

20 THE IMPACT OF COVID-19 ON INFERTILITY AND ASSISTED REPRODUCTIVE TECHNOLOGY IN NIGERIA: LEGAL CHALLENGES AND PROSPECTS

Zaynab Omotoyosi Shittu-Adenuga¹

INTRODUCTION

Infertility impedes the realisation of essential human rights, especially by those who desire to become parents and build a family. All individuals have a right to the enjoyment of the highest form of physical and mental health. Infertility is a disease of the male or female reproductive system defined by the failure to achieve a pregnancy after twelve months or more of regular unprotected sexual intercourse.² Every person and couple has the right to decide the number, timing and spacing of their children. Both men and women can suffer from infertility, although women in Nigeria are perceived by the society to suffer more from infertility.³

Infertile couples typically face violence, divorce, social stigma, emotional stress, sadness, anxiety and low self-esteem. Infertility has a huge negative societal influence on their lives. Infertility affects millions of people who are of reproductive age, including 48 million couples and 186 million people who struggle with infertility worldwide,⁴ and it can have a profound effect on their families and communities. Even though in vitro fertilisation (IVF) and other assisted reproductive technologies (ART) have been used to conceive more than five million children worldwide, they are still widely unavailable, difficult to access and prohibitively expensive in many parts of the world, particularly in low- and middle-income nations.⁵

During the final quarter of the twentieth century, assisted reproduction was first introduced into medical practice. Some religious groups, such as Roman Catholics, strongly opposed it, while others warmly embrace it. Although most Orthodox Jews reject third-party involvement, Judaism, Hinduism and Buddhism today permit assisted reproduction in almost all of its forms. On the other hand, Sunni Muslims, Anglicans Protestants and Coptic Christians tolerate assisted reproduction to the

- 1 LLB, BL, LLM, PhD (candidate) University of Ibadan; Barrister & Solicitor of the Supreme Court of Nigeria; Lecturer & Coordinator, Department of Private and Business Law, College of Law, Fountain University, Osogbo, Nigeria.
- 2 World Health Organization (WHO). 2018. *International Classification of Diseases*, 11th Revision (ICD-11). Geneva: WHO.
- 3 Zegers-Hochschild F, Dickens BM, Dughman-Manzur S. 2013. "Human Rights to In Vitro Fertilization", *International Journal of Gynecology & Obstetrics* 123(1):86-89.
- 4 Mascarenhas MN, Flaxman SR, Boerma T, et al. 2012. "National, Regional, And Global Trends In Infertility Prevalence Since 1990: A Systematic Analysis of 277 Health Surveys", *PLoS Med* 9(12):e1001356.
- 5 World Health Organization (WHO). 2020 "Infertility", *WHO.int*, 14 September.

extent that it does not involve gamete or embryo donation. Sunni Muslims accept all forms of assisted reproduction that do not require the involvement of a third party. This means that the egg and sperm must be from the intending couple themselves.⁶

This chapter seeks to examine assisted reproduction in Nigeria in the context of Covid-19. It examines the problem of infertility, its causes and effect and the operation of the assisted reproductive technologies during the pandemic and how the Nigerian government responded to problems accessing assisted reproduction. It reports the results of an online survey of Nigerians' experiences with assisted reproduction under Covid-19.

INFERTILITY: DEFINITION AND CAUSES

Infertility is a condition of the male or female reproductive system described as the inability to conceive after a period of twelve months or more of unprotected sexual activity.⁷ Infertility can affect one or both partners. Sometimes, no cause can be found. The causes of male infertility may include: sexual problems with the delivery and quality of sperm due to premature ejaculation or genetic defects, such as cystic fibrosis; structural problems, such as a blockage in the testicle or damage or injury to the reproductive organs; or sperm quality problems from enlarged veins in the testes (*varicocele*) or other conditions. The production of sperm may also be impacted by excessive exposure to certain substances, such as pesticides, radiation and illegal narcotics.⁸

