

Experts' Account of Socio-Cultural and Environmental Factors Affecting Utilization of Assisted Reproductive Technology (ART) in Enugu State

¹Kelechi E. Okpara, ²Ngozi C. Nwadike*

¹Department of Sociology & Anthropology, University of Nigeria, Nsukka

²Department of Social Work, University of Nigeria, Nsukka

DOI : <https://dx.doi.org/10.47772/IJRISS.2024.805079>

Received: 17 April 2024; Revised: 01 May 2024; Accepted: 06 May 2024; Published: 07 June 2024

ABSTRACT

Background: Infertility is one of the major health challenges confronting married couple in Nigeria generally, with recent studies reporting 26.8% prevalence (Oguejio for et al, 2023), and 55.6% secondary infertility in Enugu State (Ndubus is et al, 2021). Compared to global infertility rate of 17.8% (WHO, 2023a), Enugu state has high case of infertility, despite advancements in assisted reproductive technology (ART). The prevalence of infertility globally rose from 7.3 million in 2002, to around 186 million worldwide (The Lancet Global Health, 2022). The increase could be indication of poor utilization of ART and other fertility treatment options, or an increase in failure rate of the procedure. But considering growing evidence on improved outcomes of ART procedures; this study focused on utilization to investigate socio-cultural and environmental factors associated with ART utilization in Enugu State, Nigeria.

Method: The study adopted case study design to investigate fertility experts' account of socio-cultural and environmental factors identified by couple's during consultations as affecting their utilization of ART. The study made use of in-depth interview to obtain data from 18 fertility experts, most of whom are Obstetrics and gynecology consultants in 10 private fertility clinics, and two tertiary hospitals in Enugu State, Nigeria. The result was thematically presented and analyzed within the discursive analysis tradition.

Findings: The study found that in spite of the increase in ART clinics within the state, utilization remains hampered by poor conception of the procedure, and socio-cultural factors that are tied to individuals' commitment to traditional practices. Environmental factors like rural-urban differences, and proximity to fertility clinics were also identified as affecting utilization, but couples' ability to afford the financial requirements of ART was majorly identified as affecting utilization of ART.

Keywords: Infertility; Assisted Reproductive Technology; Utilization; Socio-cultural; Environmental Factors

BACKGROUND

This study investigated how cultural and environmental factors implicated during fertility consultations in Enugu State, Nigeria, as barriers or enablers of assisted reproductive technology (ART) utilization in treatment of infertility. It is premised on the acknowledgement of ART as one of the most prominent medical innovations for addressing the burden of infertility among couples (Sharman et al, 2020); with in vitro fertilization (IVF) as the most commonly utilized assisted reproductive technology (Begum, 2010; Jain & Singh, 2023). However, utilization has been a major issue due to multiple factors, of which socio-cultural, and in recent times, environmental factors have gained momentum as critical determinants of the extent to which couples will utilize ART in providing solutions to infertility experience. Addressing the burden of infertility is the primary goal and focus of most fertility clinics. Enugu State with an estimated population of over 3,257, 298 people, six district hospitals, 36 cottage hospitals, 366 primary health care centres and about 700 private health facilities (Uzochukwu, Onwujekwe & Ezumah, 2014); has in recent times experienced an upsurge of fertility clinics specializing in the use of different assisted reproductive technologies to help couples achieve conception.

The drive in this enterprise corroborates research evidence on the prevalence of infertility. As one of the oldest global health issues, with distinct cultural interpretations and response; infertility has a long history in medical practice (Motta & Serafini, 2002). The history according to Johnston (1962) dates back to antiquity with the earliest man's propagation for the survival of its race as a source of concern. In Western countries, Hawkey (2023) observed that being involuntarily childless, or not meeting childbearing desires is considered more as a biomedical problem and synonymous with other forms of health conditions, illness and disease. Consequently, enormous medical advances have been directed towards addressing the issue of infertility. Motta and Serafini (2002) documented these advances to include In-vitro fertilization and embryo transfer, Gamete intra-Fallopian transfer (GIFT), Zygote intra-fallopian transfer (ZIFT), tubal embryo transfer (TET) among others. Kwaghga and Dewua (2020) recognized ART as an assemblage, because it is an umbrella concept of referring to different techniques and procedures that enables the circumvention of physiological or other forms of impediments to natural conception, with the goal of achieving pregnancy.

