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Knowledge and Attitude Towards Sickle Cell Disease Screening Before Marriage Among Tertiary Students in Kano, NigeriaLatifah Musa – Pedro^{1*}, Sherifah Ibrahim², Zainab Abdullahi³.*Department of Economics, Bayero University, Kano, Kano State¹, Malaria Consortium (MC), State Office Birinin Kebbi, Kebbi State², University Medical Centre Usmanu Danfodiyo University, Sokoto³.**Author for Correspondence *: latifahpedro@gmail.com ; lmpedro.eco@buk.edu.ng***Abstract**

Sickle Cell Disease (SCD) is an inherited autosomal recessive blood disorder that causes Red Blood Cells (RBCs) to become rigid and crescent – shaped. SCD remains one of the most common genetic blood disorders among the Africans. The process of choosing a partner is sometimes challenging especially when considering the health status and the implications on future babies. One of the commonest outcome diseases of challenging genetic match is giving birth to a baby with SCD. The objective of this study is to examine the level of knowledge and attitude of undergraduate students in Bayero University, Kano, towards sickle cell disease screening before marriage. A descriptive cross – sectional study design. One hundred and fifty (150) undergraduate students in 100 Level were selected as respondents from 6 faculties using multistage sampling technique. A structured close-ended questionnaire was used to collect information on participant's demographics, knowledge and attitude of respondents toward sickle cell disease screening. The study reveals that almost all the respondents (90%) were aware of SCD and its pattern of inheritance from parents to child. Source of knowledge information regarding SCD was mainly from school 77 (51%) respondents. Despite the good knowledge and awareness of SCD, 27 (18%) respondents considered genetic screening before marriage as unnecessary and not beneficial because it shows lack of faith in God. While 108 (72%) respondents will encourage their to-be partner for SCD screening before marriage to avoid unhealthy future babies, 15 (10%) agreed to go ahead with the

marriage irrespective of the SCD carrier status of their to-be partner. The knowledge and awareness of SCD among the respondents is high, but does not translate to good attitude towards premarital screening. There is need for more emphasis on health education through schools, mass media, health professionals and especially religious bodies to address misconceptions and increase knowledge of risks of having child with sickle cell disease.

Keywords: Knowledge, Attitude, Sickle cell disease, Screening, Marriage, Undergraduates.

Introduction

Sickle Cell Disease (SCD) is an inherited autosomal recessive blood disorder that causes Red Blood Cells (RBCs) to become rigid and crescent - shaped (Al-Qattan *et al.*, 2019; Isah *et al.*, 2016; Adewoyin *et al.*, 2015). Normally, RBCs are shaped like discs, which give them the flexibility to travel through even the smallest blood vessels. However, with this disease, the RBCs have an abnormal crescent shape representing a sickle. This makes them sticky, rigid and prone to getting trapped in small blood vessels, which blocks blood from reaching different parts of the body. This leads to several complications, including hand –foot syndrome, recurrent infections, delayed growth, vision problems, vaso – occlusion, chronic haemolysis, acute and chronic kidney disease, and eventually, progressive multi organ damage and stroke (Boadu and Adoah, 2018; Uche *et al.*, 2017; Alotaibi, 2017; Isah *et al.*, 2016; Adewoyin *et al.*, 2015).

Sickle Cell Disease is one of the most common monogenetic diseases worldwide, and the greatest burden is mostly found in Sub-Saharan Africa, the Middle East and Mediterranean regions (Serjeant *et al.*, 2017; Uche *et al.*, 2017; Al-Farsi *et al.*, 2014).

In Nigeria, different studies have shown that Sickle Cell Disease is a relatively common genetic disorder whereby 25% of the population possesses the sickle cell gene, with 2% - 3% living with the disease (Uche *et al.*, 2017; Nwogoh *et al.*, 2012; Abioye-Kuteyi *et al.*, 2009). According to the former minister of health, during the 2010 Sickle Cell Day Rally, Nigeria was ranked first as the sickle cell endemic in the world with 100,000 infant death annually as a result of sickle cell disease, representing 8% of infant mortality in the country (Boadu and Adoah, 2018).

Marriage is a life-time commitment between partners with the sole aim of companionship, support and procreation (Moronkola and Fadaio, 2016). The process of choosing a partner is sometimes challenging especially when considering their health status and the implications on their future babies. Good genetic match will result in healthy babies while bad genetic match will give birth to unhealthy ones. One of the commonest outcome diseases of bad genetic match is giving birth to a baby with SCD. Studies have shown that most married couples did not know their partners genetic status before marriage (Abioye-Kuteyi *et al.*, 2009; Ezechukwu and Chukwuka, 2004). It is true that, love is the main reason many couples base their marriage on, but those who face the challenge of giving birth to children with SCD will realize that their love is not enough to alleviate the pains and sufferings of their children who come up with the disease.

