Original Article

Premarital Genotype Screening for Sickle Cell Disease: Knowledge Gaps, Perception and Determinants of Uptake among Final Year Undergraduates of a Tertiary Institution in South-West Nigeria

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Abstract

Background: Strategies involved in the prevention and management of sickle cell disease include premarital genotype screening and counselling as well as efforts at increasing the knowledge of the population about the condition.

Methodology: This is a cross-sectional descriptive study which assessed the knowledge of sickle cell disease and premarital genotype screening, attitudes towards screening and factors associated with uptake of premarital genotype screening among 326 final year students of the University of Ibadan, Oyo State, Nigeria.

Results: Respondents were within the age range of 18-24 with a mean age of 23. Majority of the respondents had AA genotype (68.71%). Only 15.95% of the respondents had good knowledge of sickle cell disease. Mean knowledge score was 14 out of 26 with a standard deviation of 4.31. 75.77% of the respondents had good knowledge of premarital genotype screening. 76.07% of the respondents had good attitudes to premarital genotype screening. Mean attitude score was 9.5 out of 12 with a standard deviation of 2.15. Respondents' current level of study (P=0.000) and marital status (P=0.042) were significantly associated with knowledge of sickle cell disease. There was significant association between knowledge of sickle cell disease and knowledge of premarital genotype screening (Fisher's P= 0.000). Knowledge of premarital genotype screening was significantly associated with respondents' current level of study (P=0.004) and attitudes to premarital genotype screening (Fisher's P= 0.000).

Conclusion: Significant knowledge gaps were identified in the study population. There is need for continuous assessment of knowledge gaps and educational intervention in order to decrease the incidence of sickle cell disease.

Keywords: Premarital Genotype Screening; Sickle Cell Disease; Knowledge Gaps; Nigeria.

Introduction

Sickle cell disease is an inherited genetic disorder which affects haemoglobin and which is one of the commonest monogenetic disorders worldwide.[1,2] It is more specifically a group of inherited disorders in which there is an abnormal haemoglobin present in association with the sickle haemoglobin.[3] Sickle cell disease is the commonest severe genetic disorder in Nigeria and with a population of approximately 180 million, Nigeria has the highest prevalence of people affected by sickle cell disease and those at risk of given birth to children affected by sickle cell disease, with the disease occurring in

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2%-3% of new-borns and the sickle cell trait maintaining a stable prevalence of 22%-25% for the last fifty years.[4]

Formerly a disease of the tropics and subtropics, global concern has now arisen for the burden of the disease as the disease has acquired a worldwide prevalence as a result of migration.[5,6,7] Africa however still retains a huge proportion of the burden with about 200,000 infants born annually with the disorder, attributable to current or historic exposure to malarial infection as carriers are protected from malaria-associated deaths favouring improved survival and consequent transmission of the abnormal gene. Sickle cell disease has fatal public health implications in Africa. It accounts for 5% of under-five deaths in Africa, at least 9% of such deaths in West Africa and up to 16% of such deaths in individual West African countries.[7]

Not only is the disorder fraught with recurrent illnesses and complications such as painful episodes, infections, splenic sequestration, acute chest syndrome, acute aplastic crisis, strokes, gall stones, jaundice, growth and development retardation, retinopathy and priapism necessitating emergency room visits and hospitalisations, the only potential curative therapy for the disorder is hematopoietic stem cell transplant which is mostly unavailable locally and is expensive.[2,8,9] As a result, preventive measures in forestalling the burden of sickle cell disease have been emphasized especially in developing countries like Nigeria and include new-born screening, premarital screening, genetic counselling, prenatal diagnosis and preconception diagnosis. Information about a couple's genotype is essential before marriage is consummated in order for the couple to make informed and timely decisions about the well-being of their future offspring.[10,11]

Premarital genotype screening has therefore been described as the only realistic approach to reduce the impact, both financial and otherwise, of the disease in developing nations.[12] Despite this, it has been reported that there still exists a significant lack of sufficient information and misconceptions about the disease within our communities which plays a role in the sustained and rising prevalence of the condition.[9] Studies done among graduates and civil servants have reported a fair knowledge of sickle cell disease with certain individuals willing to marry irrespective of genotype and possible risks of having children with the condition.[2,13]

Final year students of universities are good targets for educational interventions with regard to sickle cell disease and premarital screening as they are most likely in a position to think about marriage and are often in relationships that proceed to marriage, not excluding the prevalence of premarital sex among students of tertiary institutions. Therefore, their attitude towards premarital screening is cause for concern as this is influenced by their knowledge of sickle cell disease. This study is aimed at assessing the knowledge of sickle cell disease and premarital genotype, attitudes towards screening and other determinants of uptake of premarital genotype screening among final year students of the University of Ibadan, Oyo State, Nigeria.

