

Medical Issues in the use of Assisted Reproductive Technologies among Christians in Nigeria

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DOI: <https://doi.org/10.62154/qjrt.2025.06.01014>

Abstract

Christianity has a significant influence on attitudes towards technology, reproduction, and health in Nigeria, where infertility is predominantly perceived via spiritual and cultural lenses. To balance religion with medical progress, the Nigerian Churches have concerns about the theological and ethical issues that emanated as a result of the introduction of Assisted Reproductive Technologies (ARTs) such as IVF, PGD and surrogacy in solving infertility cases. Unfortunately, due to expensive prices, a lack of theological guidance, and significant cultural prejudices, ART acceptance is restricted in Nigeria; therefore, many couples turn to spiritual treatments and encounter ethical quandaries if they choose to explore advanced medical and technological procedures. In Lagos, 2572 Christians of different denominations participated in a mixed-method study that examined their views on ARTs from a medical and Christian perspective. Results revealed increasing awareness of ARTs but persistent moral and doctrinal confusion. Many participants viewed ARTs as medically beneficial yet spiritually questionable. Socio-economic barriers and emotional distress were also significant challenges for infertile couples. The Church should provide contextual theological education, pastoral counselling, and advocacy for ethical medical practice. Collaboration between clergy, bioethicists, and healthcare providers is vital for guiding couples responsibly. Integrating faith with medical science offers a compassionate, ethical, and practical path for addressing infertility among Nigerian Christians.

Keywords: Assisted Reproductive Technologies (ARTs), Infertility, Health, Medical Science, Nigeria, Theology.

Introduction

Infertility, a significant issue affecting the institution of marriage and social development in the Global South, particularly in Nigeria, is often perceived through a spiritual and socio-cultural lens because many Nigerian Christians believe that procreation is a divine mandate. Religion, particularly Christianity, has placed a crucial role in the evolution of civilisation, medical health, technology, and human reproduction in Nigeria (Genesis 1:28; Psalm 127) (Ogunbiyi, 2025). Before pursuing the available medical options, Nigerian couples experiencing infertility frequently turn to God for help and miracles through prayer,

deliverance, and fasting. It is crucial to combine psychological support with faith-based remedies because couples may experience despair, anxiety, and social stigma even when they are seeking divine solutions to their difficulties or throughout ART procedures (Ogunbiyi, 2025). Since the first successful birth from in vitro fertilization (IVF) in 1978 (Critchley & Saunders, 2009), ART has evolved into a highly specialized and rapidly advancing field that integrates reproductive endocrinology, embryology, genetics, and personalized patient care (Jain, et al, 2025). In Europe, ART also excludes artificial insemination and includes only procedures where oocytes are handled (Calhaz-Jorge, et al, 2016). In addition to providing solutions for infertility, the introduction of Assisted Reproductive Technologies (ARTs) like in vitro fertilisation (IVF), pre-implantation genetic diagnosis (PGD), and surrogacy (Ogunbiyi, 2025) has sparked medical, theological, and socio-ethical discussions within Christian communities as church members consider the implications of depending on medical interventions and whether doing so erodes faith in God's power and miracles or is a sign of divine assistance. This relationship between faith and modern science reflects deeper socio-religious dynamics within contemporary Nigerian Christianity (Ogunbiyi, 2025). Nigeria's cultural focus on large families and male heirs creates challenges for infertile couples, especially women, who face social stigma and emotional distress in both urban and rural communities (Ogunbiyi et al., 2025). The Church plays a vital role in providing spiritual and emotional support. This study is part of a doctoral project titled "Socio-Religious Issues in the Use of Assisted Reproductive Technologies among Church Members in Lagos Mainland Diocese (Anglican Communion)" (Ogunbiyi, 2025). While the prior study emphasised technological disruption and ecclesial responses, this research presents a comprehensive analysis of the medical, ethical, and bio-theological aspects of Assisted Reproductive Technologies (ARTs), differing in scope, research questions, and conclusions.

Statement of the Problem

Despite the accessibility of Assisted Reproductive Technologies (ARTs) in Nigeria, many Christians feel uncertain about their use due to spiritual beliefs around infertility, preferring religious interventions. Factors such as high costs, ethical concerns, and insufficient theological guidance hinder acceptance and accessibility. Additionally, social stigma, gender expectations, and differing denominational doctrines intensify the confusion, while polygamy is not a viable alternative for many, as most Nigerian churches advocate for monogamy (Van Voorhis, 2007 & Ogunbiyi et al., 2025). The majority of infants conceived via IVF do not have birth defects, although some studies indicate a potential increased risk associated with assisted reproductive technology (Hansen, et al, 2005). This growing availability of artificial reproductive technology may lead to medical complications for both mothers and infants, such as low birth weight, placental insufficiency, chromosomal disorders, preterm deliveries, gestational diabetes, and pre-eclampsia (Aiken & Brockelsby, 2016). Although Assisted Reproductive Technologies (ARTs) are becoming more widely accessible in Nigeria, little is known about how Nigerian Christians perceive these technologies from an empirical, theological, and sociomedical standpoint. There are some

important gaps, such as the lack of a common theological position on the ethics of ARTs, the absence of socioreligious data from different denominations of the church, and the disregard for infertile pastoral aids. It is unclear how to reconcile medical advancements with spiritual beliefs, and Christian couples who pursue Assisted Reproductive Technologies (ART) encounter psychological and socioeconomic difficulties. The relationship between religion and medicine is also poorly understood. This situation calls for a deeper understanding of how medical and religious perspectives can be reconciled in addressing infertility among Nigerian Christians.

