

**Original Article**

**Premarital Genetics Counseling: Knowledge of Young Adults in Federal College of Agriculture Akure Ondo State Nigeria**

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**Abstract**

**Background:** Premarital genetic counseling present an opportunity for individuals to become informed about their genetic predisposition to disease, and for couples to be aware of the possible genetic characteristics of their unborn children.

**Aim:** The study was conducted to investigate knowledge of young adults about premarital genetics counselling.

**Methods:** Cross sectional descriptive design was adopted to assess the knowledge of young adults about premarital genetics counselling. The study was carried out among the students in Animal Health and Health Production Department of The Federal College of Agriculture, Akure, Ondo State, Nigeria. Simple random sampling method was used to select 166 students who participated in the study from the population of 224 students in Animal Health and Health Production Department. A well validated self-design instrument titled Knowledge of Premarital Genetic Counseling Scale (KPGCS) was used to elicit information from the respondents. Research questions were answered descriptively with percentage, mean and standard deviation while the hypotheses stated were tested with Chi-square statistical method.

**Results:** Result revealed that 61.4% of the respondents regardless of their level of education had poor knowledge about the meaning of premarital genetic counseling. Also, 63.3% of the respondents had poor knowledge of inherited genetic disorders. Hypothesis tested at 0.05 level of significant about the relationship between students' knowledge about premarital genetic counseling and their level of education was not significant.

**Conclusion:** The level of knowledge of respondents to the components of premarital genetic counseling was poor in terms of knowledge about meaning of premarital genetic and genetic inherited disorders. Students require educational program directed towards the meaning of genetics, genetic disorders, its effects and methods of prevention of the diseases so as to enhance their knowledge on knowledge in genetics disorders.

**Key Words:** Genetic Counselling, Premarital, Knowledge, Young Adult.

## **Introduction**

Genetic counseling is a communication process which deals with human problems associated with the occurrence or the risk of occurrence of a genetic disorder in a family (Suresh, 2010). Premarital counseling is one of the health promotion activities which provided in the maternal and child health service programs (Whitehead, 2004). According to Al- Kahtani, (2000) it is the service offered to young couples on their way to marriage in order to guide, educate and prepare them for the establishment of a healthy family.

Premarital counseling is one of the most important strategies for prevention of genetic disorders, congenital anomalies, and several medical psychosocial marital problems (Mitwally, Abd El-Rahman & Mohammed, 2000). Premarital genetic counseling present an opportunity for individuals to become informed about their genetic predisposition to disease, and for couples to be aware of the possible genetic characteristics of their unborn children.

Therefore, 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 consequence becomes something to strongly consider (Odelola, Adisa, Akintaro, 2011).

WHO (2006) describes genetic counseling and screening as services targeted at individuals and families which try to enable people with a genetic disadvantage and their families to live and reproduce as normally as possible, assuring access to relevant medical services (diagnostic, therapeutic, counseling, rehabilitative and preventive) and social support system, helping them to adapt to their unique situation and providing information to enable educated and voluntary choices in health and other health risk factors known to impact pregnancy outcomes through prevention and management and it is capable of reducing the burden that birth defects and genetic disorder impose on most people.

According to Mehta (2011) genetic disorder is an abnormal condition that a person inherits through genes or chromosomes. He further said that some genetic disorders are caused by mutations in the

DNA of genes while other disorders are caused by changes in the overall structure or number of chromosomes. Genetic disorders run in blood and this accounted for why if one parent has a genetic related disease, it is very likely that 50 percent of his or her children also will develop the disease.

Ahmed (2010) stated that genetic disorders and congenital abnormalities occur in about 2%-5% of all live births, account for up to 30% of paediatric hospital admissions and cause about 50% of childhood deaths in industrialized countries.

Similarly, Memish and Saeedi (2011) noted that genetic disease affects as much as 5% of the world's population constituting a major public health problem in many parts of the world. Genetic disease impact academic achievement negatively as poor health condition resulting from the disease will not allow the affected children to participate in school work.

Adeyemo et al. (2007) added that the high figure of reported cases of sickle cell disease over ten years obviously reflects that this genetic disorder is still a common disease among Nigerians. Adeyemo et al. (2007) affirmed that this high figure genetic disorders is partly due to the lack of knowledge of couples at risk before marriage and coupled with lack of awareness about its causes and prevention.

Knowledge of pre-marital genetic screening allows a person to take steps to reduce his or her risk. For people at an increased risk of certain disorders, healthcare professionals may recommend more frequent screening starting at an earlier age.

Healthcare providers may also encourage regular checkups or testing for people with a medical condition that runs in their family. Additionally, lifestyle changes such as adopting a healthier diet, getting regular exercise, and quitting smoking help many people increase their chances of coping with such diseases (Abd-Al-Azeem, Elsayed, El-Sherbiny & Ahmed, 2011).

