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Knowledge and Perception of Students About Premarital Genetic Counselling in University of Medical Sciences, Ondo State

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ABSTRACT: *The study examined the knowledge and perception of the University of Medical Sciences students about premarital genetic counselling. The study specifically assessed the knowledge of premarital genetic counseling and examined the perception of the University of Medical Sciences students about premarital genetic counseling. The research design employed in this study was descriptive survey design. The research study was carried out among students of University of Medical Sciences, Ondo. The target population for this research study was UNIMED students between the of age 20-35years. Purposive sampling technique was used to select 175 Nursing students in the University. The data was collected through the use of questionnaires design by the researcher to elicit the responses on the knowledge and perception towards premarital genetic counselling. The questionnaire was carefully formulated and was given to experts to review in order to ascertain face and content validity. The reliability of the questionnaire was confirmed by test re-test method which yielded reliability coefficient value of 0.816. The validated questionnaire was administered on the respondents and data collected were analysed using descriptive statistics. The study revealed that respondents have strong level of knowledge about premarital genetic counselling and is likely to influence their choice of marital partner if test reveals incompatibility. However, majority of them identified only sickle cell anaemia as the consequence of genetic factor. It was recommended among others that there is need to be consistent in creating awareness about premarital genetic counselling to the youth through the mass media and online programmes.*

KEYWORDS: knowledge, perception, students, premarital genetic counselling

INTRODUCTION

Genetic blood disorders such as Sickle cell anaemia and thalassemia are the most common inherited Haemoglobinopaties and are of public health problem worldwide (Rahma et. al. 2012). According to World Health Organization (WHO), approximately 240 million people are carriers of these disorders and at least 200,000 affected individuals are born annually. Sickle cell disease also contributes to maternal and infant mortality. Nigeria, according to Bastani et al., 2010), account for about 30% congenital anomalies worldwide and it was found that there is a big lack of knowledge related to reproductive health even among educated persons (Bastani et. al., 2010).
The prevalence of genetic disease is becoming higher in the society, creating more stress despite the difficulties the people encounter in life. Genetic disease affect as much as 5% of the world's population constituting a major public health problem in many parts of the world (Memish & Saeedi, 2011). It is estimated that 5.3% of new born will suffer from a genetic disorder up till the age of 25 years. Haemoglobinopaties and glucose-6-phosphat dehydrogenase deficiencies are more rampant in the developing countries than the Western countries according to Verma and Puri (2015). They suggest that genetic disorders screening should be carried out before marriage and pregnancy.

The presence of detective gene in either parent or both have the probability of transmitting genetic disorder to their chi and this can only be detected through genetic testing (Ramen, 2021) Therefore information on this which will be gotten during genetic counseling is necessary before marriage is consummated. Genetic counseling is a process of assisting people with understanding and adapting to the medical, psychological and family implications of genetic contribution to disease (National Society of Genetic Counselors, 2012).

Premarital counseling is one of the ways to prevent heredity diseases, congenital abnormalities and genetic disorders (Ibrahim et. al. 2019). The aims of the premarital genetic counseling are mainly to minimizing the burden on the persons, families and the community, increase the knowledge of community about the types of inheritance and genetic disorders and the appropriate way of selection.

According to a study conducted in Cairo, Egypt by Hannah, Asher and Fatima, (2015) revealed that there is a great lack of knowledge and negative attitude regarding premarital genetic counselling. They stated that, there should be Involvement of community leaders and non-government organizations in counselling programs to youth towards premarital genetic counselling and marriage between genetically incompatible partners, so that the intending couples should have adequate knowledge about their genetic status.

The study conducted in Arab by Abdulbari, Marian and Angus, (2018) revealed that knowledge and attitude regarding premarital genetic counseling program (PMGC) were low in population. They suggested motivation, enforcement, and implementation of programmes at the schools and university educational campaigns to enlighten the students. However, the study conducted by Safia et al. (2018), in Saudi Arabia among youths stated that the participants have satisfactory

knowledge towards premarital screening and genetic counselling. However, when considering the diseases caused by genetic factor, it was found that their knowledge is not sufficient.

Al-Qattan et al. (2019) revealed that there are still many gaps to be filled regarding the knowledge, attitude, and practice associated with Sickle Cell Disease (CD) and PMGC, despite the advancements in public healthcare measures in Saudi Arabia. It reflects and suggests that exploring these complex challenges in detail will help create an efficient and cost-effective plan for SCD prevention.

