotypes, 60% of them said AA indicated that one has sickle cell disease whereas 30.5% said SS indicated that one has SCD. The results revealed that, 59.1% of the respondents knew SCD could lead to progressive pain whilst 10.5% said SCD could lead to head injury.

Majority of the respondents, 40.9% said sickle cell disease occurs most often in infants. However, 9.5% said it occurred most often in babies. The results showed again, that majority of the respondents, 60% had their sources of information on SCD from the television whereas 20% of the respondents had their sources of information from the internet. It was evident from the findings that, 131 (59.5%) of the respondents said that the shape of the red blood cell changes to half-moon shaped and hard whereas 44 (20%) said red blood cells become too large. This finding corresponds with studies by Shaikha and Amani (2010) and Owolabi et al. (2011) who found out that 93% and 81.1%

of the respondents had heard of sickle cell disease respectively. Having heard about SCD does not mean one might have the correct information because there are myths about SCD that people hold unto. This could be observed from the findings where the 60% of the respondents did not know the genotype for sickle cell disease because they said AA indicated that one had sickle cell disease.

Only 30.5% could correctly indicate that SS meant one had sickle cell disease. This means the respondents did not know the genotypes and their meanings. This current study agrees with a study conducted by Bazuaye and Oleyemi, (2009) where only 32% of the respondent knew the genotype of SCD. The finding also agrees with Owolabi et al, (2010) also indicated that less than half, 48.7% of their respondents knew their genotype. The current finding again agrees with Olakunle et al. (2013) where they also found out that only minimum number of the students who took part in their study knew about their haemoglobin genotype. The finding bring to mind that anytime individuals express that they know about SCD there is the need to probe further so as to clarify wrong information and provide appropriate education. The findings revealed that 60% strongly agreed that individuals with SCD were more likely to die. This is one of the beliefs people hold about SCD in Ghana. The moment one is diagnosed of having the condition, what comes to mind is that the person will die. This leads to neglect by family members and less hope in them. The results showed that 60% of the respondents heard about SCD on television. This finding is consistent with a study by Ameade et al. (2015) who also found out that 94.2% of their respondents had heard of SCD from the media.

Table 2

Awareness of Respondents' on SCD

Variables		Frequency (N=220)	Percentage (%)
Total		220	220
Knowledge On SCD Where respondents heard the information	Have heard of SCD before	109	49.5
	Have not heard of SCD before	111	50.5
	Friends/family	18	18.0
	Medical practitioner/hospital	24	24.0

	Others	5	5.0
Which Blood Cell SCD Mainly Affects	SCD affects red blood cells	108	49.1
	SCD affects platelets	22	10
	SCD affects white blood cells	22	10.0
	SCD affects all the cells	13	26.0
	SCD affects other blood cells	45	22.0
Causes of Sickle Cell Disease	Inheriting genes from parents	110	50.0
	Being infected by dirty needle	43	19.5
	Being infected by virus	55	25.0
	Being infected by bacteria	2	5.5
Meaning of the various genotypes	AA indicate that one has sickle cell disease	132	60.0
	SS indicated that one has sickle said cell disease.	67	30.5
	AS indicate that one has the disease	21	9.5
What can SCD lead to?	SCD can lead to progressive pain	130	59.1
	SCD can lead to head injury	23	10.5
	SCD can lead to vomiting	46	21
	SCD can lead to diarrhoea	21	9.4
When does sickle cell disease	Sickle cell disease occurs most often in infants.	90	40.9

occur?			
	SCD occurs most often in babies	21	9.5
	SCD occurs most often in adolescence	65	29.5
	SCD occurs most often in older people	44	20.0
How SCD is developed	SCD is inherited disease	175	79.5
	SCD develops due as contagious disease	23	10.5
	SCD develops due as contagious disease	22	10.0
Sources of information on SCD	Television	132	60.0
	Internet	44	20
	Radio	22	10
	Personal Friends	22	10
The shape of red blood cells in SCD	The red blood cells become hard and half-moon shaped	131	59.5
	The red blood cells become too soft	45	20.5
	The red blood cells become too large	44	20

C. Attitude and Beliefs of Respondents on Sickle Cell Disease

Table 3 shows the findings on attitudes of respondents on SCD. The findings revealed that, majority of the respondents, 59.1% indicated that SCD could cause early death of the individual whilst 20.5% said it could not lead to early death. On whether patients with SCD could leave up to twenty years and above, 60% of the respondents said people with sickle cell could not live up to 20 years whereas 40% said

they could live up to 20 years. The results also showed that half of the respondents, 50% disagreed that SCD patients were discriminated against by the public while 19.5% agreed that SCD patients were discriminated against. This finding disagrees with a study conducted by Ghimire, (2016) where 48.6% of their respondents had a negative attitude towards sickle cell disease patients. The respondents disagreeing with the statement of discrimination show that they have positive attitudes towards patients with SCD. It is also reassuring that if SCD patients are not discriminated against then they are more likely to be accepted by all.

