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Sickle cell disease: Awareness, knowledge and attitude among undergraduate students of a Nigerian tertiary educational institution

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ABSTRACT

Background: Sickle cell disease (SCD) is an inherited abnormality of the red blood cell characterized by chronic haemolytic anemia with numerous clinical consequences. **Aims and Objectives:** The objective of this study is to assess the level of awareness, knowledge and attitude to people living with SCD among undergraduate students of a tertiary educational institution in Abakaliki, South eastern, Nigeria. **Materials and Methods:** A cross-sectional descriptive study was carried out, and participants were selected using multistage sampling technique. Data was collected using a pre-tested, self-administered questionnaire and analyzed using SPSS software, version 20. **Results:** A total of 329 participants were studied, made up of 158 (48%) males and 171 (52%) females. Mean age of the participants was 22.3 ± 2.7years. All the participants (100%) were aware of the existence of SCD with lectures (35%) and health workers (19.1%) being the most common sources of information. One hundred and ninety one (58.1%) participants showed adequate knowledge about SCD but many of them showed some misconceptions. This study also found that majority of the participants, 291 (88.4%) have positive attitude towards people living with SCD. Majority of those who have adequate knowledge about SCD showed positive attitude while the reverse is the case for those who have inadequate knowledge. **Conclusion:** This study found knowledge gaps about SCD among the participants. Health education should be intensified to impact sufficient comprehensive knowledge about SCD to enable the students take informed decision about their marriage so as to prevent procreation of children affected with SCD.

Key words: Sickle cell disease, Students, University, Nigeria

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INTRODUCTION

Sickle cell disease (SCD) is an inherited abnormality of the red blood cell characterized by the presence of abnormal hemoglobin- hemoglobin S, either in homozygous form (Hb SS), called sickle cell anemia or in combination with other abnormal hemoglobins such as sickle cell hemoglobin C disease (Hb SC) and sickle cell β-thalassaemia (Hb Sβ-Thal).[1] They all have in common a tendency for the red blood cells to distort into a crescent shape (sickle shape) under certain conditions. The effects include chronic anemia, jaundice, recurrent bone pains, gradual deterioration of tissue and organ function and early mortality.[2]

Sickle cell disorder has been acknowledged to have a global impact by the World Health Organisation (WHO).[3] The incidence of sickle cell disorder at birth is determined by prevalence of carriers in the population. SCD has a remarkable public health implications for Africa. It contributes the equivalent of 5% to under-five deaths in Africa, with up to 16% in West Africa.[4] In Nigeria, with an estimated carrier prevalence of 24%, 20 per 1000 births are estimated to be affected with SCD, resulting in 150,000 children with SCD born in Nigeria annually.[4] Thus Nigeria has the largest population of people affected with sickle cell disease in the world.

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Despite the large number of people affected with sickle cell disease, the level of knowledge about sickle cell disease is still low. In Nigeria, various studies have reported poor knowledge of sickle cell disorder among students. A study conducted by Adewuyi among fresh University graduates in Ilorin, Nigeria reported poor knowledge of SCD, as only 43% of the respondents showed little understanding of the disease.[5] Similar study conducted in Benin City, Nigeria by Bazuaye et al,[6] reported that majority of the students (55.1%) do not know their genotype and only 18% had some correct idea about SCD. Knowledge gap has also been shown by a similar study conducted in Jos, Nigeria by Olarewaju et al,[7] who reported that many of the students (25.5%) had wrong belief that SCD is caused by evil spirit. Study from Ghana has also indicated knowledge gap despite the high prevalence of sickle cell carrier status approaching 25% and the universal newborn screening program being introduce recently in Ghana.[8] In another study, comparism of the level of knowledge was made among University students in Texas and Enugu, Nigeria, reported that on the average, students are aware of sickle cell anemia and its carrier state, but there is still some knowledge gap about SCD especially among students in non-medically-related faculties many of whom did not know their genotype.[9]

Knowledge about SCD is a way of preventing and controlling the scourge, since people will be better equipped to take informed decision concerning their marriage and the youths are good entry point for interventions aimed at controlling the disease. Since tertiary educational institutions in the country have good representation of Nigerian youths, there is need to assess the level of knowledge, ignorance and misconceptions about sickle cell disease because an understanding of these factors will help to fashion appropriate public health education programs to increase awareness and knowledge of the condition. Several published studies have given varying reports about the knowledge of sickle cell disease among students,[5-7] but there is paucity of published data on the knowledge of sickle cell disease among students in our locality. The aim of this study is therefore to assess the level of awareness, knowledge and attitude about SCD among undergraduate students of Ebonyi State University, Abakaliki, Nigeria.