Female infertility may be caused by endometriosis,⁹ ovarian problems,¹⁰ cervical abnormalities¹¹ and fallopian tube damage or obstruction, frequently brought on by fallopian tube inflammation. Fallopian tube damage can also happen as a result of endometriosis, an infection that typically causes pelvic inflammatory disease.¹² Advancing maternal age is also one of the causes of infertility in women. The quality of the egg produced or the probability that an egg will be biologically normal declines as we age. Rarely is a woman fertile after the age of forty-five, especially if she wishes to use her own eggs rather than donor eggs.¹³ Assisted reproductive technology (ART) has been defined as including all procedures or treatment strategies involving handling of human oocytes or sperm in vitro to establish clinical pregnancy by circumventing different pathological barriers in human

6 Sallam HN and Sallam NH. 2016. "Religious aspects of assisted reproduction", *Facts Views & Vision in Obgyn* 8(1):33-48.

7 WHO, *International Classification of Diseases*.

8 Mayo Clinic. 2022. "Infertility", *MayoClinic.org*.

9 This occurs when endometrial tissue grows outside of the uterus, may affect the function of the ovaries, uterus and fallopian tubes.

10 This affects the release of eggs from the ovaries.

11 This includes abnormalities with the cervix, polyps in the uterus or the shape of the uterus.

12 Mayo Clinic, "Infertility".

13 UCLA Health. 2022. "Infertility: Symptoms, Treatment, Diagnosis", *UCLAHealth.org*.

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reproduction.¹⁴ In vitro fertilisation, surrogacy, gamete donation, physiological intracytoplasmic sperm injection and intracytoplasmic sperm injection have evolved over time due to the development, commercialisation and global spread of assisted reproductive technologies, including cross-border reproductive care.¹⁵ Due to changes in affordability, legislation, reimbursement and pregnancy and childbearing policies between countries, Europe is the largest market for assisted reproductive technologies.¹⁶

According to medical anthropologist Marcia C. Inhorn, lack of access to appropriate infertility therapy is the leading cause of untreated and intractable infertility in largely rural and low-resource settings in the developing world, and it was exacerbated by the recent Covid-19 outbreak.¹⁷ Nigerian fertility expert Oladapo Ashiru has given his opinion on the reason for the increase in the cases of infertility among Nigerians.¹⁸ Ashiru states that increased social interaction, unprotected intercourse and the resultant sexually transmitted diseases or infections (STDs or STIs) are some of the factors. Research has proven that STDs or STIs account for 70% to 80% of infertility in Africa. The most prevalent of these diseases is chlamydia, which is typically a hidden infection. Unfortunately, if it is not treated promptly, it can cause harm to the female fallopian tube and the male sperm tube. Gonorrhea is another infection that can result in irreversible tubal damage.¹⁹ Reproductive problems can also be caused by a variety of other factors, including excessive consumption of sugar and fructose-containing foods like watermelon, apples and other sweet fruits as well as emissions from paint, diesel and aviation fuels, alcohol and cigarettes.²⁰

With the rapid growth in Covid-19 transmission rates around the world, many governments implemented a lockdown approach, which had serious economic consequences. This lockdown process required individuals to remain indoors or at home. Many countries ordered the closure of educational institutions, religious institutions, clubs, restaurants, factories, salons and a variety of other establishments.²¹ Only

14 Deep JP. 2014. "Assisted Reproductive Technology", *Journal of Chitwan Medical College* 4(7):1-10.

15 Palermo GD et al. 2012. "Development and Current Applications of Assisted Fertilization", *Fertility and Sterility* 97(2):248-259.

16 Ferraretti AP et al. 2008. "The European IVF Monitoring Consortium for the European Society of Human Reproduction and Embryology. Assisted Reproductive Technology in Europe; Results Generated from European Registers by ESHRE", *Human Reproduction* 27(9):2571-2584.

17 Inhorn MC. 2009. "Right to assisted reproductive technology: Overcoming infertility in Lowresource Countries", *International Journal of Gynecology and Obstetrics* 106:172-174.

