

## AWARENESS OF PRE-MARITAL GENOTYPE SCREENING AMONG UNMARRIED UNDERGRADUATES IN ILORIN, KWARA STATE

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### **Abstract**

*Genotype screening is one of the many blood examinations carried out on individuals to determine their genetic dispositions to inherited genetic diseases such as sickle cell disease. It is however of paramount importance for every individual to check and determine his or her genetic makeup through genotype screening. Despite the efforts of the government, non-governmental organization, hospitals and health personnel in sensitizing the populace about genotype screening, the researcher found it so sadden and disheartening to have a high number of sickle cell anaemia patients among University of Ilorin students. It is on this note, the research examined the awareness of pre-marital genotype screening among unmarried undergraduates, University of Ilorin. Descriptive survey design was used while multi-stage sampling technique was used, where simple random sampling was used to select six faculties, proportionate sampling was used to select 1.5% (425) from each selected faculties. The research instrument for the study was a self-developed questionnaire titled "Awareness of Pre-marital Genotype Screening Questionnaire" (APGSQ). A total number of 425 questionnaires were distributed, collected and analyzed using frequency and percentage to analyze demographic data and ANOVA was used to test the postulated hypotheses. All hypotheses were tested at 0.05 level of significance. The findings from the study revealed that: i) unmarried undergraduates, University of Ilorin have awareness of PGS, ii) there was no significant difference in awareness of PGS among unmarried undergraduates, University of Ilorin based on religion. And iii) there was a significant difference in awareness of PGS among unmarried undergraduates, University of Ilorin based on age. Therefore, it was recommended among others that there should be more workshops, seminars and conferences should be provided for both in and out of the campus by school authority and religious leaders in order to improve students awareness on PGS irrespective of their religion and PGS should be made simple and accessible to students in order to encourage them and make them aware of it irrespective of age.*

**Key Words:** *Pre-marital, Genotype screening, Awareness.*

### **Introduction**

Genotype screening is one of the many blood examinations carried out on individuals to determine their genetic dispositions to inherited genetic diseases such as sickle cell disease. It is however of paramount importance for every individual to check and determine

his or her genetic makeup through genotype screening. Predominantly, genotype screening has formed a basic and fundamental way of preventing sickle cell disease which can be determined in the blood at any stage of life of an individual, since it is an inherited condition from both parents with incompatible genotypes. It is a known fact that, genetic make-up of unborn child/children would be determined by both parents; therefore, premarital genotype screening plays a major role in preventing products of genotype incompatibility if both partners are sincere in its uptake. Premarital genotype screening assists the unmarried young adult to make the right choice of future partners or spouses and prefer a great opportunity for the intending couples to make an informed decision about their marriages. This is in agreement with the submission of Tamhankar, Agarwal, Arya, Kumar, Gupta and Agarwa, (2009) that, screening before a marital union may be considered as a more important measure for primary prevention, than neonatal screening which serves as secondary or tertiary prevention.

According to World Health Organization (2015), there is tendency that two people who are carriers could give birth to a sickle cell anaemia child/children. The couple could even have all their children having sickle cell disease irrespective of how many. The fact that the victims of this genetic disorder suffer as a result of the ignorance or selfishness of their parents make it quite pathetic. According to Damilola, (2002), anyone who has ever witnessed the agony that an individual with sickle cell anaemia goes through during a period of crisis, will definitely not need the eloquence of a preacher before reconsidering taking genotype incompatibility as one of the numerous risks of life. The recognition of sickle cell anaemia as an important public health problem is necessary to ensure that young people are aware of sickle cell anaemia and how genotype test could assist them to avoid genotype incompatibility. Since the discovery of sickle cell disease by Herrick in 1904 as published in 1910, a lot of new information has been made available about the disease.

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. Hence, if one holds the view that one of the reasons for marriage is procreation, then worrying about genetic compatibility and avoiding genetic inheritance of grave consequences becomes something to strongly consider. The most common genetic diseases include sickle cell disease, cystic fibrosis and Tay - Sach's disease of which sickle cell disease is the commonest (Abd-Al-Azeem, Elsayed, El-Sherbiny& Ahmed, 2011). Therefore, it is of paramount importance for the unmarried individual to know his or her status and that of the intending spouse to prevent the problem of genotype incompatibility. Some factors that positively influence the practice of genotype screening include age, being married, parental educational background and being in science – related field (Egbochukwu & Imogie, 2011).

