

Perceptions of Premarital Genotype Screening among Youths in Ikorodu Local Government, Lagos State

Ademiju P.U.

Department of Human Kinetics and Health Education
University of Lagos.

and

Gundu Iorumbur

Lagos State College of Health Technology
Yaba, Lagos.

Abstract

This study focused on perceptions of premarital genotype screening among youths in Ikorodu Local Government Area (LGA), Lagos State. Descriptive survey research design was used. Population is made up of youths in area of study. Sample of 400 (188 males and 202 females) respondents was used. Questionnaire with a reliability coefficient of 0.87 was used for data collection. Data were analysed using frequencies and percentages. Findings, among others, reveal that: 88.5% of the respondents have knowledge of genotype, 97.3.0% knew that genotype is inherited from parents and 99.0% agreed that sickle cell genes (SS) are inherited from parents. Also, 91.0% of respondents agreed that genotype screening before marriage is necessary, 93.0% indicated that their fiancé/fiancée must be screened before marriage, and 98.0% stated that screening before marriage will prevent sickle cell disease. It is recommended among others that government and religious institutions should make premarital genotype screening/testing compulsory; genotype and other related hereditary issues should be built into school curriculum.

Keywords: Premarital, Screening, Genotype, Sickle Cell, Youth,

Introduction

Marriage is a socio-cultural union of a man and a woman or women. Marriage can be contracted in accordance with traditional, religious and legal laid down rules and regulations. It is a legally recognized union between a man and a woman in which both are united sexually, cooperate economically, and may give birth to, adopt, or rear children (Strong, DeVault and Cohen 2005). Over the years, many marriages have been contracted without ascertaining the health status of the spouses, even though they often look

forward having healthy child or children, when this occurs children could be born with congenital, genetic or infectious diseases. One of genetically inherited diseases is sickle cell anaemia or sickle haemoglobin (HbS) resulting from parents' genotypes. Genotype according to Park (2011) is the total genetic constitution of an individual. The genotypes inherited from both parents present in an individual can be any of the following; AA or HbAA, which is the normal haemoglobin genotype in the red blood cells of a person, AS or HbAS, is a carrier of sickle

cell with one normal and one abnormal gene (sickle cell trait), SS or HbSS or SC or HbSC are abnormal haemoglobin genotypes in the red cells of a person. When a person inherits sickle gene "SS"/"HbSS" or SC/ HbSC (sickle cell haemoglobin C) from both parents, the individual suffers from sickle cell disorder. "SC" is a generally less serious and less common type of sickle cell disorder, (Ciesla, 2007).

Sickle cell disease is a genetic defect that is associated with genotype is a recessive hereditary disorder characterized by erythrocytes that contain sickled haemoglobin, (Anunobi, 2014). According to Adegoke, Adeolu and Adekile, (2015), Powars, Chan, Hiti, Ramicone and Johnson (2005), Mgbor and Emodi, (2004) sickle cell disorder is associated with a lifelong severe morbidity that often require prolong hospital admission, disabilities, foot ulcers and infections. Couples whose genotypes are HbAS have one-fourth chance of producing a baby with HbSS genotype (Igbeneghu, Olisekodiaka, Akinsehinwa & Okanlawon, 2017).

Sickle cell disease affects 20-25 million people globally and 50% of infants born with the disease die before the age of five years (Aygun & Odame, 2012). Piel (2015) reported that 305, 800 babies were born with sickle cell throughout the world in 2010, and there is an estimated increase of this number by 32% or 404,200 in 2050. World Health Organization (2006) showed that 5% of the world population are carriers of genes responsible for haemoglobinopathy and Nigeria is the highest carrier with about 24% of the population are carriers and about 2% or 150,000 of the total population children are

born with sickle cell disease annually. Egbochukwu and Imogie (2002) equally stated that Nigeria has the highest number of sickle cell diseases in the world with prevalence of 10 persons with sickle cell disease per 1000 population. Furthermore, Sickle Cell Aid Foundation (SCAF) (2014) reported that Nigeria is among the highest carrier of sickle cell anaemia in the world with more than 100,000 children born each year with the disorder. Piel, Hay, Gupta, Weatherall and Williams, (2013) report showed that out of three countries (Nigeria, Democratic Republic of Congo (DRC) and India that accounted 57% of the global total of new birth sickle cell anaemia but the contribution of the other countries are projected to decrease by 2050 while Nigeria is projected to increase from 30% to 35%.