Objectives of the Study

1. To examine the perception of church members in Nigeria regarding the use of Assisted Reproductive Technologies (ARTs).
2. To identify the major medical issues and socio-ethical concerns associated with ARTs in Nigeria.
3. To assess how theological beliefs influence attitudes toward ARTs among Nigerian Christians.
4. To propose strategies through which the Church can integrate compassionate pastoral care with informed medical guidance in addressing infertility.

Research Questions

1. What are the perceptions of church members in Nigeria regarding the use of Assisted Reproductive Technologies (ARTs)?
2. What are the major medical issues and socio-ethical concerns associated with ARTs in Nigeria?
3. What are the levels at which theological beliefs influence attitudes toward ARTs among Nigerian Christians?
4. What strategies can the Church adopt to integrate compassionate pastoral care with informed medical guidance in addressing infertility?

Theoretical Framework

Three major theoretical approaches underpin this study: the sociological, biotechnological, and biomedical theories.

Sociological Theory: Sociologically, ARTs are not merely medical interventions but social phenomena that redefine kinship, gender roles, and family structures in Nigeria. Structural-functionalists view ARTs as mechanisms that sustain the family unit by resolving infertility even among Christian couples, thus maintaining social stability (Giddens & Sutton, 2021). In contrast, conflict theorists emphasise inequalities in access to reproductive technology, arguing that ARTs reinforce class and gender disparities in Nigeria (Spar, 2006). Feminist scholars critique ARTs for sometimes commodifying women's bodies, particularly through surrogacy and egg donation, while postmodern theorists argue that ARTs challenge essentialist views of family and socio-religious identity. In the Nigerian context, ARTs expose the intersections of religion, gender, and

culture, revealing how spiritual interpretations, especially of the Bible, influence the social acceptance of biomedical practices. For instance, among believers in Nigeria, infertility may be interpreted as divine testing, while ARTs may be viewed as either faith-enhancing or faith-compromising.

Biotechnological Theory: Biotechnological theory focuses on the manipulation of biological systems for reproductive purposes in Nigeria. ARTs such as IVF and ICSI represent the application of scientific methods to overcome natural reproductive barriers among Christian couples and others in Nigeria. Genetic theory explains how traits are transmitted and how preimplantation genetic diagnosis (PGD) helps identify genetic abnormalities in the eggs or sperm of Christian couples before implantation (Niemann & Kues, 2003). Cell theory focuses on the biological mechanics of human reproduction in Nigerian couples (Alberts et al., 2008). While biotechnology provides scientific and socio-religious solutions in Nigeria, it also provokes socio-ethical questions about human intervention in divine creation. The manipulation of gametes and embryos raises concerns about when life begins, echoing biblical affirmations of divine authorship of life: "Before I formed you in the womb I knew you" (Jeremiah 1:5).

Biomedical Theory: According to biomedical views, infertility is a biological issue that can be resolved with the use of contemporary scientific methods and assessment. With an emphasis on quantifiable results like conception rates, this approach serves as the foundation for medical practice in Nigerian reproductive clinics (Greil et al., 2011). However, ART's mechanical approach occasionally ignores the socio-emotional and spiritual aspects of the couples pursuing treatment. This biomedical reductionism is at odds with faith-based worldviews in Nigeria, where patients and medical workers are frequently religious. Therefore, the problem in Nigeria, particularly among Christians, is to combine theological compassion with biological remedies.

Research Methodology

This study draws on data originally collected for the author's doctoral research titled *Socio-Religious Issues in the Use of Assisted Reproductive Technologies among Church Members in Lagos Mainland Diocese (Anglican Communion)* (Ogunbiyi, 2025), as well as insights from a related publication, *Infertility and the Christian Attitudes to Assisted Reproductive Technologies in Nigeria: A Psychological Investigation* (Ogunbiyi, 2025). While the full dataset—comprising 2,572 participants—and detailed methodological procedures are reported in the thesis, including instrument reliability established through a pilot study of 100 participants (Cronbach's $\alpha = 0.84$), and the application of inferential statistics such as Chi-square (χ^2) and Pearson correlation alongside thematic analysis of qualitative data, the present study does not reproduce the dataset in its entirety. Instead, it offers a distinct and original analysis by re-examining selected aspects of the data through a focused medical and bio-technological lens to address new research questions concerning the ethical and clinical implications of Assisted Reproductive Technologies (ARTs) within Nigerian Christian contexts. Ethical approval for the study was obtained from the Research

Ethics Committee of Redeemer's University, Ede, Nigeria, and all procedures adhered to established ethical standards, including voluntary participation, informed consent, and the assurance of anonymity and confidentiality. Particular sensitivity was maintained in addressing issues related to infertility and personal reproductive histories, ensuring that all data were handled with discretion and used solely for academic purposes.

