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Influence Of Parental Education And Religion On The Efficacy Of Health Education Interventions For Assisted Reproductive Technology In Nigerian Undergraduates.

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ABSTRACT

This study investigates the role of parental education and religious affiliation in shaping the effectiveness of health education interventions aimed at increasing knowledge and acceptance of Assisted Reproductive Technology (ART) among undergraduates in Nigeria. A Quasi-experimental one-group pretest-posttest design was used to assess changes in ART knowledge and acceptance among 143 participants, using multi-stage sampling procedure considering the variables of parents' educational background and religion. The results indicate a significant improvement in ART knowledge and acceptance following the intervention. Specifically, the mean knowledge scores increased from 16.73 ± 6.03 to 29.4 ± 13.4 (mean difference of 12.67) based on parents' educational background, and from 16.73 ± 6.03 to 29.37 ± 13.35 (mean difference of 12.64) for religious affiliation. ART acceptance also showed notable enhancement, with scores rising from 2.97 ± 0.35 to 4.85 ± 0.18 and 3.91 ± 0.98 , with mean differences of 1.88 and 1.01, respectively. These findings highlight the importance of tailoring health education interventions to address socio-cultural factors, thereby improving the overall effectiveness and inclusivity of educational practices in the field of reproductive health. Health education programs on ART be integrated into university curricula and tailored to address both parental educational backgrounds and religious beliefs to enhance their effectiveness and ensure comprehensive understanding among students.

Keywords: Health Education, Assisted Reproductive Technology (ART), Undergraduates, Parents' Educational Background, Religion.

INTRODUCTION

In a world where the dream of parenthood remains elusive for many, infertility has become a critical issue affecting millions globally. Infertility is the inability to conceive after one year of regular, unprotected intercourse or the inability to carry a pregnancy to term, is a profound challenge faced by countless individuals and couples (Sunderam et al., 2021). Assisted Reproductive Technology (ART) has emerged as a beacon of hope, offering innovative medical treatments to help overcome these barriers to conception (Germeyer et al., 2022). ART refers to various procedures designed to assist individuals in achieving pregnancy through advanced reproductive techniques (Feldman et al., 2023). Despite the benefits of ART, the prevalence of infertility remains high.

Infertility affects a substantial portion of the global population, with recent estimates suggesting that around 15% of couples worldwide struggle with infertility (Mascarenhas et al., 2023). This issue is reflected on a national level as well, with specific countries reporting varying rates of infertility. For example, in the United States, approximately 12% of women aged 15-49 years experience difficulty in conceiving, highlighting the significant prevalence of this condition (Chandra et al., 2022). On a more localized scale, recent studies from Nigeria indicate that infertility affects about 20% of couples, underscoring a pressing public health concern (Iheanacho et al., 2023). This high prevalence is often exacerbated by a lack of knowledge about reproductive health, particularly among young people, which is influenced by factors such as parental educational background and inadequate educational programs at grassroots levels (Alabi et al., 2022). These gaps in knowledge contribute to the persistence of infertility issues and highlight the need for improved health education to address these challenges effectively.

Parental educational background significantly influences the knowledge and perceptions of their children regarding various health issues, including reproductive health and infertility. Parental educational background refers to the highest level of education attained by a parent, which often shapes their ability to provide accurate and comprehensive information to their children (Pong, et. al, 2022). A study by Wang et al., (2023) shows that higher parental education levels are associated with better health literacy and more informed attitudes towards reproductive health among their offspring. For instance, a study conducted by O'Connell et al. (2023) found that university-educated parents were more likely to engage in discussions about reproductive health with their children compared to those with lower educational levels, leading to higher awareness and knowledge among their children. Similarly, while parental education plays a crucial role, religion also influences individuals' attitudes and beliefs about reproductive health, adding another layer of complexity to understanding infertility and health education.

Religion, as a complex and influential factor, profoundly shapes individuals' beliefs, attitudes, and practices regarding health and reproductive matters. Religion refers to a system of faith and worship that provides moral and ethical guidance, which can significantly impact individuals' health decisions and perceptions (Miller et. al., 2020). Studies highlights that religious beliefs can both support and hinder acceptance of medical interventions such as Assisted Reproductive Technology (ART). For example, a study by Agrawal et al. (2022) found that religious beliefs strongly influenced the acceptance of ART, with more conservative religious groups showing greater resistance compared to more liberal ones. This study underscores the importance of considering religious influences when designing health education programs. Understanding how parent's educational background and religion influence knowledge and acceptance of ART is crucial for tailoring interventions that are both culturally and contextually appropriate, thus making this study highly relevant for addressing infertility issues within specific contexts.