Methodology

Study background

Oyo state is located in the south-western part of Nigeria and its capital is Ibadan. The study was carried out in the University of Ibadan. The University of Ibadan is the first and oldest Nigerian university established 74 years ago in 1948. It is located in Ibadan, Oyo state. The main campus is located 8 kilometres from the centre of the major city of Ibadan in Western Nigeria.

Study design

This is a cross-sectional descriptive study which assessed knowledge of sickle cell disease and premarital genetic screening, attitudes to and uptake of premarital genotype screening for sickle cell disease as well as associated factors among 326 final year students of the University of Ibadan.

Study participants

The target population consisted of 326 final year students of the University of Ibadan. A multi-stage sampling technique was used to recruit respondents into the study. First, simple random sampling technique was used to select eight faculties out of twelve undergraduate faculties of University of Ibadan. The faculties selected are Faculty of Arts, Law, Education, and Veterinary medicine as well as the faculties of Science, Basic Medical Science,

Basic Clinical Science and Dentistry. In the second stage, simple random sampling was again used to select four departments out of twelve departments from Faculty of Arts, four departments out of eleven departments from Science, three departments out of nine departments from Education, two departments from Basic Medical science and department each from Law, Veterinary medicine, Basic Clinical Science and Dentistry. This gave a total of 17 departments. In the third stage, the sample size was proportionately allocated to the various departments using the formula:

(Total population in each department/Total (Target) population) X sample size

Finally, convenient sampling method was used for those that met the study criteria and who gave informed consent. All final year undergraduate students who met the sampling criteria and who gave informed consent were recruited into the study. Undergraduate students of the University of Ibadan not in their final year, postgraduate students of the University of Ibadan and final year students who were not in the sampled population or who did not consent were excluded from the study.

Study tool

Data was collected using a self-administered questionnaire comprising of fifty-three closed and open ended questions divided into five sections A-E as follows:

Section A: This section consisted of nine options requesting the socio-demographic details of the respondents including age, religion, place of residence, ethnicity, marital status, course of study, current level and occupation.

Section B: This section consisted of five questions which assessed respondents' awareness of sickle cell disease, source of knowledge, awareness of their genotypes and if they had any siblings with sickle cell disease, and nineteen questions assessing respondents' knowledge of sickle cell disease and included questions on the types, causes, methods of diagnosis, inheritance patterns complications and possibility of a cure. The respondents were required to indicate 'Yes', 'No', 'I don't know'. Good knowledge was determined if the respondent answered 70% or more correctly. Less than 70% was determined to be poor knowledge.

Section C: This section consisted of four questions which assessed respondents' awareness of and knowledge of premarital genotype screening including when the test should be done, benefits and major consequences that result from lack of testing. The respondents were required to indicate 'Yes', 'No', 'I don't know'. Good knowledge was determined if the respondent answered 70% or more correctly. Less than 70% was determined to be poor knowledge.

Section D: This section consisted of twelve questions assessing respondents' attitudes to premarital genotype screening including willingness to test, issues of stigma, legislation, cost and ability to affect marriage choices. The respondents were required to indicate 'Yes', 'No', 'I don't know'. Good attitude was determined if the respondent answered 70% or more favourably. Less than 70% was determined to be poor attitude.

Section E: This section comprised four questions which sought to find out if and when respondents had their genotypes checked as well as reasons for positive or negative responses were also sought.

Data analysis

Data was analysed electronically using Epi-Info 7.2 statistical software AND Microsoft Excel 2010. Level of statistical significance was set at 0.05. Data was presented using frequency tables and chi-square tests was used to test for association.

Ethics

Approval for this study was obtained from the health research and ethics committee of the Lagos University Teaching Hospital. The participants were informed about the significance of the study and how honest and fair answers were important when answering the questionnaire. Consent was sought before administration of the questionnaire. No names were printed on the questionnaires and the respondents were assured of the confidential nature of the study.