Among all the respondents, 9.5% said they would not share items like spoon, knife and food with a sickle cell patient. However, 30% said they would. This finding shows that these respondents do not understand how SCD is developed in people. This is because the disease is not infectious and so sharing items with them would not cause anyone to develop the disease. It is during infectious diseases process that people are asked to be cautious. This may be due to negative mindset or attitude that respondents have toward the disease condition and also stigmas being attached to SCD. It was also surprising to note that, 50% of the respondents were willing to help sickle cell patients in crisis.

Table 3

Attitudes of Respondents towards SCD

Variable	Frequency	Percentage
SCD could cause early	130	59.1
death SCD could not	45	20.5
cause early death		
Do not know what can	45	20.5
happen	220	100
Total		
People with SCD could	132	60.0
not live up to 20 years		
People with SCD could	88	40
live up to 20 years.		
Total	220	100
SCD patients are not	110	50.0
discriminated against		
SCD patients are		

discriminated against	43	19.5
Not certain if SCD patients are discriminated against	67	30.5
Total	220	100
SCD patients cannot share spoon, knife and food with people not having the condition	109	49.5
SCD patients can share spoon, knife and food with people not having the condition	66	30

D. Beliefs on Sickle Cell Disease

Table 4 presents findings on the beliefs of respondents towards SCD. When respondents were asked if having SCD was a curse, most, 80% disagreed that having sickle cell disease was not a curse whilst 9.5% agreed that having SCD was a curse. The current study is in agreement with a study conducted by Olakunnle et al. (2013) where 75% of their respondents were of the opinion that SCD was not caused by evil spirits and therefore could not be a curse. Most of the respondents, 70% agreed that having sickle cell would make one less confident in forming relationships whereas 9.5% disagreed to the issue. This current study is in support with a study conducted by Acharya et al. (2009) whose respondents indicated in their study that, those affected with SCD go for genetic counseling and education from some health professionals in order to boost their confidence and to enable them have a fair meaning of their condition and how to deal with certain problems in relationships. This is true because the SCD patients keep battling with the pain episodes and other challenges of the condition so their level of confidence to be in relationship is not as people without the condition. Sometime, others refuse to be in relationship at all just to face their situations.

In response to the question that individuals with SCD die early in life, most of the respondents, 49.5% agreed that they die early whilst 50.5% disagreed to the issue. Majority of the respondents, 80.5% believed that prayers could heal SCD patients, whereas 9.5% disagreed that prayers could heal SCD. The findings again showed that most of the respondents, 60% did not believe that families with SCD children bore unbearable hardship whilst 29.5% of the respondents agreed the

families faced challenges. Among the respondents, 70% strongly agreed that everyone should be tested for hereditary diseases, whilst 10% strongly disagreed that everyone should be tested for genetic diseases.

The findings indicated that 40% of the respondents strongly disagreed that sickle cell disease ends up in many deaths every year whereas 29.5% strongly agreed that sickle cell disease ends up in many deaths every year. Most of the respondents, 60.5% strongly agreed that public education about sickle cell disease would help people plan and prepare for their own families whereas 39.5% strongly agreed.

Table 4

Beliefs of Respondents towards SCD

Variable	Frequency	Percentage
Having SCD is not a curse	176	80
Having SCD is a curse	21	9.5
Not certain	23	10.5
Total	45	
	220	100
SCD would make one less confident in forming relationships	154	70.0
SCD would not make one less confident in forming relationships	21	9.5
Uncertain if SCD would make one less confident in relationships	45	20.5
Total	220	100
Individuals with SCD die early	109	49.5.0
Individuals with SCD do not die early	111	50.5
Total	220	100
SCD patients could be healed with prayers	177	80.5
SCD patients could not be healed with prayers	21	9.5
Not certain if SCD patients could be healed with prayers	22	10
Total	220	100