In Ekiti State Nigeria, Olubiyi et al. (2013) stated that most of the respondents had a high level of knowledge about sickle cell disease and good attitude towards genetic counselling before marriage, but there is still need for nurse and other health workers not to relent in their efforts in enlightening clients, families and communities. This shows that PMSGC knowledge is in adequate. Therefore there should be an extension of the study to reach more institutions in Ekiti state and nationwide. More seminars should be conducted in order to increase the knowledge of the populace about sickle cell disease and genetic counselling..

Memish and Saeedi (2011) in his study stated that the perception of students towards premarital genetic counselling was found satisfactory among the respondents in other to prevent genetic disease. It was revealed that the reason of their acceptance revealed that individuals want to marry a healthy person and avoid transmission of any hereditary diseases to their unborn children. According to a study conducted in Oman by Rahma, Salha and Maya (2012) stated that most of the students have a positive attitude towards PMS but inadequate knowledge about which diseases are caused by genetic factor. Even though the vast majority of them thought it is important to carry out and agreed to do it, only half of them agreed that it should be made a mandatory procedure before marriage and no more than a third agreed on making laws and regulations to prevent marriage in case of positive results. Iweriobor (2015) revealed that the participants have negative attitude towards premarital genetic counselling as a result of lack of knowledge non affordability, non-accessibility and non-availability of health centres.

Premarital genetic counseling is an expanding field in the age of genomic medicine. Genetic counselor provide services to clients across lifespan. There is conception to prenatal diagnosis, diagnosis of newborn or pediatric genetic disorders and the diagnosis of adults with inherited predisposition to diseases (WHO, 2010). Omar et al (2014) cited that lack of adequate and proper premarital counselling is one of the factors contributing to high rate of divorce, hence the study is to assess the knowledge and perception of the University of Medical Sciences students about premarital genetic counselling. The study specifically:

1. assessed the knowledge of the University of Medical Sciences students about premarital genetic counseling; and
2. examined the perception of the University of Medical Sciences students about premarital genetic counseling.

Research questions

1. What is the level of knowledge of the University of Medical Sciences students about premarital genetic counseling?

2. What is the perception of the University of Medical Sciences students about premarital genetic counseling?

METHODOLOGY

The research design employed in this study was descriptive survey design. The research study was carried out among students of University of Medical Sciences, Ondo. The target population for this research study was UNIMED students between the of age 20-35years. The study was limited to students in the Faculty of Nursing Sciences who fall within the age range of 20 – 35 years. All students other than the Faculty of Nursing Science were excluded in the study. Purposive sampling technique was used to select 175 Nursing students in the University.The data was collected through the use of questionnaires design by the researcher to elicit the responses on the knowledge and perception towards premarital genetic counselling among UNIMED students in the Faculty of Nursing Science. The questionnaire were in three sections; section A, on social demographic data, section B on knowledge of premarital genetic counselling and section C on perception on premarital genetic counselling and consist of open ended and close ended questions.

The questionnaire was carefully formulated and was given to experts to review in order to ascertain face and content validity. The reliability of the questionnaire was confirmed by test re-test method by administering 10% of the questionnaire on ten students outside the sampled institution twice within an interval of two weeks. Data collected were analysed using Pearson Product Moment Correlation statistics which yielded reliability coefficient value of 0.816.The validated questionnaire was administered on the respondents in UNIMED Sciences, Ondo. All data collected were analyzed through statistical package for social science (SPSS) version 23 software to generate descriptive analysis as frequency, percentage and tables. The response rate was 100%.

RESULTS

Table 1: Respondents' demographics characteristics

Variables		Frequency	Percentage (%)
Age	20-25 26-30 31-35	159 13 3	90.9 70.4 1.7
Sex	Male Female	40 135	22.9 77.1
Religion	Christian Islam Traditional	166 9 0	94.9 5.1 0
Ethnicity	Yoruba Igbo Hausa Others	160 12 3 0	91.4 6.9 1.7 0
Marital Status	Single Married	169 6	96.6 3.4

According to the table 1 above, a total of 175 respondents participated in the study, out of which the majority (90.9%) were between the age ranges of 20-25 years. Largest percentage of the respondents (96.6%) were singles. It was noticed that almost all the respondents (94.9%) were Christians. Likewise, 91.4% of the total respondents were from the Yoruba ethnic group, 6.9% from Igbo while just 1.7% of the respondents was from Hausa.