18 Muanya C. 2020. "Infertility set to rise after Covid-19", *The Guardian*, 23 November.

19 Muanya, "Infertility set to rise after Covid-19".

20 Muanya, "Infertility set to rise after Covid-19".

21 Gopalan HS and Misra A. 2020. "Covid-19 Pandemic and Challenges for Socio-Economic Issues, Healthcare and National Health Programs in India", *Diabetes & Metabolic Syndrome* 14(5):757-759.

essential workers were exempted from being in public places if they followed the Covid-19 prevention guidelines. In a bid to flatten the curve and slow the spread of the disease, some governments extended the lockdown even farther.²² The lockdown had both positive and negative consequences for individuals and the environment. The lockdown affected the mental well-being of people negatively in many respects, with many people experiencing anxiety, despair and abnormal sleep and eating patterns.²³ Stress itself has been found to decrease sexual behaviour and reproduction. However, during the lockdown, many couples were less weighed down by professional constraints and more likely to engage in sexual activity while confined at home.²⁴ Additional sexual activity among the homebound might be seen as a positive effect of the lockdown. However, increased sexual activity also meant increased experience of infertility when the sexual activity did not result in desired pregnancy.

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In Nigeria today, virtually all forms of ART are available, namely: artificial insemination by husband (AIH), donor insemination (DI), in vitro fertilisation (IVF), intracytoplasmic sperm injection (ICSI), freezing and donating embryos, gamete intrafallopian transfer (GIFT), zygote intra fallopian transfer (ZIFT) and surrogate motherhood.²⁵ With respect to Covid-19, the Control of Infectious Disease Bill was introduced on 28 April 2020.²⁶ The Bill repealed the Quarantine Act.²⁷ It was enacted to make provisions relating to quarantine and make regulations for preventing the introduction into and spread in Nigeria of dangerous infectious diseases and other related matters. The bill is one of the measures put in place by the Federal Government to contain the spread of the pandemic within the nation's borders.²⁸

During the Covid-19 pandemic, many fertility laboratories around the world developed plans for managing diseases and embryology cases,²⁹ including reducing

22 Kenyon C. 2020. "Flattening-the-curve associated with reduced Covid-19 case fatality rates: an ecological analysis of 65 countries", *The Journal of Infection* 81(1):e98-e99.

23 Dubey S et al. 2020. "Psychosocial Impact of Covid-19", *Diabetes & Metabolic Syndrome* 14(5):779-788.

24 Shilo G and Mor Z. 2020. "Covid-19 and the Changes in the Sexual Behavior of Men Who Have Sex with Men: Results of an Online Survey", *The Journal of Sexual Medicine* 17(10):1827-1834.

25 Giwa-Osagie OF, Nwokoro C and Ogunyemi D. 1985. "Donor insemination in Lagos", *Clinical Reproductive Fertility* 3:305-310.

26 Control of Infectious Diseases Bill, 2020.

27 Quarantine Act (CAP Q2 LFN 2004) Covid-19 Regulations, 2020.

28 Control of Infectious Diseases Bill (2020).

29 This is a branch of biology that studies the prenatal development of gametes (sex cells), fertilisation, and the development of embryos and fetuses.

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labour needs, logistical arrangements and protective measures.³⁰ According to Abayomi Ajayi and fellow researchers,³¹ economic conditions during the pandemic were the primary reason for limited access to in vitro fertilisation therapy, which was worsened by the Covid-19 pandemic. Pregnant women also encountered dangers and difficulties, including virus-induced pregnancy issues, vertical transmission to the fetus and the need to make the most of vital health care resources.³² According to reports, the ability of coronavirus to persist in cryopreservation tanks poses a significant danger of gamete contamination, patient illness and embryo infection. Several pre-implantation genetic diagnoses were halted due to the Covid-19 pandemic.³³ During the pandemic, it was reported that that vertical transmission of Covid-19 from mother to the fetus during pregnancy was not recorded, but the possibility of transmission during delivery could not be ruled out.³⁴ Research revealed the possibility that the mother might develop different cardiopulmonary disorders alongside acid-base imbalance and postpartum hemorrhage.³⁵ It should be noted that the male reproductive organ has also been identified as a possible target for the novel coronavirus illness, as the coronavirus can infect the testis, producing orchitis,³⁶ inflammation, free radical production, oxidative stress, sperm failure, cytokine storm³⁷ and hormonal imbalance.³⁸

