KNOWLEDGE AND ATTITUDE OF NNAMDI AZIKIWE UNIVERSITY UNDERGRADUATE STUDENTS TOWARDS PRE-MARITAL SICKLE CELL SCREENING

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Abstract

This study focused on the knowledge and attitude of undergraduate students of Nnamdi Azikiwe University, (NAU) Awka towards sickle cell screening. Two research questions and one hypothesis guided the study. The design of the study was descriptive survey design. Simple random sampling technique by balloting was used to select two faculties from the 13 faculties at Nnamdi Azikiwe University, Awka. Using simple random sampling technique, a sample size of 200 (100 for male and 100 for female undergraduate students) were selected. A well-structured 32 item questionnaire with two clusters was used for collection of data. The instrument was validated by three experts, two from the Department of Human Kinetics and Health Education and one expert from Measurement and Evaluation Unit of Educational Foundation Department both in Faculty of Education, Nnamdi Azikiwe University, Awka. The reliability of the instrument was established using the Cronbach's Alpha Reliability Coefficient and the reliability obtained on cluster bases were 0.86 and 0.79 respectively. The overall reliability obtained was 0.82. Mean and standard deviation was used to answer research question one, simple percentage was used to answer research question two. T-test was used for the hypothesis at 0.05 level of significance. Findings revealed that both male and female students of the university have good knowledge of the pre-marital sickle cell screening and both male and female have negative attitude towards the screening. The researchers concluded that based on this finding, there is still much work to be done among the undergraduate students in the area of practicing pre-marital sickle cell screening Based on the findings the researchers recommended among others that the issue of creating awareness about sickle cell (SCD) should be a continuous process in the media and in the schools.
Key word: Sickle cell, disease, university, screening, undergraduate

Introduction

Genetic blood disorders seem to be common in Nigeria and may have accounted for a major proportion of physical and mental handicap. One of these genetic disorders is sickle-cell disorder. Sickle cell seems to be one of the most common inherited hemoglobinopathies and constitutes a major public health problem worldwide. According to the World Health Organization (2011), approximately 240 million people are carriers of this disorder and at least 200,000 affected individuals are born annually. Sickle cell is an irreversible, manageable health problem predominantly seen amongst various tribes worldwide particularly in sub-Saharan Africa, India, Saudi-Arabia, Sicily, Greece, southern Turkey and Mediterranean countries (World Health Organization, 2011). The mutation that results in Hemoglobin S (HbS) is believed to have

originated in several locations in Africa and India. Its prevalence varies but it is high in these countries because of the survival advantage to heterozygotes in regions of endemic malaria **(Maakaron & Taher, 2019). HbS is** the most common type of abnormal hemoglobin and the basis of Sickle Cell trait and sickle cell disease.

Characteristics of this disorder include a low number of red blood cells (anemia), repeated infections, and periodic episodes of pain. Similarly, symptoms of sickle cell disease usually begin in early childhood. The severity of symptoms varies from person to person. The symptoms include; paleness, often seen in the skin, lips, or nail beds, tiredness, dizziness, short of breath, feeling lightheaded, being irritable, trouble paying attention, and a fast heartbeat (Miller, 2018). Other symptoms according to Al kindi, Salha and Al kendi (2012) are yellowing of the eyes and skin, organ damage, especially the lungs, kidneys, spleen, and brain, and pulmonary hypertension. Pulmonary hypertension occurs in about one-third of adults with sickle cell disease and can lead to heart failure. Sickle Cell disease can result to leg ulcers, bone or joint damage, gallstones, kidney damage, eye damage, delayed growth and death