Given the high prevalence of infertility and the increasing need for ART in Nigeria, this study aims to evaluate how these factors impact the effectiveness of health education interventions. By examining the combined effects of parental education and religion on ART knowledge and acceptance, the study seeks to provide insights that could inform more tailored and culturally sensitive health education programs, ultimately improving reproductive health outcomes among Nigerian undergraduates. It is in this light that the present study seeks to assess the Influence of parental education and religion on the efficacy of health education interventions for Assisted Reproductive Technology in Nigerian undergraduates.

Aim And Objectives Of The Study

The aim of this study was to investigate the Influence of parental education and religion on the efficacy of health education interventions for Assisted Reproductive Technology in Nigerian undergraduates. The specific objectives are as follows:

1. determine the effect of health education on the knowledge of Assisted Reproductive Technology among undergraduates in University of Port Harcourt based on parents' educational background
2. ascertain the effect of health education on the knowledge of Assisted Reproductive Technology among undergraduates in University of Port Harcourt State based on religion.
3. determine the effect of health education on acceptance of Assisted Reproductive Technology among undergraduates in University of Port Harcourt based on parents' educational background.

4. ascertain the effect of health education on the acceptance of Assisted Reproductive Technology among undergraduates in University of Port Harcourt based on religion.

Research Questions

The study will provide answers to the following research questions:

1. what is the effect of health education on the knowledge of Assisted Reproductive Technology among undergraduates in University of Port Harcourt based on parent's educational background?
2. what is the effect of health education on the knowledge of Assisted Reproductive Technology among undergraduates in University of Port Harcourt based on religion?
3. what is the effect of health education on acceptance of Assisted Reproductive Technology among undergraduates in University of Port Harcourt based on parent's educational background?
4. what is the effect of health education on the acceptance of Assisted Reproductive Technology among undergraduates in University of Port Harcourt based on religion?

METHODOLOGY

This study employs a quasi-experimental one-group pretest and posttest design to evaluate the knowledge and acceptance of Assisted Reproductive Technology (ART) based on parents' educational background and religion among undergraduate students at the University of Port Harcourt. Founded in 1975 and located in Choba, Port Harcourt, with 12 faculties, offering undergraduate and postgraduate courses.

The study population includes 18,844 undergraduate students enrolled in the 2018/2019 to 2021/2022 academic sessions. A sample size of 143 students was determined using Cochran's formula with a 95% confidence level and a 4% attrition rate. A multi-stage sampling procedure was adopted, beginning with the random selection of two faculties (Social Sciences and Management Sciences), followed by random selection of two departments from each faculty. Proportionate random sampling was used to select students from each department, and simple random sampling was employed in the final selection stage. Data were collected using a structured self-designed instrument titled "Knowledge and Acceptance of Assisted Reproductive Technology," which consisted of three sections: socio-demographic characteristics, knowledge assessment through 45 True/False items, and acceptance of ART using a 25-item, 5-point Likert scale. Descriptive statistics were used to analyze the socio-demographic data, while mean and standard deviation were computed to address the research questions.

Ethical Approval

This study followed the ethical principles guiding the use of human participants in research. Approval for the study was obtained from the University of Port Harcourt Research Ethics Committee.

RESULTS

Table 1: Socio-demographic characteristics of respondents

Socio-demographic characteristics	Frequency	Percentage
Religion		
Christianity	141	98.6
Islam	2	1.4
Traditional	-	-
Total	143	100.0
Parents' Educational Background		
None	73	51.0
Primary	6	4.2
WAEC	9	6.3
TC2	14	9.8
National Diploma (ND)	15	10.5
HND	9	6.3
Bachelor's Degree	14	9.8
Masters	1	0.7
PhD	2	1.4
Total	143	100.0

Table 1 reveal the socio-demographic characteristics of the respondents. 98.6% were Christians while only 1.4% are of the Islamic religion. The table also showed that None (51.0%) of their parents went to school, however, 10.5 had a National Diploma certificate, 9.8% obtained a TC2 certificate and a Bachelor’s degree, 6.3% had HND and WAEC, 4.2% went to Primary school, 1.4% PhD and 0.7% a Master’s degree.

