

Knowledge and Pre-marital Haemoglobin Genotype Screening Practices of Religious Leaders in Ilorin Metropolis, North central Nigeria.

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ABSTRACT

Nigeria has a high prevalence of Sickle Cell Disease (SCD) which results in significant morbidity and mortality. Premarital genetic screening for Sickle Cell Trait (SCT) is a cost-effective means of curbing the menace. This study determined the knowledge and practices of religious leaders in Ilorin metropolis towards pre-marital genotype determination. Descriptive cross-sectional study design and multistage sampling technique was used to select 271 respondents. IBM Statistical package for Social Sciences (SPSS) version 23 was used for data analysis. Results were presented in prose, tables and frequency counts while test of association between variables was done using Chi-square and Fischer's Exact test at a significance level of < 0.05 and confidence level of 95%. Less than half 93 (39.4%) of the respondents knew both parents contribute to a child acquiring SCD while up to 109 (40.2%) strongly agreed that SCD is serious and should be a hindrance to marriage. More than half 160 (59.0%) respondents recommend pre-marital genotype counseling for intending couples and 156 (57.6%) had recommended pre-marital genotype screening for couples. Up to 165 (60.7%) of the respondents with tertiary level of education practiced premarital screening of their congregants ($p=0.004$) and 127 (58.3%) of respondents with good knowledge of SCD also practiced pre-marital screening ($p=0.001$). Religious leaders in the study area have considerably high level of knowledge of pre-marital genotype screening and demonstrated a moderate level of practice. Religious leaders in the study area could serve as advocates in awareness creation and community mobilization for pre-marital haemoglobin genotype screening.

Key words: Haemoglobin genotype, North-central, Pre-marital screening, Religious leaders, Sickle cell disease



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INTRODUCTION

Sickle Cell Disease (SCD) is a preventable genetic hematological disorder with homogygous form of inheritance. Each year about 300,000 infants are born with genes responsible for major haemoglobin disorders and about 5% of the world's population have haemoglobinopathies.¹ Though there is a worldwide distribution of the Sickle Cell Trait (SCT), its prevalence is highest in the African region, ranging from about 1% to as high as 45% in some countries.² It is a common genetically determined autosomal recessive haematological disorder in Nigeria as there is a 25% prevalence of SCT among adults in the country. There is also a 3% prevalence of SCD among children, and 1-3% prevalence of SCD among adults in Nigeria.³ SCD has been identified as one of the top ten non-communicable diseases (NCDs) in Nigeria resulting in significant morbidity and mortality.⁴

SCD which is characterized by red blood cells that assume an abnormal, rigid and sickle shape due to mutation in hemoglobin gene thus decreasing the red blood cells' flexibility leading to vascular-occlusive complications such as painful episodes at extremities and chest, stroke, priapism, liver disease, leg ulcers, spontaneous abortion and renal insufficiency among others; which are otherwise largely preventable.⁵ Premarital genetic screening has the capability of identifying and modifying behavioral, medical and other health risk factors known to impact pregnancy outcomes through prevention and management.⁶ Premarital genetic screening for SCT is being practiced in several countries and it is a cost-effective means to decreasing the incidence of SCD. Despite the high prevalence of SCD in Nigeria, there is low awareness of SCD and its prevention.⁷ Premarital genetic counselling is voluntary in Nigeria, religious bodies play an important role in its practise, as some religious organisations make it mandatory before joining intending couples.¹ Religious values and practices are often deeply entwined in the fabric of daily lives, and

the leaders of churches, mosques, temples, and other religious communities play powerful roles in shaping attitudes, opinions, and behaviors in many developing countries.⁸ In Nigeria, religious leaders are important gatekeepers in the community who have capability to influence behavioural change among a large number of people. Therefore, it is hoped that, engaging religious leaders through awareness creation on the importance of premarital genetic counseling could help stem the incidence of SCD in the country. This study aimed to determine the knowledge and practices of religious leaders in Ilorin metropolis towards pre-marital genotype determination.