But despite these advances, the prevalence of infertility has remained. Number of couples affected by infertility has raised from 7.3 million in 2002 to 48.5 million worldwide (Fortin & Abele, 2016). More recently, the World Health Organization reported that one in every six people of reproductive health worldwide experience infertility in their lifetime. Few years later, Oladapo (2019) reported that about 168 million couples who desire to have children through the natural mechanics of intercourse to achieve pregnancy are unable to do so for a period of time, to which they are called infertile couple. According to World Health Organization (2023b), existing evidence suggests that one in every six people experience infertility in their lifetime, and it's defined as failure to achieve a pregnancy after 12 months or more of regular unprotected sexual intercourse.

In sub-Saharan Africa, estimation of about 30-40% of women is infertile, with female infertility cases accounting for about 55% as against 30% to 40% cases in men and the remaining 5% to 15% cases for unexplained infertility (Araoye, 2003; Begum, 2010). More specifically, Nigeria and Ghana are indicated to have a prevalence rate of 30.3% - 11.8%, as against 10-15% of global prevalence of infertility (Adegbola, & Akindele, 2013). Furthermore, a study that included 27 African countries on prevalence of infertility within the continent reported 10-20% prevalence rate (Fadere & Adeniyi, 2015). This indicates that the continuous prevalence of infertility in developing countries are high compared to the rate found in more developed countries of the north. For example, studies done in Scotland and the USA for over a decade revealed the prevalence rates of 9.1% and 10% respectively (Bhattacharya et al, 2009).

In part, the continued prevalence of infertility despite technological advancements in different ART methods could be due to the obvious failure rate of the procedure. Large sample studies reported only 23.2% clinical pregnancy rate in China (Bai et al, 2020). However, in India, the success rate is high. For example, Praba et al (2022) studied 510 women that approached private fertility clinics in Ramana thapuram, India and reported percentages of success and failure rates. The study shows that out of 118 that were treated through IVF procedure, 75.4% was successful, while 24.6% were not. Nonetheless in other procedures, more negative outcomes were observed such as cases of IVM/OI with natural cycle, in which 84.3% was negative, while only 15% succeeded (Praba et al, 2022). But in developing countries like Nigeria, where success rate is 23.7%, the continuous prevalence of infertility questions utilization of ART. At surface level, the success rate could be regarded as affecting poor utilization, but cost of the procedure has been largely reported (Chikeme, Ihudiebube-Splendor & Arinze, 2022).

Considering the cultural relevance of procreation among the Igbo of Southeastern Nigeria (Isiugo-Abanihe, 1994), and people's willingness to for a workable fertility procedure; the contributing role of socio-cultural and environmental factors needs to be properly accounted for in utilization of ART. In other countries and parts of Nigeria, studies that have interrogated impediments to utilization of some medical innovations towards addressing infertility (Mackay, Taylor & Glass, 2023). For example, culture and religion generally have been implicated in existing studies as barriers to utilization of ART (Aziken et al., 2010; Fadare & Adeniyi, 2015; Sallam & Sallam, 2016; Olorumfemi et al., 2021). Other issues affecting the use of ART, within strong cultural affirmative society like Nigeria has been raised by Egbokhare and Akintola (2020) with reference to culturally and legal interpretations of parenthood. The study problematized the alternation of traditional conception of parenthood and the legal implications of the recent dynamics introduced in both indigenous laws and the Nigerian jurisprudence. It reported that existing laws does not provide tangible clarities on the problems

introduced by ART in areas of succession, nationality and assignment of responsibilities (Egbokhare & Akintola, 2020).

However, critical insights on factors that falls within cultural and environmental classifications that arises whenever ART options are suggested for couples in Enugu State is yet to be investigated from fertility consultants experience working in the state. Therefore, this study engaged fertility consultants in private fertility clinics and tertiary hospitals in Enugu state, to find out the different environmental and socio-cultural factors that are associated with couple's utilization of ART in the state.

MATERIALS AND METHOD

This study investigated socio-cultural and environmental factors, implicated as affecting utilization of ART in 10 Private Fertility Clinics and Two Tertiary Hospitals across three senatorial districts of Enugu State, Nigeria. Enugu State is among the thirty-six states constituting the Nigerian Federation and also one of the states in Southeast geo-political zone of Nigeria. The State is located at 6⁰30¹ North of Equator and 7⁰30¹ East of Latitude and is one of the five states that is indigenous to the Igbo. Prominent cultural groups dominate the state in each political zone structure, and it includes Udi/Eziagu cultural zone, Nkanu cultural zone and Nsukka cultural zone. Fertility is central to marriage and family continuity in the region and are all tied to distinct environments and locations. This implies that fertility decisions are critical in families and the tendency to utilize ART may not be solely dependent on economic considerations. However, in 2016, 84% of married women in the northern zone of the state reported that information on fertility is among their top reproductive health needs (Ezema, 2016), demonstrating the seriousness of fertility related issues among couples in the zone and why policies that could address barriers to effective utilization of ART is important public health issues in the state.