MATERIALS AND METHODS

Study design

Descriptive cross-sectional study was carried out between September and November 2015 at Ebonyi State University, which is located in Abakaliki, Ebonyi State, South eastern Nigeria.

Sample size

The sample size for this study was determined using the formula[10] for estimation of population prevalence and was based on a 95% confidence level, and a prevalence of knowledge gap about Sickle cell disease among students, which is 73.4%, as reported by a previous study,[11] and a desirable degree of accuracy set at 0.05 level. Minimum sample size of 303 was calculated. However, 350 questionnaires were given out to account for refusals. Out of this number, 329 were correctly and completely filled. These questionnaires were considered valid and were used for data analysis.

Sampling method

Multistage sampling technique was used for the study. Simple random sampling by ballot method was used to select four out of the ten faculties existing in the school. Simple random sampling technique by ballot method was also employed to select four departments, one department each out of the four chosen faculties, as well as to select students from the chosen departments.

Study instrument and data collection

The tool for data collection was a pre-tested, semi-structured self-administered questionnaire. Information sought in the questionnaire included socio-demographic characteristics, knowledge about SCD including misconceptions, cause of SCD and methods of prevention. During data collection, three research assistants were employed to administer the questionnaires. They were adequately trained and mobilized for the exercise and they assisted in the administration and retrieval of the questionnaires.

Data management and analysis

Knowledge about SCD

Eleven variables on the study instrument were used to assess participants' knowledge about sickle cell disease including modes of inheritance and ways of prevention. One mark was awarded for every correctly answered question and zero for every wrongly answered or unanswered question. Getting all the eleven questions on general knowledge of SCD correctly were scored as 100%. Participants who scored 50% and above were categorized as having adequate knowledge. Those who scored below 50% were categorized as having inadequate knowledge.

Attitude to people living with SCD

Seven questions on the study instrument were used to assess respondents' attitude to people living with SCD, with each question having five Likert items. The Likert items were strongly agreed, agreed, indifferent, disagreed, strongly disagreed. Number of responses to each of the Likert items were computed and converted to percentages.

Data was cleaned for inconsistencies in the responses and was entered into a computer using statistical package for social sciences (SPSS) software, version 20, which was also used for the analysis. Descriptive statistics were used to compute percentages and averages. Chi square test was used to assess the relationship between variables. Results were presented in tables and charts, and expressed as percentages/proportions, means and standard deviation.

Ethical issues

Approval for this study was gotten from Research and Ethics Committee of the institution. Questionnaires were administered only to students who gave their consent.

RESULTS

A total of 329 students participated in the study and were made up of 158 (48%) males and 171 (52%) females, with male to female ratio of 1: 1.1. The ages of the participants ranged between 16 and 36years with mean age of 22.3± 2.7years. Most of the participants, 323 (98.2%) were Christians while 305 (92.7%) were single (Table 1).

All the participants (100%) were aware of the existence of SCD. Lectures were the most frequent source of information, 115 (35%). Other sources of information include health workers 63 (19.1%), friends and colleagues 55 (16.7%), family members 37 (11.2%), radio and television 34 (10.3%), Library 11 (3.3%), internet 5 (1.5%) and posters 1 (0.3%) (Figure 1).

One hundred and ninety one (58.1%) of the participants have adequate knowledge about SCD (Figure 2). Knowledge about SCD displayed by the participants were as shown in Table 2. Three hundred and seventeen (96.4%) participants know that SCD is an inherited disease; 309 (93.9%) know that SCD affects the red blood cell and can be diagnosed with blood test; 34(10.3%) believe that SCD is contagious; Only 97 (29.4%) know the features that are commonly associated with SCD; 242 (73.4%) know that SCD can be detected by haemoglobin genotype; 306 (93%) know that sickle cell disease can be prevented and 153 (46.5%) know the ways through which SCD can be prevented. Other knowledge about sickle cell disease displayed by the participants are shown in Table 2. Some of the participants also showed misconceptions about SCD, example SCD is caused by witchcraft, evil spirit, curse by enemies and punishment from God. Sickle cell disease is contagious 34 (10.3%).