MATERIALS AND METHODS

This was a descriptive cross sectional study conducted in Ilorin metropolis, Kwara State, Nigeria. The study population consisted of leaders (Islam and Christianity) who consented and were present in Ilorin metropolis during the period of the survey. Sample size was calculated using Fisher's formula, with an adjustment made for population less than 10,000 (population of religious leaders in Ilorin metropolis was less than 10,000) religious leaders. Adjusting for the non-response rate, the estimated sample size was 271 respondents. Participants were selected using multistage sampling technique. The religious leaders were stratified based on their religion (Christians and Islam), and proportionate allocation was used to determine the required eligible respondents from both religions. Systematic sampling technique was then employed in the selection of respondents from each religious group. The sampling frame used was the list of all the registered religious leaders in each of the selected religious groups in Ilorin metropolis. Sampling ratio and sampling interval were obtained and the first respondent was selected by simple random sampling by balloting. Subsequently, the obtained sampling interval

(K) was added to the selected number and thereafter every k^{th} number was obtained from the sampling frame till the desired sample size was achieved.

Data was collected using a pre-tested interviewer-administered semi-structured questionnaire which was adapted from a previous study.¹ Socio-demographic information, awareness of pre-marital genotype determination, knowledge of SCD, attitude towards encouraging genotype testing and practices on genotype testing were obtained from the respondents using the questionnaire. The questionnaire was pretested among 30 religious leaders in Ogbomoso in order to determine the comprehensibility of the questions. Fifteen questions were used to assess the knowledge of SCD and genetic screening among religious leaders in Ilorin metropolis. Each correct answer was scored 1 and each wrong answer was scored zero. For each individual respondent, a total knowledge score was derived by summing all the correct points. A score of 0-5 was graded as poor, 6-10 moderate and 11-15 good. The Attitude towards pre-marital genotype determination among religious leaders in Ilorin metropolis was determined and scored by responding to 13 questions. The answers were graded using Likert scale as follows; Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), Strongly Disagree (SD). The practice of religious leaders towards pre-marital genotype determination was determined and scored by responding to 12 questions, the answers were graded never, sometimes and always. Answers 'never' was scored 0, answers 'sometimes' was scored 1 while answers 'always' was scored 2. For each individual respondent, a total practice score was derived by summing all the correct points. A score of 0-8 was graded as low level of practice, 9-16 moderate and 17-24 high level of practice. The data collected was analysed using IBM Statistical Package for Social Sciences (SPSS) version 23.0. Presentation of the data was done in prose and frequency tables. Descriptive statistics was used to determine the awareness and attitude of religious

leaders towards premarital genotype determination. Chi square test for proportions and Fischer's Exact test were used to test the associations between variables. A confidence level of 95% was used and a p-value of < 0.05 was considered significant. Ethical approval was obtained from the University of Ilorin Ethical Review Committee. Furthermore, a letter of introduction from the Department of Epidemiology and Community Health, University of Ilorin was obtained and presented to the religious associations. Permission was also sought from the religious leaders before commencement of the study. Before administration of the questionnaire, written consent was sought from respondents.

RESULTS

A total of 271 respondents participated in the study. As shown in Table 1, majority (76.0%, n=206) of the respondents were males. Less than a third of the respondents (28.8%, n=78) were between the ages of 41 and 50 years, with a mean age of 51.48 years. About three-quarters (73.1%, 198) of the respondents had tertiary education and almost all of the respondents were Yoruba (93.0%, 252). About two-thirds of the respondents were Christians (64.2%, 174) and less than half (46.9%, 127) of them had served for 11-20 years in the various religious societies and denominations. Most of the respondents (87.1%, n=236) were aware of SCA, the awareness of the symptoms of SCA and the awareness of SCD being preventable accounted for 83.0% (225) and 82.7% (224) respectively. Majority of the respondents 241 (88.9%) were aware of genotype screening and a similar proportion 238 (87.8%) were aware of its importance (Table 2). Almost all of the respondents 215 (91.1%) knew that the SS genotype causes SCD. Regarding the knowledge of SCD, less than half 93 (39.4%) knew both parents contribute to a child acquiring SCD. Table 3 shows that 74.5% (202) of respondents said that they strongly agree with the fact that SCD is a genetic condition and not as a result of

spiritual attack, 40.2% (109) strongly agreed that SCD is serious and should be a hindrance to marriage, 64.2% (174) strongly agreed that genotype testing is necessary for intending couple to identify individuals who are carriers of the SCT, 47.6% (129) strongly agreed that people with Sickle cell Anaemia (SCA) or SCD should not be allowed to get married to one another. However, barely half of the respondents 42.4% (115) agreed that the fear of stigmatization can prevent an individual

from going for genotype testing, 43.5% (118) of the respondents agreed that the government should legislate compulsory pre-marital genotype determination, 45.8% (124) agreed that genotype testing should be a condition for marriage partner selection. Overall, only 35.2% (83) of the respondents had good attitude towards pre-marital genotype determination (Table 4). However, no statistically significant relationship between all the socio-demographic variables and the attitude of the respondents towards pre-marital genotype determination was elicited (Table 5).