Design, Participants and Sampling

The study made use of case study research design to investigate socio-cultural and environmental factors associated with utilization of ART, as a case of experts experience in private and tertiary fertility clinics in Enugu State, Nigeria. Specifically, we employed the key informant/in-depth interview procedure, to obtain data from purposively selected IVF and infertility specialists in 10 private fertility clinics and two tertiary hospitals in the state. Our attempt was to explain the meanings that people attach to different socio-cultural and environmental factors that shapes how these factors constitutes the excuses they give fertility specialist as affecting their utilization of ART for infertility treatments. First, ethical approval with IRB number (00002323) was obtained from the Health Research Ethics Committee of the University of Nigeria Teaching Hospital (UNTH). Afterwards, a pilot study was conducted in the two teaching/tertiary hospitals in the state to ascertain the clinics to be included in the study. The pilot study was to help us determine clinics with high rate of fertility care patronage. We were also particular on clinics that have and uses ART facilities. We purposively selected the two teaching hospitals in the state because, most consultants in all private clinics within the state, are affiliated to the two tertiary hospitals. Afterwards, a total of ten private clinic was selected in addition to the two tertiary hospitals.

From the 12 hospitals, a total of 18 fertility specialists were purposively selected for the study. In most private fertility clinics, only the major consultant was selected, while in two hospitals, the visiting gynecologists were also included. Therefore, participants were majorly medical doctors/consultant obstetricians and gynecologists specializing on infertility and the use of assisted reproductive technology. Interview was on face-to-face basis, often after appointment was booked over phone call, or after first physical meeting. It was only on few cases that the interview took place, during the first physical meeting, without any prior appointment.

DATA ANALYSIS AND INTERPRETATION

Data obtained from the interview were subjected to discursive analysis, which is described by (Bondarouk & Ruel, 2004) as appropriate for understanding how individuals and group beliefs are conveyed through linguistic expressions and tied to the context of fertility practice within the cultural group. Therefore, our attempt it to go

beyond descriptive presentation of the different responses produced during interview, to interpret the language choices that are commonly used by couple when explaining how socio-cultural or environmental factors affects their utilization of ART. Both authors agreed read the transcripts and agreed on the synthesis to be included in the analysis, especially direct and illustrative quotes. Also, in presenting the data, key findings were thematically arranged to provide easily comprehensible insights on the socio-cultural and environmental factors that shapes utilization of ART for infertility treatment.

RESULT

Description of participants

Table 1: Participants’ socio-demographics

<i>Characteristics</i>	<i>Categories</i>	<i>Frequency</i>	<i>Percentages (%)</i>
SEX	Male	16	88.9
	Female	2	11.1
AGE	< 40years	3	16.7
	40 – 45years	2	11.1
	46 – 50years	4	22.2
	51 years and above	9	50.0
HIGHEST QUALIFICATION	Ph.D	5	27.8
	FWACS/FMCOG	10	55.5
	M.Med/MPH	3	16.7
LENGTH OF PRACTICE	< 10years	3	16.7
	10 – 15years	6	33.3
	16 – 20 years	7	38.9
	> 20years	2	11.1

A total of 18 Medical professionals participated in the study. Most of the participants identified themselves as consulting obstetricians and gynecologist, or simply as fertility expert. More than 55% were fellows of the West African College of Physicians or Surgeon, while 27.8% had PhDs as their highest educational qualifications, and others (16.7%) had Master of Medicine (MMed). Surprisingly, 88.9% of participants were male, while only 11.1% were female. The age range varied from 16.7% that were below 40years old, and 50% that were 51 years and above. In terms of experience, 16.7% have been consulting from less than 10 years. But a greater proportion of the participants (72.2%) had being consulting for 10-20years.

Conceptions of ART

Central to whether and how the people will utilize ART for treatment of infertility is what they conceive it to be. This conception highlights their major understanding and the meanings they assigned to the procedure, often as influenced by their socio-cultural context. Therefore, the meanings do not necessarily need to tally with the

medical conception of the procedure, however it forms the general way of referring to it among the people as contained in the terms they employ when describing it. For example, one of the respondents relating the common ways or terms employed by his clients to describe the use of ART in treating infertility said:

You can see their displeasure once you mentioned IVF, they don't want to find out, it is the next option for them. It's like they are not expecting it. Once you mention it, you will hear them say, doctor, I hope you're not suggesting *nwa technology* [a child conceived through technology]; or some will say, *obaraonyeozo* [another person's blood] (**IDI: 42 years old medical consultant, Enugu Urban**).