Table 1: Perceived Medical Causes of Infertility

Variable	SA (%)	A (%)	SD (%)	D (%)	Total Agreement (%)
Infertility is on the rise	52	21	11	16	73
Medical conditions (ageing, diabetes, STIs, menstrual disorders)	63	33	–	4	96
Lifestyle factors (smoking, alcohol, diet, exercise)	71	16	5	8	87
Psychological/health factors (stress, anxiety, sleep disorders, heart disease)	68	29	–	3	97

Source: Thesis Field Survey, 2023-2024

Table 2: Acceptance of Clinical Treatment Options for Infertility

Treatment Option	SA (%)	A (%)	SD (%)	D (%)	Total Agreement (%)
Advanced medications	85	15	–	–	100
Surgical interventions	68	23	9	–	91
ARTs as viable treatment	91	9	–	–	100

Source: Thesis Field Survey, 2023-2024

Table 3: Awareness and Familiarity with ART Procedures

Variable	Yes (%)	No (%)	Uncertain (%)
Awareness of ARTs	99.9	0.03	0.07

Source: Thesis Field Survey, 2023-2024

Familiarity with Specific ART Methods

ART Method	Awareness (%)
In-vitro Fertilization (IVF)	98.3
Surrogacy	99.9
Egg/Sperm Donation	96.9
Pre-implantation Genetic Diagnosis (PGD)	89.7

Source: Thesis Field Survey, 2023-2024

Table 4: Perceived Medical and Psychological Risks of ARTs

Risk Factor	Yes (%)	No (%)	Uncertain (%)	Undecided (%)
Medical risks (OHSS, ectopic pregnancy, low birth weight, birth defects, infections)	74	9	12	5
Psychological risks (anxiety, depression, stress)	95	3	2	–

Source: Thesis Field Survey, 2023-2024

Table 5: Clinical Benefits and Outcomes of ARTs

Clinical Benefit	SA (%)	A (%)	Total Agreement (%)
Genetic screening and disease detection	93	7	100
Availability of donor gametes	78	22	100
Successful conception and delivery outcomes	89	11	100

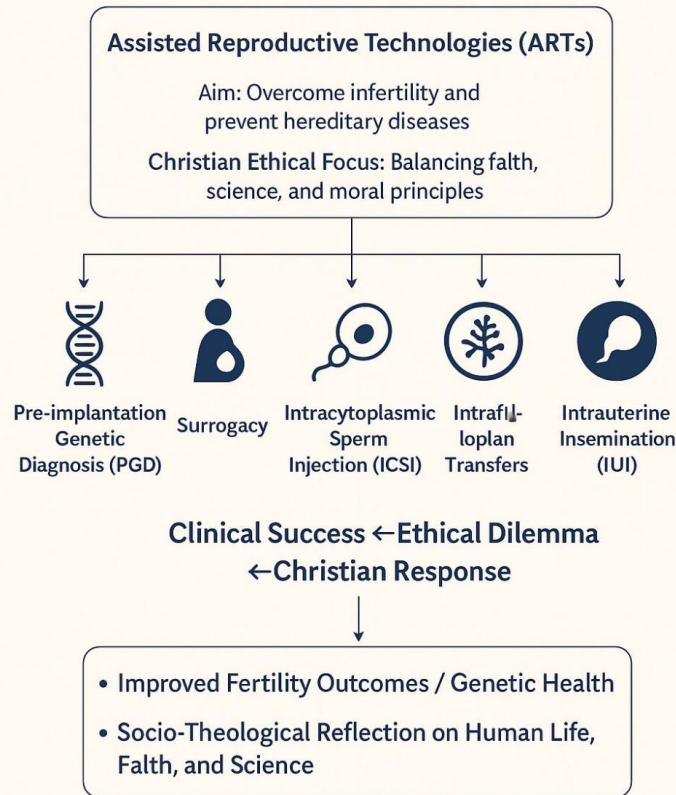
Source: Thesis Field Survey, 2023-2024

Findings and Discussion

The growth, controversies, and acceptance of ARTs are influenced by cultural and religious beliefs, particularly from Islam and Christianity, which hold strong views on practices such as surrogacy, gamete donation, PGD, IVF, and abortion. The average infertility rate across the African continent is about 10.1%, though some countries report figures as high as 32%, with variations between different ethnic groups. In Nigeria, national estimates range from 10% to 30% of couples (Chimbatata and Malimba, 2016). Hospital-based studies further reveal regional disparities: 4.0% in Ilorin (North Central), 15.4% in Abakaliki (South East), and a striking 48.1% in Oshogbo (South West), while data from the Northwest remains scarce. These figures highlight the growing importance of medical support for couples especially Christian couples facing infertility, particularly through the application of assisted reproductive technologies (ARTs), which offer clinical alternatives to natural conception.

The study also found that 2,529 respondents, or 98.3% of the sample population, are familiar with in vitro fertilisation (IVF). Pre-implantation Genetic Diagnosis (PGD) is known to 2,309 respondents, or 89.7% of the sample population. 2,570 people, or 99.9% of the sample, said they were familiar with surrogacy. 2,494 respondents, or 96.9% of the sample population, are familiar with egg or sperm donation. It demonstrates that all of the listed Assisted Reproductive Technologies (ARTs) are widely known among respondents, with surrogacy being the most familiar and PGD being the least familiar. 74% (1,903 respondents) said that issues such as ovarian hyperstimulation syndrome, ectopic pregnancy, early birth, low birth weight, birth abnormalities, and genetic or infection risks were major concerns. 9% (232 respondents) disagreed, 12% (309) were uncertain, and 5% (128) were undecided. This demonstrates that the majority of respondents are aware of the medical issues that may result from the use of ARTs, although a smaller minority disagreed or were unsure regarding the existence or severity of such hazards.