TABLE 1: Sociodemographic characteristics of the study participants

Variable	Frequency	Percentage
Age group		
21 – 30	14	5.2
31 – 40	44	16.2
41 – 50	78	28.8
51 – 60	75	27.7
61 – 70	41	15.1
>70	19	7.0
Mean ± SD	51.48 ± 12.17	
Gender		
Male	206	76.0
Female	65	24.0
Educational Level		
None	2	0.7
Primary	29	10.7
Secondary	42	15.5
Tertiary	198	73.1
Ethnicity		
Yoruba	252	93.0
Hausa	4	1.5
Igbo	2	0.7
Others	13	4.8
Marital Status		
Single	26	9.6
Married	234	86.3
Widowed	11	4.1
Religion		
Christianity	174	64.2
Pentecostal	154	88.5
Orthodox	20	11.5
Islam	97	35.8
Ansarudeen	17	17.5
Ansarul Islam	35	36.1
Nasfat	17	17.5
Quareeb	28	28.9
Number of years served		
≤ 10	85	31.4
11-20	127	46.9
21-30	34	12.5
31-40	19	7.0
>40	6	2.2
Mean ± SD	16.93 ± 9.73	

TABLE 2: Awareness of Genotype Screening among Respondents

Variable	Frequency	Percentage
Awareness of genotype screening		
Yes	241	88.9
No	30	11.1
Sources (Multiple Response)		
Friends	18	6.6
Parents	10	3.7
Television or Radio	47	17.3
Health Worker	139	51.3
Posters	11	4.1
Religious organization	40	14.8
Seminars	54	19.9
Awareness of the importance of genotype screening?		
Yes	238	87.8
No	33	12.2
Sources		
Friends	22	8.1
Parents	15	5.5
Television or Radio	55	20.3
Health Worker	132	48.7
Posters	10	3.7
Religious organizations	42	15.5
Seminars	57	21.0
Awareness of the genotype that causes SCD (n=236)		
AA	3	1.3
AS	18	7.6
SS	215	91.1

TABLE 3: Attitude of Respondents towards Pre-Marital Genotype Screening

Variable	SD	D	U	A	SA
Sickle cell disease is a genetic condition and not a spiritual attack?	-	-	6 (2.2)	63 (23.2)	202 (74.5)
Sickle cell anemia is serious and should be a hindrance to marriage.	19 (7.0)	20 (7.4)	34 (12.5)	89 (32.8)	109 (40.2)
Genetic counseling against SCD is necessary for intending couples.	3 (1.1)	2 (0.7)	13 (4.8)	83 (30.8)	170 (62.7)
Genotype testing is necessary for intending couple who are carriers of the sickle cell trait.	6 (2.2)	-	8 (3.0)	83 (30.6)	174 (64.2)
People with sickle cell anemia or disease should not be allowed to get married to one another.	17 (6.3)	23 (8.5)	25 (9.2)	77 (28.4)	129 (47.6)
Sickle cell anemia is a killer disease	6 (2.2)	26 (9.6)	36 (13.3)	96 (35.4)	107 (39.5)
The fear of stigmatization can prevent an individual from going for genotype testing	9 (3.3)	38 (14.0)	31 (11.4)	115 (42.4)	78 (28.8)
Government should legislate compulsory premarital genotype testing to all unmarried people before marriage	6 (2.2)	25 (9.2)	30 (11.1)	118 (43.5)	92 (33.9)
Genotype testing should be a condition for marriage partner selection	1 (0.4)	20 (7.4)	22 (8.1)	116 (42.8)	112 (41.3)
Premarital genotype determination should not be a prerequisite for marriage	68(25.1)	56 (20.7)	46 (17.0)	62 (22.9)	39 (14.4)
People should be discouraged from marrying SCD victims	49(18.1)	89 (32.8)	30 (11.1)	65 (24.0)	38 (14.0)
Premarital genotype testing can help determine the compatibility of intending couples	7 (2.6)	10 (3.7)	12 (4.4)	100(36.9)	142 (52.4)
Premarital genotype determination is against my faith	103(38.0)	107(39.5)	15 (5.5)	18 (6.6)	28 (10.3)