This study also show that majority of the participants have positive attitude to people living with SCD, as 308 (93.6%) agreed that people with SCD should not be isolated from others; 307 (93.3%) agreed that people with SCD should be enrolled to school with others; 273 (83.0%) agreed to have person with SCD as their room mate; 316 (96.0%) agreed

Table 1: Socio-demographic characteristics of the participants

Characteristics	Frequency	Percentage
Sex		
Male	158	48
Female	171	52
Total	329	100
Age		
<20	31	9.4
20-25	266	80.9
>25	32	9.7
Total	329	100
Religion		
Christianity	323	98.2
Islam	0	0
Traditional	1	0.3
Others	5	1.5
Total	329	100
Marital status		
Married	22	6.7
Single	305	92.7
Divorced	2	0.6
Total	329	100

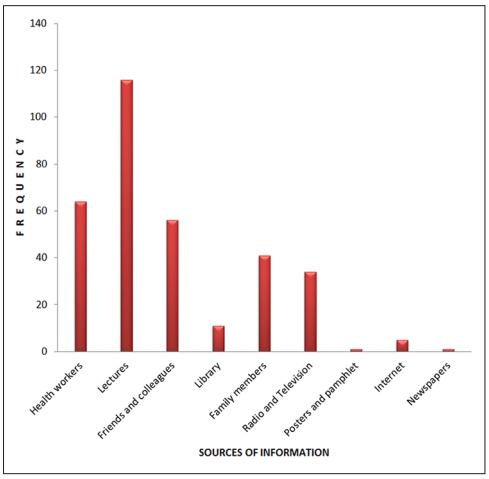

Figure 1: Sources of information about Sickle cell disease

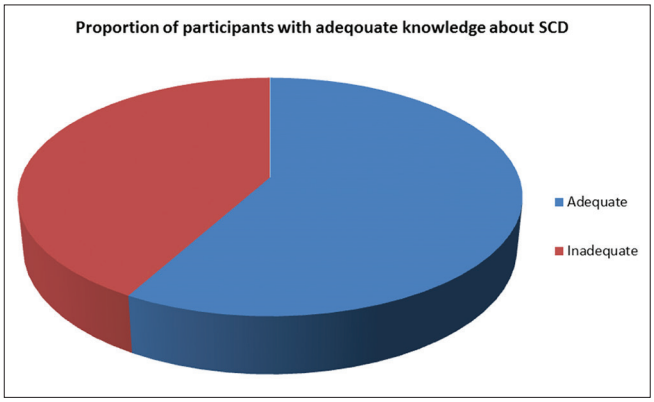

Figure 2: Proportion of students with adequate knowledge about SCD

Table 2: Participants' knowledge about sickle cell disease

Variables	Responses N(%)	
	Correct	Incorrect
Cause of SCD	317 (96.4)	12 (3.6)
Body fluid with which to diagnose SCD	309 (93.9)	20 (6.1)
SCD is contagious	295 (89.7)	34 (10.3)
SCD is curable	255 (77.5)	74 (22.5)
Component of blood affected by SCD	309 (93.9)	20 (6.1)
SCD can be detected with haemoglobin genotype	242 (73.4)	87 (26.4)
Features commonly associated with SCD	97 (29.4)	232 (70.6)
SCD can be prevented	306 (93.0)	23 (7.0)
Ways of preventing SCD	153 (46.5)	176 (53.5)
Chances of SCD in a child if both parents are carriers	86 (26.1)	243 (73.9)
Chances of SCD in a child if one parent is a carrier	84 (25.5)	245 (74.5)

to have person with SCD as their study mate; 311 (94.5%) agreed to have person with SCD as a friend; 313 (95.1%) agreed to invite person with SCD to their birthday party; 300 (91.2%) agreed to eat with person living with SCD (Table 3).

Knowledge and faculty

This study also showed that a higher percentage of students from faculty of medicine (74.9%), had adequate knowledge compared to students from other faculties: Faculty of Health science and technology (57.9), Faculty of Agriculture (42.0%) and faculty of law (33.9%). Association between knowledge and faculty was statistically significant ($X^2 = 48.5$, $p = 0.0001$).

Knowledge and attitude

Association between knowledge about SCD and attitude towards people living with SCD showed that majority of those who had adequate knowledge about SCD displayed positive attitude while majority of those who had inadequate knowledge showed negative attitude, though not statistically significant (Table 4).