Results

Majority of the respondents were within the age range of 18-24 with a mean age of 23. More than half

of the respondents (53.37%) were male, Christians (81.29%), single (90.49%), of Yoruba ethnicity (81.29%) and had no known relatives with sickle cell disease (92.94%). Most of the respondents (98.77%) were aware of sickle cell disease and 'lectures/school' appeared to be the commonest major source of information (65.95%). Majority of the respondents (95.09%) indicated that they knew their genotype; however, only 92.94% stated their genotype correctly with the rest indicating their blood groups and rhesus factors instead. Among the respondents who stated their genotypes correctly, 224 (68.71%) stated they had genotype AA, 71 (21.77%) stated they had genotype AS, 4 (1.22%) stated they had genotype AC, and 2 (0.61%) had genotype SC.

Majority of the respondents had heard about sickle cell trait (63.19%), knew sickle cell disease is a disease of blood (78.22%), is a genetic disease (88.04%), and that it was transmitted from parents to offspring (84.97%). Majority of the respondents also agreed that sickle cell disease could skip generations to families (55.21%) and that both parents with sickle cell trait could give birth to a child with sickle cell disease (95.40%). Majority of the respondents (89.88%) agreed sickle cell disease can be identified by blood test and that it was not contagious (85.28%). Majority of the respondents agreed sickle cell disease could come down with painful episodes requiring hospitalisation (88.34%) and could come down with life threatening infections (79.44%). A little more than half (55.82%) of the respondents agreed cold weather worsens sickle cell disease symptoms.

On the other hand, only about a quarter of the population (25.54%) knew each pregnancy had 25% chance of being affected in a situation where both parents had the sickle cell trait. Only 11.65%, 44.78%, 17.79%, and 38.34% knew hot weather, fatigue, vomiting and diarrhoea, and lack of air respectively could also worsen symptoms. Majority of the respondents had not heard of the C-trait (66.26%) and still more, the B-thalassemia trait (80.06%). Only less than half (38.96%) knew there were variants of sickle cell disease, knew that sickle cell disease could not be identified by urine testing (37.73%), could not be acquired through blood transfusion (49.39%) and less than a quarter of the respondents (23.01%) knew Africans were more likely to have the condition. Only less than half of the respondents knew kidney failure (44.8%) and stroke (34.35%) were possible complications of sickle cell disease. Only 13.80% of the respondents knew bone marrow transplant offered a cure.

Overall, only 15.95% of the respondents had good knowledge of sickle cell disease. Mean knowledge score was 14 out of a possible 26 with a standard deviation of 4.31.

Almost all the respondents (98.77%) indicated that they were aware of premarital genotype screening. Majority of the respondents indicated that radio, television, magazines and newspapers (53.37%) and lectures/school (47.85%) as major sources of knowledge of premarital genotype screening. Majority of the respondents (71.47%) knew that premarital genotype screening is used to test for sickle cell disease, knew that it should be done before marriage or during courtship (98.46%), knew that it prevented children with sickle cell disease (93.86%) and knew that negative consequences of not having screening could include birth of a child with sickle cell disease (93.25%), separation of couples (64.41%), disharmony in homes (68.71%) and catastrophic expenditures in the management of a child with sickle cell disease (86.50%). However, only 29.75% of the respondents knew that it was not just any test done before marriage, and more than a quarter of the respondents (35.27%) thought premarital genetic screening tests for malaria.

Overall, 75.77% of the respondents had good knowledge of premarital genotype screening. Mean knowledge score was 8.5 out of a possible 11 with a standard deviation of 2.06.

Majority of the respondents (92.33%) were willing to opt for premarital genotype screening. 91.10% felt screening was necessary. Majority of the respondents (94.78%) felt screening reduces the incidence of sickle cell disease, felt it should be mandatory for every adult before marriage (93.86%), agreed screening is not a waste of time (92.02%), disagreed to preferring ignorance of genotype (82.82%), disagreed that it will expose their genetic status to the public (80.67%) and agreed results would change their decisions about marriage (76.68%). A lesser percentage of the

respondents felt the cost should not influence decision to test (62.26%), felt there should be legislation against marriage of two sickle cell trait carriers (61.34%), agreed it will not be a cause of conflict among couples (65.64%) and agreed screening will not hinder their chances of getting married (56.74%).

Overall, 76.07% of the respondents had good attitudes to premarital genotype screening. Mean attitude score was 9.5 out of a possible 12 with a standard deviation of 2.15.