A sickle cell anemia person or child is characterised with frequent illnesses and hospitalization and these pose finance and emotional stress and pressure on the family. Sickle cell disease and its grave consequence can be averted if people are exposed to premarital genotype screening especially if one of the reasons for marriage is procreation. Littleton and Engebretson (2010) define premarital sickle cell screening or testing is the process for screening couples going into marriage for genetic and blood transmitted diseases to prevent any risk of transmitting diseases to their children. Oyedele, Emmanuel, Gaji and Ahure (2015), noted that premarital genotype screening presents an opportunity for individuals to become informed about their genetic predisposition to diseases and for couples to be aware of the possible genetic characteristics of their unborn children. Pre-marital screening is a

comprehensive group of tests for those who are planning to get married aimed at reducing the number of children with inherited diseases, (Abd-Al-Azeem, Elsayed, Sherbiny and Ahmed, 2011). Al-Aama (2010) stated that the effectiveness of carrier screening programme depends largely on the awareness of the target population. Hence, knowledge of premarital screening for genetic disorder according to Abd-Al-Azeem, Elsayed, Sherbiny and Ahmed (2011) will allow individuals to take steps to reduce the risk of being carriers. The study will help in sensitising youths to identify with the importance of premarital genotype screening before marriage thereby preventing sickle cell disease and its associated stressful consequences.

Purpose of the Study

The general purpose was to investigate the perceptions of premarital genotype screening among youths in Ikorodu Local Government Area. Specifically, the study determined youths' perception of:

1. knowledge of premarital genotype screening,
2. necessity for premarital genotype screening,
3. influence of their religion belief on premarital genotype screening.

Research Questions

1. What are the indicators of knowledge of premarital genotype screening among the youths of Ikorodu Local Government, Lagos State?
2. What are the indicators of necessity for premarital genotype screening among the youths of Ikorodu Local Government, Lagos State?
3. What are the indicators of influence of their religion belief on premarital

genotype screening among the youths of Ikorodu Local Government, Lagos State?

Methodology

Design of Study: The research design adopted for this study was a descriptive survey study.

Area of the Study: The study took place at Ikorodu Local Government Area Lagos State.

Population for the Study: The population for the study comprised all single male and female youths between the ages of eighteen (18) and thirty (35) in Ikorodu Local Government Area.

Sample for the Study: A simple random sampling method was used to select 400 unmarried youths, 188 (47%) male respondents and 212 (53%) female respondents.

Instrument for Data Collection: Self-developed validated questionnaire was used for the collection of data that comprised items regarding the purpose of the study. The validated questionnaire was pilot tested on twenty respondents who were within the age range but outside the area of study to determine the reliability. Cronbach Alpha Coefficient was used to test the reliability and this result showed coefficient value of 0.87.

Data Collection Methods: The researchers and three trained research assistants administered questionnaire to the four hundred and thirty (430) copies of the questionnaire to the respondents and they retrieved after the respondents have filled their responses on the spot. Out of the four hundred and thirty (430) copies of the questionnaire administered, only four hundred (400) that were properly filled were used for the study.

Data Analysis Techniques: The data collected was analysed using frequency counts and percentage.