The Covid-19 pandemic also had a devastating mental effect on patients, especially as some clinics or hospital facilities suspended reproductive treatment during this period. Government directives on Covid-19, such as social distancing, lockdown and travel restrictions, placed a huge burden on patients who wanted to seek physical medical attention for their reproductive issues. In a bid to communicate with patients during the Covid-19 pandemic, fertility clinics employed the use of

30 Choucair F, Younis N and Hourani A. 2020. "IVF Laboratory Covid-19 Pandemic Response Plan: A Roadmap", *Middle East Fertility Society Journal* 25:31.

31 Ajayi AB. 2020. "Influence of the awareness of Covid-19 pandemic on assisted reproductive technology clinic in Africa, South of the Sahara", *Obstetrics & Gynecology International Journal* 11(5):328–332.

32 Ory SJ et al. 2020. "The Global Impact Of Covid-19 On Infertility Services", *Global Reproductive Health* 5:43.

33 Ajayi et al, "Influence of the awareness of Covid-19 pandemic on assisted reproductive technology clinic".

34 Karimi-Zarchi M et al. 2020. "Vertical Transmission of Coronavirus Disease from Infected Pregnant Mothers to Neonates: A Review", *Fetal Pediatric Pathology* 39(3):246-250.

35 Karimi-Zarchi et al, "Vertical Transmission of Coronavirus Disease".

36 This is an inflammation of one or both testicles.

37 This is a physiological reaction in humans and other animals in which the innate immune system causes an uncontrolled and excessive release of pro-inflammatory signaling molecules called cytokines. Normally, cytokines are part of the body's immune response to infection, but their sudden release in large quantities can cause multisystem organ failure and death.

38 Younis JS, Abassi A and Skorecki K. 2020. "Is there an impact of the Covid-19 pandemic on male fertility? The ACE2 connection X", *American Journal of Physiology, Endocrinology and Metabolism* 318(6): E878-E880.

telemedicine. While some patients were relieved to have ample time to interact with their fertility experts, since majority were working from home, others were worried about being safe inside the fertility facility. People who were eager to continue their reproductive therapy flocked to the clinic, while those who were hesitant preferred to wait until the pandemic came to an end for fear of nosocomial infection.³⁹

Furthermore, it was discovered that the global rate of conception decreased as a result of the extended lockdown of numerous healthcare facilities that provide high-complexity fertility procedures. According to reports, just 0.3% of babies are conceived each year using assisted reproductive technology; therefore, the number of infants projected to be conceived and eventually conceived during the Covid-19 pandemic was low.⁴⁰ Medical researchers David Swartz and Ashley Graham examined how Covid-19 infection affected maternal and reproductive health services. They discovered that in underdeveloped countries, shortages of medical supplies, ineffective service delivery and increased staff workload dramatically reduced the utilisation and quality of maternal and reproductive health care services.⁴¹ In addition, human reproduction societies recommended that embryo transfers should be postponed, telecare use should be increased, and new treatment cycles should be stopped.⁴² Evidence also suggested that the outbreak of Covid-19 may have increased the risk of infertility as a result of the stress of the lockdown process, postponement of treatment cycles, suspension of fertility treatments, scarcity and increase in the price of drugs during the pandemic.⁴³ Likewise, it was revealed that there was the possibility of Covid-19 vertical transfer from infected mother to fetus.⁴⁴

ASSESSING THE EFFECTS OF COVID-19 ON INFERTILITY IN NIGERIA

The underlying study for this chapter was an online survey to examine the impact of Covid-19 on infertility and assisted reproductive technology in Nigeria. A total