Most youth are driven by love and passion. They are interested in nothing but that "I Love you" rather than thinking of the health status and future implications associated with the relationship in terms of their haemoglobin electrophoretic pattern. The objective of this study is to examine the level of knowledge and attitude of undergraduate students in Bayero

University, Kano, towards sickle cell disease screening before marriage.

Materials and Methods

Study Design: A descriptive cross-sectional study design was employed.

Study Area: This study was carried out in Bayero University, Kano, Northwest Nigeria. The University consists of several campuses that are geographically separated in the state. The main campus of the university has the central administration and 10 faculties, with the highest number of students. The old campus is located just outside the ancient city walls of Kano city with 7 faculties. The university offers diploma, degree and postgraduate programmes. Respondents were selected from various faculties of the university (both old and main campus).

Sources and Methods of data collection

The data analysed in this study were collected using multistage sampling techniques whereby six faculties were selected using a simple balloting method. The selected faculties were: Engineering, Earth and Environmental Sciences, Education and Social Sciences from the main campus, while Pharmacy and Basic Medical Sciences from the old campus. Each selected department served as the sampling unit where respondents were chosen. Then, the same random method was used to select respondents strictly from 100 Level when having a faculty course lecture. Based on a valid student identity card, respondents were selected during lecture periods randomly. A structured close-ended questionnaire was used to collect information on participant's demographics, knowledge and attitude of respondents toward sickle cell disease screening and questionnaires were filled in the presence of the researchers.

Sample Size

This will be calculated using the formula for minimum sample size.

$$n = \frac{Z^2 pq}{d^2}$$

Where,
n = Minimum sample size

Z = Standard Normal deviation corresponding to 95% confidence interval on the Normal Distribution Curve = 1.96

p = Prevalence obtain from previous similar study = 10% = 0.10

q = Complementary Probability of p

= 1 - p

= 1 - 0.05 = 0.95

d = Degree of precision or margin of error allowed at 95% confidence limit = 5% = 0.05

Therefore,

$$n = \frac{Z^2 pq}{d^2} = \frac{(1.96)^2 \times 0.10 \times 0.95}{(0.05)^2} = \frac{0.364952}{0.0025} = 145.98$$

Adjusting for non-response at 3% we have 150.

This suggests the administration of 25 questionnaires in each selected department, to make a total of 150 respondents.

Methods of Data Analysis

The data obtained from the survey were analysed using descriptive analytical techniques, which include tables, percentages, frequencies and charts.

Data Analysis and Presentation

A total of 150 questionnaire were distributed, which involved 100 males (67%) and 50 females

(33%). All participants were Muslims by religion, Single (unmarried) and restricted to only 100 Level students from the selected faculties. One hundred and thirty (87%) respondents know their haemoglobin electrophoretic pattern while 20 (13%) of them have not been tested to know their status. Of the respondents who knew their status, 80 (54%) were AA; 50(33%) were AS; SS (none) and 20(13%) did not know their status. Table 1 shows the socio-demographic characteristics of respondents. Table 2 shows the knowledge of respondents towards sickle cell disease. Table 3 shows the attitude of respondents towards sickle cell disease screening before marriage. Figure 1 shows the knowledge of respondents on premarital sickle cell disease screening. A total of 116 (77%) respondents have no knowledge of premarital SCD screening, because they are only aware of screening test for diseases such as Hepatitis, HIV and other sexually transmitted disease (STDs), while 34 (23%) respondents have good knowledge of premarital screening for SCD. Figure 2 shows the attitude towards premarital SCD screening. A total of 108 (72%) respondents will agree and encourage premarital SCD screening while 42 (28%) respondents disagree and will discourage such screening.