DISCUSSION

This study found that the ages of the participants ranged between 16 and 36 years with equal sex distributions. The participants were all young people most of whom were unmarried making them ideal for the study on knowledge about SCD, as also implicated by previous studies within and outside Nigeria.[12,13] Knowledge about SCD will help them take informed decision concerning their marriage so as to avoid procreation of children affected with SCD.

Table 3: Attitude towards people living with SCD

Attitudinal statements	N (%)		
	Attitude	Response	
	Positive	Negative	Indifferent
People with SCD should be isolated from others	308 (93.6)	13 (4.0)	8 (2.4)
People with SCD should not be enrolled in schools	307 (93.3)	17 (5.2)	5 (1.5)
I will accept person living with SCD as my room mate	273 (83.0)	41 (12.5)	15 (4.5)
I will study with person living with SCD	316 (96.1)	6 (1.8)	7 (2.1)
I will accept person living with SCD as my friend	311 (94.5)	13 (4.0)	5 (1.5)
I will invite person living with SCD to my birthday party	313 (95.1)	7 (2.2)	9 (2.7)
I will eat with person living with SCD	300 (91.2)	22 (6.7)	7 (2.1)

Table 4: Relationship between knowledge and attitude towards people living with SCD

Attitude towards people living with SCD	Knowledge about SCD			
	Adequate (%)	Inadequate (%)	Total	X^2 (p-value)
Negative attitude	17 (44.7)	21 (55.3)	38	1.1 (0.29)
Positive attitude	172 (59.1)	119 (40.9)	291	

This study also found that all the students have heard and were aware of SCD. This is similar to the report of Gbeneol PK et al,[14] who also reported awareness of SCD among all the participants studied but Durotoye IA, et al[11] reported that 79.5% of their participants had heard about SCD. This may be because their study population were mostly made up of adolescents in secondary school who may not have been exposed to more enlightenment on issues concerning SCD unlike the study population of Gbeneol PK et al,[14] who were mostly made up of young adult most of whom had secondary and tertiary education. Many of them were married and some were preparing for marriage and in the process were taught about SCD and were also screened for their genotype. Major source of information about SCD include Lectures, health workers, friends and colleagues. This corroborates with the findings of the study conducted in Jos, Nigeria,[7] which also reported health workers, family members and friends as the major source of information.

Though, all the participants were aware of the existence of SCD, many of them lack adequate comprehensive knowledge about SCD and exhibited some misconceptions. Some reported that SCD is caused by witchcraft, germs, evil spirit and curse by enemies. Other misconceptions include

that SCD is contagious, cannot be diagnosed with blood test and cannot be prevented. Similar misconception were also reported by other studies.[15,16] These knowledge gaps are due to lack of proper education and enlightenment about SCD.

This study also found that students from faculty of medicine had significantly more adequate knowledge compared to students from other faculties. This is not surprising considering the fact that medical students are better exposed to enlightenment about SCD and other health issues compared to students from other faculties. This buttresses the fact that proper education about SCD will help to close the knowledge gaps and equip people to take informed decisions and appropriate actions to control SCD. Similar study conducted among health care workers and medical students showed better knowledge about SCD since they interact more with clients suffering from the disease.[17]

Majority of the participants exhibited positive attitude to people living with SCD. In addition, majority of those who had positive attitude towards people living with SCD were also found to have adequate knowledge about SCD. A higher proportion of those who had negative attitude exhibited inadequate knowledge about SCD. This is similar to findings of other studies.[18,19] Negative attitude will result to denial and concealment of the disease by the affected individuals as well as carriers, with adverse consequences. Elimination of negative attitude, discrimination and stigmatization depends largely on the extent of enlightenment of the society on issues concerning SCD.

CONCLUSION

All the students were aware of SCD but many of them lack adequate comprehensive knowledge about SCD and displayed some misconceptions. A higher proportion of the respondents showed positive attitude to people living with SCD and majority of those who had positive attitude were found to have adequate knowledge about SCD while the reverse is the case for those who had negative attitude. Health education should be reinforced to impact adequate comprehensive knowledge about SCD. This will help equip people to take informed decisions and actions as well as to instill into the society the right attitude towards people living with SCD, with consequent prevention and control of SCD.

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Authors Contribution:
Ugwu NI: Concept and design of the study, review of the literature, collected data, manuscript preparation and critical revision of the manuscript.

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