The prevalence of genetic disease is becoming higher in the society, creating more stress despite the difficulties the people encounter in life. Method of preventing genetic disease includes premarital screening and genetic counseling, prenatal diagnosis and preconception diagnosis to mention just few (WHO, 2006). It is a disease that affects the red blood cell and is a longlife ailment which has been with man since the existence of man. Sickle cells affect all races of the world; it affects the people of tropical Africa, Mediterranean

Sea, Middle East and South India. It has contributed significantly to high childhood mortality rate (Afolayan&Jolayemi, 2011). According to Omolase et.al, (2010) in a study conducted among youth corpers in a Nigeria community. The study was conducted between January and March, 2009 among youth corpers in Owo to determine the awareness of sickle cell disease among them. One hundred and sixteen out of the two hundred and fifty youth corpers in the community were selected. 97.4% were aware of sickle cell disease. About 30.1% knew of sickle cell disease through lectures and seminars. While 69% were aware of their haemoglobin genotype. Abioye-Kuteyi, Oyegbade, Bello and Osakwe (2009) observed that though the 69.7% of their respondents had tertiary education, only 31.0% had good knowledge of genetic disease, while about a quarter of the married respondents and those engaged to a partner did not know their partner's genetic status. These findings indicated the necessity of functional education, early life genetic education, screening and counseling.

Islam (2012) found that many people are aware of genotype have positive attitude towards it and most time encourage to go for it before marriage in Islam. Pre-marital genotype screening is crucial in identifying potential health risks for couples intending to get married as well as for their siblings. Couples are tested for infectious, blood-transmitted and genetic diseases, the latter being especially important in consanguineous marriages (marrying a blood relative), since such marriages put partners at increased risk of having children with inherited disorders such as autosomal recessive disorders (El Mouzan, Al Salloum, Al Herbish, Qurachi& Al Omar, 2008).Kivipelto, Kindi, Rujaiabi, and Kendi (2014) found out that virtually all the participants (98%) believed that adults generally have the right to know their genotypes. A majority of participants (63%) believed that older people generally have knowledge and have undertaken test for their genotype screening. A similar majority (67%) felt that teenagers, aged 13 to 18, should have the right to undergo and know their genotype if they either have parental permission or are emancipated minors.

It is important for would-be-couples to undergo genotype screening as sensitization have been on over time for early assurance of their genotype compatibility but it is so sadden and disheartening to have observed the high number of sickle cell anaemia patients among University of Ilorin students at this era despite various efforts of the government, hospitals, health personnel and non-governmental organizations in sensitizing the populace on the way and how genotype screening particularly pre-maritally can prevent the dangers of genotype incompatibility among which are financial involvement on health maintenance, psychological trauma, emotional instability and divorce in marriages to mention but a few on the part of parent, agony or pain crisis, psychological issues, educational setback, physical challenges and very often short life-span on the part of the products of genotype incompatibility. Some youths hide under their religions, believing that nothing can go wrong with them when being prayerful about their marriages. Some even, after the result confirmed incompatibility in their genotypes, went ahead to marry claiming their God will perfect the whole journey for them. These are the categories of people that are still producing products of incompatibility, that is, the sickle cell anaemia child/children. Therefore, this study examined the awareness of unmarried undergraduates of University of Ilorin towards premarital genotype screening.

### Research Question

The researcher answered this question:

1. Are unmarried undergraduate students aware of premarital genotype screening?

### Hypotheses

The following hypotheses were tested:

1. Unmarried undergraduate students will not significantly differ in awareness of premarital genotype screening based on religion.
2. Unmarried undergraduate students will not significantly differ in awareness of premarital genotype screening based on age

### Methodology

Descriptive survey research design was used in this study. The population for this study comprised all undergraduate of the University of Ilorin, Nigeria with forty-three thousand nine hundred and eighty three (43,983) spread across the fifteen faculties in the University (General Academic office, 2019). Multi-stage sampling technique consisting of simple random, proportionate sampling techniques was use to select the sample size of 425 (1.5%) undergraduates who served as respondents for this study.