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- 39 Younis et al, "Is there an impact of the Covid-19 pandemic on male fertility?". Nosocomial infection is an infection you get while you are in the hospital for another reason. It is also called a hospital acquired infection.
 - 40 Alviggi C et al. 2020. "Covid-19 And Assisted Reproductive Technology Services: Repercussions for Patients and Proposal for Individualized Clinical Management", *Reproductive Biology and Endocrinology* 18(1):45.
 - 41 Swartz D and Graham A. 2020. "Potential Maternal and Infant Outcomes from Coronavirus – nCoV (SARS-CoV-2) Infecting Pregnant Women: Lessons from SARS, MERS, and Other Human Coronavirus Infections", *Viruses* 12(2):194.
 - 42 Bateson DJ et al. 2020. "The Impact of Covid-19 on Contraception and Abortion Care Policy and Practice: Experiences from Selected Countries", *BMJ Sexual & Reproductive Health* 46(4):241-243.
 - 43 Olaniyan OT et al. 2020. "Impact of Covid-19 on assisted reproductive technologies and its multifacet influence on global bioeconomy", *Journal of Reproductive Healthcare and Medicine* 2 (Suppl 1):92-104.
 - 44 Olaniyan, "Impact of Covid-19 on assisted reproductive technologies".

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of 60 individuals participated in the study, including 17 men (28.8%) and 42 women (71.2%), while one person did not identify with any gender. The participants were recruited via various social media platforms. The majority of the participants were in the age range of 25 years and above (96.6%), as against a smaller group (3.4%) who ranged in age from 18 to 25 years. Forty participants (67.8%) were married, while 19 participants (32.2%) were single.

The respondents were asked if they were trying to get pregnant, and while 76.3% answered no, 23.7% answered affirmatively. 27.1% of the respondents revealed that they had tried to seek medical attention for their condition. 1.7% of the respondent revealed that they have been medically proven to be infertile. When asked about the traditional or modern methods employed in getting pregnant, there were several findings: (1) 3.6% of the respondents claimed to have visited the hospital and conducted various test; (2) 3.6% of the respondents calculated their ovulation periods and avoided stress; (3) 3.6% of the respondents mentioned follicle tracking and ECG; (4) 3.6% of the respondents alleged to have resorted to local herbs; (5) 3.6% of the respondents claimed to submit to letrozole, varicolectomy and the use of supplements; (6) 3.6% of the respondents reported using clomid and ovulation tracking, as directed by the physician; (7) 10.7% of the respondents are reported to have used modern techniques of getting pregnant; and (8) 3.6% of the respondents adopted both traditional and modern means.

The respondents were further quizzed on whether any of the traditional or modern methods worked. Unfortunately, only 15.2% of the respondents answered affirmatively and explained how it worked. Some of the responses were: (1) "After flushing my fallopian tube, I got pregnant the following month"; (2) "I got pregnant after the treatment"; and (3) "The treatment helped my hormones." The survey also revealed that 19% of the respondents did try to conceive during the Covid-19 lockdown and encountered challenges. Furthermore, 40.7% of the respondents admitted to having been fully vaccinated against Covid-19 and 24.2% of them believed that the Covid-19 vaccine may have aided their fertility journey positively. The study further revealed that all of the respondents attested to the fact that the Covid-19 vaccine did not disrupt their fertility journey.

When asked if the participants tried some of the techniques of assisted reproduction, such as surrogacy, in vitro fertilisation, artificial insemination and other methods during the Covid-19 lockdown, 16.7% stated that they tried artificial insemination. The survey revealed that 6.4% of the participants revealed that the Covid-19 outbreak had a negative psychological effect on them. In conclusion, 29.2% of the participants stated that they had unfettered and unrestricted access to medical care during the Covid-19 lockdown, while 70.8% claimed to have been denied access to medical care during this period.