Table 1: Summary of Socio Demographic Characteristics of Respondents

Gender		Number of Respondents	Percentage
Male		100	67%
Female		50	33%
Total		150	100%
Do you know your SCD Status		Number of Respondents	Percentage
Yes		130	87%
No		20	13%
Total		150	100%
What is your genotype		Number of Respondents	Percentage
AA		80	54%
AS		50	33%
SS		None	0%
Not Known		20	13%
Total		150	100%

Table 2: Knowledge of Respondents towards Sickle Cell Disease

Are you aware of sickle cell disease	Number of Respondents	Percentage
Yes	135	90%
No	15	10%
Total	150	100%
What is Sickle Cell Disease (SCD)	Number of Respondents	Percentage
Is an inherited disease acquired from parents to children	82	55%
Is an evil disease	None	0%
Is an inherited genetic disorder disease	18	12%
Is a blood disorder inherited from parents	35	23%
Don't know	15	10%
Total	150	100%
Are you aware of the pattern of inheritance from parents to child?	Number of Respondents	Percentage
Yes	135	90%
No	15	10%
Total	150	100%
If YES, what is the pattern of inheritance	Number of Respondents	Percentage
Parent AA + Parent AA	None	0%
Parent AA + Parent AS	25	17%
Parent AS + Parent AS	105	83%
Total	150	100%
Are you aware of the Signs and Symptoms of SCD	Number of Respondents	Percentage
Yes	135	90%
No	15	10%
Total	150	100%
Sources of Knowledge of SCD	Number of Respondents	Percentage
School	77	51%
Family and Friends	10	7%
Media (Television/Radio)	15	10%
Healthcare Professionals	23	15%
Awareness Programme	10	7%
No information	15	10%
Total	150	100%

Table 3: Attitude of Respondents towards Sickle Cell Disease Screening before marriage

Do you think everybody should know their genotype	Number of Respondents	Percentage
Yes	108	72%
No	42	28%
Total	150	100%
Will you encourage your to - be partner for sickle cell disease screening before marriage	Number of Respondents	Percentage
Yes	108	72%
No	42	28%
Total	150	100%
What will be your decision if your to – be partner is diagnosed as a carrier of sickle cell disease before marriage	Number of Respondents	Percentage
Discontinue the relationship	108	72%
Continue with the relationship because genetic screening before marriage shows lack of faith in God	27	18%
Irrespective of the carrier status of to – be partner, I will go ahead with the Marriage	15	10%
Total	150	100%

Figure 1 : Knowledge of Pre-martial Sickle cell Disease Screening

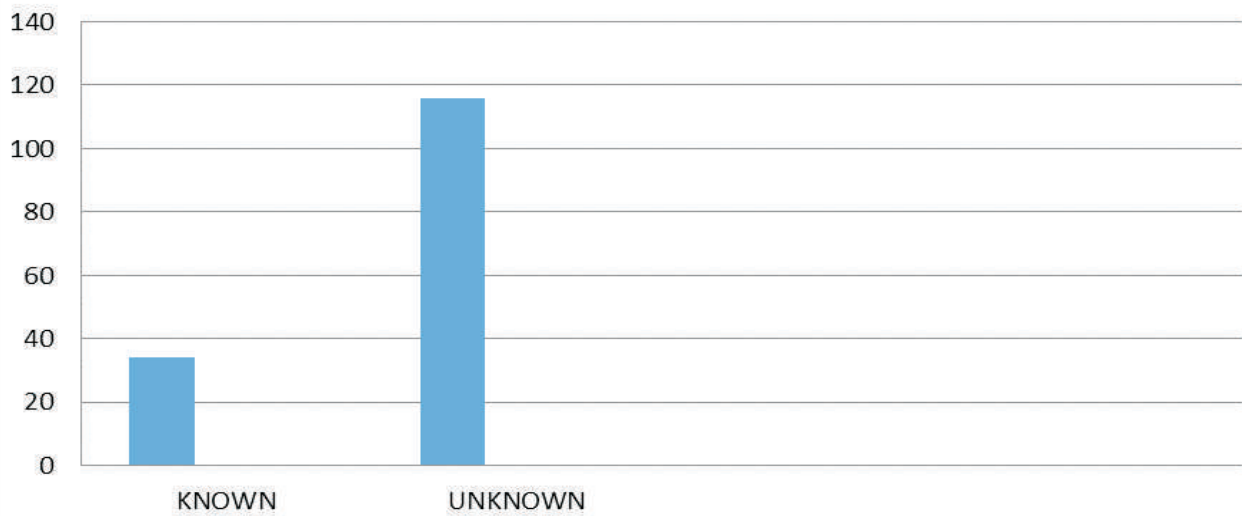
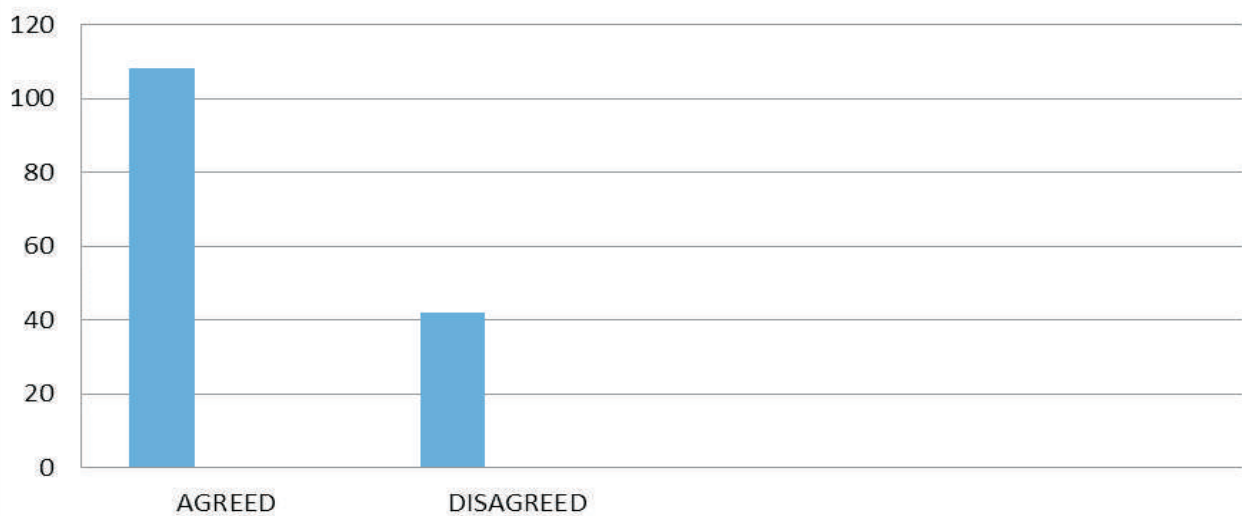


