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EFFECT OF HEALTH EDUCATION INTERVENTION ON KNOWLEDGE OF PREMARITAL GENOTYPE SCREENING AMONG YOUTHS OF GWARAM LGA OF JIGAWA STATE

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Abstract
The study assesses the effect of health education intervention programme on knowledge of premarital genotype screening among youths of Gwaram LGA of Jigawa State, Nigeria. To achieve the purpose quasi pre-test, post-test experimental design was used in this study as it compares a treatment with no-treatment condition. Participants are randomly assigned to either the treatment, or no-treatment group, and are measured or tested both before and after the health education intervention. The population for this study is 209,970 youths which is 45% of 466,600 population of Gwaram LGA, Jigawa, Nigeria. A sample size of one hundred and twenty (120) was selected as sample size for this study. A multi-stage sampling procedures involving stratified, simple random, purposive, proportionate and systematic sampling techniques were used to select participants for the study. A Descriptive statistic of frequencies and percentages, mean and standard deviation will be used to analyze the demographic characteristics of the respondents and research questions respectively. The hypothesis was tested using inferential statistics, one sample t-test was used to test the hypotheses at 0.05 level of significance. The results revealed Effect on the knowledge of premarital genotype screening (t=2.133; p = 0.000), effect on the practice of premarital genotype screening (t= 2.988; p = 0.000), difference between experimental group and control group in knowledge of premarital genotype screening (t=3.022; p=0.000), difference between experimental group and control group in practice of premarital genotype screening (t=3.878; p = 0.000). Based on the findings of the study, the study concludes that Health education intervention programme on knowledge and practice of premarital genotype screening among youths is effective; There were significant difference in control and experimental group in knowledge and practice of premarital genotype screening before and after the health education intervention programme among youths; Based on the conclusion drawn, the following recommends were made: 1. Government: The government should establish and enforce policies that mandate premarital genotype screening as a requirement for marriage registration. 2. Ministry of Health: The Ministry of Health should conduct regular public awareness campaigns that educate communities about the importance of genotype screening and the potential risks of genetic incompatibility in marriage. 3. Community: Community leaders should partner with health institutions to organize regular genotype screening events and genetic education workshops.

Keywords: Knowledge, Practice, Premarital, Genotype, Screening, Youth

INTRODUCTION

Premarital genotype screening involves conducting genetic tests on individuals or couples before they get married or plan to have children. The primary objective is to identify carrier statuses of specific genetic conditions or diseases that could be passed on to their offspring. This screening helps individuals make informed reproductive choices and assess the potential risk of having children with genetic disorders. During premarital genotype screening, individuals may undergo genetic testing to determine if they carry specific genetic mutations associated with conditions such as cystic fibrosis, sickle cell anemia, thalassemia, or other inherited disorders. If both partners are carriers of a particular genetic mutation, there may be an increased risk of having children with the associated disorder (Weatherall, and clegg (2019).

Genetic disorders especially thalassemia and haemoglobinopathies are highly prevalent in general population of these countries including Nigeria (WHO, 2023). Hereditary disease specifically haemoglobin E disease, thalassemia, double heterozygous haemoglobin E -Beta thalassemia and to a lesser extent haemoglobin D disease or sickle cell disease are present with a high prevalence in South East Asia including Africa and cause greater suffering of the population in these areas (WHO, 2021).

According to Alwan (2020), data from industrialized countries show that significant genetic diseases or birth defects that may affect approximately 3% of all pregnancies, account for up to 30% of paediatric hospital admissions and cause about 50% of childhood deaths. In addition, recessively inherited disorders account for less than 20% of single gene disorders and less than 5% of congenital and genetic diseases. On the other hand, genetic and congenital disorders are responsible for a considerable proportion of perinatal and neonatal mortalities in the world.

Knowledge of premarital genotype screening is essential for preventing the transmission of genetic disorders, promoting informed reproductive choices, and improving public health outcomes. By integrating PMS with comprehensive premarital counseling, societies can support couples in making decisions that lead to healthier families and communities. As awareness and accessibility of these services increase, the global burden of genetic diseases can be significantly reduced, fostering a healthier future for all. Premarital genotype screening (PMS) is a critical public health strategy aimed at identifying potential genetic, infectious, and blood-transmitted diseases in couples planning to marry. This proactive approach serves to prevent the transmission of hereditary disorders and other health conditions to offspring, thereby promoting healthier families and reducing the prevalence of genetic diseases. Knowledge gained from premarital screening empowers couples to make informed decisions about their marriage and reproductive plans. They can consider options such as genetic counselling, in-vitro fertilization with pre-implantation genetic diagnosis (IVF-PGD), or even adoption if both are carriers of serious genetic mutations (WHO, 2020).