It should perhaps be noted that overall, 60 participants participated in this study of the impact of Covid-19 on infertility and assisted reproductive technology in Nigeria. The low participation rate can be linked to the fact that issues of fertility and the use of assisted reproductive technology in Nigeria is still considered a

sensitive topic, thus, women especially are shy to share their experience, which was perhaps the major limitation to this study. Overall, the study recorded a low success rate for participants who adopted any of the traditional or modern techniques of assisted reproduction. Furthermore, it was revealed that the Covid-19 vaccine did not disrupt individual's fertility plan or reproductive process. Unfortunately, a large percentage of the participants stated that they didn't have access to adequate medical care during the Covid-19 lockdown.

LEGAL CHALLENGES AND PROSPECTS AROUND INFERTILITY IN NIGERIA

In Nigeria, a couple's capacity to have children determines how successful their marriage will be. Thus, childless couples turn to assisted reproductive treatment facilities for assistance. Sadly, these ART practices are largely unregulated. The creation of the Association for Fertility and Reproductive Health (AFRH) has cushioned a little of the effect of the total absence of legislation in this aspect of the medical field by providing guidelines for ART practitioners.⁴⁵ AFRH is a non-profit organisation dedicated to improving and providing high-quality reproductive health education, with a focus on fertility services. The organisation aims to raise awareness of the importance of reproductive health among all people in Nigeria, Africa and the rest of the world. The Health Regulatory Agency in Lagos State is the only state agency to really enforce the AFRH's stated requirements; other states have yet to do so.⁴⁶ It is important for the Nigerian government to address ART in order to prevent unethical practices and abuse. ART centres need to be properly evaluated, and monitoring and quality assurance must be carried out regularly.

In sub-Saharan Africa, South Africa is the only country with a national law on assisted reproductive technology. In vitro fertilisation was initially used in sub-Saharan Africa by Nigeria in 1984, South Africa in 1986 and Ghana in 1995. Right now, there are more than seventy ART centres in Nigeria.⁴⁷ There exist well-trained ART specialists in Nigeria. Notwithstanding this, there have been complaints of fraud by the ART centres. Desperate couples have been taken advantage of because of their vulnerability.⁴⁸

The National Health Act of 2014 is the main piece of legislation governing health care delivery in Nigeria. The requirements of the Act are supplemented by the Nigerian Code of Medical Ethics,⁴⁹ which focuses on ethical considerations in medical

45 See Association for Fertility and Reproductive Health. Online at: <https://afrhnigeria.org>

46 Ezeome IV, Akintola SO, Jegede AS and Ezeome ER. 2021. "Perception of Key Ethical Issues in Assisted Reproductive Technology (ART) by Providers and Clients in Nigeria", *International Journal of Women's Health* 13:1033-1052.

47 Bamgbopa KJ et al. 2018. "Public Perceptions On Ethics In The Practice Of Assisted Reproductive Technologies In Nigeria", *Global Reproductive Health* 3:e13.

48 Ezeome et al, "Perception of Key Ethical Issues in Assisted Reproductive Technology".

49 Dondorp W et al. 2013. "ESHRE Task Force on Ethics and Law 20: sex selection for non-medical reasons", *Human Reproduction* 28(6):1448-1454.

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practice. Although they are limited, there are a few sections of both the Act and the Code that could have an effect on assisted reproductive technologies in Nigeria.⁵⁰ While other countries made advancements in the field of assisted reproduction during the outbreak of Covid-19 by putting in place adequate structures to address the challenges created by the pandemic, Nigeria is still struggling with the issue of codification, let alone putting in place a structure to address the reproductive health concerns of its citizens in a pandemic context.

