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ASSESSMENT OF ATTITUDE TOWARDS PREMARITAL GENOTYPE SCREENING FOR SICKLE CELL DISEASE AMONG UNIVERSITY STUDENTS IN NORTH WEST ZONE OF NIGERIA

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Abstract

This study assessed the attitude towards premarital genotype screening for sickle cell disease among university students in the North-West zone of Nigeria. A descriptive survey research design was adopted. The population comprised 70,530 undergraduate students in the ten Federal universities in the North-West zone of Nigeria. The researcher sampled 572 students through multi-stage sampling techniques, which comprised of cluster, simple random and proportionate sampling techniques. A researcher-developed close-ended questionnaire was used for data collection. Out of the 572 copies of the questionnaire administered, 534 (93%) were used for data analysis; the remaining 38(7%) were considered invalid as they were not duly filled by the respondents. Descriptive statistics of frequencies and percentages were used to describe the demographic characteristics of the respondents and answer to the research question was provided using means and standard deviations. Inferential statistics of a one-sample t-test was used to analyze the hypothesis at a 0.05 level of significance. The findings of the study revealed that the respondents have an insignificantly positive attitude towards premarital genotype screening for sickle cell disease (mean = 2.53 and p-value = 0.164). Based on the findings of the study, the researcher concluded that university students in the North-West zone of Nigeria have a positive attitude towards premarital genotype screening for sickle cell disease. The researcher recommended that university curriculum planners should include the importance of premarital genotype screening in the school curriculum and the need for religious societies in the universities such as the Muslim Student Society (MSS) and Fellowship Christian Society (FCS) to periodically organize programs aimed at sensitizing their followers about the importance of premarital genotype screening for sickle cell diseases to correct wrong attitudes.

Keywords: Attitude, Premarital Genotype Screening, Sickle Cell Disease.

Introduction

Sickle cell disease is the most common killer genetic disorder worldwide with the highest occurrence in sub-Saharan Africa, Spanish-speaking regions (South America, Central America and the Caribbean), Saudi Arabia, India, Mediterranean countries such as Turkey, Greece and Italy. (Centres for disease control, 2017). About 5-7 % of the world global population have an abnormal haemoglobin gene and sickle cell disease is the most predominant (World Health Organization, 2006). Sickle disease results from the inheritance of abnormally structured haemoglobin called sickle haemoglobin. Inheritance of 2 copies of the abnormal haemoglobin will result in sickle cell disease while the inheritance of one copy of the abnormal haemoglobin and one copy of the normal haemoglobin will result in sickle cell trait. The most common types of sickle cell disease are Sickle Cell Anemia (HbSS), Sickle Hemoglobin- C Disease (HBSC), Sickle Beta-Plus Thalassemia (HbSBthal), Sickle Beta Zero-Thalassemia (HbSB0) (Centres for Disease Control, 2016).

Globally, about 300,000 babies are born with sickle cell disease annually and the figure has been projected to rise to 400,000 by 2050 (Piel, Hay, Gupta, Weatherall, Williams, 2013). In Nigeria, sickle cell trait prevalence is 24% of the 160 million population while the disease occurs in 20 per 1000 births; about 150,000 babies are born with the disease annually in the country, that is, 50% of the global

sickle cell disease births occur in Nigeria (World Health Organization, 2006). This estimate is challenging because many babies are born outside the hospital and may die before they are being diagnosed with the disease, however, in a regional newborn screening program, it was discovered that approximately 700,000 babies are born annually in the country and about 3 per cent of the newborn have sickle cell disease (Debaun & Galadanci 2018). A large retrospective study conducted in Benin City, South-South Nigeria by Nwogoh, Adewoyin, Iheanacho, and Bazuaye (2012) revealed that sickle cell disease prevalence was 2.39% while the carrier prevalence was about 23% of the population.

Sickle cell disease reduces the quality of life of its victims. The disease makes life difficult for those affected and their family members. Most patients die in childhood, while those that live long actually live a hard life because the management of the disease is a long-life, tiring and costly procedure. The disease leads to serious complications like anaemia, stroke, hypertension, acute chest syndrome, multi-organ failure syndrome among others, and if untreated, they may lead to death (Ademola, 2015). The patients often experience sudden attacks characterized by extreme pain in the arms, the back, the knees, the legs, the chest, and the stomach. The attack is termed ‘’sickle cell crisis’’ and may last for several hours to days. These complications are a result of the occlusion of blood vessels by the sickled cells. Sickle cell disease leads to serious social, financial and psychological problems in families. The study of Adegoke and Kuteyi (2012) revealed that 73.3% of the respondents (parents of children with sickle cell disease) reported that the time spent in caring for the child makes them lose income or financial benefits, 32.1% reported that they always feel angry with themselves or the child, 84.4%% always feel angry and depressed. In most cases, the mothers do not receive support from other family members in caring for the child, this results in a family crisis, frequent quarrels, disharmony and eventually divorce. The fathers marry new wives to give them healthy children. On the part of the victims, they are often stigmatized, and as such, they are always having negative thoughts which eventually make them depressed, sickle cell disease also disrupts their academic pursuit, making them less productive and thus, slows economic growth. All these could be avoided through premarital genotype screening for sickle cell disease and avoiding risk marriages. Management of sickle cell disease is not adequate in the countries where the disease is prevalent. According to MedlinePlus (2011), the goals of treating sickle cell disease are to manage the disease complications which include pain, infections, anaemia, stroke, and organ damage.