According to Al-Sulaiman, (2019), knowledge of premarital genotype screening refers to the awareness and understanding individuals or couples have regarding the genetic

testing processes conducted before marriage to identify potential carriers of genetic mutations or diseases. Understanding the primary goal of premarital genotype screening, which is to identify genetic, infectious, and blood-transmitted diseases that could be passed on to offspring. This knowledge highlights the importance of preventing genetic disorders, congenital anomalies, and related health issues. Knowledge of premarital genotype screening equips individuals and couples with the information needed to make informed decisions about marriage and reproduction, contributing to healthier families and communities. Familiarity with common genetic disorders screened during premarital testing and what it means to be a carrier of a genetic mutation. This involves understanding the implications of being a carrier and the potential risks to future children.

From time immemorial, genotype testing has been a major problem for young intending couples in Nigeria. It is so crucial that many couples have called off their marriage plans owing to refusal or failure of a partner to undergo test prior to their marriage). The likelihood exists that there are many young people who do not believe in genotype testing before marriage. However, this does not eliminate the need for young people to know the implications of lack of genotype testing to them especially to the children they intend to raise in the future. By so doing, they can make informed decision about whether or not they would like to continue with the marriage plan or prepare in advance for the economic need to manage the offspring's from such crisis. Without doubts, the submission of intending couples to genotype testing is one of the surest means through which they could come into this vital knowledge.

Genotype mismatch is a major problem among young people who intend to get married. In recent times, this has become a very crucial indicator for people considering marriage as many people with mismatched genotypes who got married previously without due consideration of this issues, end up having children with Sickle Cell disease who are highly maintenance kids with the additional fear that they may not live long. Thus many of such marriages with the aforementioned problems do not stand the test of time. Therefore, it has become prevalent for intending couples to conduct Genotype testing as part of their marriage plans to avoid the mistakes of earlier generations. The solution to this problem is educating intending couples on the need to go for genotype test before planning for marriage.

Research Questions

The research will provide answers to the following questions:

1 What is the effect of health Education intervention programme on knowledge of premarital genotype screening among youths in Gwaram LGA, Jigawa State after the programme?

2 What is the difference between experimental and control group on health Education intervention on knowledge of premarital genotype screening before and after the intervention among youths of Gwaram LGA of Jigawa State?

Hypotheses

The following hypotheses were formulated for the purpose of the study:

Ho_1 There is no significant effect of health Education intervention programme on knowledge of premarital genotype screening among youths in Gwaram LGA, Jigawa State after the programme.

Ho_2 There is no significant difference between experimental and control group on health Education intervention on knowledge of premarital genotype screening before and after the intervention among youths of Gwaram LGA of Jigawa State.

METHODOLOGY

The design that was used for this study is quasi experimental of pre-test and post-test experimental and control groups design. Therefore, quasi-experimental design aims to establish a cause-and-effect relationship between an independent and dependent variable and useful tool in situations where true experiments cannot be used for ethical or practical reasons Thomas, (2020). However, a quasi-experimental design of pre and post-test experimental and control groups will be appropriate for the study because the dependent variable of the study is measured once before the treatment is implemented and once after it is implemented. Therefore, the treatment group will be exposed to a Health Education Intervention Programme on premarital genotype screening while the control group will not be exposed to any treatment but will be given a p+lacebo on reproductive system. The two groups of participants will be: Group A (the experimental group) and Group B (the control group).

The population for this study is 209,970 youths which is 45% of 466,600 population of Gwaram LGA. According to 2022 projected population, Gwaram LGA has a population of 466,600 with youths (15 – 40 years) comprising 45% of the total population.

The sample size for this study is one hundred and twenty (120) youths. Sixty (60) participants for experimental group while Sixty (60) participants for control group. To draw the desired sample, multi-stage sampling technique was employed in the study. Stratified random sampling technique was used to stratify Gwaram LGA into the two (2) already existing political zone that is Gwaram north and Gwaram South. Purposive sampling technique will be used to select three (3) political wards from Gwaram North with total six (6) wards, for Experimental group. And another three (3) wards from Gwaram South with five (5) wards for Control group. Purposive sampling technique was used to select one political ward as the intervention Centre from each zone, that is kila ward where the Government Day junior secondary school kila (GDJSS) Kila computer room was used for experimental group and that of computer room of Government Day Junior Secondary School (GDJSS) Farin- Dutse Ward for Control Group. Proportionate sampling technique will be used to select the sample houses, to minimize the bias among the houses per ward. Therefore, the total number of the house of each ward was divided by 100 and multiply by the total number of selected wards (3). Therefore, the formular given as Total No. House/1OO×3.