Sickle cell disease has several signs and symptoms which include anemia, episodes of pain, hand and foot syndrome, jaundice, frequent infection, and verso occlusion among others. George, (2011), asserts that anemia is very common because the cells when elongated are fragile and breaks apart easily to die leaving chronically shortage of red blood cells to carry oxygen to tissues. Anemia can lead to fatigue, irritability, dizziness and light headiness with fast heart rate and difficulty in breathing when the body cannot get oxygen to energize the tissue. According to the World Health Organization (WHO, 2019), Sickle cell disease has continued to be a major global public health issue. Approximately 5 percent of the world's population carries trait genes for hemoglobin disorders, mainly, sickle-cell disease and thalassemia. Rees (2010), stated that children and adults born with sickle cell disease in the developed countries have longer lives with fewer complications, due to early diagnosis and the availability of treatment options. However, the WHO regretted that Sickle cell disease remains a major killer of infants and children in the developing countries, particularly in Sub-Saharan Africa, where an estimated 50 to 90 percent of infants born with sickle cell disease die before their fifth birthday. WHO, further forecasted that **by the year 2050, the number of people with** sickle cell disease **is expected to increase to about 30 percent of the global population. Similarly,** in Sub-Sahara Africa, the prevalence of sickle cell trait has reached levels **as high as 40 percent**.

In Nigeria, as observed by Alkindi, Salha and AL-kend (2012), 24 percent of the population are carriers of the mutant gene and the prevalence of sickle-cell anemia is about 20 per 1000 births. This means that in Nigeria alone, about 150, 000 children are likely to be born annually with sickle-cell anemia, making Nigeria the world's number one sickle cell disease endemic nation (WHO, 2019). Deaths from Sickle Cell disease complications occur mostly in children under five years, adolescents and pregnant women. Abioye-Kuteyi, Oyegbade, Bello and Osakwe (2009), stated that about 25 percent of adults in Nigeria have the sickle cell gene, while the hemoglobin (Hb) C trait is largely confined to the Yoruba people of South-Western Nigeria, in whom it occurs in about 6 percent of the population.

Despite recent advances in the management of sickle cell disease through improved care, re-induction of foetal hemoglobin synthesis and bone marrow transplantation, the condition continues to cause high morbidity and early death in Nigeria (Abioye-Kuteyi, et al., 2009). Abioye-Kuteyi et al. further noted that the chronic nature of sickle cell disease in Nigeria is associated with high morbidity, reduction in life expectancy of the affected, poor school attendance, the potential risk of the development of drug addiction, and its burden on the affected families. These are all indicative that the condition is a major public health problem in Nigeria. As a result, it is highly imperative for people of reproductive age group to understand the genetics of sickle cell disease, know their own blood type, and if they carry the S gene choose in advance of selecting right partners for future marriages (that is, non-carriers of SS gene). This is the starting point towards managing sickle cell disease. Olarawaju (2013), reported that knowledge of sickle cell disease was found to be low despite good awareness among respondents. He further advised that more awareness should be created through different means.

In line with the management of sickle cell disease, Omuemu, Obarisiagbon and Ogboghodo (2013) stated that methods of preventing genetic diseases include pre-marital screening and genetic counselling, pre-natal diagnosis, preconception diagnosis, implantation of normal embryos after in-vitro-fertilization and in-utero therapy using stem cell transplantation. However, prevention of the disease through carrier identification and genetic counselling appears to remains the only realistic approach to reducing the impact of the disease. In support of the afore stated, Jadan, Al baali, Siddiqui, Naeem, Rashdi Mahrouqi and Hinai (2018), stated that pre-marital sickle cell screening is needed to control the huge burden of morbidity and mortality. This is because, pre-marital screening of sickle cell disease not only provide information about the health and wellbeing

of the individual, it is also important in assessing their health related reproductive risk. It helps people concerned to make important and major life decisions that will benefit family members either now or in the future.

Pre-marital Sickle cell screening implies the screening of the prospective couples for a genetic disease, genetic predisposition to a disease, or a genotype that increases risk of having a child with a genetic disease (El-Hazmi &Warsy (2011). Pre-marital Sickle Cell screening allows the genetic diagnosis of vulnerabilities to inherited diseases, and can also be used to determine a child's parentage or a person's ancestry. In addition, most of the results of genetic testing identify changes in chromosomes, and most times testing is used to find changes that are associated with inherited disorders. The result of a genetic disorder can be used to determine a person's chance of developing or passing on a genetic disorder. Pre-marital sickle cell screening creates an opportunity for people to take informed decision on the genetic predisposition of their unborn children.