**Table 1: Sample size from the selected faculties of University of Ilorin**

S/N	Faculties	No. of students per faculty	Sample selected per faculty (1.5%)
1.	Physical Science	3,382	51
2.	Life Science	3,636	54
3.	Social Science	3,788	57
4.	Arts	4,761	71
5.	Education	9,409	141
6.	Engineering	3,438	51
	<b>Total</b>	<b>28,414</b>	<b>425</b>

**Source: General Academic office (2019)**

Researchers developed structured questionnaire was used for data collection for the study titled "Awareness, of Premarital Genotype Screening Questionnaire" (APPGSQ)". The questionnaire consists of two sections namely; Section A and B. Section A comprise four items which sought the demographic data of the respondents. The items include age, gender, religion and faculty. Section B contains items which sought the information on knowledge of premarital genotype screening of unmarried undergraduates of University of

Ilorin, Ilorin Nigeria. The response mode of the questionnaire for was Yes or No. To ascertain the reliability of the instrument in this study, the researchers adopted the split half method of reliability. Twenty copies of questionnaire was administered to twenty respondents in Kwara State University, Malete which is outside the study area but share the same characteristics with the population. The result after the administration was analysed using Spearman Brown. A correlation coefficient of 0.87 was obtained which was considered reliable for the study. The research questionnaire was distributed to the respondents by the researchers and three research assistants and recovery was ensured. The completed copies of the questionnaire was collected, collated, coded, entered and analyzed. Descriptive statistics of frequency and percentages was used to analyze the demographic characteristics of respondents and answered the research question while analysis of variance (ANOVA) was used to test the hypotheses. The decision criteria for the hypotheses were tested at 0.05 level of significance.

## Results

**Table 2: Demographic data of respondents**

Characteristics	Frequency	Percentage %
<b>Religion</b>		
Islam	274	64.5
Christianity	137	32.2
Others	14	3.3
<b>Total</b>	<b>425</b>	<b>100</b>
<b>Age Range</b>		
16-18 years	77	18.1
19-21 years	157	36.9
22-24 years	113	26.5
Above 25 years	78	18.5
<b>Total</b>	<b>425</b>	<b>100</b>

Table 2 shows that 274(64.5%) respondents that took part in the study practiced Islam, 137(32.2%) practiced Christianity and 14 (3.3%) of the respondents practice traditional religion. The table further shows that respondents within the age range of 16-18 years were 77 (18.1%), age range 18-21 years were 157 (36.9%), 22-24 years were 113 (26.5%) and respondents with the age of 25 years and above were 78 (18.5%).

**Research Question1:** Are unmarried undergraduate students aware of premarital genotype screening?

**Table 3: Awareness of premarital genotype screening by unmarried undergraduate students**

S/N	Items	Yes	No
1	Are you aware of genotype screening?	350 (82.4%)	75 (17.6)
2	Are you aware of sickle cell disease?	355 (83.5%)	70 (16.5%)
3	Genotype test is best done before marriage	349 (82.1%)	76 (17.9%)
4	Genotype test is to ascertain genotype match among couple	348 (81.9%)	77 (18.1%)
5	Is sickle cell disease curable?	371 (87.3%)	54 (12.7%)
6	Is sickle cell disease a lifelong disease?	362 (85.2%)	63 (14.8%)
	<b>Mean</b>	<b>355 (83.5%)</b>	<b>70 (16.5%)</b>

Table 3 shows the answer to the research question one. The mean values of respondents that said Yes was 355 (83.5%) which is greater than the number of respondents that said No 70 (16.5%). Therefore, this shows that unmarried undergraduate students are aware of premarital genotype screening.

**Ho1:** Unmarried undergraduate students will not significantly differ in awareness of premarital genotype screening based on religion.