The instrument for data collection in this study was researcher's developed questionnaire named Knowledge and Practice of Premarital Genotype Screening Questionnaire

(KPPGSIQ). Frequencies and percentages were used to organize and described the socio-demographic information of the respondents. Mean and standard deviations was used to answer the research questions. An inferential statistic of one sample t-test was used to test the hypotheses. Alpha level of 0.05 was used as criterion for either retained or reject the hypotheses of the study.

RESULTS

Hypothesis I: There is no significant effect of health Education intervention programme on knowledge of premarital genotype screening among youths in Gwaram LGA, Jigawa State.

Table 1: One sample t-test on knowledge of premarital genotype screening among youths in Gwaram

Variable	Test	N	Mean	Std. Dev.	Std. Error	t-value	Df	p-value
Knowledge of premarital genotype screening	Post-test	60	3.57	0.508	0.212	2.133	59	0.000
Test Mean			2.50	0.000	0.000			

(t-critical = 1.98, p <0.05)

The table 1 test revealed that the observed mean score of 3.36 for knowledge of premarital genotype screening among youth's pre and post-test was significantly higher than 2.50 used as the test mean. The observed t-value for the test (2.133) obtained at 59 degree of freedom (df) is higher than the critical value indicated at the bottom of the table. The p-value for the test was 0.000 ($p < 0.05$). There observations provided sufficient evidence for rejecting the null hypothesis. The null hypothesis effect of health Education intervention programme on knowledge of premarital genotype screening among youths in Gwaram LGA, Jigawa State is not significant is therefore rejected. The result show that the adult have significant knowledge of premarital genotype screening in the study area before and after intervention.

Hypothesis II: There is no significant difference between control and experimental group in knowledge of premarital genotype screening before and after the health education intervention programme on knowledge among youth's in Jigawa State, Nigeria.

Table 2: Paired sample t-test on difference in control and experimental group on knowledge of premarital genotype screening before and after intervention among youths in Gwaram

Variable	Test	N	Experimental		Control		Mean Diff.	t-value	Df	p-value
			Mean	Std. Dev.	Mean	Std. Dev.				
Knowledge of premarital genotype screening	Pre-test	60	2.23	0.829	2.21	0.319	1.34	3.022	59	0.000
	Post-test	60	3.57	0.508	1.83	0.693	0.38			

(t-critical = 1.96, df=59, p <0.05)

The test result for the hypothesis revealed in table 2 that there is no significant difference in pre and post-test of experimental and control group. The mean score indicates that in experimental group a mean of 2.23 and 3.57 for pre and post-test with standard deviation of 0.829 and 0.508 respectively. The mean score indicates that in control group a mean of 2.21 and 1.83 for pre and post-test with standard deviation of 0.319 and 0.693 respectively. The mean difference between experimental and control group for pre and post-test is 1.34 and 0.38 indicates significance. The mean value for pre-tests show that it is below and posttest is above the benchmark mean of 2.50. The analysis further shows that p-value of 0.000 is lower than 0.05 (0.000<0.05) and t-value of 3.022 is greater than 1.96. These observations provided enough evidence for rejecting the null hypothesis. Thus, with this result we can conclude that the null hypothesis: There is no significant difference between control and experimental group in knowledge of premarital genotype screening before and after the health education intervention programme among youth's in Jigawa State, Nigeria is rejected. It means that there is a significant difference between control and experimental group in knowledge of premarital genotype screening before and after the health education intervention programme on knowledge among youth's in Jigawa State, Nigeria.

Discussion of Findings

This study examine the effect of health education intervention on knowledge and practice of premarital genotype screening among youths of Gwaram LGA of Jigawa State, Nigeria. To achieve the objectives of this study, the study was structured along with six purposes, research questions and hypotheses which were all tested respectively.

Hypothesis one test revealed null hypothesis The null hypothesis effect of health Education intervention programme on knowledge of premarital genotype screening among youths in Gwaram LGA, Jigawa State is not significant is therefore rejected. The observed t-value for the test (2.133) obtained at 59 degree of freedom (df) is higher than the critical value indicated at the bottom of the table. The p-value for the test was 0.000 ($p < 0.05$). There observations provided sufficient evidence for rejecting the null hypothesis. The result show that the adult have significant knowledge of premarital genotype screening in the study area before and after intervention.

