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Gender-Based Knowledge of Biological Risk Factors for Infertility among Students of Tertiary Institutions in Anambra State

*Edith Chinedu Emeagui and Chrysantus Chinyere Onwurah
Human Kinetics and Health Education Department, Nnamdi Azikiwe University, Awka, Anambra State
*Correspondence: emeaguiedith@gmail.com; +2348037112912

Abstract
This study investigated the knowledge of biological risk factors for infertility among male and female students of tertiary institutions in Anambra State. Two research questions guided the study, while one null hypothesis was tested at 0.05 level of significance. This study adopted a descriptive survey design. The population of the study comprised 79,100 undergraduate students in all tertiary institutions in Anambra State. The sample size for the study was791 undergraduate students obtained through stratified random sampling technique. The instrument for data collection is "Knowledge of Biological Risk Factors Associated with Infertility Test (KBRFAIT)".The instrument was validated by three experts. The split-half method was used to test for reliability of the instrument. The reliability index of 0.801 was obtained. The data were analysed using mean and standard deviation to answer the research questions while t-test was used to test the null hypothesis at 0.05 level of significance. The findings of the study showed that the students were moderately knowledgeable of the male and female related biological risk factors to infertility. Based on the findings, it was recommended among others, that there is a need for curriculum planners to introduce sexual and reproductive health education in the post-primary school curriculum.
Keywords: Knowledge, Biological, Risk Factor, Infertility, Tertiary Institutions.

Introduction

The increasing rate of infertility among women is a public health concern. Today, a lot of women tend to suffer from several infertility problems. The alarming increase in infertility is such that in churches, streets, schools, workplaces, there is a possibility of identifying individuals with a fertility problem. The problem of infertility, thus, has almost become a widespread issue. According to the World Health Organization (WHO) (2009), it has been recorded that there exists an infertility problem with one couple in every six couples. Thus, infertility has become a global health problem that requires urgent attention. The prevalence of infertility especially in developing countries like Nigeria is today of serious concern to many. For instance, infertility according to Ikechebelu et al (2015) has been described as the most important reproductive health concern of Nigerian women and accounts for between 60 and 70 per cent of gynaecological consultations in health institutions. Abarikwu (2013) recounted a 65 per cent and a 35 per cent prevalent rate for primary and secondary infertility respectively.

Infertility is the inability of a person, animal or plant reproduces by natural means. WHO (2013) defined infertility as a disease that results in the inability of persons of reproductive age to impregnate or conceive and carry a pregnancy to give birth within two years of sexual intercourse without contraception. According to Mahat et al. (2016), following regular and frequent unprotected sexual intercourse, about 84 per cent of couples in the general population are expected to conceive within one year and about 92 per cent should conceive within two years. This implies that when a couple fails to conceive even after two years of regular frequent coitus and there is no known reproductive pathology, either the male of the female may be considered infertile.

Mamalette (2013) noted that a male is said to be infertile if he is unable to impregnate his partner after one year of unprotected intercourse. A female is considered infertile if she is unable to become pregnant and when she cannot carry the pregnancy to full term despite trying to do so at least for one year. Infertility is of different types, primary and secondary infertility. According to Mamalette, primary infertility refers to a woman who has never conceived a child in the past or a person who has difficulty conceiving. Secondary infertility is described by Mamaletteis a situation where a mother who has had one or more pregnancies in the past is having difficulty conceiving again. Both primary and secondary biological risk factors to infertility are considered in this study.

The biological risk factors of infertility according to Izugbara (2015) are those medical conditions, actions, disorders, phenomena that predispose a person to infertility. Infertility could be due to biological factors such as: producing and releasing immature eggs, endometriosis, sexually transmitted infections (STI), hormonal problems or ovarian cysts, problems with fallopian tubes, the inability of a fertilized egg to properly implant in the uterine lining, uterine disorders, reproductive tract infections, low sperm count, no sperm cells, premature ejaculation, cryptorchidism, varicocele, poor semen quality, malformations in reproductive organs, and

reproductive tract infections (Barak & Baker, 2016). The general biological factors of infertility for both male and female are related to medical issues as organ disorder, disorder from birth, hormonal imbalances, genetics and auto-immunity (Fotopoulou et al., 2015).

These factors do not directly lead to infertility but could expose both male and female to higher risks of developing infertility. Some risk factors specific to infertility in women include abortions, promiscuity, obesity, drug use, poor nutrition, lack of exercise, STI, life-styles, contraceptive use, and vaginal douching (Omoaregba et al., 2016). Similarly, male risk factors for infertility include sexually transmitted infection, exposure to laptop and cell phone radiation, advance in age, occupation, exercise, diet, living arrangements, life-styles and nutrition (Cong, et al., 2016).