According to WHO (2006) methods of preventing genetic diseases include pre-marital screening and genetic counseling, prenatal diagnosis, preconception diagnosis and implantation of normal embryos after in-vitro-fertilization, and in-utero therapy using stem cell transplantation. Prevention of the disease through carrier

identification and genetic counseling remains the only realistic approach to reduce the impact of the disease and allow better use of available resources in the low income

countries where the condition is most prevalent. Chen et.al. (2008) opined that though students' attitude towards sexual matters are liberal, yet, their knowledge about reproductive health and pre-marital knowledge is still limited. Very little attention has been paid so far on the need to educate the society at large in developing countries about developments in human genetics and their application in health and wellbeing. Without the knowledge of basic genetics, many find it hard to distinguish valid genetic information from mis-information (Jennings, 2004).

Though, premarital genetic counselling is increasingly practiced in many countries of the world, knowledge of the citizenry of a nation about genetic disorders constitutes an important variable that influences the acceptability, practice and success of premarital genetic counselling. Therefore, there is need to evaluate young adults' level of knowledge about premarital genetic counseling in Federal College of Agriculture, Akure, Ondo State, Nigeria.

The main purpose of this study was to evaluate the level of knowledge of young adult about premarital genetic counseling in Federal College of Agriculture, Akure, Ondo State.

### **Specific Objectives of the Study**

The study objectives are;

1. To assess the level of knowledge of young adults about premarital genetic counseling in Federal College of Agriculture, Akure.
2. To assess the relationship between level of knowledge of young adults about premarital genetic counseling and the number of years spent in school.
3. To determine if gender correlation with knowledge of young adults about premarital genetic counseling.

### **Research Questions**

1. What is the level of knowledge of young adult about premarital genetic counseling in Federal College of Agriculture, Akure?
2. Does relationship exist between knowledge of young adult about premarital genetic counseling and the number of years spent in school?
3. Does gender correlation with knowledge of young adult about premarital genetic counseling?

### **Research Hypotheses**

1. There is no significant relationship between the level of knowledge of young adult about premarital genetic counseling and level of their education.
2. There is no significant correlation between male's level of knowledge about premarital genetic counseling and female's level of knowledge about premarital genetic counsel

### **Materials and Methods**

This study adopted cross sectional descriptive design to assess knowledge of premarital genetic counseling among young adult in Federal College of Agriculture, Akure, Ondo State.

The study area is Federal College of Agriculture, Akure, Ondo State which was established on 10<sup>th</sup> January 1957. It is located along Fiwasaye girl's high school road, adjacent to Ijapo estate Akure.

The school is headed by a provost and other departmental HOD'S with a total number of 1011 students in the following departments Animal health and production, Agricultural Technology, Crop Production, Agricultural and Extension Management, Agriculture and Bio-environmental Engineering , Horticulture and Landscape Management , Fishery Technology, Forestry, Agronomy , Pasture and Range Management. The above departments run both ordinary diploma and higher national diploma (OND & HND).

**Table 1. Target population for the study**

<b>Animal health and health production</b>
<b>OND 1 = 68</b>
<b>OND 2 = 56</b>
<b>HND 1 =44</b>
<b>HND 2 =56</b>
<b>TOTAL =224</b>

The study population were young adult who are students of the Federal College of Agriculture, Akure, Ondo State. The target population were the students in Animal health and Health production

Students from animal health and production department who are unmarried and between the ages of 19- 28 were included in the study.

A study sample size of 166 participants were selected from Animal Health and Production Department based on calculation using Taro Yamane formula (1973) from the population of 224.

$$n = \frac{N}{1+N(e)^2}, n = \text{Sample size, } e = \text{Margin of error} = 5\%, N = \text{Total population}$$

$$n = \frac{224}{1+224 \times 0.05^2}$$

$$n = \frac{224}{1+224 \times 0.0025}$$

$$n = \frac{224}{1+0.56}$$

$$n = \frac{224}{1.56}$$

n = 143, 10% attrition rate of the entire studied population = 22.4 = 23.

Total sample size for the study = 143+23  
n = 166

Simple random sampling technique was to select respondents proportionately based on the total

population in each academic level (ND1= 50, ND2 = 42, HND1 = 33, and HND2 = 41).

A self-developed instrument titled Knowledge of Premarital Genetic Counseling Scale (KPGCS) was used to collect data from the participants. It was made up of two sections (section A and section B) with 27 items. Section A, contained demographic characteristics of the participants while section B, contained variables on knowledge of premarital genetic counseling. The response pattern of the instrument was YES or NO, data obtained from items 8-27 were used to answer research questions and test hypotheses. The items in the instrument were positively worded and responses from the instrument were scored that is Yes takes 1 and No takes 2.

