

## KNOWLEDGE OF PRE-MARITAL GENETIC SCREENING AMONG STUDENTS OF OSUN STATE POLYTECHNICS IN NIGERIA

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### ABSTRACT

*This study investigated the knowledge of pre-marital genetic screening among students of Osun State Polytechnics. Descriptive survey research design was used for the study. The instrument for data collection was self developed and structured questionnaire in four likert-scale format. Descriptive statistics of frequency count and simple percentage was used to analyse the demographic data, while the parametric statistics of t-test set at 0.05 alpha level was used to test the hypothesis. A total number of one thousand, one hundred and sixty-five (1,165) Higher National Diploma students served as respondents for the study. Multistage sampling technique was used in three stages, namely: purposive sampling technique was used to select the schools; stratified sampling technique was used to select the faculties, while proportionate sample of 25% was selected from each stratum. Two research questions were asked and a comprehensive hypothesis was formulated to guide the study. The value for difference in knowledge due to gender was obtained. Based on this, it was concluded that male students of Osun State Polytechnics have more knowledge of pre-marital genetic screening than their female counterparts. The study therefore recommended among other things that social expectations of individuals and communities should be assessed properly before setting programme goals.*

**Keywords:** *Pre-marital genetic screening, students, gender*

### INTRODUCTION

Among their many uses, pre-marital genetic screening most commonly 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. 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 consequence becomes something to strongly consider.

According to El-Hazmi and Warsy (2011), pre-marital genetic screening is 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. It gives the couples information about their predisposition to certain diseases and the odds of passing on those diseases to their unborn children. It is part of every couple's intelligent wedding plan that provides them with opportunity for prevention, management and treatment of diseases. According to WHO (1999) pre-marital genetic screening is aimed at addressing the medical and psychosocial needs of affected individuals and their families through early and accurate clinical and laboratory diagnosis, coordination of the multidisciplinary and long-term management of patients, anticipatory guidance of predicted problems based on the natural history of the condition, genetic counseling and psychosocial support to the patient and family.

El-Hazmi and Warsy (2004) have stated that objectives of the pre-marital screening program considering religious, ethical, psychosocial and economical aspects can be summarized as follows: limitations of the frequency and distribution of blood genetic disorders and minimizing the burden on the individual, family and the community, raise the awareness and knowledge of the community regarding the pattern of inheritance and genetic disorders and appropriate method of selection, help families avoid psychosocial problem that result from the presence of the affected child in the family, minimizing the economic burden on the family and health care providers, limiting negative complications that result from an affected child in the family and affected children in the community.

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 and 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-fertilisation, 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.

Castilla (1999) opines that public education about genetic disorders and birth defects should be attuned to the prevailing cultures, beliefs and values of the populations in any given community. Proper use of the media (particularly radio and TV) is invaluable. Community meetings should be encouraged to discuss important issues, such as the use of alcohol in pregnancy, self-medications, the value of learning

about one's own family medical history, where to go for genetic counseling, among others. Furthermore, WHO (1999) submits that information about genetics usually reaches the public through the sensationalism and distortion by the mass media. Hence, Lanie, Jayaratne, Shelden, Kardina and Anderson (2004) argue that health information presented informally through various media is not always correct. However, in some developing countries parent/patient groups have been organizing with the aim of increasing awareness of the public and their governments about the plight of people with genetic disorders, birth defects and disabilities through which these organizations are bringing a humane approach to available genetic services and prevention programs.

Al Sulaiman, Saeedi, Al-Suliman, and Owaidah (2010) find that there was a fair knowledge among three groups of Saudi participants about the nature of tests for targeted disorders included in pre-marital screening programme. According to them, another study conducted which explored the impact of the pre-marital genetic screening programme and genetic counseling on couples at risk for thalassemia and sickle cell anemia in an area of the country with high hemoglobinopathy prevalence, found a lack of awareness about genetic diseases and a misunderstanding of the impact of genes on health. The study showed some early benefits of the pre-marital genetic screening in prevention of the targeted diseases and confirmed that the program helped in early detection of the disease in their offspring.