Because of the above, researchers, including Fotopoulou, et al. (2015), Ikechebelu et al. (2015) and Sabarre et al. (2013) have stressed the need to increase people's knowledge regarding biological risk factors for infertility. This could include enlightenment programs to enlighten people on the biological risk factors for infertility. Infertility is a reproductive health defect is not life-threatening but tends to have detrimental effects on individuals, their families and the larger society. For instance, Peter and Temi (2016) observed that infertility occurred in 8-15 per cent of all couples in the world. Ikechebelu et al. (2015) further observed that infertility has been described as the most important reproductive health concern of Nigerian women, and accounts for between 60 and 70percent of gynaecological consultations in health institutions.

For instance, Alu (2011) expressed that cases of infertility worldwide are put to 10-30 per cent but in Nigeria, 60 per cent or over of gynaecological clinic consultants are infertility cases. Abarikwu (2013) study subsequently reported a 65 per cent and 35 per cent prevalent rate for primary and secondary infertility respectively. The contribution of these researchers notwithstanding, infertility seems to have remained a public health problem in Anambra State due to its tendency to become a source of sadness and worry among the affected persons irrespective of gender. The high prevalence of infertility cases may be due to poor knowledge of the biological associated risk factors, especially among young adults. The vulnerability of these groups of young people could be because they are in the transition period between adolescence and adulthood. This transition period is a period of psychological, social and sexual changes. Therefore, young people are likely to explore and engage in several risky sexual behaviours.

These behavioural dispositions as Ogu (2013) and Okonkwor (2014) observed could expose them to infertility and other risk factors. For instance, Okonkwo noted that female students in secondary and high institution are prone to contraceptive pills and contraceptive pills today seems to have become one of the fast-selling drugs in the pharmaceutical industries. The pills can be preventive or abortive. Ajayi (2015) noted that girls to avoid unwanted pregnancy have a tendency to abuse contraceptive pills. It even seems to have become a common phenomenon among girls in high institutions to take a contraceptive dosage of pills constantly until they are ready for marriage. Although these behaviours seem rather feminine than masculine, there are male behaviours that could lead to infertility such as young men resorting to pills that could, in the long run, impede spermatogenesis.

Similarly, Ajayi (2016) noted that some young adults to prove their sexual prowess also take erectile dysfunction drugs like Viagra to improve sexual activity or impress their girlfriends. Some go to the extent of installing penile prosthesis that could be used to substance tumescence during sex. The problems of the male and female behaviours could lead to infertility, points to the fact that gender is an important determinant of the biological associated risk factors for infertility. There is a need that every young person, male or female intending to become pregnant in the future need to be aware of the male and female biological risk factors for infertility. Importantly, knowledge of the biological risk factors to infertility in this study means having the knowledge, information or perception of situations or facts that put one at the danger of infertility.

A study such as Dubey (2016) revealed that females displayed higher knowledge about female related infertility risks than males. Another risk factor to infertility among young girls is abortion. The emergence of micro-clinics where abortion may be conducted makes the case seem rather worse. Some may even resort to local and traditional means of abortion. Moreover, with the emergence of the internet, a lot of misconceptions have been sold to school children. Ideas such as "13 reasons you should have sex on your period" (Scott, 2016), "All the ways that masturbation can make you healthier" (Birch, 2020), spread at an alarming speed. Although many of such articles could also be misleading since they may not have any scientific bases. Also, many young people may have a distorted understanding of the subject matter even when the article meant well.

Research has highlighted that knowledge is a key factor associated with fertility. Hence, knowledge about fertility health issues may also help prevent infertility in the first instance. Knowledge about the factors that may also reduce the chances of conception as a lack of awareness in these areas may mean that people unintentionally

contribute to their future fertility problems. More so as Bunting and Boivin (2008) noted that education about fertility issues is needed to prevent potential risk factors to infertility and possible delay in seeking help when faced with problems of conceiving.

Not many studies have examined whether people are aware of the biological risk factors to infertility. Since some behaviour, when left unchecked, expose the students to the danger of infertility in the nearest future while the students are supposed to be aware of the risk factors for infertility. Knowledge level has a key role for preventive measures and lack of knowledge together with some fallacies tends to delay the search for medical help. It has been therefore suggested that increase in the knowledge about risk factors for infertility will likely help students in higher institutions who are mostly adolescents and young adults to refrain from these risk factors which will contribute to decrease in the prevalence of infertility. This is the motivation for this study.