Research Question 1: What is the level of knowledge of the University of Medical Sciences students about premarital genetic counseling?

Table 2: Knowledge on Premarital Genetic Counseling (PGC)

Items		**Frequency**	**Percentage %**
Have you heard about PGC?	Yes No	149 26	85.1 14.9
If yes, where?	Religious Inst. Mass Media School Friend	15 29 103 2	10.1 19.5 69.1 1.3
Have you heard about genetic disease?	Yes No	160 15	91.4 8.6
If yes, where?	Religious Inst. Mass Media School Friend	12 37 107 4	7.5 23.2 66.8 2.5
Do you think larger populations of youth are aware of PGC?	Yes No	119 56	91.3 8.7
Do you know about the effect of genetic disease?	Yes No	150 25	85.7 14.3
If yes, mention one?	Sickle Cell Anaemia Any other related Disease None related disease	80 21 49	53.3 14 32.7
Do you think genetic disease can be prevented?	Yes No	164 11	93.7 6.3
Do you know that PGC may reduce the spread of genetic disease?	Yes No	172 3	98.3 1.7
Do you know that PGC is important to you and your future spouse?	Yes No	172 3	98.3 1.7
Do you believe that failure to know your genetic status before marriage can cause genetic disease to your unborn children?	Yes No	171 4	97.1 2.9
Do you know that genetic counseling before marriage can prevent disease like SCA	Yes No	173 2	98.9 1.1

Based on the analysis from the table 2 above on the knowledge of Premarital Genetic Counseling (PGC), majority (85.1%) have heard about Premarital Genetic Counseling, wrong routes (90.7%),

also 91.4% had heard about genetic disease. Ninety-three percentage think that a larger percentage of the youth had heard about PGC. Majority (85.7%) of the respondents know the effect of genetic disease, while only 53.75 specifically mentioned Sickle cell anaemia and only 14% mentioned related disease condition.

Research Question 2: What is the perception of the University of Medical Sciences students about premarital genetic counseling?

Table 3: Perception on Premarital Genetic Counseling (PGC)

	Strongly Agree (%)	**Agree (%)**	**Strongly Disagree (%)**	**Disagree (%)**
PGC is one of the ways that genetic disease can be prevented	120 (68.6)	46 (26.3)	2 (1.1)	7 (4.0)
PGC should be the first step before marriage	121 (69.1)	48 (27.4)	2 (1.1)	4 (2.3)
PGC can help reduce incidence of genetic disease	113 (64.0)	53 (30.3)	3 (1.7)	6 (3.4)
PGC should involve both spouse	140 (80.0)	30 (17.1)	1 (0.6)	4 (2.3)
PGC is an important factor for marriage	115 (65.6)	48 (27.4)	2 (1.1)	10 (5.7)
Planning to assess PGC is your responsibility	93 (53.1)	70 (40.0)	4 (2.3)	8 (4.6)
PGC will guide young adult to preventing genetic disease from getting to their children	116 (66.3)	49 (28.0)	1 (0.6)	9 (5.1)
PGC will ruin my relationship if it reveals we are not compatible	54 (30.9)	66 (37.7)	20 (11.4)	35 (20.0)

According to the table 3 above on Perception of Premarital Genetic Counseling (PGC) it was strongly agreed by the majority that PGC is one of the ways that genetic disease can be prevented (68.6%), PGC should be the first step before marriage (69.1%), and PGC can help reduce incidence of genetic disease (64.0%), PGC should involve both spouse (80.0%), PGC is an important factor for marriage (65.6%), Planning to assess PGC is your responsibility (53.1%), PGC will guide young adult to preventing genetic disease from getting to their children (66.3%). However, only 30.9% strongly agree that PGC will ruin my relationship if it reveals we are not compatible.

DISCUSSION

The findings of this study showed that majority (85.1%) of the respondents have heard about Premarital Genetic Counseling (PGC) and 91.4% of them are aware about genetic diseases. Majority (85.7%) of the respondents also know the effect of genetic disease, while only 53.75

specifically mentioned Sickle cell anaemia. This is in agreement with the study conducted by Safia et al. (2018), in Saudi Arabia among youths which also showed that the participants have satisfactory knowledge towards premarital screening and genetic counselling. They also have limited knowledge about the diseases caused by genetic factor. The result is also in accordance with the study conducted by Olubiyi et al. (2013) in Ekiti State in which most of the respondents had a high level of knowledge about sickle cell disease and good attitude towards genetic counselling before marriage.