Christian Perspectives on Assisted Reproductive Technologies (ARTs) in Nigeria



Pre-implantation Genetic Diagnosis: This study's findings show that pre-implantation genetic diagnosis (PGD) has helped some Christian couples in Nigeria in avoiding genetic abnormalities such as sickle cell disease, albinism, cancer, and Down syndrome in their sperm and eggs prior to in vitro fertilisation (IVF). Nigeria has over two million individuals with albinism, a hereditary condition marked by low melanin production. Causes include recessive alleles OCA1 and OCA2, and mutations in the TRP-1 gene may lead to additional forms of albinism like OCA3. A study in southwestern Nigeria found that 60.4% worked outdoors, and 97.9% suffered from photodermatosis, notably dermatoheliosis (77.1%) and solar lentigines (66.7%). Additionally, 52.1% had actinic keratosis, with 18.8% presenting malignant skin tumours. Genetic counselling and diagnostic options like prenatal diagnosis and preimplantation genetic diagnosis are available for Christian families at risk of albinism (Sani & Yahya, 2023; Enitan et al., 2022; Piyamongkol, 2022). Down syndrome, caused by a third copy of chromosome 21, leads to distinctive physical traits, intellectual challenges, and developmental delays. The risk of having a child with Down syndrome increases with maternal age, rising from less than 0.1% for women under 20 to 3% for those over 45. While trisomy 21 occurs in about 1 in 700 births, maternal age is a significant factor, with most

cases found in mothers under 35. Recent research has shown varying prevalence rates in Africa, including 1 in 865 in Nigeria, 1.3-1.5 per 1,000 in South Africa, and about 1 in 555 in Egypt. For Christian couples in Nigeria at risk, preimplantation genetic diagnosis using FISH offers a comprehensive reproductive solution (Adeyokunu, 1982; Butt, 2025; Weijerman & De Winter, 2010). Sickle Cell Disorder (SCD) is the most prevalent inherited blood disorder, affecting around 100 million people globally, with Nigeria bearing a significant burden—150,000 affected births annually and a life expectancy under 20 years for those with SCD. Over 25% of Nigerians carry the sickle cell trait, posing risks for future generations (SCD, 2024; Yawn et al., 2014). Preimplantation genetic diagnosis (PGD) offers a potential solution for at-risk couples to prevent SCD, although its availability faces challenges. Additionally, Nigeria reports 102,100 new cancer cases annually, with a notable prevalence among women, resulting in 71,600 cancer-related deaths each year (Fatiregun, 2025; Lee, 2016). PGD is also applicable for couples with inherited cancer-related mutations, allowing the birth of mutation-free children. In Nigeria, PGD, as one of the ART procedures, helped to limit the transmission of hereditary (genetic) illnesses while also improving clinical and ethical outcomes in the use of ARTs in Nigeria. It was discovered that PGD can also be used for sex selection through the development of sperm sorting and embryo testing methods. Some Christian couples in Nigeria may, as a result of desperation for a male child for bloodline continuity, have used this procedure to procreate, which can lead to gender preference and socio-cultural prejudices. Although non-medical sex selection remains illegal in many jurisdictions, some couples pursue sex selection for both medical (to avoid sex-linked diseases) and personal reasons (Sullivan-Pyke and Dokras, 2018; Flinter, 2001; Kuznyetsov et al., 2018). After ovarian stimulation and egg retrieval, fertilisation occurs in the lab using the father's sperm, followed by testing and transfer of embryos of the desired sex into the uterus (Li & Pantano, 2023). Compared to older methods like the Ericsson method, IVF combined with PGD provides higher accuracy and greater laboratory control, resulting in improved outcomes for sex selection. Ultimately, PGD serves as a vital tool for couples at risk of transmitting inherited disorders, enabling the selection of embryos free from genetic diseases and improving both clinical and ethical outcomes in ART.

Surrogacy: According to Kumari (2021), motherhood is a cherished experience for many women; however, some face physiological challenges preventing them from bearing children. In Nigeria, particularly in cities such as Lagos, Ibadan, Abuja, and Port Harcourt, surrogacy has emerged as a secretive solution adopted by some Christian couples, often with the awareness of a pastor or family. This process involves a surrogate who legally agrees to carry a pregnancy due to the couple's medical inability to conceive naturally (Ezenwa, 2024; Daud & Gustia, 2023). Surrogacy is gaining traction over adoption since the child can be genetically related to the husband and, if fertile, the wife. There are two main types of surrogacy: gestational and traditional (Adeniyi & Owolabi, 2022). The distinction between these two is crucial: gestational surrogacy involves a woman carrying a pregnancy but not providing the genetic material, whereas traditional surrogacy comprises the surrogate supplying the egg, making her the biological mother (Ladomato, 2012).