Purpose of the Study

The main purpose of the study was to investigate knowledge of biological risk factors for infertility among male and female students of tertiary institutions in Anambra State. Specifically, the study sought to determine:

1. The level of knowledge of male-related biological risk factors for infertility among students in tertiary institutions in Anambra State;
2. The level of knowledge of female-related biological risk factors for infertility among students in tertiary institutions in Anambra State; and

Research Questions

The following research questions guided the study:

1. What is the level of knowledge of male-related biological risk factors for infertility among students in tertiary institutions in Anambra State?
2. What is the level of knowledge of female-related biological risk factors for infertility among students in tertiary institutions in Anambra State?

Hypothesis

H01. There is no significant difference in the level of knowledge of biological risk factor for infertility between the male and female students in tertiary institutions ($p<.05$).

Materials and Methods

Design of the Study

This study adopted a descriptive survey design. The population of the study consists of 79,100 undergraduate students in all nine tertiary institutions in Anambra State. The sample size for this study was 791 (357 males and 434 females) undergraduate students obtained through disproportionately stratified random sampling technique. The institutions were stratified according to type (university, college of education and polytechnic). Simple random sampling was used to select three Faculties/Schools from each of the three institutions. This gave rise to 9 Faculties. From each of the 9 Faculties/schools, a simple random sampling technique was further utilized to select three Departments. This yielded 27 Departments from which 30 students were further selected randomly.

Area of the Study

The study was conducted in Anambra State. Anambra State is one of the five states in the South-East geo-political zone in Nigeria. There are 21 Local Government Areas in the state and nine tertiary institutions as at the time of conducting this research. Anambra state was chosen for this study because fertility is traditionally valued in the state and cases of infertility tend to attract much stigma with various social consequences. Though the literacy rate may be perceived high, knowledge of risk factors for infertility seems lacking.

Instrument for Data Collection

The instrument for data collection was "Knowledge of Biological Risk Factors Associated with Infertility Test (KBRFAIT)". The instrument was validated by three experts. The instrument has two sections. In section one, the respondents were asked to provide information on some demographic factors such as institution, age and gender. Section two of the instrumentconsisted100 items. This is made up of 20 items on female related risk factors, 20 items on male-related risk factors, 31 items on female related risk factors and 29 items on male-related risk

factors. The items are in checklist format (where students are required to tick true/false). The split half method was used to test for reliability of instrument which yielded a reliability index of 0.801.The researcher administered copies of the instrument with six research assistants.

Method of Data Collection

The researcher administered copies of the instrument on the study sample with the help of nine research assistants. Copies of the research instrument were distributed to the respondents through the direct delivery method.

Method of Data Analysis

Responses to the awareness test items were tallied and the frequencies, percentages, and means were calculated. For research the research questions, the mean of the total score for the items determined. The mean score below 50 was considered as low knowledge, 50 to 69 were considered as moderate knowledge while 70 to 100 were regarded as High knowledge.

Table 1: Knowledge of Biological Risk Factors for Male Infertility

	N	Mean	SD	Remark
Knowledge of biological risk factors for male infertility	766	52.85	16.28	Moderate knowledge

Table 1 reveals that with the mean score of 52.85, the level of knowledge of biological risk factors for male infertility among tertiary education students is moderate.

Table 2: Level of knowledge of biological risk factors for female infertility

	N	Mean	SD	Remark
Knowledge of risk factors for female infertility	766	62.94	17.81	Moderate knowledge

Table 2 showed that with the mean score of 62.94, the knowledge of the risk factors for female infertility among tertiary education students is moderate.

Table 3: t-test of significance on comparison of knowledge of the biological risk factors for infertility among tertiary education students by gender

Source of variation	N	Mean	SD	df	z-cal	z-crit	Decision
Male	357	39.68	11.58				
				764	2.90	1.96	Sig
Female	409	37.44	9.81				

Table 3 shows that the calculated t-value of 2.90 is greater than the critical value (1.96) at an alpha level of 0.05 and the degree of freedom (df) 764. This is an indication that male and female students differ significantly on their knowledge of the biological risk factors for infertility among tertiary education students. The null hypothesis was therefore rejected.

Discussion

The findings of the study are discussed as follows:

Knowledge of the male-related biological risk factors for infertility among tertiary education students.