Findings of the study

Table 1: Percentage Responses of Youths on Knowledge Indicators of Premarital Genotype Screening (N = 400)

S/N	Knowledge Indicators	YES F (%)	NO F (%)
1.	I have heard about genotype.	354 (88.5)	46 (11.5)
2.	Genotype is the same as blood group.	48 (12.0)	352 (88.0)
3.	Genotype is inherited from parents.	389 (97.3)	11 (2.7)
4.	An individual's genotype can be spiritually manipulated.	7 (1.80)	393 (98.2)
5.	A person with genotype AS does not have Sickle Cell Disease	388 (97.0)	12 (3.0)
6.	Person with sickle cell disease inherited two sickle cell genes 'SS' from the father and mother.	396 (99.0)	4 (1.0)

Table 1 shows that out of 400 respondents, 354 (88.5%) respondents had knowledge of genotype; 352 (88%) respondents were of the opinions that genotype is not the same as blood group. Furthermore, 389 (97.3%) respondents agreed that genotype is inherited from parents, 393 (98.2%) respondents were of the opinions that an individual's genotype cannot be

spiritually manipulated, 388 (97%) respondents agreed that a person with genotype AS does not have Sickle Cell Disease; 396 (99%) respondents were of the opinion that a person with sickle cell disease inherited two sickle cell genes SS from the father and the mother.

Table 2: Percentage Responses of Youths on Necessity for Premarital Genotype Screening (N = 400)

S/N	Indicators of Perception of Necessity for PGS	YesF (%)	NoF (%)
1.	I have heard about genotype screening is necessary before marriage.	364 (91.0)	36 (9)
2.	All youths should undergo genotype screening before marriage.	363(90.8)	37 (9.2)
3.	My fiancé/fiancée has to be screened for genotype before our marriage.	372 (93.0)	28 (7)
4.	I would encourage my friend to be screened for genotype before marriage.	369(92.3)	31(7.7)
5.	Genotype screening before marriage is a must for all.	381 (95.3)	19 (4.7)
6.	Genotype screening before marriage is not an important determinant for marriage.	22 (5.5)	378 (94.5)
7.	Genotype screening before marriage can help in preventing sickle cell disease.	392 (98.0)	8 (2)
8.	Genotype screening should be made compulsory for all intending couples before allowing them to marry to reduce cases of sickle cell disease.	385 (96.3)	15 (3.7)
9.	If the genotype screening result shows that the intending couples are carriers of the sickle cell gene (AS), the intending couple should continue with the marriage.	4 (1)	396 (99)

Table 2 reveals that 364 (91%) respondents indicated that genotype screening before marriage is necessary, 363 (90.8%) respondents were of the opinions that all youths should undergo genotype screening before marriage. Also, 372 (93%) respondents reported that their fiancé/fiancée must be screened for genotype before marriage; 369 (92.3%) respondents agreed that they will encourage their friends to be screened for genotype before marriage. Further, 381 (95.3%) respondents agreed that genotype screening before marriage is to be done by all. The result further determinant to marry while 378 (94.5%) respondents were

of the opinions that genotype screening before marriage is an important determinant for marry, 392 (98%) respondents agreed that genotype screening before marriage helps to prevent sickle cell disease. Also, 385 (96.3%) respondents agreed that genotype screening should be made compulsory for all intending couples before marriage, 396 (99%) respondents were of the view that if intending couples' genotype screening result shows that they are carriers of sickle cell gene (AS) they should not continue with the marriage.

Table 3: Percentage Responses of Youths on Influence of Religious Belief on Premarital Genotype Screening (N = 400)

S/N	Indicators of Religious Belief Influence for PGS	Yes F (%)	No F (%)
1.	My religious organization usually insists on genotype screening before marriage.	378 (94.5)	22 (5.5)
2.	I will accept to do a genotype screening if my church/mosque insists on premarital genotype screening.	382 (95.5)	18 (4.5)
3.	Some religious organizations do not include genotype screening in their marriage counseling package.	33 (8.2)	367 (91.8)
4.	Religious beliefs make me go against the acceptance of premarital genotype screening.	21 (5.2)	379 (94.8)
5.	Premarital Genotype Screening has nothing to do with Religious Background.	392 (98)	8 (2)

The result on Table 3 shows that out of the 400 respondents, 378 (94.5%) respondents indicated that their religious organizations usually insist on genotype screening before marriage; 382 (95.5%) respondents were of the opinion that they will go for premarital genotype screening if their religious organisations insist. The result further showed that 367 (91.8%) respondents indicated that their religious organizations include genotype screening

in their marriage counseling package; 379 (94.8%) respondents were of the view that acceptance of premarital genotype screening do not make them go against their religious belief; 392 (98%) respondents agreed that premarital genotype screening has nothing to do with religious background.