However, the study conducted in Cairo, Egypt by Hannah, Asher and Fatima (2015) and Abdulbari, Marian and Angus (2019) in Arab revealed that there is a great lack of knowledge and negative attitude regarding premarital genetic counselling. The community leaders and non-government organizations in these areas need to be involved in PGC counselling of the youth in order to have adequate knowledge about their genetic status. Also, there is need of motivation, enforcement, and implementation of programmes at the schools and university educational campaigns to enlighten the students.

In Saudi Arabia, Al-Qattan et al. (2019) revealed that despite the advancements in public healthcare measures in the country, there are still many gaps to be filled regarding the knowledge, attitude, and practice associated with Sickle Cell Disease (CD) and PMGC. He suggested that there is need to explore more on these complex challenges to create an efficient and cost-effective plan for SCD prevention.

Ibrahim et al (2019) argued that premarital counselling is one of the strongest ways to prevent hereditary diseases, congenital abnormalities and genetic disorders. It can provide a capability to intervene according to identified risks, vaccinations, genetic consulting, nutrition, consulting regarding behavior and advice regarding contraception. The majority (68.6%) of the respondents in this study strongly agreed that PGC is one of the ways that genetic disease can be prevented. (69.1%) of them also strongly agreed that PGC should be the first step before marriage and that it can help reduce incidence of genetic disease (64.0%). There is high perception (80.0%) that both intending spouse should be involved in PGC. However, only 30.9% strongly agree that PGC will ruin marital relationship if it is revealed after marriage that they are not compatible. Hashemi-Soteh et al (2019) in the study he conducted in Northern Iran revealed that most individuals were interested in using genetic counselling services and genetic tests before marriage.

However, in a study conducted by Omar et al. (2014), it was revealed that despite the relatively high level of knowledge of the participants, about one third of them were still reluctant to carry out premarital testing. Community-based campaigns are greatly needed to encourage the public to be involving in premarital testing before marriage.

Also, in the study conducted by Rahma, Salha and Maya (2015), it was revealed that despite the perception of the majority of the participants that it is important to be carrying out premarital screening, only half favoured making it obligatory before marriage while only one third favoured making laws and regulations to be doing PGC before marriage. This reflects a strong gap between knowledge and practice of PGC. There is therefore, importance of health education to improve their perception towards premarital screening and involvement in genetic counselling program.

The majority of the respondents in this study strongly agreed that PGC will guide young adult to be preventing genetic disease from getting to their children. This supported the finding of Memish and Saeedi (2011) in his study which revealed that the perception of students towards premarital genetic counselling was found satisfactory to prevent genetic disease. Most of them want to marry healthy persons to avoid transmission of any hereditary diseases to their unborn children. However, in the study conducted in Oman by Rahma, Salha and Maya (2012), despite the fact that most of the students have a positive attitude towards PMS, the still manifested inadequate knowledge about the diseases that are caused by genetic factor and only half of them agreed that it should be made a mandatory procedure before marriage.

Implication to Midwifery Practice

This study reveals the importance of health education programme by the health personnel. This will result in positively attitude in the youth in premarital genetic counselling. The danger of genetic diseases due to genetic incompatibility must be stressed to prompt spouses to follow medical verdicts.

CONCLUSION

The study concludes that the respondents have strong level of knowledge about premarital genetic counselling and is likely to influence their choice of marital partner if test reveals incompatibility. However, majority of them identified only sickle cell anaemia as the consequence of genetic factor. Health education of the youth on other health consequences of genetic incompatibility is needed.

Recommendations

1. There is need to be consistent in creating awareness about premarital genetic counselling to the youth through the mass media and online programmes.
2. Premarital genetic counselling should be legalized but couples should reserve the right to either accept or reject the advice.
3. Community and religious leaders, organizations and universities, and health personnel should cooperate in providing premarital genetic counselling.
4. To increase the success of counselling in preventing at-risk marriages, the counselling should be handled by trained professionals and prior to each genetic test

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