Knowledge of pre-marital genetic screening allows a person to take steps to reduce his or her risk. The prospective control of SCD and other genetic diseases through premarital screening is vital to the identification of couple risk. (Al Arrayed, S. 2005). It helps an individual to get a clear awareness or explicit information about a situation or fact. Through having knowledge about an issue, several medical, psychosocial marital problems are solved because it provides opportunity for intending couples to respond accordingly in order to reduce the risk associated with the disease burden (Ferguson, 2010). Premarital interventions include counseling and testing before marriage. These have been found to be effective in a variety of ways, for example in decreasing the risk factors associated with SCD and later marital problems and increasing the quality of life for couples who stay together. Knowledge of pre-marital sickle cell screening in the context of this study is refers to degree in which adult students have low or high knowledge about premarital sickle cell screening which will help them make better choice of life partner. For these students to show they are knowledgeable about pre-marital sickle cell screening depends on their attitudes to practice it.

Attitude according to Ferguson (2010) can be defined as susceptibility to certain kinds of stimuli and readiness to respond in a given way, which are possible towards our world and parts of it which impinges upon ones. Gharaibe and Mater (2013) defined attitude as the totality of those states that lead to a point towards some particular activity of the organism. Attitude is therefore

the dynamic element and the motive of activity in human behaviour. In the context of this study, attitude to premarital Sickle cell screening is the favourable and unfavourable feelings and beliefs of students towards premarital sickle cell screening, which can either be positive attitude or negative attitude. Attitude can be negative or positive evaluation of people, objects, events, activities, and ideas; or just about anything in your environment. It can be seen as negative or positive views of a person, place or thing. Positive attitudes to sickle cell screening is all about people perceiving premarital sickle cell screening as important. It means thinking positively about all situations in a person's life, for example positive attitude towards premarital sickle cell screening will overlap with health success and make life more successful, more creative and help people to cope better with life (Gharaibe & Mater, 2013). Negative attitude towards premarital sickle cell screening will make the acceptance and practice of sickle cell screening difficult. Attitude can be formed through learning and can be changed as a function of experience. Dissonance - reduction theory by Carlsmith and Festinger (2007), states that when the components of an attitude (belief and behaviour) are at odds, an individual may adjust one to match the other. Attitude can be changed through persuasion.

There are some factors that may affect attitude like target characteristics, source characteristics and message characteristics. Additionally, Ferguson, (2010) states that a number of studies worldwide showed that attitude towards premarital sickle cell may be related to religious convictions. For instance, the report states that Muslim couples have been reported to refuse premarital sickle cell screening on the basis that it is against their religion. The low attitude of self-risk associated with non-premarital screening as reported by Lockock and Joe (2009) may be influenced by so many factors. This may influence their readiness to act not minding whether the action will benefit them or predispose them to disease. Such factors include belief/opinions; cultural diverse attitude, religious belief and loneliness make decision. Against this background therefore, the researchers sought to find out knowledge and attitude of Nnamdi Azikiwe University undergraduate students towards pre-marital sickle cells screening.

Statement of the Problem

Despite the current advances in diagnosis and the increasing campaigns through mass media and health professionals geared towards increasing peoples' knowledge about pre-marital sickle cell screening with a view to bringing about a drop in high risk marriages, sickle cell diseases

seem to have remained very common in Nigerian society. Although, pre-marital sickle cell screening has a high potential to reducing the incidence of sickle cell disease in adult population and preventing marriages among high risk couples, it appears that many undergraduate students in tertiary institutions in Nigeria, especially in Anambra State do not have adequate knowledge of pre-marital sickle cell screening and have poor attitude towards it. Therefore, this study was carried out to determine the knowledge and attitude of undergraduate students of Nnamdi Azikiwe University towards pre-marital sickle cell screening. This study is appropriate for under graduate students since many of they are ripe for marriage and this information will help to get them prepared for better marriage.