Respondents' current level of study (P=0.000) and marital status (P=0.042) were significantly associated with knowledge of sickle cell disease. Knowledge of sickle cell disease was not significantly associated with the age (P=1.00), sex (P= 0.173), religion (P=0.350), and ethnicity (P=0.634) of the respondents. There was significant association between knowledge of sickle cell disease and knowledge of premarital genotype screening (Fisher's P= 0.000). Knowledge of premarital genotype screening was significantly associated with respondents' current level of study (P=0.0039) and attitudes to premarital genotype screening (Fisher's P= 0.000) but was not significantly associated with the age (P=0.248), sex (P=0.154), religion (P=0.211), marital status (P=0.829), and ethnicity (P=0.637) of the respondents. There was no significant association attitudes to premarital genotype screening and knowledge of sickle cell disease (Fisher's P=0.288). Attitudes to premarital genotype screening was not significantly associated with the age (Fisher's P=1.000), sex (Fisher's P=0.435) religion (P=0.664), marital status (P=0.253), ethnicity (P=0.731), and current level of study (P=0.732) of the respondents.

Table 1: Socio-demographic characteristics of respondents

Characteristics	Frequency (N=326) (%)
Sex	
Male	174 (53.4)
Female	152 (46.6)
Age	
18-24	267 (81.9)
25-34	55 (16.9)
35-44	4 (1.2)
Marital Status	
Divorced	2 (0.6)
Engaged	13 (4.0)
Married	16 (4.9)
Single	295 (90.5)
Religion	
Christian	265 (81.3)
Islam	49 (15.0)
Traditional	10 (3.1)
Others	2 (0.6)
Ethnicity	
Yoruba	265 (81.3)
Igbo	20 (6.1)
Hausa	10 (3.0)
Others	31 (9.5)

Table 2: Knowledge of Sickle Cell Disease

Knowledge Items	Yes(%)	No(%)
If you have heard of sickle cell disease?	322 (98.7)	4(1.2)
If Yes through what means?		
Media	192(58.9)	
Lectures/school	215(66.0)	
Internet	165(50.6)	
Friends and Family	174(53.4)	
Health personnel	139(42.6)	
Others	15(4.6)	
If you know your genotype?	310 (95.1)	16 (4.9)
Correctly stated genotype		
AS	224(68.7)	
AA	4(1.2)	
AC	71(21.8)	
SC	2(0.6)	
If there are different types of sickle cell disease	127 (31.0)	199 (69.0)
If you heard of sickle cell trait	206 (63.2)	120 (36.8)
If you have heard of C-trait	110 (33.7)	216 (66.3)
If you heard of B-thalassemia trait	65 (80.1)	261 (19.9)
If sickle cell disease is a disease of the blood	255 (78.2)	71 (21.8)
If sickle cell disease is a genetic disease	287 (88.0)	39 (12.0)
If sickle cell disease can be transmitted from parents to offspring	277 (85.0)	49 (15.0)
If sickle cell disease sometimes skip generations in families	180 (55.2)	146 (44.8)
If two parents with sickle cell trait can give birth to a child with sickle cell disease	311 (4.6)	15 (95.4)
If yes, chances of it happening		
100%	81(26.0)	
75%	66(21.2)	
50%	82(26.3)	
25%	83(26.6)	
If sickle cell disease can be identified by a blood test	293 (89.8)	33 (10.1)
If sickle cell disease can be acquired through blood transfusion	161 (49.4)	165 (50.6)
If sickle cell disease is contagious	48 (14.7)	278 (85.3)
.....	75(23.0)	251(77.0)
If you would say that children with sickle cell disease are more likely to develop the following conditions due to the disease		
Pain requiring hospitalization	288(88.3)	38(11.7)
Life threatening infections	259(79.5)	67(20.5)
Kidney failure	146(44.8)	180(55.2)
Stroke	112(34.4)	214(65.6)
If you know stem cell transplant is the cure for sickle cell disease	45(13.8)	281(86.3)