To reduce the prevalence of sickle cell disease, the World Health Organization (2008) identified some appropriate ways of preventing its occurrence especially in countries with the highest prevalence. These are carrier identification through premarital genotype screening, prenatal diagnosis, preconception genetic diagnosis and in-utero transplantation. However, prevention of the disease through premarital genotype screening to avoid risk marriage is the most reliable method. Premarital genotype screening is a blood test done especially by prospective couples to know the possible genotype of their unborn children (Oyedele, Emmanuel, Gaji & Ahure, 2015). Hence, if couples have plans of procreation, then it is a must to worry about the health condition of their unborn children. Premarital genotype screening for sickle cell disease and other haemoglobinopathies has since been mandated in several countries in the Middle East and North Africa (Al-Allawi, Jalal, Faraj, Shalli & Hamamy, 2013). The researcher observed that some religious organizations in Nigeria have also recently mandated premarital genotype screening for sickle cell disease, but most times it is done only a few days before the wedding when the prospective couples might find it hard to accept the negative results.

As observed by the researcher, there is a high level of ignorance within the area of the study, as a result, the residents believe that all blood tests done before marriage are to check Human Immunodeficiency Virus (HIV) status and other Sexually Transmitted Diseases (STDs) which are meant for the promiscuous and couples who do not trust each other. Another challenge is the religious belief of the residents, that is, belief in destiny and readiness to accept a diseased child as one’s fate. The emotional feeling of love or fear of losing a loved one due to negative results is also a major

challenge. Because of love, some people could go to an extent of deceiving their intending partners by lying about their results, the truth eventually gets revealed but mostly after the damage has been done. It is in view of this that the researcher deemed it fit to conduct the study.

Material and Methods

A descriptive survey research design was used for the study. The population of the study comprised of seventy thousand, five hundred and thirty (70,530) undergraduate students admitted in the year 2017 and 2018 in the ten (10) Federal universities in the North-West zone of Nigeria (Joint Admissions and Matriculation Board, 2018). The rationale behind choosing these set of students as the population of the study is that at the time of the study, they were expected to be graduating soon, and as such, were presumed to enter wedlock, a stage where important decisions such as premarital genotype screening for sickle cell disease are made. The instrument for the study was a researcher-developed close-ended questionnaire. The sample of the study comprised 572 students drawn through multi-stage sampling techniques as follows:

Stage one: The seven States in the North-West zone of Nigeria were clustered into 2 based on proximity.

Stage two: Two States were selected each from the two clusters using a simple random sampling technique. The names of the States in the first cluster were written on pieces of paper, folded and then put in a container. The researcher randomly picked two folded pieces of paper one after the other from the container, unfolded them and recorded the names of the selected States. The same procedure was followed to select the States from the second cluster.

Stage three: The same simple random sampling technique used in stage two was used to select two universities from the selected States in each cluster.

Stage Four: Proportionate sampling technique was used to calculate the number of respondents from each of the selected universities who were administered copies of the questionnaire.

Stage five: Respondents in the selected universities were selected by ‘’Yes’’ or ‘’No’’ simple random sampling technique. Students that met the criteria for the study (that is, those admitted in the year 2017 and 2018) found within the areas chosen for data collection (eateries, hostels, lecture halls, gymnasia and gardens) were allowed to pick “Yes” or “No” written on pieces of paper and folded. Those who picked “Yes” and were willing to fill a copy of the questionnaire and submit it on the spot were given a copy of the questionnaire, while those who picked “No” or those not willing to fill a copy of the questionnaire and submit on the spot were not given the questionnaire. The researcher waited for them to fill the questionnaires and retrieved them. Five hundred and seventy-two (572) copies of the questionnaire were administered and all were retrieved.

Results and Discussion

All the 572 (100%) copies of the administered questionnaire were retrieved, however, 534 (93%) were used for data analysis because 38 (7%) were not duly filled by the respondents, and as such, they were considered invalid. The data was analyzed using Statistical Package for Social Science (SPSS) IBM version 26 and presented in the tables below:

Table 1: Demographic Characteristics of the Respondents

Variable	Option	Frequency	Per cent
Age range (years)	< 22years	280	52.4
	22-26years	161	30.2
	27 – 31years	82	15.4
	32 – 36years	5	0.9
	>36years	6	1.1
	Total	534	100.0
Gender	Male	279	52.2
	Female	255	47.8
	Total	534	100.0
Religion	Islam	364	68.2
	Christianity	167	31.3
	Traditional	3	0.5
	Total	534	100.0

Table 1 reveals that most of the respondents (280; 52.4%) were below 22years of age. This skewness is generally expected since most students are generally young. Students between 22-26 years were 161 (30.2%.) and 27-31 years were 82 (15.4%). The remaining respondents were ages 32-36 (5; 0.9%) and >36years (6; 1.1%) respectively. Concerning the gender of the respondents, the majority (279; 52.2%) of the respondents were males, while the remaining (255; 47.8%) were females. The representation could be said to be proportionate in ratio to the male/female in the universities within the zone. In terms of religious affiliation, most (364, 68.2%) respondents were of the Islamic faith. Those of the Christian faith were (167; 31.3%), while 3 (0.5%) of respondents belonged to the Traditional religion. The dominance of the Islamic faith among the respondents could be attributed to the location where the study was conducted.