Research Questions

The following research questions guided this study:

1. *What* knowledge of pre-marital sickle cell screening do undergraduate students of Nnamdi Azikiwe University possess based on gender?
2. *What* attitude of pre-marital sickle cell screening do undergraduate students of Nnamdi Azikiwe University possess based on gender?

Hypothesis

The following hypothesis guided the study at 0.05 level of significance.

H_{O1}: *There is no significant difference in the male and female undergraduate students of Nnamdi Azikiwe University on their knowledge towards premarital sickle cell screening*

Method

This study examined the knowledge and attitude of undergraduate students of Nnamdi Azikiwe University towards premarital sickle cell screening in Awka, Anambra State. Two research questions and one hypothesis guided the study. The design of the study was descriptive survey design. The total population of this study comprised of all the 200 to 400 level 2018/2019 undergraduate students of Nnamdi Azikiwe University, Awka (NAU which is 13,700 students (Students Affairs of NAU, July 2019). Simple random sampling technique by balloting was used to select two faculties from the 13 faculties at Nnamdi Azikiwe University, Awka. Using simple random sampling technique, a sample size of 200 (100 for male and 100 for female undergraduate students) were selected. A structured 32 item questionnaire with two clusters and titled

"Knowledge and Attitude of Undergraduate Students on Pre-Marital Sickle Cell Screening (KAUSPMSCS) was used for collection of data. The instrument was validated by three experts, two from the Department of Human Kinetics and Health Education and one expert from Measurement and Evaluation Unit of Educational Foundation Department both in Faculty of Education, Nnamdi Azikiwe University, Awka. The reliability of the instrument was established using the Cronbach's Alpha Reliability Coefficient and the reliability obtained on cluster bases were 0.86 and 0.79 respectively. The overall reliability obtained was 0.82. In research question one, to determining the knowledge of undergraduate students on pre-marital Sickle Cell screening, a four point likert scale of Strongly Agree =4 points, Agree =3 points, Disagree =2 points and Strongly Disagree =1 point was adopted. In research question two, to determine the attitude of undergraduate students on pre-marital Sickle Cell screening, simple percentage was used.

Data was analyzed using simple percentage for research question one. The bench mark for **True** is 50%. Any item with a mean % cut off of below 50% shows **False**. For research question two, the no of frequency responses ranging from 17%-52% will indicate **Negative Attitude** and range between 53-above will indicate **Positive Attitude.** T-test was used to test the hypothesis at 0.05 level of significance. When the calculated t-test is higher than the critical value the null hypothesis is rejected and when the calculated t- test is less than the critical value, the null hypothesis is Accepted.

Results

Research Question 1: What knowledge of pre-marital sickle cell screening do undergraduate students of Nnamdi Azikiwe University possess based on gender?

Table 1: Mean ratings of undergraduate students on knowledge of pre-marital sickle cell screening