Legal issues abound due to this lack of codification. One of it is on the issue of confidentiality, which creates problems for the child born through any of the assisted reproductive methods. Section 26(1) of the National Health Act protects a patient's confidentiality. It states: "All information concerning a user, including information relating to his or her health status, treatment or stay in a health establishment is confidential."⁵¹ On the other hand, Regulation 44 of the Nigerian Code of Medical Ethics provides that the profession takes very seriously the ethic of professional secrecy, whereby any information about the patient that comes to the knowledge of the practitioner in the course of the patient-doctor relationship constitutes secret and privileged information, which must in no way be divulged by him to a third party, except with an informed consent of a patient given preferably in writing. However, the principles do not apply in circumstances where a discretionary breach of confidentiality is required to save the patient or the community.⁵²

When the child reaches the age of majority, Section 24 of the National Health Act of 2014 and Regulation 44 of the Code of Medical Ethics will have the combined effect of keeping information regarding the request of a donor-conceived child private because the child is not regarded as a "user".⁵³ A user is defined as the person receiving treatment in a health establishment, and if the person receiving treatment is under the age of majority, "user" includes the person's parent or guardian or another person authorised by law to act on behalf of the parents, such as the person's spouse, grandparent, adult child, brother, sister or other family member. It is difficult to classify the donor-conceived child who has come of age as an adult child (conceived through traditional means) as stated under Regulation 44. This is not the case in other advanced jurisdictions, such as the United Kingdom. This may cause serious family problems for the donor-conceived child. The restriction on disclosure amounts to stigmatisation of the donor, the donee and the child. A child has the right to be aware of their birth parents. Such facts provide the child with an identity.⁵⁴

50 Ekechi-Agwu CA and Nwafor AO. 2020. "Regulating assisted reproductive technologies (ART) in Nigeria: lessons from Australia and the United Kingdom", *African Journal of Reproductive Health* 24(4):82.

51 National Health Act of 2014, s 26(1).

52 Ekechi-Agwu and Nwafor, "Regulating assisted reproductive technologies (ART) In Nigeria".

53 National Health Act of 2014, s 24; Code of Medical Ethics, reg 44.

54 Ekechi-Agwu and Nwafor, "Regulating Assisted Reproductive Technologies (ART) In Nigeria".

Further sections of the Health Act that touch on assisted reproductive issues can be found in Section 50, which states as follows:

- (1) A person shall not:-
 - (a) Manipulate any genetic material, including genetic material of human gametes, zygotes or embryos; or
 - (b) Engage in any activity including nuclear transfer or embryo splitting for the purpose of the cloning of human being.
 - (c) Import or export human zygotes or embryos.
- (2) Any person who contravenes a provision of this section or who fails to comply therewith is guilty of an offence and is liable on conviction to imprisonment for a minimum of five years with no option of fine.

It is noteworthy that this section above prohibits reproductive and therapeutic cloning of humankind. This may be likened to the prohibition of creating a human embryo. The act is silent in situations where a human egg is fertilised by a human sperm outside of a woman's body with the goal of causing a woman to become pregnant. This is one of the negative consequences of the lack of codification of ART practices in Nigeria.

ART is very expensive in Nigeria, although the cost is still low compared to the Western world. In Nigeria, ART treatments are mostly carried out in privately owned hospitals, which buy modern equipment abroad at a seemingly high rate. Every nation in Europe offers some kind of cost health insurance coverage. The only countries having complete national health coverage are Denmark, France, Hungary, Russia, Slovenia and Spain, while Austria and Finland have two-thirds and forty per cent coverage, respectively. On the other side, health insurance coverage is based on the patient's unique characteristics. Despite strong government support in the majority of western European nations, all public and commercial Western health care systems have stringent eligibility standards that restrict patients' access.⁵⁵ In Nigeria, where people scarcely take out medical insurance policies and there is hardly any form of public subsidy, the financial burden is significantly greater.

Assisted reproductive technology is established in Africa, although a lot needs to be done, in terms of regulation, training of professionals, importation of modern equipment, medical insurance and adequate sensitisation of the public. Efforts must be directed at improving.⁵⁶ One of the challenges created by the lack of legislation is the problem of managing medical negligence and regularising the legal impact of intercontinental demand for ART services in Nigeria. Due to the cheaper cost of

55 Keane M, Long J, O'Nolan G and Farragher L. 2017. *Assisted Reproductive Technologies: International Approaches to Public Funding Mechanisms and Criteria. An Evidence Review*. Dublin: Health Research Board.