Commercial surrogacy, where payment occurs, varies in legality and expense across nations, complicating international partnerships. Where it is allowed, agencies screen potential surrogates and manage legalities, although it remains contentious and raises ethical, moral, and legal dilemmas not yet fully addressed by the judiciary (Katiyar, 2021). Traditional surrogacy has evolved from relying on relatives or friends to utilising artificial insemination, connecting the surrogate's egg fertilised by the intended father's sperm to the intended parents (Reznik & Yakushchenko, 2020). For gestational surrogacy, the pregnancy success rates range from 19 to 33%, with a third of cases leading to formal adoption of the child by the intended parents (Bergh et al., 2016). The International Federation of Gynaecology and Obstetrics emphasises upholding the autonomy of surrogates throughout the pregnancy, as altruism remains the predominant motivation for engaging in surrogacy, though financial gain is also cited (Bergh, 2016; Golombok, 2015).

Intracytoplasmic sperm injection (ICSI): Intracytoplasmic sperm injection (ICSI) is an IVF technique that involves injecting a single sperm directly into the cytoplasm of an egg, bypassing the acrosome reaction, which is required in classic IVF that needs 50,000–100,000 sperm per oocyte. Although the preparatory steps are similar for both methods, ICSI results in the formation of a pre-embryo that is later transferred to the uterus. The first successful human pregnancy using ICSI occurred in 1991. This treatment is usually used to treat male infertility, but it can also help in cases when sperm fails to penetrate eggs. It is helpful in teratozoospermia because aberrant sperm morphology does not usually influence blastocyst development. Even in extreme situations, sperm with normal morphology can be found using microscopy, increasing success rates. ICSI is also used in azoospermia patients when viable sperm is present following chemotherapy or previous IVF cycle problems (Boulet et al, 2015; French et al, 2010).

Intrafallopian Transfers: Three main types of intrafallopian transfer procedures have been identified: Gamete Intrafallopian Transfer (GIFT), Zygote Intrafallopian Transfer (ZIFT), and Pronuclear Stage Tubal Transfer (PROST), as described by Romito (2022). GIFT involves placing both eggs and sperm directly into the fallopian tubes through a laparoscopic procedure, allowing fertilisation to occur naturally inside the body. This technique is often recommended for women between the ages of 40 and 42 who still have a good ovarian reserve, serving as a cost-effective alternative to donor egg IVF. Reportedly, GIFT has a pregnancy success rate of about 25–30%, with a 30% chance of multiple births. However, careful choice of fertility clinics is advised, especially for women who have not had success with IVF in the past (Gilson, 2008). ZIFT, by contrast, is used when other fertility treatments have failed. It requires two separate procedures but generally achieves higher pregnancy and implantation rates than standard IVF. The full ZIFT process typically takes around four weeks and may involve stronger hormonal stimulation if earlier medications, such as Clomid, have not produced sufficient results (Zhu, 2011). PROST represents a more advanced approach. It involves transferring both the male and female pronuclei into the fallopian tubes after fertilisation has begun, which helps confirm that fertilisation has occurred successfully. This method is often used for couples dealing with conditions like oligospermia or the presence of antisperm antibodies. Similar to ZIFT, PROST makes use

of in vitro fertilisation techniques and provides additional diagnostic and prognostic benefits for patients with ovarian failure or those who have not had success with other ART procedures (Mokra, 2023). Together, these methods reflect how assisted reproductive technologies continue to evolve, offering a range of tailored options for couples facing infertility.

Frozen Embryo Transfer: Frozen Embryo Transfer (FET) is an in vitro fertilization (IVF) technique where thawed embryos from a previous stimulated IVF cycle are transferred into a woman's uterus. This process often involves embryos from a gestational parent's earlier IVF treatment, though it can also utilize cryopreserved embryos from a donor. The success rates of FET using frozen embryos and fresh embryos are generally comparable, with some studies suggesting a slight edge for fresh embryos due to potential variations in embryo quality and timing of the transfer (Wang & Zhang, 2021). Hormonally supported FET-IVF cycles are increasingly favored for their ease of management, offering hormonal assistance to address ovulation issues. These cycles promote endometrial thickening through a regimen of estrogen and progesterone, crucial for embryo implantation. In contrast, natural FET-IVF cycles depend on the woman's ovulatory process, using hCG injections and progesterone. Recent advances in cryopreservation, particularly vitrification, have improved the success rates of frozen embryo transfers, alongside enhanced thawing and embryo selection protocols. However, the success of FET is influenced by factors such as the woman's age at embryo freezing, embryo quality, and uterine health. Ongoing research aims to optimize these factors to improve FET outcomes in assisted reproductive technology (Boynukalin et al., 2020; Lambert et al., 2020).

Intrauterine Insemination: Ginsburg (2021) characterises intrauterine insemination (IUI) as a fertility treatment where motile sperm is directly injected into the uterus, aimed particularly at couples facing unexplained infertility. While IUI is less invasive and more affordable than in vitro fertilisation (IVF), concerns about its safety when combined with ovarian hyperstimulation (OH) centre around the heightened risk of multiple pregnancies (Ayeleke et al., 2020). IUI is typically indicated for unexplained infertility, low sperm count, reduced motility, mild endometriosis, single women wanting to conceive, cervical problems, and situations requiring donor sperm to prevent genetic disorders. It is considered a cost-effective first-line option for patients with normal tubal function, achieving clinical pregnancy rates of 10-20% per cycle, though effectiveness is limited in women aged ≥ 35 years, cases of severe male infertility, and significant endometriosis (Allahbadia, 2017). It is particularly favoured for heterosexual couples with moderate male factors and ejaculatory difficulties, with optimal results linked to minimal ejaculatory abstinence and a total motile sperm (TMS) count over 5 million per millilitre. For single women and lesbian couples, IUI using donor sperm is more effective than intracervical insemination (ICI), despite socio-religious challenges in places like Nigeria, where homosexuality is illegal. Although double IUI could enhance success by addressing ovulation timing issues, studies show no significant difference in live birth rates between single and double insemination. Cochrane reviews reveal inconclusive findings contrasting