**Table 4: Analysis of Variance on difference on awareness of premarital genotype screening among unmarried undergraduate Students based on religion**

Model	Sum of squares	Mean square	df	F	p-value	Decision
Between groups	3.571	0.714	5			
Within groups	357.027	0.852	419	0.838	0.532	Ho Retained
Total	1656.221		424			

$F = 0.838$   $p > 0.05$  at  $df = 424$

Table 4 reveals that F-calculated value is 0.838, and the p-calculated value is 0.532, which is greater than 0.05 level of significance. This shows that the hypothesis which states

that unmarried undergraduate students will not significantly differ in awareness of premarital genotype screening based on religion is retained. This implies that there is no significant difference in awareness of unmarried undergraduate students on premarital genotype screening based on religion. The HSD Post Hoc test conducted reveals that there is difference between Islam and Christianity with mean difference of 0.66239 and significance of 0.021

**Ho2:** Unmarried undergraduate students will not significantly differ in awareness of premarital genotype screening based on age.

**Table 5: Analysis of variance on difference on awareness of premarital genotype screening among unmarried undergraduate Students based on age**

Model	Sum of squares	Mean square	df	F	p-value	Decision
Between groups	4.294	0.859	5			
Within groups	161.296	0.385	419	2.231	0.004	H <sub>0</sub> Rejected
Total	1656.221		424			

F = 2.231, p > 0.05 at df = 424

Table 5 above reveals that F-calculated value is 1.530, and the p-calculated value is 0.004, which is less than 0.05 level of significance. This shows that the hypothesis which states that unmarried undergraduate students will not significantly differ in awareness of premarital genotype screening based on age is rejected. This implies that there is a significant difference in awareness of unmarried undergraduate students on premarital genotype screening based on age. The HSD Post Hoc test conducted reveals that there is difference between 19-21 and 22-24 with mean difference of 0.598745 and significance of 0.032

### Discussion of Findings

Research question one implies that unmarried undergraduate students of University of Ilorin are aware of premarital genotype screening. This is in support of findings of Omolase, Odeyemi, Onajole, and Asuzu (2010) who found out in a study conducted among youth corpers in a Nigeria community. The study was conducted between January and March, 2009 among youth Corpers in Owo to determine the awareness of sickle cell disease among them. One hundred and sixteen out of the two hundred and fifty youth corpers in the community were selected. 97.4% were aware of sickle cell disease. About 30.1% knew of sickle cell disease through lectures and seminars. While 69% were aware of their haemoglobin genotype. The finding is against the findings of Abioye-Kuteyi, Oyegbade, Bello and Osakwe (2009) observe that though the 69.7% of their respondents had tertiary education, only 31.0% had good knowledge of genetic disease, while about a quarter of the

married respondents and those engaged to a partner did not know their partner's genetic status. These findings indicated the necessity of functional education, early life genetic education, screening and counseling.

Hypothesis one result implies that there is no significant difference in awareness of unmarried undergraduate students on premarital genotype screening based on religion. This is in contrast with study of Islam (2012) who found that many people are aware of genotype have positive attitude towards it and most time encourage to go for it before marriage in Islam. Pre-marital genotype screening is crucial in identifying potential health risks for couples intending to get married as well as for their siblings. Couples are tested for infectious, blood-transmitted and genetic diseases, the latter being especially important in consanguineous marriages (marrying a blood relative), since such marriages put partners at increased risk of having children with inherited disorders such as autosomal recessive disorders (El-Mouzan, Al-Salloum, Al-Herbish, Qurachi & Al-Omar, 2012).

Hypothesis two result implies that there is significant difference in awareness of unmarried undergraduate students on premarital genotype screening based on age. This is in support with findings of Kivipelto et al., (2014) who found out that virtually all the participants (98%) believed that adults generally have the right to know their genotypes. A majority of participants (63%) believed that older people generally have knowledge and have undertaken test for their genotype screening. A similar majority (67%) felt that teenagers, aged 13 to 18, should have the right to undergo and know their genotype if they either have parental permission or are emancipated minors.