A gynecologist in one of the specialist hospitals from Enugu North also described people's conception of the use of ART to imply going outside the natural order and often contrary to God's will. According to him:

What I can say is that it is common, even among the educated clients to see IVF or other ART procedures as going against the natural process. A couple can consult you for five years and consistently turn down IVF options, till they have no other choice left. They feel it's not normal or you can hear them say, it's not the will of God. With such mindset, it becomes difficult to convince them. Also, the idea that fertility is the will of God, is part of why couples hardly seek for medical assistance on time. Before they come for consultations, they have stayed years in marriage, trying different options (**IDI: Male, 45 years old Gynecologist, Enugu North Zone**).

It was also observed that the negative conception of ART derives from rumors or some negative feedback the people may have obtained from couples who tried the procedure, and it did not work for them. One of the respondents said:

Most times, the people are not even aware of what ART truly is, although some, may have generally knowledge of it, especially some educated ones. But what they regard it as, is majorly based on what they have heard about it. Some patients will simply tell you, it's a waste of money, while others will tell you they don't have strength for "try your luck" [an expression that suggest high level of uncertainty]. What does this tell you, they know it's a medical procedure, but because it does not always work, their conviction is not guaranteed, so they describe it as one of the ways we exploit them of their money (**IDI: Male, 52 years old infertility consultant, Enugu Urban**).

However, for the informed couple, the conception tallied with the medical stand of what ART is, but with minor exception that could interfere with utilization. Most of the respondents acknowledged that it is also common to see couple who have done their research before approaching a fertility specialist for consultations. One of the participants, noted this by saying:

I don't think there is one general way the people conceive of ART. I have heard people refer to it with some derogatory expressions like *igba cha-cha nwa* [medical gambling for a child], but I have also seen those who refer to it as it should be. Those derogatory expressions, if you ask me should be of concern because it signifies a threat to the entire practice. But I have also seen couples who took out time to do their research before coming. They have some encouraging insight on the procedure and the different options they can chose from. But even at that, you see some resentment when it comes to them deciding on the type to choose. They can tell you they don't like option A, and you will later realize it's probably because of some negative sentiments they have around it. It may have something to do with either their religious or cultural belief (**IDI: 58 Fertility Consultant, Enugu Urban**).

In all, the prevailing evidence suggests that conception of ART in the area is tied to both scientific and unscientific ideas about the practice. The technological optimism with which ART is introduced to the people, made them to regard its failure as fraudulent medical practice of extorting money from couple. Others believe that the procedure is for the very rich who can afford to use money to improvise against natural procedure for achieving fertility. On the other hand, some derogatory conceptions of ART also derive from socio-culturally standpoint on fertility and acceptable mediums of achieving birth.

Socio-cultural factors in utilization of ART

Most respondents did not consider socio-cultural factors as strong in shaping couple's utilization of ART. Rather couple's ability to afford the cost of the procedure was prioritized as key considerations in actual utilization. It was common for them to emphasize cost implications, even among those that acknowledge the effect that cultural positions may have on couples' utilization of ART, or the type of ART acceptable to the couple. One of the respondents said:

I don't think socio-cultural is a factor, if you have the money, it is about the happiness of your family. Nobody needs to know. Once you and your wife decide and can afford it, why not. It's only when someone is poor and need to go around and borrow money that he will start telling what he wants to do. But there may be one or two aspects of ART in reproduction that some people may reject on cultural basis such as egg donor. I am aware that the Anglican church although supported IVF procedure generally but is against some aspects of the practice on religious ground (**IDI: Female, 44 years old, gynecologist, Enugu urban**).

Another participant said:

I cannot wave the fact that couples may have one or two socio-cultural considerations when choosing to utilize any infertility treatment options. If I do so, it will mean that I am not aware that these cultural excuses, as unscientific as they may sound, are strong forces in taking medical decisions. But if I am to comment from experience, I don't think it is a strong factor, because I have not had to advice couples for or against it (**IDI: 52 years old fertility consultant, Nsukka Cultural Zone**).

A different position was however expressed by a gynecologist who has consulted in the state for over 20 years. According to him:

Socio-cultural factors like inheritance, position in the family and even nature of family, i.e. whether it is a polygamous family have strong influence on all forms of fertility decisions. They may not have direct effect on whether a couple decides to utilize ART, but in cases where the couples are under extended family pressure, it will definitely compel them to use it. But there may also be cases where misconception is high leading to stigma. In such situation, the couple will not even tell anybody that they are going for such treatment option, especially in cases where a donor is needed (**IDI: Male, 60 years old gynecologist, Enugu Urban**).