IUI and timed intercourse but suggest that IUI with controlled ovarian hyperstimulation might yield better results. The impact of various semen preparation techniques on pregnancy outcomes remains uncertain (Marshburn et al., 2009; Ayeleke et al., 2020; Boomsma, 2019).

Although assisted reproductive technologies (ARTs), including in vitro fertilisation (IVF), pre-implantation genetics diagnosis (PGD), and intrauterine insemination (IUI), effectively tackle various forms of infertility, they remain largely inaccessible in Nigeria. This inaccessibility stems from high costs, limited specialised facilities, and strong moral, religious, and cultural objections. Kunhiyop (2008) categorises physical causes of infertility into infections, hormonal disorders, anatomical abnormalities, and unexplained factors, many of which ARTs can address. However, in regions where infertility is often viewed through spiritual or moral lenses, their usage is under-represented. As fertility declines with age, particularly for women post-35 and men post-40 (Klein, 2021), ARTs provide viable solutions like IVF, oocyte cryopreservation, and oocyte donation. Oocyte donation, especially when younger eggs are used, is highlighted as the most effective treatment for older women seeking to conceive. Nevertheless, Klein (2021) also discusses that while techniques such as IVF and experimental methods like oocyte nuclear transfer show potential, they remain largely untested in clinical practice. Older women face heightened challenges with success rates due to deteriorating egg quality, making oocyte donation critical. Furthermore, while the decline in male fertility is less pronounced, it significantly impacts reproductive outcomes. Harris et al. (2011) point out that as sperm quality decreases in men over 40, ARTs, including sperm retrieval and sperm freezing, have become essential for those with age-related fertility issues.

Aspect / Theme	Key Findings	Statistical / Empirical Evidence	Religious / Ethical Implications
1. Cultural and Religious Context	ART growth and acceptance are influenced by Christian and Islamic moral worldviews; infertility seen as both spiritual and social issue.	The majority (73%) of respondents agree that infertility is increasing in Nigeria, while a smaller group (27%) disagree, indicating general awareness of rising infertility trends.	Resistance to ARTs due to belief that conception is divinely ordained; stigma around infertility remains strong.
2. Pre-Implantation Genetic Diagnosis (PGD)	PGD prevents transmission of hereditary diseases (sickle cell, albinism, Down syndrome, cancer).	~2 million with albinism; 25% of Nigerians carry sickle cell trait; 102,100 annual cancer cases.	Ethically acceptable when used to prevent suffering; controversial when used for sex selection; raises questions on divine will.
3. Sickle Cell Disorder (SCD)	PGD can help eradicate sickle cell inheritance	150,000 annual SCD births; life expectancy	PGD seen as moral stewardship of health but sometimes

Aspect / Theme	Key Findings	Statistical / Empirical Evidence	Religious / Ethical Implications
	among Christian couples.	<20 years in Nigeria vs. 60+ in U.S.	resisted due to ignorance or fatalism.
4. Down Syndrome	PGD (using FISH testing) helps detect trisomy 21 before implantation.	1 in 865 births in Nigeria; risk rises with maternal age.	Raises moral debate about embryo rejection and sanctity of life.
5. Surrogacy	Increasing practice among urban Christian couples, often kept secret; provides genetic continuity.	Common in Lagos, Abuja, Port Harcourt.	Seen as violating marital unity; ethical divide between altruistic vs. commercial surrogacy.
6. Types of Surrogacy	Distinction between gestational (no genetic link) and traditional (genetic link).	19–33% success for gestational surrogates; 30–70% adoption after birth.	Theologically contentious: who is the “real mother”?; commodification of childbirth.
7. Intracytoplasmic Sperm Injection (ICSI)	Addresses male infertility; now most common ART technique globally.	Used for azoospermia, low sperm count, and anejaculation.	Raises bioethical questions about “playing God” and long-term health of offspring.
8. Intrafallopian Transfers (GIFT, ZIFT, PROST)	Provides alternative fertilisation routes when IVF fails.	25–30% success rate for GIFT; multiple pregnancy rate ~30%.	Theologically controversial for separating conception from conjugal intimacy.
9. Frozen Embryo Transfer (FET)	Comparable success to fresh embryos; improved by vitrification.	Success influenced by age, embryo quality, uterine health.	Raises concern over embryo storage, disposal, and personhood.
10. Intrauterine Insemination (IUI)	Cost-effective first-line treatment for mild infertility or single women.	10–20% pregnancy rate per cycle.	Moral concern over donor sperm, single motherhood, and non-conjugal conception.
11. Accessibility and Awareness	ARTs remain limited due to cost, infrastructure, and cultural/religious resistance.	High urban concentration; low rural access.	Theological ignorance equates infertility with sin or divine punishment.
12. Age and Fertility Decline	Fertility drops after 35 (women) and 40 (men);	Advanced age reduces IVF success; donor	Raises theological tension between divine

Aspect / Theme	Key Findings	Statistical / Empirical Evidence	Religious / Ethical Implications
	ARTs offer compensatory options.	oocytes improve outcomes.	timing and medical intervention.