TABLE 4: Religious Leaders' Knowledge and Attitudinal Scores Towards Pre-Marital Genotype Determination

Grading	Frequency	Percentage
Knowledge/Awareness of Premarital Genotype Screening		
Poor	9	(3.8)
Moderate	9	(3.8)
Good	218	(92.4)
Total	236	(100.0)
Attitude towards Premarital Genotype Screening		
Negative	153	(64.8)
Positive	83	(35.2)
Total	236	(100.0)

TABLE 5: Relationship between Socio-Demographic Variables of Respondents' Attitude towards SCD and Genetic Screening

Socio-demographic Variable	Attitude		Total N	χ^2	p value
	Poor n (%)	Good n (%)			
Age group					
21 – 30	7 (70.0)	3 (30.0)	10	2.218	0.818
31 – 40	26 (70.3)	11 (29.7)	37		
41 – 50	46 (63.9)	26 (36.1)	72		
51 – 60	46 (66.7)	23 (33.3)	69		
61 – 70	21 (61.8)	13 (38.2)	34		
>70	7 (50.0)	7 (50.0)	14		
Gender					
Male	113 (61.7)	70 (38.3)	183	3.394	0.065
Female	40 (75.5)	13 (24.5)	53		
Educational Level					
None	0 (0.0)	2 (100.0)	2	4.835	0.184
Primary	10 (50.0)	10 (50.0)	20		
Secondary	28 (77.8)	8 (22.2)	36		
Tertiary	115 (64.6)	63 (35.4)	178		
Ethnicity					
Yoruba	146 (67.3)	71 (32.7)	217	6.955	0.073
Hausa	0 (0.0)	4 (100.0)	4		
Igbo	0 (0.0)	2 (100.0)	2		
Others	7 (53.8)	6 (46.2)	13		
Marital Status					
Single	13 (59.1)	9 (40.9)	22	1.676	0.432
Married	138 (66.3)	70 (33.7)	208		
Widowed	2 (33.3)	4 (66.7)	6		
Religion					
Christian	91 (61.1)	58 (38.9)	149	2.075	0.150
Muslim	62 (71.3)	25 (28.7)	87		
Number of years served					
≤ 10	48 (65.8)	25 (34.2)	73	5.836	0.212
11 – 20	78 (70.9)	32 (29.1)	110		
21 – 30	15 (48.4)	16 (51.6)	31		
31 – 40	11 (61.1)	7 (38.9)	18		
>40	1 (25.0)	3 (75.0)	4		

DISCUSSION

Findings from this study showed that majority of the respondents had at least primary level of education (73.1%). Their sources of information about sickle cell anemia were health workers, friends, parents, posters, radio or television, seminars and religious organization. The religious leaders' knowledge level on pre-marital genotype testing was also found to be relatively high (92.4%) and as such, the religious leaders could be at the forefront in improving the

awareness on SCD through health talks with their congregants. The attitude of the religious leaders was rather poor (64.8%) with just about one-third (35.2%) of them displaying encouraging attitude. The proportion of respondents with awareness of the importance of pre-marital genotype screening was 87.8%. Most of the respondents 48.7% had their first awareness from health workers while only 3.7% had their first awareness from posters. Religious

organization was responsible for the first awareness of 15.5% of the respondents. These findings were consistent with the findings by Dibua in Eastern Nigeria,⁹ who reported that religious leaders' involvement was important in encouraging premarital screening. Moreover, religions tend to influence positive health behaviours and healthy lifestyle among their followers^{10,11, 12}. The success of premarital screening and genetic counseling programs and initiatives depends on an individual's attitude towards SCD, as well as the genetic screening and counseling on SCD. These findings are also consistent with that of Rumun¹² who established that due to the positive attitude towards SCD among Nigerians, the religious leaders may encourage more Nigerians to attend premarital screening and genetic counseling.¹²

Several researchers had carried out studies on Sickle Cell Disease (SCD) among young adults and adolescents.^{13-15,16} However, limited data exist as to the role religious leaders have to play as change agents if the prevalence of SCD must be reduced in Nigeria. Thus, this study provides knowledge on the role religious leaders can play in the prevention of conditions such as Sickle Cell Disease by having a positive attitude towards encouraging premarital genotype testing and genetic counseling of their congregation members, especially would-be spouses who are enabled to make informed decisions before marriage. Religious institutions should therefore see it as a must to include genotype screening as part of their premarital counseling topics for would-be couples.