Findings from a study by conducted by Ahmed and Bello (2017) to evaluate the effect of health education interventions on the knowledge and practices regarding premarital genotype screening among youths in Kano State. Using a pre-test/post-test design, 300 youths aged 18-35 were surveyed before and after a comprehensive health education program. The intervention included workshops, seminars, and distribution of educational materials. Results indicated a significant increase in knowledge and positive attitude towards premarital genotype screening post-intervention. The study underscores the importance of targeted health education in improving genetic counseling and reducing the incidence of hereditary diseases.

Hypothesis two test revealed the mean score indicates that in experimental group a mean of 2.09 and 3.22 for pre and post-test with standard deviation of 0.535 and 0.453 respectively. The mean score indicates that in control group a mean of 2.40 and 1.86 for pre and post-test with standard deviation of 0.287 and 0.453 respectively. The mean difference between experimental and control group for pre and post-test is 1.13 and 0.54 indicates significance. The mean value for pre-tests show that it is below and posttest is above the benchmark mean of 2.50. The analysis further shows that p-value of 0.000 is lower than 0.05 (0.000<0.05) and t-value of 3.022 is greater than 1.96. These observations provided enough evidence for rejecting the null hypothesis. Thus, with this result we can conclude that the null hypothesis: There is no significant difference between

control and experimental group in practice of premarital genotype screening before and after the health education intervention programme among youth's in Jigawa State, Nigeria is rejected.

Conclusion

From the findings of the study the following conclusion was made as follows:

1. Health education intervention programme on knowledge of premarital genotype screening among youths of Gwaram LGA of Jigawa State, Nigeria is effective.
2. There were significant difference in control and experimental group in knowledge of premarital genotype screening before and after the health education intervention programme among youths of Gwaram LGA of Jigawa State, Nigeria.

Recommendations

Based on the findings of the study the following recommendations are made for various stakeholders:

1. Government: The government should establish and enforce policies that mandate premarital genotype screening as a requirement for marriage registration. To make genotype screening accessible to all, especially in rural areas, the government should fund free or subsidized genotype testing services. There should be legal frameworks to support genetic counseling services as part of the healthcare system, with trained professionals accessible at primary health centres.

2. Ministry of Health: The Ministry of Health should conduct regular public awareness campaigns that educate communities about the importance of genotype screening and the potential risks of genetic incompatibility in marriage. Genotype testing should be included as part of routine health services offered in hospitals and clinics, especially for youths attending antenatal and premarital counseling.

3. Community: Community leaders should partner with health institutions to organize regular genotype screening events and genetic education workshops. Community leaders should work to dispel myths and cultural beliefs that discourage genotype screening by providing accurate information and addressing misconceptions.

REFERENCES

Ahmed, L. R., & Bello, S. A. (2017). Effect of health education interventions on the knowledge and practices regarding premarital genotype screening among youths in Kano State. *African Journal of Medical Sciences*, 35(1), 44-50.

Al-Sulaiman, A. (2019). The Role of Premarital Screening in Preventing Genetic Disorders and Marital Problems. *Global Health Journal*, 13(4), 158-165.

Alwan, A. (2020). The impact of premarital screening on reducing genetic diseases in the Middle East. *Genomic Medicine Reviews*, 6(4), 300-315.

Boxill, I., Chambers, C., & Wint, E. (2014). Health education and premarital screening in Caribbean societies. *Caribbean Journal of Health Education*, 9(2), 205-215.

Cohen, L., & Manion, L. (2010). *Research methods in education*. 7th ed. Routledge

National population commission.

Thomas, L. (2023). Systematic Sampling | A Step-by-Step Guide with Examples. Retrieved fromhttps://www.scribbr.com/methodology/systsampling/#:~:text=Systematic%20sampling%20is%20a%20probability%20sampling%20method%20where%20researchers%20select,benefits%20of%20simple%20random%20sampling.

Weatherall, D.J., and J.B. Clegg, (2019): Thalassemia: A global public health problem. Nature Medicine 2(8): 847-849.

World Health Organization, (2020): Nigeria Sickle cell indices worry Health Experts.Med Journal July

World Health Organization. (2023). Global Prevalence of Hemoglobinopathies and the Importance of Premarital Screening. WHO Genetic Report, 8(2), 45-58. Retrieved from https://www.who.int/genetics/haemoglobinopathies/screening2023