Another respondent narrated a consulting experience whereby the couple decision on ART utilization was hinged on the man's cultural position. He said:

I think it depends on the individual couple and community. Some communities have strong reservations for inheritance and in such cases, the couple may refuse using donor, even when the man's sperm or the woman's egg is weak. I had this experience in which I confidently, told the man that he should consider using a donor. He was so angry. He even reminded me of his cultural position and how only an heir of their blood lineage can take over from him. He said that instead of him to resort to my suggestion; he will rather not have a child. Instead, he will support his brother's son to take over as the family heir when he is gone; than to bring someone else blood, to head over the cultural institution of their community. This person is very educated and has the money. But he is very committed to their custom. I didn't tell the wife because she may not have it. This is why I think it depends on individual attachment and position in the community (**IDI: Male, 48 years old fertility consultant, Enugu Urban**).

In all the evidence, the strength of socio-cultural factors in affecting utilization of ART was found to be subject to personality and traditional position occupied by the individual, or the extent to which the person is tied to traditional values.

Environmental factors in ART utilization

The nexus between environment and health care is often tied to physical environmental feature or pollutants. However, we considered such conception of environment as narrow because it is insufficient for a critical understanding of environment as an interplay of nature and social. Secondly, it limits insight on how geospatial

locations of individual within and outside the city could influence their access to health care services such as assisted reproductive technology. Therefore, exploring a more robust conception of environment, this study questioned whether the nature of environment where couples reside could impact on their utilization of ART. Environmental factors explored in this regard include locality in terms of its proximity to fertility clinics; rural-urban classification of the environment, and spatial locations within the city where couple reside. We found that aside rural-urban environmental context and proximity to hospitals/fertility clinics, most medical experts do not consider other environmental items as capable of influencing couples' utilization of ART. For example, one of the participants when asked how different socio-environmental contexts can affect couple's utilization of ART said:

It depends, we often use environment in considering growth of organisms and not in utilization. But now that you have said this, I think that those living in urban areas will be more disposed to use ART than those in rural areas. When you compare the rate at which clinics in Enugu is approached by clients for ART, you will not compare it to what we experience here in Nsukka. Even some couple from this town that wants to do it, will prefer going to Enugu, where no body know them, or where they believe it is done better (**IDI: 52 years old fertility consultant, Nsukka Cultural Zone**).

This perspective was also supported by another participant who described most of his clients as people who resides in the urban centre of Enugu and how people in rural locations lack access to good medical consultations regarding their reproductive health challenge. She said:

The environment I can think of is the place where the couple reside. Most of my IVF clients resides in cities. Both here in Enugu town and other major cities in Nigeria. I can't remember ever having anyone couple from the rural area. I think they may not be aware or even if they are, both cost and ability to come for treatment from their may also hinder them (**IDI: Female, 44 years old, gynecologist, Enugu urban**).

Another participant described the relationship in environment and status as inseparable. According to him:

The same way I told you that money has a role to play in couple utilization of ART, that is how where they reside will also affect them. Is it not when you have money, you live in good locations. Let's not forget that where you reside is also related to your social status. Rich people don't live in village or slums. But those who are rich and reside in rural area may be because they are tied to their traditions and customs. If that is the case, they may also not want to use ART because most people in the village have negative idea of it (**IDI: 42 years old medical consultant, Enugu Urban**).

DISCUSSION OF FINDINGS

In this study, we investigated the socio-cultural and environmental factors that shape couples' utilization of ART as a treatment option to infertility. This is in a bid to provide critical insight on socio-cultural and environmental barriers implicated during medical consultations for infertility treatment through assisted reproductive technology (ART). We relied on narratives from experts in fertility treatment in most visited fertility clinics in the state and found that despite the World Health Organization recommendation on using ART as acceptable solution to infertility (Ottun et al, 2023); there are still negative perceptions of assisted reproductive technology among couple in Enugu state. This is evident in the language construct with which they refer to conceptions achieved through assisted reproductive technology. In Northern Nigeria, Adesiyun et al (2011) reported that majority of their respondents (50.7%), had knowledge of ART, yet could not freely express whether they perceive children conceive through the procedure as normal/natural babies or not, while only 18.7% regarded such babies as normal children. Both positions contradict the optimism expressed by Ikechebelu (2003) on the potentials of ART to address the problem of childlessness in marriage within the zone. This indicates that despite growing awareness on ART, the medical advancement has not been accompanied with massive social enlightenment towards addressing some of the misconceptions of the practice. This is further heightened by what appears like a negligence of the role of social scientists like medical social workers in promoting acceptance and utilization of medical innovations. Out of the three synthesized function of social workers in health care setting by Okafor et al (2017), the second point, focused on sustaining treatment outcome as key outcome in utilization. Therefore,

increasing positive perception for improved utilization demands awareness creations that targets existing negative representations of ART in everyday interaction of the people.