Medical Issues in the Use of ARTs

The study results also revealed a link between the three adopted theories and the study's overall findings:

- 1. Accessibility and Socio-Economic Barriers:** Although ARTs offer medical solutions to infertility, accessibility remains limited in Nigeria. The procedures are expensive, with costs ranging from ₦1.5 million to ₦3 million per cycle (Fadare & Adeniyi, 2015). This excludes the majority of low-income earners, making ARTs accessible primarily to the wealthy. Socio-economic inequality intersects with religious belief in shaping medical choices. Wealthier parishioners may pursue ARTs discreetly, while others depend solely on spiritual remedies. Moreover, many fertility clinics operate without strong regulatory oversight, raising ethical concerns about patient exploitation, success rate misrepresentation, and embryo management. Comparatively, Ogunbiyi’s (2025) study reveals that technological innovations, including digital payment systems and assisted reproductive technologies (ARTs), provoke theological concerns and resistance among church communities in Nigeria. The core issue is rooted in how these technologies are perceived through faith and socio-cultural lenses. Ogunbiyi found that 84% of study participants viewed the transition to a cashless system as disruptive, with similar resistance noted towards ARTs due to misinformation and ethical concerns. The study suggests that clergy need to foster awareness and inclusivity by educating congregants on these technologies, framing medical interventions as potentially compatible with divine will, and addressing both spiritual and scientific aspects of infertility.
- 2. Psychological and Emotional Implications:** Infertility often leads to psychological trauma, depression, and anxiety—especially among young women. Couples undergoing ART treatments frequently experience emotional stress due to repeated failures, financial burden, and social stigma. Research indicates that emotional support from faith communities plays a critical role in helping couples cope (Peterson et al., 2008). In Nigerian churches, pastoral counselling can mitigate these challenges when handled with sensitivity. Unfortunately, in some instances, insensitive preaching or moral condemnation exacerbates feelings of guilt. The Church must therefore train clergy to approach infertility as both a medical and spiritual concern, balancing doctrine with empathy.
- 3. Ethical and Bio-Medical Concerns:** ART procedures raise a number of ethical questions that intersect with theology. The creation and disposal of excess embryos, use of donor gametes, and surrogacy arrangements introduce moral complexities. The biblical view that life begins in the womb (Psalm 139:13–16) invites reflection on whether embryos outside the womb deserve the same moral consideration. Additionally, the practice of third-party reproduction challenges traditional Christian notions of marriage and procreation. The introduction of sperm or egg donors can blur boundaries of fidelity and parenthood.

Theologians argue that any procedure undermining the marital bond contradicts biblical teachings on “one flesh” union (Genesis 2:24).

4. The Issue of Medical and Lifestyle history: It was also discovered that individuals’ lifestyles and moral histories—including sexual behaviour, substance use, and general health practices—have significant medical and ethical implications for infertility treatment in Nigeria, especially in the use of Assisted Reproductive Technologies (ARTs). Youth practices such as premarital sex, prostitution, excessive alcohol consumption (Ogunbiyi, 2024) and drug abuse often result in reproductive health problems that lead couples to seek ARTs. The church’s weak moral and health education contributes to these challenges by failing to promote responsible attitudes toward sexuality and bodily care. Harmful habits developed in adolescence frequently persist into adulthood, affecting fertility and creating ethical dilemmas in treatment decisions. Comprehensive medical histories—covering past illnesses, infections, and lifestyle factors—are essential in determining appropriate ART procedures and improving treatment outcomes. These records also expose deeper social and moral lapses rooted in inadequate guidance during youth. The lack of strong formative leadership often produces risky adult behaviour, leaving churches to grapple with the moral question of supporting ART for members whose infertility stems from earlier societal neglect (Ogunbiyi et al., 2025).

5. Pastoral and Ecclesiastical Response: The Church’s response to medical and ethical challenges must be both doctrinally sound and pastorally compassionate. A contextual theology of reproduction should affirm God as the ultimate author of life while recognizing that medical interventions can serve as instruments of grace. Pastoral counselling should help couples discern ethical boundaries, ensuring that scientific solutions align with Christian morality. Training programmes in theological seminaries and diocesan offices should include bioethical education, enabling clergy to address reproductive issues competently. Furthermore, the Church should advocate for ethical oversight in fertility clinics, ensuring transparency, affordability, and protection of patients’ rights.