Chen, Lu, Wang, Ma, Zhao, Guo, Hu, Wang, Huang, and Chen (2008) opine that though students' attitudes 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 society at large in developing countries about developments in human genetics and their application in health and wellbeing. Education has an obvious effect on the knowledge of the respondents as the total score of their knowledge had improved after implementation of the teaching unit. Also, there was a significant relationship between nursing students' knowledge towards genetic counseling before and after implementation of the teaching unit (Sobhy, Shoeib, and Zaki, 2001). 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. Similarly, in Cyprus the incidence of b-thalassaemia was reduced through health education (Abioye-Kuteyi, Oyegbade, Bello and Osakwe, 2009).

El-Hazmi (2006) states that the World Health Organization has repeatedly recommended several measures to prevent genetic diseases including health education and the improvement of community knowledge and attitude towards the control of hereditary genetic diseases. While according to Alam (2006), health education is an important means of improving the public perception of newly introduced health interventions. Studies conducted about pre-marital genetic screening revealed low knowledge of adolescents about this important issue. A comprehensive epidemiological

study including health education campaign for university students about pre-marital genetic screening is urgently needed (Ibrahim, Al-Bar, Al-Fakeeh, Al-Ahmadi, Qadi, Al-Bar and Milaat, 2011). According to Nazli and Umit (2005), health education is one of the tools to provide individuals with the knowledge, skills, and motivation to make healthier lifestyle choices especially when properly targeted. Many young women and men enter into marriage with insufficient information on sexuality, reproduction, and family planning (Bastani, Hashemi, Bastani and Haghani, 2010). Addressing young couples' needs about information on reproductive health remains a critical area for expanded health education interventions through a range of media, including in-school and out-of-school information programs (Beamish, 2003).

According to Mahini (2009) there is a big lack in knowledge related to reproductive health even among educated persons. Media and friends, not health professionals, are the primary sources of health information for young women and men of all ages; hence, inadequate information is expected in youngsters (Baron-Epel, 2003). In spite of the increased exposure to genetics, recent studies of the peoples' genetics knowledge show a relatively low understanding of genetics concepts (Petty, Kardia, Mahalingham and Pfeffer, 2000.) Without the knowledge of basic genetics, many find it hard to distinguish valid genetic information from misinformation (Jennings, 2004). According to Al-AaMa (2010), the effectiveness of carrier screening programs depends largely on the knowledge of the target population. One very important factor is the timing of the screening. The genetic screening is usually done as a formality and as a final step in the preparation for marriage; hence, an unexpected result may therefore need to be ignored by the couple or their families for various cultural, social, emotional and financial reasons (Hesketh, 2003).

Very little attention has been paid to-date on the need to educate society at large in developing countries about developments in human genetics and their application in health and wellbeing. Information about genetics usually reaches the public through the sensationalism and distortion by the mass media. Improving the peoples' knowledge will improve their understanding and cooperation which is capable of decreasing the number of marriages among carriers. There is a big lack in knowledge related to reproductive health even among educated persons. According to Bazuaye and Olayemi (2009), media and friends, not health professionals, are the primary sources of health information for young women and men of all ages; hence, inadequate information is expected in young people. It is on this premise that this study is out to examine the knowledge of pre-marital genetic screening among students of Osun State Polytechnics. Hence, the study sought to answer the following questions

- 1) Are students of Osun State Polytechnics aware of genetic diseases?
- 2) What are the sources of health information among students of Osun State Polytechnics?

A comprehensive proposition was formulated to guide the study. There is no significant difference in the knowledge of pre-marital genetic screening due to gender among students of Osun State Polytechnics.

## METHODOLOGY

The purpose of this study is to examine the knowledge of pre-marital genetic screening among students of Osun State Polytechnics. The descriptive survey research design was used for this study. It is considered appropriate because according to Best and Kalin (2003), descriptive survey is concerned with the condition and relationship which exist, practices that prevails, point of view or attitude that are held, processes that are going on, effects that are being felt or attitude that are developing. The population for this study comprises all students of Osun State Polytechnics. The sample for the study was one thousand, one hundred and sixty-five (1,165) respondents drawn from Osun State Polytechnics. Multistage sampling technique was used in the following order: stratified sampling technique was used to select the faculties; purposive sampling technique was used to select Higher National Diploma students; while proportionate sample of 25% of the total population was selected from each stratum (department) using simple random sampling technique.