Similarly, the possibility of socio-cultural impediments to utilization of ART was barely acknowledged as cost of treatment was mostly identified as the real barrier. Omokanye et al (2017) have reported that cost of utilizing ART is one of its major inhibitors in developing countries like Nigeria. Also, Brezina and Zhao (2012) reported that due to high cost associated with the treatment, it is often available only to couples with the financial strength. What has remained unexplained is how the high cost of the procedure has contributed to the negative perceptions that people have about it, especially with awareness of its success and failure rate. Furthermore, the ease with which most experts disregard socio-cultural factors neglects reports by Mulder et al (2018) that culture, personal beliefs and religion are strong determinants of couple utilization of ART. But despite such low recognition of socio-cultural factors in couple's utilization of ART, there is also evidence from some respondents that socio-cultural factors like nature of kinship/inheritance, husband's position in the family and nature of family can either lead to utilization of ART or deter couples from using it. For example, narratives of couples who are compelled by family pressure into utilizing ART abound, while there are cases of those who could not use some aspect of it, because it contradicts their belief in blood lineage as a key issue in childbirth. Also, since this study does not include direct information from the couple, it is possible that elements of the culture that create barriers in utilization not mentioned to the doctors during consultations, will not appear in this study.

Medical position on the effect of environmental exposures on reproductive and pregnancy outcomes have been tied to natural implications of environmental chemical and nutritional factors (Messerlian et al, 2018). This is based on the understanding that reproductive function is sensitive to changes in physical, psychological and chemical environments, to which occupation factors such as exposure to environmental contamination at work, has been shown to affect success of IVF (Younglai, Holloway and Foster, 2005). Interestingly, recent efforts have shown the need to expand this scope towards health care utilization and our study incorporated this concern alongside socio-cultural considerations. It turns out that most fertility experts that participated in the study did not consider environmental factors such as spatial location, rural-urban differentiation and proximity to fertility clinics as capable of influencing ART utilization. Only few of the participants, acknowledged the strength of environmental factors, but went on to argue that couples with high financial standing is capable of overriding the limitations associated with environmental limitations. This is contrary to Mackay, Taylor and Glass (2023) study that reviewed 19 studies from five databases, and reported that geographical location of the patients, which is environmental in scope, is the most identified factor affecting couple's chances of utilizing assisted reproductive technology. Also, whereas Kunicki et al (2018) study of rural and urban woman differences in assisted reproductive technology outcomes, could not find a statistical difference in IVF outcome; the distribution shows that there were more urban women than rural women in terms of utilization of the procedure.

CONCLUSION

The study found that increase in fertility clinics within the state does not tally with utilization, as the latter remained stalled by negative conception of the procedure, lack of optimism in the procedure outcome and socio-cultural factors that are tied to individuals' commitment to traditional practices. It was also observed that not all fertility experts in the state acknowledged the impact of environmental factors like rural-urban differences, and proximity to fertility clinics in affecting utilization of ART. Rather, couples' ability to afford the financial requirements of ART was dominantly identified in their accounts, as a key inhibitor of ART utilization in the state. We conclude that the inability of fertility experts within Enugu State to recognize the strength of socio-cultural and environmental limitations in utilization of ART, explains why most of the fertility clinics in the state are located within Enugu urban. However, this factor could be addressed through intensive sensitization that involves all stakeholders and anchored by consulting health sociologists, and medical social workers as mediators for addressing the obvious gap.

STUDY LIMITATION

The key limitation of this study is its sole reliance on consultants' account of their experience with couples who approached their clinics for infertility treatment and use of ART. Consequently, the effort to interpret the

language representations employed by the people to describe ART as a treatment option for infertility is limited to the terms that the consultants could recall, while socio-cultural cases identified are based on information disclosed to them during consultations. Nevertheless, the study is expected to expand its scope by including couples who are experiencing infertility, religious leader, and cultural bearers in its subsequent phase. This will help it to expand insights on how the already identified factors interacts to shape overall utilization of ART as well as options for improvement towards sustainable health seeking model that aligns with socio-cultural and environmental peculiarities.

ACKNOWLEDGEMENT

We acknowledge the Tertiary Education Trust Fund (TET Fund) University of Nigeria Nsukka, for funding this research.