S/N	Item Statements	Male		Female	
		True	False	True	False
1	pre-marital screening is a test done after marriage to rule out any abnormality in the blood	75(75%)	25(25%)	82(82%)	18(18%)
2	pre-marital screening is not a test that reveals the level of malaria parasite in an individual	89(89%)	11(11%)	74(74%)	26(26%)
3	pre-marital screening is a test done before marriage to rule out sickle cell disorder	86(86%)	14(14%)	88(88%)	12(12%)
4	pre-marital screening decrease the chance of giving birth to a child with sickle cell	73(73%)	27(27%)	89(89%)	11(11%)
5	pre-marital sickle screening should be done before marriage or during courtship	70(70%)	30(30%)	80(80%)	20(20%)
6	pre-marital sickle cell screening should not be done when a couple give birth to a sickler	94(94%)	6(6%)	60(60%)	40(40%)
7	pre-marital sickle cell screening helps to detect abnormalities in couples early before marriage	74(74%)	26(26%)	72(72%)	28(28%)
8	pre-marital sickle cell screening helps to expose the genetics status of an individual to the public before marriage	69(69%)	31(31%)	82(82%)	18(18%)
9	the major consequences of not practicing pre-marital sickle cell screening is giving birth to child living with sickle cell disease	78(78%)	22(22%)	69(69%)	31(31%)
10	pre-marital sickle cell screening should be done immediately after delivery	82(82%)	18(18%)	76(76%)	24(24%)
11	pre-marital sickle cell screening should be done after marriage	68(68%)	32(32%)	81(81%)	19(19%)
12	pre-marital sickle cell screening has no benefit	18(18%)	82(82%)	31(31%)	69 (69%)
13	the major consequences of not practicing pre-marital sickle cell screening is separation/divorce of couples	98(98%)	02(2%)	88(88%)	12(12%)
14	the major consequences of not practicing pre-marital sickle cell screening is excessive financial expenditure on the management of the sick child	88(88%)	12(12%)	90(90%)	10(10%)
15	the major consequences of not practicing pre-marital sickle cell screening is high infant mortality	93(93%)	7(7%)	90(90%)	10(10%)
16	the major consequences of not practicing pre-marital sickle cell screening is disharmony and conflict in the family	95(95%)	5(5%)	91(91.5%)	9(9%)
	Grand Mean	**77.8%**	**21.8%**	**72.1%**	**21.6%**

Table 1 above revealed the mean responses of male and female undergraduate students. Items 1,2,3,4,5,6,7,8,9,10,13,14,15,16, which are above the bench mark of 50% shows that they have knowledge of premarital sickle cell screening. Such responses as; pre-marital screening is a test done before marriage to rule out any abnormality in the blood, pre-marital screening decrease the chance of giving birth to a child with sickle cell, among others and their low % mean responses in items11 and 12 with questions such as pre-marital sickle cell screening has no benefit and premarital sickle cell screening should be done after giving birth indicates that they have knowledge of pre-marital sickle cell screening and what are involved that is why they responded false to such questions . From the cluster mean % responses of 77.8% for (males) and 72.1% for (female) who said True are above the bench mark of 50 % and this shows that they both agreed they have good knowledge of premarital sickle cell screening.

Research Question 2: What attitude of pre-marital sickle cell screening do undergraduate students of Nnamdi Azikiwe University possess based on gender?

Table 2: Responses of male and female undergraduate students on their Attitudes towards pre-marital sickle cell screening.

	Responses on Attitude towards the practice of premarital sickle cell screening	**N** (N =100 males and 100 females**)**	% of response s	Remarks
Male	53 – Above	25	25%	Positive attitude
	17 – 52	75	75%	Negative attitude
Female	53 – Above	33	33%	Positive attitude
	17 – 52	67	67%	Negative attitude

Table 2 revealed that both male and female undergraduate students of the university have negative attitude to premarital sickle cell screening. This could be seen in the number of respondents (Male and Female) that responded negatively and those that responded positively. 25 males (25%) out of 100 male respondents and 33 females (33%) out of 100 female respondents have positive attitude to premarital sickle cell screening. While 75 (75%) males and 67 (67%) females out of 100 each responded within 17-52 and this indicates negative attitude to premarital sickle cell screening. This therefore shows that male and female students undergraduate students have negative attitude to premarital sickle cell screening.

Table 3: T-test analysis on knowledge of male and female undergraduate student of Nnamdi Azikiwe University towards premarital test screening.