Figure 2 : Attitude towards Pre-martial Sickle cell Disease Screening



Discussion of Findings

The study reveals that almost all the respondents (90%) were aware of sickle cell disease (SCD) and its pattern of inheritance from parents to child but not an evil disease. Knowledge assessment of signs and symptoms of SCD and information of frequent illness, severe bone pain, slow and delayed growth, yellowish of the eyes and lips, swelling of hands and feet, the results showed that 135 (90%) respondents have adequate understanding of signs and symptoms of SCD. This is closely related to previous

reports (Gabriel and Matthew, 2013; Adeyemo *et al.*, 2007) that participants have good knowledge of sickle cell disease. Source of knowledge information regarding SCD was mainly from school 77 (51%), media (Television/Radio) 15 (10%), Healthcare professionals 23(15%), awareness programmes 10 (7%), family 10 (7%) and No source of information on SCD 15 (10%). This shows that schools and healthcare professionals are the major sources of information to the respondents. The finding is consistent with previous reports (Boadu and

Adoah, 2018; Isah *et al.*, 2016; Al-Farsi *et al.*, 2014; Alao *et al.*, 2009). Despite the good knowledge and awareness of sickle cell disease among the students, it is quite surprising that, 42 (28%) respondents still consider genetic screening before marriage as unnecessary and not beneficial. This shows that, of those who knew their genotype, was as a result of compulsory medical examination requirement prior to entry into the university. While 108 (72%) respondents will encourage their to-be partner for SCD screening before marriage and if diagnosed as a SCD carrier, will discontinue with the relationship to avoid giving birth to a child with sickle cell disease. This shows that those respondents are aware of the associated pains and psychosocial trauma, affected children go through and would not want to put themselves into such dilemma. Similar positive attitude and decision has been previously reported (Boadu and Adoah, 2018; Ameade *et al.*, 2015; Olatona *et al.*, 2012).

Conclusion

The study examined the knowledge and attitude towards sickle cell disease screening before marriage among tertiary students in Kano, with particular reference to Bayero University, Kano. To achieve the objective of the study, a descriptive cross-sectional research design was adopted. The population of the study was solely 100 Level students, selected using multistage random sampling technique. The findings revealed that 135 (90%) of the respondents were aware of sickle cell disease while 34 (23%) respondents have knowledge of premarital SCD screening. A total of 108 (72%) respondents will agree and encourage their to-be partner for SCD screening before marriage and if diagnosed as a SCD carrier, will discontinue with the relationship to avoid giving birth to unhealthy child.

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

1. Religious bodies should be involved to aid and increase the level of awareness of SCD, based on their closeness to the members of the community. This is necessary to address the faith misconceptions and increase knowledge as well as understanding of the risks of having child with sickle cell disease.

2. Sickle cell disease screening should be made compulsory as a pre-condition for marriage by government. Intending couples should be mandated for SCD screening before marriage as a preventive measure to control SCD.
3. The mass media, schools and healthcare professionals should continue to intensify the public awareness of SCD.

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