REFERENCES

1. Adegbola, O. & Akindele, M. O. (2013). The pattern and challenges of infertility management in Lagos, Nigeria. *Afr Health Sci.*13(4):1126-9. doi: 10.4314/ahs. V 13i4.37. PMID: 24940341; PMCID: PMC4056510.
2. Adesiyun, A. G., Ameh, N., Avidime, S. & Muazu, A. (2011). Awareness and perception of assisted reproductive technology practice amongst women with infertility in Northern Nigeria. *Open Journal of Obstetrics and Gynecology*, 1, 114-148
3. Araoye, M. (2003). Epidemiology of infertility: Social problems of the infertile couples. *West African Journal of Medicine*,22, 190-196.
4. Aziken, M. E., Orhue, A. A., Kalu, O. O., & Osemwemkha, P. A. (2010). Knowledge, perception and attitudes of infertile women in Benin City, Nigeria to the causation of the infertility and in vitro fertilization and embryo transfer. *Tropical Journal of Obstetrician Gynecology*,27, 40-45
5. Bai, F., Wang, D. Y., Fan, Y. J. et al (2020). Assisted reproductive technology service availability, efficacy and safety in mainland China: 2016. *Human Reproduction*, 35(2), <https://doi.org/10.1093/humrep/dez245>
6. Begum, M. R. (2008). Assisted reproductive technology: Techniques and limitations. *J Bangladesh Coll Phys Surg*, 26, 135-141
7. Bhattacharya, S., Porter, M., Amalraj, E., Templeton, A., Hamilton, M., Lee, A. J., Kurinczuk, J.J. (2009). The epidemiology of infertility in the North East of Scotland. *Hum Reprod.* 24(12), 096-107. doi: 10.1093/humrep/dep287. Epub 2009 Aug 14. PMID: 19684046.
8. Bonda rouk, T. & Ruel, H. (2004). Discourse analysis: making complex methodology simply. In T. Leino, T. Saarienen, and S. Klein (Eds). *Proceedings of the 12th European Conference on Information System (ECIS)*. June 14-16,2004, Turku, Finland.
9. Brezina, P. R., & Zhao, Y. (2012). The ethical, legal and social issues impacted by modern assisted reproductive technologies. *Obstetrician and Gynecology International*, 2012,686253
10. Chikeme, P. C., Ihudiebube-Splendor, C. N. & Arinze, L. B. (2022). Awareness, perceived efficacy, and utilization of assisted reproductive technologies among women attending fertility clinic in a Nigerian tertiary health institution: A cross-sectional study. *Pan African Medical Journal*, 42, 181, <https://doi.org/10.11604%2Fpamj.2022.42.181.35153>
11. Egbokhare, O. & Akintola, S. O. (2020). Rethinking parenthood within assisted reproductive technology: The need for regulation in Nigeria. *Bioethcis*, 34, 578 – 584
12. Ezema, I. J. (2016). Reproductive health information needs and access among rural women in Nigeria: A study of Nsukka Zone in Enugu State. *The African Journal of Information and Communication*, 18, 117 - 134
13. Fadare, J. O., & Adeniyi, A. A. (2015). Ethical issues in newer assisted reproductive technologies: A view from Nigeria. *Nigerian Journal of Clinical Practice*,18 Supplementary SI, 57-61.
14. Fortin, C. & Abele, S. (2016). Increased length of awareness of assisted reproductive technologies fosters positive attitude and acceptance among women. In *ter national Journal of Fertility & Sterility*, 9(4), 452 – 464