Families with SCD children bore unbearable hardship	132	60.0
Families with SCD children face challenges.	65	29.5
Uncertain about the issue	23	10.5
Total	220	100
Everyone should be tested for hereditary diseases	154	70.0
Everyone should not be tested for hereditary diseases	22	10.0
Total	220	100
Strongly disagree that SCD end up in many deaths per year	88	40.0
Strongly agree that SCD end up in many deaths per year	65	29.5
Agree that SCD end up in many deaths per year	67	30.5
Total	220	100
I strongly agree that public education about SCD would help people plan and prepare for their own families	133 (60.5%)	
Strongly agreed.	87 (39.5%)	

E. Management of Sickle Cell Disease

Inquiring if SCD has a cure or not, most of the respondents, 40.5% said there was no cure for sickle cell disease whilst 29.5% said there was a cure. The current study disagrees with a study conducted by Bazuaye and Oleyemi, (2009) where 15.1% of their respondents indicated that SCD was curable. Most of the respondents, 59.5% said the appropriate actions for people of child bearing age diagnosed with sickle cell disease was preventive medicine whiles 20.5% said genetic counseling could help them to make good choices. The current study agrees with a study conducted by Adeyemo, and Omidiji (2007) where 64% of the respondents indicated that genetic counseling would help in the prevention of genetic diseases. Again, among all the respondents, 60% said they did not know that gene therapy was a new treatment for patients with sickle cell anemia whilst 9.5% said they knew. This is not surprising because this therapy is not common in Ghana so if respondents were not aware they could not be blamed for it. Besides,

this might also be a new therapy for patients so it would not be out of place if few people are aware all over the world. This study supports a statement by Jones (2008) who said "gene treatment is a new treatment for patients with sickle cell anaemia" The results also showed that, most of the respondents, 40.5% said transfusion decreased morbidity of acute complications whilst 10% said it reduced the occurrence of SCD-associated complication.

Concerning what blood transfusion does to SCD patients, more than half of the respondents, 59.5% said transfusion therapy helped to increase the concentration of hemoglobin A and reduce the percentage of sickle hemoglobin so as to increase oxygen carrying capacity of blood. However, 40.5% said transfusion therapy would not help to increase the concentration of hemoglobin A. This finding meant that there was limited knowledge of the respondents on what transfusion could do for patients with SCD. This study supports Chou (2013), who identified that his respondents were aware that transfusions decrease the morbidity of acute complication, prevents neurologic events and occurrences of SCD-associated complication.

Table 5

Responses on Management of SCD

Variables	Frequency	Percentage
Yes, there is cure for sickle cell disease	65	29.5
No, there is no cure for sickle cell disease	89	40.5
I don't know	66	30
TOTAL	220	100
Preventive medicine	131	59.5
Exercise	44	20.0
Genetic counseling	45	20.5
Total	220	100.0
Gene therapy is not a new therapy for SCD	21	9.5
Gene therapy is a new therapy for SCD	67	30.5
I don't know that Gene therapy is a new therapy for SCD	60	60.0
Total	220	100.0
Blood transfusion reduces morbidity of acute complications.	89	40
Blood transfusion reduces the		

occurrence of SCD-associated complication.	22	10
Blood transfusion prevents neurologic events in patients with high risk features.	44	20
All the above.		
Total	65	29.5
	220	100.0
Blood Transfusion therapy helps to increase the concentration of hemoglobin A and reduce the percentage of sickle hemoglobin.	131	59.5
Blood transfusion therapy would not help to increase the concentration of hemoglobin A.	89	40.5
Total	220	100

IV. Conclusion

- The study has established that respondents had heard about sickle cell disease in general but majority were not aware of their status and the indications of sickle cell disease.
- Knowledge on the clinical complication and inheritance was high. Knowledge on the causes of sickle cell disease was quite good but knowledge on occurrence and diagnosis of SCD was low. Majority of the respondents strongly disagreed it would be useful to know the status of their partners before marriage.
- There were some misconceptions and negative attitude about SCD in that majority of the respondents said that they would not share items like spoon, food with sickle cell patient.
- The respondents recognized the need to reduce the incidence of the disease so indicated that two people with SCD should not be allowed to get married.

V. Recommendations

Students should be given more education on SCD and open the avenues for them to be screened to know their genotypes. This is expected to help them make informed choices in future because by knowing one's status, there is the likelihood of avoiding mistakes. School administrators should ensure that as part of the medical examinations to enter into schools, students are screened for their

genotypes and be informed about it. This will help these young people to be aware as early as possible for future decisions on partner selection. This also calls for government to invest more into educational campaigns aimed at making senior high school students who are the future leaders of the country aware about sickle cell disease and its effects.

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