## Conclusion

Unmarried undergraduates of University of Ilorin were aware of premarital genotype screening. There was a difference in awareness of unmarried undergraduates of University of Ilorin on premarital genotype screening based on religion and also there was a difference in awareness of unmarried undergraduates of University of Ilorin on premarital genotype screening based on age. Based on the conclusions of the study, the following recommendations were made:

1. There should be continuous sensitization awareness through seminar and conferences to maintain and improve awareness of premarital genotype screening among unmarried undergraduates of University of Ilorin
2. More workshops, seminars and conference should be provided for both in and out of the campus by school authority and religious leaders in order to improve students awareness of premarital genotype screening irrespective of their religion.
3. Premarital genotype screening should be made simple and accessible to students in order to encourage them and make them aware of it irrespective of age

## References

- Abd-Al-Azeem, S.T., Elsayed, E.T., El-Sherbing, N.A. & Ahmed, L. A. (2011). Promotion of knowledge and attitude towards premarital care: *An intervention study among medical students in Fayoum*. Available from [http:// www.academicJournals.org /jphe](http://www.academicJournals.org/jphe), accessed on 11<sup>th</sup> November, 2022.

- Abioye-Kuteyi, E. A., Oyegbeale, O., Bello, I. & Osakwe, C. (2009). Sick cell knowledge, premarital screening and marital screening in Nigeria. *African Journal of Primary Health Care and Family Medicine*, 11 (1), 55-57.
- Afolayan J. A. & Jolayemi F. T. (2011). Parental attitude to children with sickle cell disease in selected health facilities in Irepodun L.G.A of Kwara State Nigeria. *Ethnicity Medicine*, 6 (1), 33 -40.
- Anie, K. A., Egunjobi F. E. & Akinyanju, O. O. (2016). Psychosocial impact of sickle cell disorder: *Prospective from A Nigerian setting. Globalization and Health*. 6(2), 44-47. *Dol:10.1186 / 1744 -8603 -6 -2*.
- Egbochukwu, E. O. & Imogie, A. O. (2011). Knowledge and attitude of Nigerian adolescents to premarital genotyping. *Paper presented at the biennial meeting of the society for research on adolescents*. from <http://www.eric.edu.gov/ERICwedportal>, Retrieved on 16<sup>th</sup> November, 2022.
- Islam, K., L. (2012). Awareness of Sick Cell among People of Reproductive Age: Dominicans and African Americans in Northern Manhattan, *Journal of Urban Health: Bulletin of the New York Academy of Medicine*. doi: 10.1007/s11524-011-9618-x 2011.
- Kivipelto H, Kindi, R., A, Rujaiabi, S., A & Kendi, M., A. (2014) Knowledge and Attitude of University Students towards Premarital Screening Program. *Oman Med J.*, 27(4): 291-296.
- Omolase, K. I., Odeyemi, K., A, Onajole, A., T and Asuzu M., C. (2010). Effects of health education on knowledge and attitude of youth corps members to sickle cell disease and its screening in Lagos State. *Journal of Medicine and Health Education* 14(2), 124-129.
- Saraf, S. I., Molokie, R. E., Nouraie, M., Sable, C. A. & Luchtman-Jones, L. (2014). Differences in the clinical and genotypic presentation of sickle cell disease around the World. *Pediatrics Respiratory Reviews*. 15(1), 4-12.
- Tamhankar, P. M., Agarwal, S., Arya, V., Kumar, R., Gupta, U. R. & Agarwa, S. S. (2009). Prevention of homomygous beta bb-thalassemia by premarital screening and prenatal diagnosis in India. *Prenatal Diagnosis*, 29(1)83-88. doi: 10.1002/pd.2176.
- World Health Organization (2006). Sickle cell anemia report by the secretariat. Fifty ninth World health assembly. Retrieved from [http://apps.who.int/gb/ebwha/pdf\\_files/WHA\\_59/A\\_59-9-en.Pdf](http://apps.who.int/gb/ebwha/pdf_files/WHA_59/A_59-9-en.Pdf).
- World Health Organization (2015). Sickle cell disorder in African Region: Current situation and the way forward. World Health Organization Regional Committee for African AFR\ ec 56| 17 Geneva.