15. Hawkey, A. (2023). Infertility as a social and public health issue. Liamputtong, P. (eds) Hand book of Social Sciences and Global Public Health. Springer, Cham. https://doi.org/10.1007/9783-031-25110-8_102
16. Ikechebelu, J. I. (2003). Assisted reproductive techniques (ART): The state of the art in Nigeria. *International Journal of Medicine and Health Development*, 8(1), 1-6
17. Isiugo-Abanihe, U. C. (1994). The socio-cultural context of high fertility among Igbo women. *International Sociology*, 9(2), 131-148
18. Jain, M. & Singh, M. (June 7, 2023). Assisted Reproductive technology (ART) techniques. National Library of Medicine. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK576409>
19. Johnston, D. R. (1962). The history of human infertility. *Fertility and Sterility*, 14(3), 261 -268
20. Kunicki, M, Lukaszuk, K., Liss, J., Jakiel, G. &Skowronska, P. (2018). Demographics characteristics and AMH levels in rural and urban women participating in an IV F programme. *Annals of Agricultural and Environmental Medicine*, 25,<https://doi.org/10.26444/aaem/78944>
21. Kwaghga, A. L. &Dewua, R. E. (2020). Assisted reproductive technologies and fertility transition in Nigeria. *Benue Journal of Sociology*, 8(1), 60 – 79
22. Mackay, A., Taylor, S. & Glass, B. (2023). Inequality of access: Scoping the barriers to assisted reproductive technologies. *Pharmacy*, 11(17), <https://doi.org/10.3390 /pharmacy11010017>
23. Messerlian, C., Williams, P. L., Ford, J. B et al (2018). The environmental and reproductive health (EARTH) study: a prospective preconception cohort. *Human Reproduction Open*,2, <https://doi.org/10.1093%2Fhropen%2Fhoy001>
24. Motta, E. & Serafini, P. (2002). The treatment of infertility and its historical context. *Reproductive Bio Medicine Online*, 5(1), 65 – 77
25. Mulder, C. L. Serrano, J. B., Catsburg, L. A., Roseboom, T. J., Repping, S., & van Pelt, A. M. (2018). A practical blueprint to systematically study life-long health consequences of novel medically assisted reproductive treatments. *Human Reproduction*, 33, 784-792.
26. Ndubuisi, V. A., Ezugwu, E. C., Chigbu, C. O., Ekwazi, K. E. & Onwuka, C. I. (2021). The impact of infertility on the sexual life of infertile women in Enugu, South East Nigeria. *Nigerian Journal of Clinical Practice*, 24(8), 1144 -1149
27. Oguejiofo, C. B., Obi, N. C., Okafor, O. C. et al (2023). A 5-year retrospective cross-sectional study of the pattern of infertility in Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria. *Obstetrics & Gynecology: Open Access*, 7, 166, www.doi.org/10.29011/2577-2236.100166
28. Okafor, A., Onalu, C., Ene, J. & Okoye, U. (2017). Social work in health care setting. In Okoye, U., Chukwu, N. & Agwu, P. (Eds.). *Social work in Nigeria: Book of readings* (pp 135 145). Nsukka: University of Nigeria Press Ltd.
29. Olorunfemi, O., Osunde, N. R., Osian, E. A., Tope-Fakua, L. A., &Fadipe, O. O. (2021). The relationship between religion, culture, cost, ethics and husband perception with the decision of women’s utilization of assisted reproductive technology as methods of infertility management. *Journal of Nursing and Midwifery Sciences*, 8, 268-273.
30. Omokanye, L. O., Olatinwo, A. O., Durowade, K. A., Raji, S. T., Biliaminu, S. A., & Salaudeen, G. A. (2017). Assisted reproductive technology: Perceptions among infertile couples in Ilorin, Nigeria. *Saudi Journal for Health Sciences*, 6, 14-18.
31. Ottun, T.A., Adewunmi, A.A., Jinadu, F.O. et al. (2023). A decennial cross-sectional review of assisted reproductive technology in a Tertiary Hospital in Southwest Nigeria. *BMC Pregnancy Childbirth*, 23(680). <https://doi.org/10.1186/s12884-023-05964-0>
32. Praba L. J., Rajeswari, G. V., Addline, D., Sakthi, V. S. & Bindu, B. B. (2022). Success and failure rate of assisted reproductive technology (ART) treatment with different age group of infertile women in Raman thapuram district, Tamil Nadu. *Uttar Pradesh Journal of Zoology*, 43(20), 33-39, DOI: 10.56557/UPJOZ/2022/v43i203194
33. Sallam, H. N. & Sallam, N. H. (2016). Religious aspects of assisted reproduction. *Facts Views Vision in Obstetrics, Gynecology and Reproductive Health*,8(1), 33-48.
34. Sharma, N., Chakrabarti, S., Barak, Y., & Ellenbogen, A. (Eds.). (2020). *Innovations In Assisted Reproduction Technology*. Intech Open, doi: 10.5772/intechopen.77538
35. The Lancet Global Health (2022). Infertility—why the silence? Retrieved from <https://www.thelancet.com/action/showPdf?pii=S2214-109X%2822%2900215-7>

36. Uzochukwu, B.SC, On Wujek we, O. E. & Ezumah, N. (2014). The district health system in Enugu State, Nigeria: An analysis of policy development and implementation. *African Journal of Health Economics*, 3(1), 1-14
37. World Health Organization (WHO) (2023b). Infertility. Accessed February 02, 2023 from https://www.who.int/health-topics/infertility#tab=tab_1
38. World Health Organisation (WHO) (April 4, 2023a). 1 in 6 people globally affected by infertility: WHO. Retrieved from <https://www.who.int/news/item/04-04-2023-1-in-6-people-globally-affected-by-infertility>
39. Younglai, E.V., Holloway, A.C. and Foster, W.G. (2005) Environmental and occupational factors affecting fertility and IVF success. *Human Reproduction*, 11, 43-57.