Sources of variation	population	X	SD	DF	Cal-t	Crit-t	P>0.05	Dec.
Male	100	2.91	0.71	198	1.89	1.96	5.35	Accepted
Female	100	2.71	0.79					

Table 3 above shows that the calculated t-value of 1.89 is less than critical t-value of 1.96 at 0.05 level of significance. Thus the null hypothesis is accepted. The decision therefore, is that *there is no significant difference in the knowledge of male and female undergraduate students of Nnamdi Azikiwe University towards premarital sickle cell screening*

Discussions

From table 1 the finding on the knowledge of male and female students of university towards pre-marital sickle screening revealed that the undergraduate students of university have good knowledge of premarital sickle cell screening. They see it as the test carried out before embarking on marriage in order to determine the predisposition to disease by the couples. The knowledge of premarital sickle cell screening will help to reduce infant mortality, disharmony at home, exposes the genetic diagnosis of vulnerabilities to inherited diseases. This finding shows that undergraduate students being knowledgeable about sickle cell premarital screening reflects the ideas of Jadan, Al baali, Siddiqui, Naeem,Al Rashdi Al Mahrouqi and Al Hinai (2018), and Naeem,Al Rashdi Al Mahrouqi and Al Hinai (2018), who posits that pre-marital sickle cell screening is needed to control the huge burden of morbidity and mortality. The findings also revealed that the ignorance of not having premarital sickle cell screening will cause more harm than good. This reflects the earlier findings of Al -Arayed (2005), who posits that knowledge of pre-marital genetic screening allows a person to take steps to reduce his or her risk. The prospective control of SCD and other genetic diseases through premarital screening is vital to the identification of couple risk. It helps an individual to get a clear awareness or explicit information about a situation or fact. The finding is contrary to earlier findings of Olaraenwaju (2013) who reported that knowledge of sickle cell disease was found to be low despite good awareness among respondents. This may be because of technology which has exposed people to different knowledge

on different issues including health issues or as a result of level of education of the respondents. This present study is for undergraduates of university while that of Olaraenwaju was for secondary school students who may have low knowledge due to their level of education. The finding also revealed that there *is no significant difference in the knowledge of male and female undergraduate students of Nnamdi Azikiwe University towards premarital sickle cell screening.*

The findings in table 2 which centers on the attitude of male and female students on pre-marital sickle cell screening revealed that the students both male and female have Negative Attitude to premarital sickle cell screening. This negative attitude shows that though the undergraduate students have knowledge of pre-marital sickle cell screening but they have negative attitude to it. This will result to refusal to practice it. This finding is in line with that of Locklock (2009) who reported that the low attitude of self-risk associated with non-premarital screening may be influenced by so many factors. This may influence their readiness to act not minding whether the action will benefit them or predispose them to disease. Additionally, Ferguson, (2010), states that a number of studies worldwide showed that attitude towards premarital sickle cell may be related to religious convictions. For instance, the report states that Muslim couples have been reported to refuse premarital sickle cell screening on the basis that it is against their religion, this undergraduate students Negative Attitude to premarital sickle cell screening may be as a result of ego, to protect themselves from discovering that they have the disease or fear of losing out the loved partner. This is an indication that there is still much to be done in terms of creating awareness among the youths for change of attitude towards it. There is no significant difference in the knowledge of both male and female students on premarital sickle cell screening.

Conclusion

Sickle cell disease is one of the blood diseases that has been ravaging mankind from time past. This study carried out among the undergraduate students of university has helped to expose the high knowledge and negative attitude they have towards premarital sickle cell screening. This has exposed the fact that though they have good knowledge of the test but are not willing to practice it before marriage. The researchers therefore concluded that for sickle cell disease to be a thing of the past, there is need for more emphasis on health education through programs promoting sickle cell screening .in addition provision of genetic counselling to all sickle cell patients will promote

the capacity of the intending couples to take informed decision and be aware of the outcome of such decisions.

Recommendations

The following recommendations were made:

1. Government should sustain the public enlightenment programme on sickle cell disease with special focus on how to change the negative attitude of youths towards sickle cell screening.
2. Higher institutions should include a course that will teach more of sickle cell in their general course to enable undergraduate students in other disciplines to have good knowledge of the disease and how to develop positive attitude towards it.
3. Government should enact a policy to ensure easily accessible community wide sickle cell screening and premarital counselling to achieve the desired reduction in delivery of SCD babies.

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