Table 3: Knowledge of Premarital Genetic Screening

Knowledge Items	Yes (%)	No (%)
If you have heard of premarital genetic screening?	322(98.8)	4(1.2)
If YES, through what means?		
Media	174(53.4)	
Lectures/School	156(47.9)	
Internet	142(43.6)	
Friends & family	141(43.3)	
Health Personnel	124(38.0)	
Others	17(5.2)	
What you understand by premarital genotype screening		
Test done before marriage to rule out any abnormality in the blood	251(77.0)	75(23.0)
Test that reveals the level of malaria in the blood	115(35.3)	211(64.7)
Test done before marriage to rule out sickle cell disorder	233(71.5)	93(28.5)
Any test done in the hospital before marriage	229(70.2)	97(29.8)
When should premarital genotype screening be done?		
Just before marriage or during courtship	322(98.5)	
After marriage	2(0.6)	
Immediately after delivery	2(0.6)	
when couples give birth to an affected child	1(0.3)	
What is/are the benefits of premarital genotype screening?		
Helps to detect abnormalities in couples	283(86.8)	43(13.2)
Helps to prevent having a child with sickle cell disease	306(93.9)	20(6.1)
To expose the genetic status of an individual	141(43.2)	185(56.8)
Has no benefits	26(8.0)	300(92.0)
What are the major consequences of not adhering to premarital screening?		
Giving birth to a child living with sickle cell disorder	304(93.3)	22(6.7)
Separation/divorce from couples	210(64.4)	116(35.6)
Disharmony and conflict in the family	224(68.7)	102(31.3)
Excessive financial expenditure on the management of SCD	282(86.5)	44(13.5)

Table 4: Attitudes towards Premarital genotype screening

Attitude Items	Yes(%)	No(%)
If you would opt for pre-marital genetic screening?	301(92.33)	25(7.67)
If pre-marital genetic screening is necessary and valuable once the couples have agreed to marry.	297 (91.1)	29 (8.9)
If premarital genotype screening is one of the ways to reduce sickle cell disease burden in the family.	309 (94.8)	17 (5.2)
If premarital genotype screening should be made mandatory for every adult before marriage	306 (93.9)	20 (6.1)
If there should be legislation against marriage union between two sickle cell trait carriers.	200 (61.3)	126 (38.7)
If going for premarital genotype screening will expose my genetic status to the public.	263 (80.7)	63 (19.3)
If premarital genotype screening brings conflict between couples.	214 (65.6)	112 (34.4)
If premarital genotype screening increases the chance of one not getting married	185 (56.7)	141 (43.3)
If premarital genotype screening is a waste of time and resources.	300 (92.0)	26 (8.0)
If you prefer not to know if anything is wrong with me before marriage.	270 (82.8)	56 (17.2)
If the cost of premarital genotype screening should not influence if the screening is done or not.	203 (62.3)	123 (37.7)
If you would change your decision about marriage based on result of premarital genotype screening.	250 (76.7)	76 (23.3)

Table 5: Factors Associated with Knowledge of SCD

Variable	Good	Poor	Total
Age Group			
18-31	52(16.2)	270(83.8)	322(100.0)
32-44	0(0.0)	4(100.0)	4(100.0)
	Fischer's P =1.00		
Sex			
Female	29(19.1)	123(80.9)	152(100.0)
Male	23(13.2)	151(86.8)	174(100.0)
	Fischer's P =0.173		
Religion			
Christian	46(17.4)	219(82.6)	265(100.0)
Islam	5(10.2)	44(89.8)	49(100.0)
Traditional	1(10.0)	9(90.0)	10(100.0)
Others	0(0.0)	2(100.0)	2(100.0)
	Fischer's P =0.350		
Marital Status			
Single	51(17.3)	244(82.7)	295(100.0)
Engaged	0(0.0)	13(100.0)	13(100.0)
Married	0(0.0)	16(100.0)	16(100.0)
Divorced	1(50.0)	1(50.0)	2(100.0)
	Fischer's P =0.042		
Current Level			
400	6(4.4)	131(95.6)	137(100.0)
500	12(8.6)	127(91.4)	139(100.0)
600	34(68.0)	16(32.0)	50(100.0)
	Fischer's P =0.000		
Knowledge of Premarital Screening			
Good	49(19.8)	198(80.2)	247(100.0)
Poor	3(3.8)	76(96.2)	79(100.0)
	Fischer's P =0.000		