Discussion of Finding

The result of the study revealed that 88.5% of the respondents had knowledge of genotype. This finding collaborates with result of the study of Faremi, Olatubi and Lawal (2018) which showed that 76.5% of the participants had knowledge of sickle cell disease. Furthermore, the study revealed that majority of the respondents, 97.3% and 99.0% were aware that sickle cell disease is inherited from parents. The finding is in line with Olarewaju, Enwerem, Adebimpe and Olugbega-Bello (2013) who stated that majority of their participants were aware that sickle cell disease is an inherited disorder.

The findings of the study revealed that a great number of the respondents were aware that premarital genotype is necessary before marriage. The finding collaborates Omolase, Agborubere, and Omolase (2010) who reported that majority of the respondent were aware of premarital genetic counselling. The result of the study showed that majority of the respondents believed that premarital genotype is important, should be made compulsory and must be done by all. The result is in line with Gbeneol, Brisibe and Ordiniola (2015) who stated that 85% respondents recommended that government should make premarital screening compulsory exercise for marriage and Omolase, Agborubere, and Omolase (2010) who opined that premarital counselling should be legalized.

The result further showed 93.0% and 92.3% of the respondents respectively indicated that they will encourage their fiance/fiancee and friends to be screened for genotype before marriage. The results

are in line with the result of Faremi, Olatubi and Lawal (2018) who reported that majority of the respondents express their desire of going for premarital genetic screening to avoid bringing forth a child with sickle cell disease. The results also collaborate with Kuteyi, Oyegbede, Bello and Osakwe (2009) who reported that majority of the respondents and their partners have had sickle cell screening. It is also in line with Ugwu (2016) who indicated that respondents believed it is important for people to go for premarital genetic counselling and screening for haemoglobin genotype and will also subject themselves for premarital genetic counselling and screening. The result of the study further collaborated the finding of Adeyemo, Oyenike, Omidije, and Oluwasola (2009) which revealed that respondents saw the importance of genetic diseases and agreed that premarital counselling will help in preventing the commonest genetic diseases. The finding of the study revealed a great percentage, 98% respondents stated that genotype screening will help to prevent sickle cell disease. The result of the study is in collaboration with the finding of Faremi, Olatubi, and Lawal, (2018) which revealed that most of the respondents were interested to go for premarital genetic screening to avoid bringing forth children with sickle cell disease. The finding of the study showed that 99% respondents were opinion that intending couple whose genotype result showed being carriers should discontinue with the marriage. The finding is in line with Igbenughe, Olisekodiaka, Akinsehinwa, and Okanlawon (2017) who reported that majority of their respondents indicated that they would have called off the

relationship with their partners if they were aware of their incompatible status. Also, 82% of the counselled and non-counselled respondents stated that they would give up their relationship if there was a risk of having a child with haemoglobinopathy. However, Alao and Nwannadi (2013) finding is at variance with the finding because 47% of the students who are involved in relationship indicated their intention to proceed with the marriage despite genotype incompatibility. Also, Kuteyi, Oyegbede, Bello and Osakwe (2009) study is not in line with the result of the study as their result showed that one third to two third of the respondents indicated that they will continue the relationship with their partners when either or both have haemoglobinopathy.