Research question 1: *What is the effect of health education on the level of knowledge of Assisted Reproductive Technology among undergraduates in University of Port Harcourt based on parent’s educational background?*

Table 2: Mean and Standard deviation on effect of health education on the level of knowledge of Assisted Reproductive Technology among undergraduates in University of Port Harcourt based on parent’s educational background

Education	Pretest Mean	S.D.	Posttest Mean	S.D.	Mean Difference	Decision
None	16.45	6.03	29.2	13.5	12.67	Positive effect
Primary	16.33	5.71	29.1	13.9		
WAEC	27.44	.726	34.7	7.5		
TC2	22.71	2.36	32.4	9.9		
National Diploma (ND)	11.87	.990	26.9	15.3		
HND	13.11	1.36	27.6	14.9		
Bachelor’s Degree	12.93	1.49	27.5	14.8		
Masters	15.00	.00	28.5	19.0		
PhD	18.50	4.95	30.3	13.9		
Total	16.73	6.03	29.4	13.4		

Table 2 showed the mean and standard deviation on effect of health education on the level of knowledge of Assisted Reproductive technology based on Parent’s educational background. The result revealed that pretest mean score of 16.73 ± 6.03 and 29.4 ± 13.4 for posttest respectively with a Mean Difference of 12.67. This indicates a positive effect of health education on the knowledge of ART based on Parent’s educational background.

Research question 2: *What is the effect of health education on the level of knowledge of Assisted Reproductive Technology among undergraduates in University of Port Harcourt based on religion?*

Table 3: Mean and Standard deviation on effect of health education on the level of knowledge of Assisted Reproductive Technology among undergraduates in University of Port Harcourt based on Religion

Religion	Pretest Mean	S.D.	Posttest Mean	S.D.	Mean Difference	Decision
Christianity	16.81	6.04	29.40	13.31	12.64	Positive effect
Islam	11.00	0.00	26.50	17.90		
Total	16.73	6.03	29.37	13.35		

Table 3 showed the mean and standard deviation on effect of health education on the level of knowledge of Assisted Reproductive technology based on religion. The result revealed that pretest mean score of 16.73 ± 6.03 and $29.37.0 \pm 13.35$ for posttest respectively with a Mean Difference of 12.64. This indicates a positive effect of health education on the knowledge of Assisted Reproductive technology based on religion.

Research question 3: *What is the effect of health education on acceptance of Assisted Reproductive Technology among undergraduates in University of Port Harcourt based on parent's educational background?*

Table 4: Mean and Standard deviation on effect of health education on acceptance of Assisted Reproductive Technology among undergraduates in University of Port Harcourt based on parent's educational background

Education	Pretest Mean	S.D.	Posttest Mean	S.D.	Mean Difference	Decision
None	2.98	0.33	4.87	0.15	1.88	Positive effect
Primary	3.08	0.45	4.75	0.34		
WAEC	3.08	0.00	4.93	0.14		
TC2	2.55	0.06	4.83	0.14		
National Diploma (ND)	2.96	0.32	4.78	0.19		
HND	3.25	0.21	4.84	0.23		
Bachelor's Degree	3.18	0.37	4.85	0.21		
Masters	2.56	0.00	5.00	0.00		
PhD	2.52	0.06	4.94	0.09		
Total	2.97	0.35	4.85	0.18		

Table 4 showed the mean and standard deviation on effect of health education on acceptance of Assisted Reproductive technology based on Parent’s educational background. The result revealed that pretest mean score of 2.97 ± 0.35 and 4.85 ± 0.18 for posttest respectively with a Mean Difference of 1.88. This indicates a positive effect of health education on the knowledge of ART based on Parent’s educational background.

Research question 4: *What is the effect of health education on the acceptance of Assisted Reproductive Technology among undergraduates in University of Port Harcourt based on religion?*

Table 5: Mean and Standard deviation on effect of health education on the acceptance of Assisted Reproductive Technology among undergraduates in University of Port Harcourt based on Religion

Religion	Pretest Mean	S.D.	Posttest Mean	S.D.	Mean Difference	Decision
Christianity	2.90	0.34	3.92	0.98	1.01	Positive effect
Islam	2.60	0.00	3.68	1.20		
Total	2.90	0.35	3.91	0.98		

Table 5 showed the mean and standard deviation on effect of health education on the acceptance of Assisted Reproductive technology based on religion. The result revealed that pretest mean score of 2.97 ± 0.35 and 3.91 ± 0.98 for posttest respectively with a Mean Difference of 1.01. This indicates a positive effect of health education on the acceptance of ART based on based on religion.

DISCUSSION OF FINDINGS

Effect of Health Education on Knowledge Based on Parent’s Educational Background: The significant improvement in knowledge of Assisted Reproductive Technology (ART) among undergraduates at the University of Port Harcourt, influenced by parental educational background, highlights the crucial role that family education plays in shaping students' understanding of complex health topics. The pretest and posttest results show a notable increase in knowledge, with a mean difference of 12.67, suggesting that health education interventions can bridge gaps in knowledge that are affected by parents' educational levels (Jalal et al., 2023). This finding was expected, as previous research has established that parental education levels are a strong determinant of children's educational achievements and knowledge acquisition (Adeyemi & Fadeyibi, 2022). The implication is that targeted educational interventions could enhance ART awareness and acceptance among students from less educated backgrounds, promoting more informed decisions regarding reproductive health. This study contributes to the literature by demonstrating that improving health education can effectively address disparities in ART knowledge related to parental education.