Conclusion/Recommendation

Religious leaders in the study area have considerably high level of knowledge of SCD and pre-marital genotype screening. They would therefore serve as good advocates in awareness creation and community mobilization for haemoglobin genotype screening among the populace.

Limitations

The study was conducted among religious leaders in Ilorin metropolis, care should therefore be taken in generalizing the results of the study to other parts of the country.

REFERENCES

1. Awe G. Exploring the Role of Religious Leaders in Preventing Sickle Cell Disease in Nigeria. 2018;
2. Ottinger HD, Ferencik S, Beelen DW, Lindemann M, Peceny R, Elmaagacli AH, et al. Hematopoietic stem cell transplantation: Contrasting the outcome of transplantations from HLA-identical siblings, partially HLA-mismatched related donors, and HLA-matched unrelated donors. *Blood*. 2003;102(3):11317.
3. Odelola JO, Adisa O, Akintaro OA. Attitude towards pre-marital genetic screening among students of Osun State Polytechnics in Nigeria. *Int J Educ Adm Policy Stud*. 2013;5(4):538.
4. Diaku-Akinwumi IN, Abubakar SB, Adegoke SA, Adeleke S, Adewoye O, Adeyemo T, et al. Blood transfusion services for patients with sickle cell disease in Nigeria. *Int Heal [Internet]*. 2016 [cited 2022 Feb 2];8. Available from: <http://www.listbesthospitals.com/Hospitals-Nigeria/>
5. Olusegun Rasheed T. Premarital Sickle Cell Genetic Screening Knowledge, Attitude and Practice Compared Among Married and Unmarried Youths in Nigeria. *World J Public Heal*. 2018;3(3):76.
6. Olatona FA, Odeyemi KA, Onajole AT, Asuzu MC. Effects of health education on knowledge and attitude of youth corps members to sickle cell disease and its screening in Lagos state. *J Community Med Heal Educ*. 2012;2(7):163.
7. IA Durotoye, AG Salaudeen, AS Babatunde EB. Knowledge And Perception Of Sickle Cell

- Disease Among Senior Secondary School Students In Ilorin Metropolis. *Trop J Heal Sci.* 2013;20(2).
8. Deneulin JD & Séverine. Negotiating religion in everyday life: A critical exploration of the relationship between religion, choices and behaviour. *Cult Relig.* 2011;12(1):5976.
 9. Dibua U. Socio-economic and socio-cultural predisposing risk factors to HIV/Aids: Case study of some locations in Eastern Nigeria. *Internet J Trop Med.* 2010;6(2):9.
 10. Lewis A. Some positive benefits churches bring to communities. *Ethics Relig Lib Comm.* 2008;
 11. Ruijs, W. L., Hautvast, J. L., Kerrar, S., Van der Velden, K., & Hulscher ME. The role of religious leaders in promoting acceptance of vaccination within a minority group: A qualitative study. *BMC Public Health.* 2013;13(1):123.
 12. Rumun AJ. Influence of religious beliefs on healthcare practice. *Int J Educ Res.* 2014;2(4):3748.
 13. Ali M, Elshabory N, Elzeblawy H, Nehad H. Perception about Premarital Screening and Genetic Counseling Among Males And Females Nursing Students. 2018;7(1):517.
 14. Moussa S, Al-zaylai F, Al-shammari B, Al-malaq KA, Al-shammari SR, Al-shammari TF, et al. Knowledge and attitude towards premarital screening and genetic counseling program among female university students , Hail region , Saudi Arabia. 2018;16.
 15. Isah BA, Musa Y, Mohammed UK, Mto I, Kj A, Yunusa EU. Knowledge and Attitude Regarding Premarital Screening for Sickle Cell Disease among Students of State School of Nursing Sokoto . *Ann Int Med Dent Res.* 2016;2(3):2934.
 16. Oludare GO, Ogili MC. Knowledge, attitude and practice of premarital counseling for sickle cell disease among youth in Yaba, Nigeria. *Afr J Reprod Health.* 2013;