Table 6: Factors Associated with Attitudes to Premarital Screening

Variable	Good	Poor	Total
Age Group			
18-31	245(76.1)	77(23.9)	322(100.0)
32-44	3(75.0)	1(25.0)	4(100.0)
	Fischer's P = 1.000		
Sex			
Female	119(78.3)	33(21.7)	152(100.0)
Male	129(74.1)	45(25.9)	174(100.0)
	Fischer's P =0.435		
Religion			
Christian	199(75.1)	66(24.9)	265(100.0)
Islam	39(79.6)	10(20.4)	49(100.0)
Traditional	9(90.0)	1(10.0)	10(100.0)
Others	1(50.0)	1(50.00)	2(100.0)
	Fischer's P =0.664		
Marital Status			
Single	227(76.9)	68(23.1)	295(100.0)
Engaged	9(69.2)	4(30.8)	13(100.0)
Married	10(62.5)	6(37.5)	16(100.0)
Divorced	2(100.0)	0(100.0)	2(100.0)
	Fischer's P =0.253		
Current Level			
400	102(74.5)	35(25.5)	137(100.0)
500	106(76.3)	33(23.7)	139(100.0)
600	40(80.0)	10(20.0)	50(100.0)
	Fischer's P =0.732		
Knowledge of Sickle Cell Disease			
Good	43 (82.7)	9 (17.3)	51 (100.0)
Poor	205 (84.8)	69 (25.2)	274 (100.0)
	Fischer's P =0.288		
Knowledge of Pre-marital Screening			
Good	205 (83.0)	42 (17.0)	247 (100.0)
Poor	43 (54.4)	36 (45.6)	79 (100.0)
	Fischer's P =0.000		

Discussion

The genotype demographic in our study population was similar to other studies done in this environment, with majority of the respondents being of genotype AA.[14-16] About 99% of the respondents were aware of sickle cell disease and in consonance with the study done in Benin and Ghana,[2, 16] the fact that respondents were tertiary education students did play a significant role. Not only did majority of the respondents indicate lectures/school as major source of knowledge, their current level of study was significantly associated with their knowledge of sickle cell disease. Since all the respondents were final year students of the university and since various courses have different durations, it appears the particular course which the students studied affected their knowledge significantly. Contrary to the study done among university students in Ghana and Benin,[16, 17]majority of the respondents knew their genotype.

Despite the high level of awareness, there were significant gaps in knowledge of sickle cell disease among the respondents and overall knowledge was poor (15.95%). 76.99% of the respondents were not aware that Africans were majorly affected, 74.46% were not aware of the inheritance pattern, more than half did not know about the factors that worsen symptoms, variants and traits of sickle cell disease, 62.27% felt that diagnosis could be made by urine testing, 50.61% felt that the disease could be transmitted through blood transfusion, only less than half knew of possible complications of the disease and 86.20% did not know about the potential cure from bone marrow transplantation. Awareness level of bone marrow transplantation in Benin City was 22% which was also low.[2] Other studies done in Nigeria have also indicated low knowledge of sickle cell disease among tertiary students.[2, 9, 18, 19] Our findings were also consistent with a previously published US study,[20] and inadequate knowledge about pattern of inheritance was also noted by the study done in Ghana.[16]

Knowledge of sickle cell disease in our study was significantly associated with respondents' current level of study (P=0.000) and marital status (P=0.042). These findings were similar to that in Benin[2]

Although knowledge of sickle cell disease was poor, 75.77% of the respondents had good knowledge of premarital genotype screening for sickle cell disease. Despite the fact that they had good knowledge of premarital genotype screening, more than a quarter of the respondents felt the screening test was for malaria (35.27%) and that it included any tests done before marriage (29.75%). This finding was consistent with a study done in Benin[6] but was inconsistent with the study done in Sokoto and Egypt where knowledge of screening was low.[9, 10] Knowledge of sickle cell disease (P=0.000) and respondents' current level of study (P=0.0039) were significantly associated with knowledge of premarital genotype screening.

In our study, majority of the respondents (76.07%) had good attitudes to screening and majority of them gave favourable answers to the attitude questions. However, concerns were expressed including screening hindering their chances of getting married (43.26%), legislation against marriage of two sickle cell trait carriers (38.66%) and cost (37.74%). Knowledge of premarital genotype screening was significantly associated with attitudes to screening (P=0.000). Similar findings were reported in studies done in Sokoto, in Benin and among African-American students,[6, 9, 21] while studies in Egypt and Oman reported negative attitudes.[10, 22]

Conclusion

With increasing awareness of sickle disease and public health interventions in this regard, a continuous assessment of gaps in knowledge and concerns regarding attitudes to screening remain essential in evaluating efforts and in ensuring increased knowledge and prevention of diseases like sickle cell disease which have a high burden in this part of the world.

Our study essentially has shown significant knowledge gaps in sickle cell disease, good knowledge of premarital genotype screening and positive attitudes towards screening among students of a tertiary institution in Oyo State, Nigeria. Public health intervention should be geared at improving respondents' knowledge and addressing specific concerns which affect attitudes to screening.

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