The instrument for the study was given to two experts in nursing department to validate both face and content validity of the instrument and all the necessary correction from the expert report were effected. The instrument was pilot tested among the young adults who are student in Department of Animal Health and Production of Federal University of technology Akure. Data collected were analyzed with Cronbach alpha. The reliability index of the instrument was 0.75.

This study commenced after ethical clearance was issued from the Research and Ethical Committee of the Federal College of Agriculture, Akure Ondo State and written informed consent form was completed. The records of this study were kept private as all information collected were coded with numbers. The proposed study's findings may be of benefit to the respondents and the study caused no harm to the respondents. Respondents' participation in this research was entirely voluntary.

The researchers explained the study, its importance and what the respondents stand to benefit. The researcher respected the human right of free choice and ensured written informed consent form was completed before carrying out the study. All findings and results presented was that of actual facts. Questionnaire was given by the researcher to the respondents and waited to collect immediately when it was completed with the help of other co-researchers which had been previously trained on how to put respondents through.

The data collected was analyzed with different statistical methods. Percentage, mean and standard deviation where used to answer research questions while chi-square was used to test the stated hypothesizes at 0.05 level of significance with the help of Statistical Package for Social Sciences [SPSS] version 20.

### Results

According to the socio-demographic characters of the respondents (Table 2), forty four dot nine

percent ( 44.9%) of respondents were within the age range of 17-21years, male respondents were 57% , 30.4% of respondents were in OND1, 25.3% were in OND2, 20.9% of respondents were in HND1 and 23.4% of respondents were in HND2.

Table 3 below shows that 61.4% of respondents had poor knowledge about the meaning of premarital genetic counseling, also, 63.3% of respondents had poor knowledge of inherited genetic disorders.

Furthermore, 72% of respondents had good knowledge of the benefits of premarital genetic counseling and 50.6% of respondents had good knowledge of the purpose of premarital genetic counseling.

Table 4 reveals that 68% of the respondents in OND1, 77.8% of the respondents in OND2, 66.2% of the respondents in HND1 and 74.5% of respondents in HND2 had poor knowledge of premarital genetic counseling,

**Table 2: Demographic variables of the respondents**

VARIABLES	N	%
<b>AGE</b>		44.9
17-21	71	44.9
22-26	62	39.2
27 – 31	19	12.0
32 – 36	5	3.3
37 – 41	1	0.6
<b>Sex</b>		
Male	90	57.0
Female	68	43
<b>Educational level</b>		
OND1	48	30.4
OND2	40	25.3
HND1	33	20.9
HND2	37	23.4

**Table 3: Knowledge of Respondents about Premarital Genetic Counselling.**

VARIABLES	Good knowledge		Poor knowledge	
	n	%	n	%
Knowledge about:				
Meaning of genetics	61	38.6	97	61.4
Purpose of pre-marital genetic counseling	80	50.6	78	49.4
Inherited disorders	58	36.7	100	63.3
Benefit of pre-marital genetic counseling	114	72.2	44	27.8

**Table 4: Relationship between knowledge of Respondent and their Educational level**

VARIABLES	Good knowledge		Poor knowledge	
	n	%	n	%
<b>Educational Level</b>				
OND 1	18	32.00	30	68.00
OND 2	15	22.20	25	77.80
HND 1	9	33.80	24	66.20
HND 2	10	25.50	27	74.50

**Table 5: Relationship between Knowledge of Respondent and their Sex**

VARIABLES	GOOD KNOWLEDGE		POOR KNOWLEDGE	
	n	%	n	%
<b>Sex</b>				
Male	22	17.6	67	53.6
Female	15	8.8	58	46.4

**Hypothesis 1: There is no significant relationship between the level of knowledge of young adults and their sex.**

**Table 6: Chi square analyses of respondents on premarital genetic counseling.**

VARIABLES	POOR KNOWLEDGE	GOOD KNOWLEDGE	X2	DF	SIGNIFICANCE
Male	67	22	1.81	1	0.18
Female	58	11			

**Hypothesis 2: There is no significant relationship between the level of knowledge of young adult about premarital genetic counseling and level of education.**

**Table 7: chi square analysis of respondents on premarital genetic counseling.**

VARIABLES	POOR KNOWLEDGE	GOOD KNOWLEDGE	X2	DF	SIGNIFICANCE
OND 1	68	32	1.50	3	0.68
OND 2	77.80	22.20			
HND 1	66.20	33.80			
HND 2	74.50	25.50			

Table 5 reveals that 53.6% of the male respondents had poor knowledge premarital genetic counseling, and 46.4% of the female respondents had poor knowledge of premarital genetic counseling.