The instrument used for this study is self developed questionnaire of Students' Knowledge of Pre-marital Genetic Screening Questionnaire (SKPGS) designed according to variables tested in the hypotheses, using four-point likert scale format. To establish the reliability of this instrument, the collected data from pre-testing was subjected to Crombach Alpha Correlation Coefficient to find its reliability. Following this, 0.84 was obtained as reliability value. Descriptive statistics of frequency count and percentage were used to analyse the demographic data while t-test was used to analyse the only hypothesis formulated for the study.

## RESULTS AND DISCUSSION

Table 1: t-test table showing Difference in Knowledge Due to Gender

| Knowledge | N   | Mean  | Std. Dev. | Crit-t | Cal-t. | DF   | P    |
|-----------|-----|-------|-----------|--------|--------|------|------|
| Male      | 666 | 34.91 | 4.78      | 1.96   | 2.09   | 1163 | .037 |
| Female    | 499 | 34.31 | 5.00      |        |        |      |      |

(Crit-t = 1.96, Cal.t = 2.091, df = 1163, P < .05 level of significance).

From the table 1 above, the null hypothesis that there will be no significant difference in knowledge of pre-marital genetic screening due to gender among students of Osun State Polytechnics was rejected. That implies that there is significant difference in knowledge of pre-marital genetic screening due to gender among students of Osun State polytechnics. The mean value (34.91) gotten from the table above showed that male students of Osun State Polytechnics have significantly higher knowledge of pre-marital genetic screening than their female colleagues with the mean value of 34.31. The result of this study showed that there is significant difference in the knowledge of pre-marital genetic screening due to gender among students of Osun State Polytechnics. This is reflected in the mean value of male students which is greater than that of the female students.

This result is in line with the findings of Ganczak, Barss, Alfaresi, Almazrourei, Muraddad and Al-Maskari, (2007) which showed that males scored higher on knowledge and were more susceptible to fear of diseases than their female counterparts. Conversely, Al-Aama, Al-Nabulsi, Alyousef, Asiri, and Al-Blewi (2008) in a study on knowledge regarding the national pre-marital screening program among university students in western Saudi Arabia, they found out that females have more knowledge than males. Sobhy, Shoeib and Zaki (2001) submit that there is a positive correlation between knowledge and attitude, hence, this study and similar studies like that of Abd-Al-Azeem, Elsayed, El-Sherbiny and Ahmed (2011) demonstrate that females were more oriented and more knowledgeable with important health issues related to pre-marital genetic screening than males which they said later reflected on their better attitude. Al-Aama (2010) in a study on attitudes towards mandatory national pre-marital screening for hereditary hemolytic disorders discovers that women also had better knowledge and stronger attitudes toward the implementation of screening with a significantly higher number of female respondents believing that the pre-marital screening should be mandatory and that marriage should not be allowed between two carriers of the same disorder.

They speculated that the discovery may reflect the belief that women in some societies may bear more of the burden of a handicapped or chronically ill child and they have less opportunity to a second chance than men. Similarly, Arulogun and Adefioye (2010) find out that females tend to have more knowledge about issues relating to reproductive and sexual health than their male counterparts. The reason they adduced to this is the fact that many of the Christian religious organizations have a compulsory counseling sessions for intending couples which last for months before the marriage is conducted. In these counseling sessions, the intending couples are educated on issues regarding marriage and the home; whereas, in most religious places in Nigeria, especially in churches, there are usually more women than men.

## **CONCLUSION AND RECOMMENDATIONS**

This study aimed at examining the knowledge of pre-marital genetic screening among students of Osun State Polytechnics, Esa-Oke. Based on the findings, it was observed that there is much knowledge of pre-marital genetic screening among the students of Osun State Polytechnics due to the availability of health information from different sources. Male students of Osun State Polytechnics are more knowledgeable about pre-marital genetic screening than their female counterparts. It has therefore recommended the following

- 1) The health beliefs, traditions, religious observances and social expectations of individuals and communities should be assessed properly before setting program goals, and respected thereafter. These goals should never be set in ways to impose certain genetic screening or reproductive decisions on individuals.

- 2) To encourage a transformation from passive knowledge in pre-marital genetic screening gained through accidental learning, there is an urgent need for the inclusion of Health Education in the curriculum of Nigerian Polytechnics to be taught as a course.
- 3) Governments should recognize that within any country there exists diversity of cultures and opinions about a number of issues relevant to genetics. These include human reproductive issues, and community and individual approaches to the significance of disabilities, this diversity should be respected.

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