Findings from the study revealed that the knowledge of the male-related risk factors for infertility among tertiary education students in Anambra state is moderate. This means that tertiary education students possess to some extent knowledge of infertility risk factors such as premature ejaculation, tumour in the pennies, obesity, among others. The finding from this study suggests that men are reasonable knowledge of risk factors to infertility. Going by the findings, it could be possible that with changing trends, men's attitude and knowledge may have changed compared with the findings of earlier studies.

The findings to some extent agreed with the findings of Gerhard et al. (2014). Gerhard et al. observed that about half of the men surveyed showed awareness of infertility risk factors. On the other hand, the finding of the study seems to disagree with Meissner et al. (2016) whose study observed a gap in knowledge about infertility

and were more pronounced in male students. This finding corroborates with that of Dhont et al (2010) whose survey of gender differences showed awareness of risk factors to infertility in favour of women. The reason being that females are more likely to show concern on health-related issues like infertility and would likely go out of their way to seek knowledge on how to solve or prevent a possible problem that could arise.

Knowledge of the female-related biological risk factors for infertility among tertiary education students.

Findings from the study revealed that knowledge of the female-related biological risk factors for infertility among tertiary education students in Anambra state is moderate. This means that the level of knowledge of risk factors to infertility such as abortions, promiscuity, obesity, drug use, nutrition, exercise, sexually transmitted diseases, among others is reasonable. This finding is in agreement with Rouchou and Forde (2015) whose study revealed that there was a moderate level of knowledge among the college participants with regards to the risk factors that may contribute to infertility. The finding is in agreement with Jeje et al. (2016**)**whose study findings revealed that forty-four (62.9 per cent) knew the biological risk factors associated with infertility. The reason for this may be because the studies were both carried out among students who are expected to possess the requisite knowledge related to infertility.

Moreover, these students being in a learning environment are likely to be exposed to higher knowledge due to easy accessibility to infertility information. More so, the fact that these students are knowledgeable of biological risk factors for infertility is good as studies show that such knowledge of infertility issues among students is important. Such appropriate knowledge will likely guide them in their actions, especially as they relate to what might constitute a hazard to the reproductive aspect of their body.

On the other hand, the findings of the study are not totally in line with the study of Hampton and Mazza (2017) which revealed that fertility knowledge in women attending general practice only increased slightly. The reason for this may be based on the study is a cross-sectional survey and the selection process which was done according to the Index of relative socio-economic disadvantage. Nevertheless, the findings as Hampton and Mazza stated, revealed that less than half of the respondents indicated often having fertility knowledge. Similarly, Dattijoet al. (2016) also identified lack of knowledge of infertility showing that there was a low level of knowledge of the biological risk factors associated with infertility among women in Northern part of Nigeria. The reason for this could be related to the observation made by Dattijo, et al. (2016) that belief in supernatural forces is common among the infertile women studied. The finding may also be connected with their level of educational exposure, so the knowledge they possess may be largely based on mirth and not on facts, unlike the case with university students in the current study.

The findings further revealed that male and female students differ significantly on their knowledge of the risk factors for infertility among tertiary education students. The finding of the study to some degree is in agreement with Dhont, et al (2010) whose study observed that there was a significant gender difference in the perceptions towards infertility as women had a higher level of knowledge than men. The reason behind this transcendence in awareness level in females could be due to their higher concerns regarding infertility and the fear of not being able to have a child. The findings of Rouchou and Forde (2015) on the other hand suggested that the awareness level of men and women about infertility risk factors are almost equal. However, in the current study, it was revealed that men had more knowledge of the biological risk factors to infertility. The finding of the current study is no doubt surprising being that females are the ones that are always more concerned about infertility problems and the ones more likely to seek for solutions when problems are identified.

Conclusion

Findings from the study revealed that the knowledge of both the male-related and female-related risk factors for infertility among tertiary education students in Anambra state is moderate. Based on the findings of this study, it is concluded that students in tertiary institutions in Anambra state are knowledgeable of the male and female related biological risk factors for infertility. Also, male and female students differ significantly on their knowledge of the risk factors for infertility among tertiary education students.

Recommendations

The following recommendations were made:

1. There is a need for the curriculum planners to include the study of infertility education and reproductive health in the post-primary school curriculum in Anambra State.

2. School administrators in tertiary institutions should organize workshops and conferences where specialists in health education should serve as resource persons to address the knowledge of infertility issues among students.
3. Health education departments in all tertiary institution should provide more infertility-related reading materials for students in the universities, polytechnics and colleges of education and also produce more infertility-related education-based programs in media during societal gatherings.

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