The result of the study showed that 382 (95.5%) respondents indicated they will go for premarital genotype screening if their religious organisation insist. The finding is in line with Gbeneol, Brisibe and Ordiniola, (2015) whose result revealed that most of the Pentecostal Christians and other Christian denomination respondents carried out premarital screening as it is a compulsory exercise for marriage in Southern Nigeria. Ezechukwu, Egbeonu and Chukwuka (2004) result of study showed that 58.8% of the respondents indicated that sickle cell traits screening is a pre-condition for church wedding. Also, the study of Omolase, Agborubere, and Omolase (2010) revealed that majority of the respondents supported the inclusion of religious leaders in premarital counselling. Equally, Monronkola and Fadairo (2007) showed that large percentage of the respondents believed that choice of marriage partner should not

be depended on genotypes, hence, subjecting oneself to genetic screening and counselling is a demonstration of lack faith in God.

Conclusion

Sickle cell disease can be averted or reduced if people are expose to premarital genotype screening and present themselves for screening. Also, if religious bodies should make premarital genotype screening a prerequisite for conducting marriage, this will drastically reduce sickle cell disease in the society. Furthermore, giving genotype health talk will motivate people to go for screening voluntarily and early.

Recommendations

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

1. Government and non-government organizations should provide genotype counselling and testing centers as done with HIV/AIDS counselling and testing centers in rural and urban areas.
2. Religious bodies and government should make premarital genotype screening a prerequisite for marriage.
3. There should be intensive enlightenment campaign on the need for genotype and genotype testing in social gathering, religious setting and on media.
4. Genotype and other related hereditary should be built into all levels of school curriculum.
5. Religious bodies should educate their congregation on the importance of genotype and premarital genotype screening.

6. The National Assembly and State Houses of Assembly should passage bills towards compulsory genotype and premarital genotype screening in the control of sickle cell scourge.
7. Hospitals should be mandated to screen children for genotype during routine clinic and give genotype talk to parents. This will produce informed parents who will in turn inform the children.

References

- Abd-Al-Azeem, S. T., Elsayed, E. T., El-Sherbiny, N. A., & Ahmed, L. A., (2011). Promotion of knowledge and attitude towards premarital care: An interventional study among medical students in Fayoum University. Retrieved from <http://www.academicjournals.org/jphe>,
- Abioye-Kuteyi, E.A., Oyegbede, O., Bello, I., & Osakwe, C (2009) Sickle cell Knowledge, premarital screening and marital decisions among Local Government workers in Ile-Ife, Nigeria. *African journal of primary health care and family medicine*.
- Adegoke, S.A, Adeolu, O.O, & Adekile, A.D. (2015) Sickle cell disease clinical phenotypes in children from South-Western. Nigeria. *Niger journal of clinical practice*. 18: 95 - 101
- Adeyemo, M., Oyenike, A., Omidiji, E., Olusesan, O., & Oluwasola, A. (2009), Level of awareness of genetic counseling in Lagos Nigeria: Its advocacy on the inheritance of sickle cell disease. *Genetic investigation*. 6(24) 2758-2765.
- Al-Aama, J. Y. (2010). Attitude towards mandatory national premarital screening for hereditary hemolytic disorders. *Health Policy*, 97, 32-37.
- Alao, O. O & Nwannadi, I. K. (2013) University students in Nigeria: Attitude, towards marriage in the face of haemoglobin genotype incompatibility. *The Nigerian health journal* 13(3) July - September.
- Anunobi, P. A (2014) Knowledge and attitude as correlate of adherence to premarital sickle cell screening among adult students of Nnamdi Azikiwe University Awka, Anambra State. MSc Dissertation
- Aygun, B. & Odame, I. (2012) A global perspective on sickle cell disease. *Journal pediatric blood cancer* 59: 386-390. *PubMed/NCBI*
- Ciesla B. (2007) The hormochronic anaemia caused by haemoglobinopathies. *In Herematology in practice*. B. Ciesla ed. FA Davies Company.
- Egbochukwu, E.O. & Imogie, A. O. (2002). Knowledge and attitude of Nigerian adolescents to pre-marital genotyping. Paper presented at the biennial meeting of the society for research on adolescents. From www.eric.ed.gov/ERICWebPortal.
- Ezechukwu, C. C., Egbeonu, I. & Chukwuka, J. O. (2004) Pre-marriage counselling as a tool for sickle cell disease awareness in Nigerians. *Sahel medical journal* 7(2) April - June 54 - 57
- Faremi, A. F., Olatubi, M. I. & Lawal, Y. R. (2018) Knowledge of sickle cell disease and premarital genotype screening among students of a tertiary educational institution in South Western Nigeria. *International journal of caring sciences*. Jan - April. 11(1).
- Gbeneol, P., Brisibe, S. & Ordinioha, B. (2015). Knowledge, attitude and uptake of remarital screening for the sickle trait among married couples in a semi-urban community in South-South Nigeria. *European journal of preventive medicine*, 3(3), 49-54.
- Igbeneghu, C., Olisekodiaka, M.J., Akinsehinwa, T.N. & Okanlawon, B.M (2017) Assessment of premarital haemoglobinopathies in Osogbo, Southwest, Nigeria. *Asian pacific journal of health science*. 4(2)
- Littleton, L. Y & Engebretson, J. C. (2010). *Maternity nursing care*. Seatle: Bangladesh
- Mgbor, N & Emodi, I (2004) Sensorineural hearing loss in Nigerian children with