6. African Theological Perspective: African theological ethics and African Pentecostal approaches bioethical questions from a worldview where life is sacred, relational, and deeply communal (Ogunbiyi & Adedibu, 2025). Unlike Western biomedical ethics, which often emphasizes individual autonomy, African thought sees every human being as bound within a web of relationships—with God, family, ancestors, and creation. In this vision, any medical or reproductive intervention touches not just the individual but the entire community’s spiritual and moral fabric. Bujo’s idea of “vital participation” teaches that moral decisions must enhance the life-force of the community (Bujo, 1998; 2001). Magesa’s belief that “life is the supreme moral value” reminds us that ethical reflection should always aim at the preservation and flourishing of life (Magesa, 1997). Orobator adds that theology must be compassionate and grounded in lived experience, seeing scientific medicine as a way humans can share in God’s creative work (Orobator, 2008; 2011). Viewed through this lens, Assisted Reproductive Technologies (ARTs) such as in vitro fertilisation need not be seen as intrusions into divine prerogative but as potential acts of healing and hope when

guided by moral responsibility. When these technologies restore family wholeness, uphold human dignity, and strengthen the bonds of community, they can be understood as participating in God's life-giving power. However, when they commodify life or disregard its sacredness, they betray the African moral vision rooted in *ubuntu*—"I am because we are."

7. The Place of Artificial Intelligent: Assisted Reproductive Technologies (ART) uses artificial intelligence (AI) to enhance fertility treatment efficacy. AI optimises procedures like ovarian stimulation, sperm and embryo selection, and success prediction while also streamlining workflows. For instance, AI analyses ovarian stimulation data to predict hormone dosages and ovulation timing, potentially reducing patient visits. Additionally, AI evaluates sperm quality for intracytoplasmic sperm injection (ICSI) and employs time-lapse imaging to identify viable embryos for transfer. However, challenges such as data privacy, algorithmic bias, and equitable access persist. Collaboration among medical professionals and religious leaders is essential for rigorous clinical validation and establishing socio-cultural and religio-ethical frameworks for AI in reproductive health. In Nigeria, limited investment in healthcare AI contrasts with technological advancements. The Nigeria Artificial Intelligence Research Scheme (NAIRS) aims to promote local innovation in reproductive technologies, addressing structural hurdles like research funding, stable electricity, and regulatory support to enhance AI's integration into ART services (Ogunbiyi, 2025; Ogunbiyi & Olajugbagbe, 2025).

8. The Contribution of the Professionals: The study's findings also demonstrated that assisted reproductive technology (ART) required a multidisciplinary team of doctors to provide comprehensive patient care. Embryologists are key contributors who manage gametes and embryos using techniques like IVF and cryopreservation, which have a considerable impact on fertilisation success rates. Andrologists specialise in male reproductive health, monitoring sperm quality and assisting with sperm retrieval for infertility. Ultrasonographers provide vital imaging to support procedures such as embryo transfer and egg retrieval. Nurses provide patients with emotional support, information, and procedural assistance throughout the ART process. Mental health professionals offer support for the emotional difficulties connected with infertility. Reproductive urologists treat male infertility with medicinal and surgical procedures. Finally, bioethicists guide the ethical aspects of ART practices, ensuring culturally appropriate discussion of complicated concerns.

Conclusion and Recommendations

The study highlights the significance of Assisted Reproductive Technologies (ARTs) like IVF, PGD, surrogacy, ICSI, and IUI as vital medical interventions for infertility among Christians in Nigeria. Despite recognising the medical advantages of ARTs, acceptance is hindered by cultural beliefs, religious doctrines, and socio-economic challenges. Respondents expressed awareness of ARTs yet exhibited limited understanding of their theological compatibility. While acknowledging the medical efficacy of ARTs, many find them spiritually contentious due to concerns over embryo disposal, third-party reproduction, and

divine sovereignty. A critical need for a theological synthesis that merges faith with medical science is identified, emphasising that ethical and compassionate scientific interventions can coexist with divine providence.

Recommendations include the development of contextual bioethical curricula in churches, training clergy to navigate ARTs through a biblical lens, establishing counselling units for emotional support, and promoting public awareness campaigns to dispel misconceptions. Furthermore, interdisciplinary collaboration among clergy, bioethicists, and medical professionals is advocated to create guidelines for ethical reproductive practices. Financial support initiatives from the Church and Christian NGOs for low-income couples, as well as regulatory oversight from government and ecclesiastical bodies, are essential. The engagement of African theological perspectives, like ubuntu, is encouraged to foster a communal understanding of ARTs. Lastly, responsible use of artificial intelligence in ART must adhere to ethical and theological guidelines to ensure equitable access and prevent misuse.

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NOTICE OF ETHICAL APPROVAL

Title of Study: "Socio-Religious Perspectives of Assisted Reproductive Technologies and its Implication in Lagos Mainland Diocese (Anglican Communion)"

Reference number: RUN/REC/2024/216

Thank you for your recent application for an ethical clearance. In giving this final approval, the Redeemer's University Ethics Committee, has also noted the expertise of the principal investigator Prof Babatunde Aderemi Adedibu and members of his research team including David Oluwabukunmi Ogunbiyi to conduct the above-mentioned study.

Please note the following conditions for the approval:

1. The duration of the approval shall be for eighteen months. If there is a delay in the commencement of the project, kindly inform the Redeemer's University Ethics Committee so that the duration can be adjusted accordingly.
2. Please remember that the Committee must be notified in the event of any alterations in the study design.
3. Note that as a researcher, there is a great onus on you to conduct your study in an ethical manner in accordance with the guidelines established by the University.
4. The REC reserves the right to conduct compliance visits to your study locations without previous notifications.

Yours sincerely,

Chiagoziem Otuechere, PhD
DRIPs, Redeemer's University Ethical Committee

...running with the vision