Research Question: What is the attitude of university students in the North-West Zone of Nigeria towards premarital genotype screening for sickle cell disease?

Table 2: Mean of Responses on Attitude towards Premarital Genotype Screening for Sickle Cell Disease Among University Students in North-West Zone of Nigeria.

S/N	Attitude	Mean	Std dev.
1	I think premarital genotype screening for sickle cell disease is necessary	2.11	0.764
2	I think the screening will help reduce the burden of sickle cell disease in families	3.28	0.876
3	I feel the screening will reduce the prevalence of sickle cell disease in the country	3.29	0.865
4	I feel the screening will reduce regular pains experienced by individuals	3.19	0.837
5	I think the screening will help reduce worries about giving birth to a child with sickle cell disease	2.55	0.847
6	I feel the screening reveals a lack of trust among intending couples	3.02	1.037
7	I believe the screening is against my religious belief	2.13	0.842
8	I feel the screening increases one's chance of getting married	1.58	0.784
9	I think the screening causes conflict among intending couples	1.83	0.882
10	I prefer not exposing my genotype status to the public	2.35	0.892
	Aggregate mean	**2.53**	**0.572**

(Fixed mean = 2.5)

Table 3 shows that the respondent's attitude towards premarital genotype screening for sickle cell disease was positive with an aggregate mean of 2.53. The mean score is within the range of the midpoint average of 2.5 or slightly higher. Most (3.28) of the students believed that the screening will help reduce the burden of sickle cell disease in families, reduce the prevalence of sickle cell disease in the country (3.29), will reduce regular pains experienced by individuals (3.19) and will help reduce worries about giving birth to a child with sickle cell disease (2.55). The aggregate mean score of 2.53 and a standard deviation of 0.572 for the table implies a positive attitude towards premarital genotype screening for sickle cell disease among university students in the North-West zone of Nigeria.

Hypothesis: University students in the North-West zone of Nigeria do not have a significant attitude towards premarital genotype screening for sickle cell disease.

Table 3: Analysis of One-Sample t-test on Attitude towards Premarital Genotype Screening for Sickle Cell Disease among University Students in North-West Zone of Nigeria

Variable	N	Mean	Std. Dev.	Std. Error	t-value	DF	p-value
Attitude	534	2.53	0.572	0.025	1.392	533	0.164
Test mean	534	2.50	0.000	0.000			

(t-critical = 1.96, $p > 0.05$)

Table 3 reveals that the attitude of the university students towards premarital genotype screening for sickle cell disease in the zone was not statistically significant. The observed t-value obtained at 533 degree of freedom was lower than the critical value (1.96). The p-value for the test was 0.164 ($p > 0.05$). This means that the university students in the North-West zone of Nigeria have an insignificant attitude towards premarital genotype screening for sickle cell disease.

Discussion

The findings of the study showed that the respondent's attitude towards premarital genotype screening for sickle cell disease was positive (2.53) but not adequate. This is because even though most of the students believed that the screening will help reduce the burden of sickle cell disease in families (3.28), reduce the prevalence of sickle cell disease in the country (3.29), reduce regular pains experienced by individuals (3.19), reduce worries about giving birth to a child with sickle cell disease (2.55), they did not agree that premarital genotype screening for sickle cell disease is necessary (2.11) or that the screening increases one's chance of getting married to the right partner (1.58). They also believed that the screening reveals a lack of trust among intending couples (3.02). In the test of the related null hypothesis, the expressed attitude towards premarital genotype screening for sickle cell disease was found to be not significant ($p>0.05$). This finding contradicted the result of Saidu (2018) in his study on attitude and perception towards premarital counselling and screening among youths of Dala local government area, Kano, Nigeria, where he revealed that the majority (86.3%) of the respondents had a negative attitude. However, the study of Faremi, Olatubi and Lawal (2018) titled ''Knowledge of sickle cell diseases and premarital genotype screening among students of a tertiary educational institution in South-Western, Nigeria'' supported the finding of this study because the majority (74.4%) of their respondents also had a positive attitude toward premarital genotype screening.

Conclusion

Based on the findings of the study, the researcher concluded that university students in the North-West zone of Nigeria have a positive attitude towards premarital genotype screening for sickle cell disease.

Recommendations

1. University curriculum planners should include the importance of premarital genotype screening in the school curriculum.
2. Religious societies in the universities such as the Muslim Student Society (MSS) and Fellowship Christian Society (FCS) periodically organize programs aimed at sensitizing their followers about the importance of premarital genotype screening for sickle cell diseases to correct wrong attitudes.

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