Table 6 shows chi square analysis of the relationship between respondents' level of knowledge about premarital genetic counseling and gender of the respondents at  $p < 0.05$ . The result shows that no significant relationship do exist between respondents' level of knowledge about premarital genetic counseling and gender of the respondents [ $\chi^2(1,158) = 1.81, P=0.18$ ]. This result suggests that there is no relationship between

the gender of the students and their level of knowledge about premarital genetic counseling.

Table 7 shows chi square of the relationship between respondents' level of knowledge about premarital genetic counseling and educational status, at  $p < 0.05$ . The result shows that there was no significant relationship between respondents' level of knowledge about premarital genetic counseling and educational status [ $\chi^2(3,158) = 1.50, P=0.68$ ]. This result suggests that students' knowledge about premarital genetic counseling do not have any relationship with the students' level of education.

## Discussion

The findings of this study regarding the components of premarital genetic counseling showed that majority of the respondents had poor knowledge about the meaning of premarital genetic counseling and genetic disorders, these findings are in line with the findings reported by Gamalat, Amany and Ahmed (2014) reported that majority of the respondents had poor knowledge of premarital genetic counseling as indicated that many give incomplete correct answers about components of genetic premarital counseling. These findings also agree with the study of Abdel Rahman (2001) who found that deficient knowledge exist among students who participated in the study, finding is also consistent with the report from Safia et. al., (2018) who found that participants had poor knowledge about genetic counseling and disorder.

Furthermore, finding revealed that some of the respondents had good knowledge of the benefits and purpose of premarital genetic counseling. This also agree with Cooroid et. al., (2009), Gharaibeh and mater (2009) who found out that majority of the respondents who participated in their study had good knowledge of the benefits and purpose of premarital genetic counseling.

Findings also revealed that majority of the respondents in OND1, OND2, HND1 and HND2 had poor knowledge about premarital genetic counseling. The findings agree with findings reported by Abioye, et. al., (2009) who found that though the 69.7% of the respondents had tertiary education, only 31.0% had good knowledge of premarital genetic counseling. This lack of knowledge may be attributed to insufficient basic information obtained during their formal academic education in relation to premarital genetic counseling.

Findings based on the gender of the respondents revealed that both male and female respondents had poor knowledge of premarital genetic counseling, this finding contrasting the findings reported from Amany and Ahmed (2010) who stressed that female students had high knowledge of premarital genetic counseling than male student. The result of the hypothesis revealed that no significant relationship exist between level of

knowledge of the respondents on premarital genetic counseling and respondents gender [ $\chi^2(1,158) = 1.81, P=0.18$ ]. Also, the result of the hypothesis showed that no significant relationship exist between level of knowledge of premarital counseling among the students and their educational status [ $\chi^2(3,158) = 1.81, P=0.18$ ].

## Implication to Nursing Practice

This study showed that there is lack of adequate knowledge about premarital genetic counseling among students who participated in the study despite awareness on other aspects of family health programs. It is therefore important that all nurses in clinical practice, school health and family health clinics should take cognizance of these and increase awareness rate, encourage premarital genetic counseling when planning care in all areas where youths are been cared for. Nurses should collaborate with governmental and non-governmental organizations to provide premarital genetic counseling and screening. Nurses should plan to include family members of people living with genetic disorders in the care of their relatives' during appointment visits and in counseling them to reduce chances of genetic disorder occurrence. Importance of family support should also be emphasized to clients' relatives or family at the time of visit to the hospital. Also, they must ensure that adequate information is given to intending couples before marriage or as soon as adolescent stage is reached for easier compliance.

## Conclusion

- The level of knowledge of respondents to the components of premarital genetic counseling was poor in terms of knowledge about meaning of premarital genetic and genetic inherited disorders.
- Both male and female respondents had poor knowledge of premarital genetic counseling.
- The respondents' knowledge of premarital genetic counselling did not depend on the respondents' level of education.

## Limitation to the Study

In this study, there are limitations that may affect the results.

- The study was conducted in a single center.



- The study was conducted with a small sample size.
- Lack of adequate cooperation from the students to participate in the study.

### Recommendations

Based on the information gathered from this study, the following recommendations were made to ensure improved knowledge of premarital genetic counseling.

- Students require knowledge in genetics disorders to enable them to know their status and likelihood of its occurrence. The educational program should be directed towards meaning of genetics, genetic disorders, its effects and methods of prevention of the diseases.
- The government should provide free or subsidized premarital genetic counseling and screening units in order to increase awareness and aid easy accessibility even by the less privileged ones.
- Genetic counseling should be included in curricula of students from secondary to tertiary education to raise awareness.
- More research studies should be conducted on similar topic in different settings in order to identify factors responsible for poor knowledge, attitude and practice of premarital genetic counseling.

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