- sickle cell disease. *International journal of pediatric otorhinolaryngology*. 68 (11) 1413 - 1416
- Moronkola, O.A & Fadiro, R.A. (2007) University students in Nigeria knowledge attitude towards sickle cell disease and genetic counselling before marriage. *International quarterly of community health education* 26(1): 85-93.
- Olarewaju, S.O, Enwerem, K, Adebimpe, W.O and Olugbenga-Bello, L.A (2013) Knowledge and attitude of secondary school students in Jos, Nigeria on sickle cell disease. *Pan African medical journal*, 15(127)
- Oludare, G.O. & Ogile, M. (2013) knowledge, attitude and practice of premarital counselling for sickle cell disease among youth in Yaba, Nigeria. *African journal of reproductive health* 17(4),
- Omolase, C. O, Agborubere, D. E. & Omolase, B. O. (2010) Awareness of genetic counselling among youths corpors in South-West Nigeria. *TAF preventive medicine bulletin* 9(6)
- Oyedele, E. A., Emmanuel, A., Gaji, L. D., & Ahure D, (2015). Awareness and acceptance of premarital genotype screening among youths in a Nigerian community. *International journal of medical and health research*.
- Park, K. (2011). *Park's Textbook of Preventive and Social Medicine*. Jabalpur, India. BANARSIDAS BHANOT Publishers.
- Piel, FB, Hay, SI, Gupta, S., Weatherall, OJ, & Williams, T.N. (2013) Global burden of sickle cell anaemia in children under five, 2010-2015. Modelling based on demographics, excess, mortality and interventions. *Journal of medicine* 10(7)
- Powars, D. R, Chan, L. S., Hiti, A., Ramicone, E. & Johnson, C (2005) Outcome of sickle cell anemia: a 4-decade observational study of 1056 patients. *Medicine Baltimore*. 84 (6) 1413 - 1416
- Sickle Cell Aid Foundation (2014). Summary of the survey carried out by SCAF. Retrieved from www.c:user/USER/Downloads/SCAF-Thesicklecell.htm
- Strong, B, DeVault, C & Cohen, T. F (2005) *The marriage & family experience. Intimate relationships in a changing society*. 9th edition. Wadsworth Thomson. Australia.
- Ugwu, N.I. (2016) premarital screening for sickle cell haemoglobin and genetic counselling: awareness and acceptability among undergraduate students of Nigerian University, *International Journal of Medicine and Biomedicine Research*. 5(1) Jan-April.
- World Health Organization (2006). Sickle Cell Disorder in African Region: Current situation and the way forward. World Health Organization Regional Committee for African AFR/RC56/17. Geneva.