Effect of Health Education on Knowledge Based on Religion: The significant effect of health education on ART knowledge, as influenced by religious beliefs, underscores the importance of considering religious context in educational interventions. The observed increase in knowledge, with a mean difference of 12.64, reflects that religious perspectives significantly shape understanding and acceptance of ART (Singh & Chakraborty, 2021). This finding aligns with existing literature, which suggests that religious beliefs can both support and hinder the acceptance of medical technologies depending on doctrinal interpretations (Ahmed et al., 2023). The implication is that health education programs need to be culturally and religiously sensitive to be effective. This study adds to the body of knowledge by highlighting the necessity of integrating religious considerations into health education strategies to enhance their impact.

Effect of Health Education on Acceptance Based on Parent’s Educational Background: The health education intervention's significant impact on the acceptance of ART, based on parental educational background, reveals that increasing knowledge can positively influence acceptance levels. The pretest and

posttest results indicate a mean difference of 1.88, suggesting that improved knowledge leads to greater acceptance of ART among students from different educational backgrounds (Khan, et al., 2022). This outcome was anticipated, given that increased knowledge generally fosters more positive attitudes towards new technologies (Ghani et al., 2023). The implication is that enhancing educational efforts can effectively address skepticism and resistance related to ART. This contribution to the field emphasizes the role of education in overcoming barriers to acceptance of reproductive technologies.

Effect of Health Education on Acceptance Based on Religion: The observed increase in the acceptance of ART, with a mean difference of 1.01, influenced by religious beliefs, points to the complex interplay between religious views and acceptance of medical innovations. This finding shows that while knowledge can improve acceptance, religious beliefs still play a significant role (Osei et al., 2023). This result was somewhat expected, as religious doctrines often influence personal and societal attitudes towards reproductive technologies (Umar et al., 2024). The implication is that while health education can improve acceptance, it must be accompanied by efforts to address religious concerns and provide supportive information. The study contributes to the literature by highlighting that addressing religious factors is essential for enhancing ART acceptance in diverse populations.

CONCLUSION

In conclusion, the study on the influence of parental educational background and religion on the efficacy of health education interventions for Assisted Reproductive Technology (ART) among undergraduates at the University of Port Harcourt reveals significant insights into how these factors impact knowledge and acceptance of ART. The findings indicate that health education significantly enhances both knowledge and acceptance of ART, particularly when tailored to address differences in parental education and religious beliefs. Improved knowledge, driven by targeted health education, positively influences acceptance, though religious beliefs continue to play a crucial role in shaping attitudes towards ART. These results underscore the importance of considering educational and cultural contexts in designing effective health education interventions. The study contributes to the growing body of literature by demonstrating that addressing both educational and religious factors is essential for improving ART awareness and acceptance among university students, highlighting the need for culturally sensitive and inclusive educational approaches to address infertility challenges effectively.

RECOMMENDATIONS

Based on the study's findings, several recommendations can be made to enhance the efficacy of health education interventions for Assisted Reproductive Technology (ART) among undergraduates:

1. **Tailored Health Education Programs:** Develop and implement health education programs that are specifically tailored to address the diverse educational backgrounds and religious beliefs of students. This includes creating culturally sensitive materials and offering workshops that cater to the varying levels of knowledge and acceptance influenced by parental education and religious perspectives.
2. **Incorporation into Curriculum:** Integrate comprehensive ART education into the undergraduate curriculum, especially within courses related to family living and reproductive health. This integration ensures that all students receive consistent and accurate information about ART, regardless of their background.
3. **Engage Religious Leaders:** Collaborate with religious leaders and community influencers to provide education on ART that aligns with religious values and addresses common misconceptions. This can help in fostering a more supportive environment for individuals considering ART and promote greater acceptance within religious communities.
4. **Parental Education Initiatives:** Implement programs aimed at educating parents about ART and its benefits. Such initiatives can help bridge gaps in knowledge that may affect students' attitudes and acceptance of ART, ultimately supporting informed decision-making.
5. **Ongoing Research and Evaluation:** Conduct further research to continuously evaluate the effectiveness of health education interventions on ART. This includes assessing the impact of

these programs on different demographic groups and refining strategies based on feedback and evolving needs.

6. Policy Advocacy: Advocate for policies that support the inclusion of ART education in higher education institutions and ensure that funding and resources are available to support these educational initiatives. This can help in standardizing ART education and making it accessible to a broader audience.

By implementing these recommendations, educational institutions and healthcare providers can enhance the effectiveness of ART education, address barriers to acceptance, and support individuals in making informed decisions about reproductive health.

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