56 Dyer S et al. "African Network and Registry for Assisted Reproductive Technology. Assisted reproductive technology in Africa: a 5-year trend analysis from the African Network and Registry for ART", *Reproductive Biomedicine Online* 41(4):604-615.

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ART in Nigeria, as a result of the Naira's value relative to other currencies, there appears to be an increase in the need for ART on the continent. There are no regulations governing the production of transatlantic ART services, as there are in most developed countries.⁵⁷

Due to the lack of legislative backing, self-regulation in Nigeria is unlikely to succeed. According to a study in which clinic directors took part, the AFRH standards are insufficient. This is because AFRH has little influence in the other states of the nation outside of Lagos State. While it might be effective in Lagos, other states cannot use it. Because of Nigerians' ingenuity, unlicensed clinics can move to other regions of the nation and continue to wreak havoc. Instead of state-by-state regulation, there are reasons for a national law that will be binding on all practitioners.⁵⁸

It is clear that the practice of assisted reproduction in Western countries has evolved to the point where an intending parent can simply go online and conduct the process of ART, as sperm and eggs selection from women can be done via delivery to the fertility clinic.⁵⁹ Globally, there has been considerable advancement in the development of ART. Despite this, the industry of assisted reproductive technologies is currently being threatened by the aftermath of the Covid-19 pandemic across many sectors, including pharmaceutical, medical, research, agricultural sector and others. In many jurisdictions, personal interaction was reduced to the barest minimum, as people were asked to stay home from work, school and public areas, and if there was any reason to be in a public space, then a well-fitting face mask was recommended.⁶⁰ Prospective parents who needed to travel could not travel as a result of flight restrictions or cancellation. Medicine companies producing reproductive health drugs closed their factories for economic reasons, while some countries suspended new treatment cycles.⁶¹

The American Society for Reproductive Medicine (ASRM) declared on 17 March 2020 that all cases of reproductive care must be stopped, unless they were extremely necessary.⁶² Due to the limited evidence available at the time about Covid-19 and its effects on pregnancy, the European Society of Human Reproduction and Embryology (ESHRE) issued a warning on 19 March 2020 to infertile patients to use caution and advised against getting pregnant. Similar to this and on the same day, the Fertility Society of Australia (FSA) advised people to consult with their

57 Rozée-Gomez V and de la Rochebrochard E. 2013. "Cross-border reproductive care among French patients. experiences in Greece, Spain, and Belgium", *Human Reproduction* 28(11):3103-3110.

58 Ezeome et al. "Perception of Key Ethical Issues in Assisted Reproductive Technology".

59 Olaniyan et al, "Impact of Covid-19 on Assisted Reproductive Technologies".

60 Olaniyan et al, "Impact of Covid-19 on Assisted Reproductive Technologies".

61 Olaniyan et al, "Impact of Covid-19 on Assisted Reproductive Technologies".

62 American Society for Reproductive Medicine (ASRM). 2020. "Patient Management and Clinical Recommendations During the Coronavirus (Covid-19): Pandemic Update No. 11 – Covid-19 Vaccination", 16 December.

expert on the propriety of delaying treatment.⁶³ According to research, receiving the Covid-19 vaccine did not raise the risk of infertility, pregnancy loss, stillbirth or the need for treatment for congenital abnormalities.⁶⁴ However, many countries are still recovering from the economic impact of Covid-19. It is important to reiterate that while many jurisdictions were making important governmental policies to manage and evaluate reproductive techniques during the Covid-19 pandemic, Nigeria did not partake in such.

CONCLUSION

The process of assisted reproduction affords infertile couples the opportunity to bring forth a life. This process goes to the root of a family's existence, identity and happiness. In Africa, people's opinions about assisted reproduction are significantly influenced by their religious beliefs, and different religions have responded to assisted reproduction in different ways. The response ranges from partial approval to complete approval to complete rejection. Every Nigerian citizen has a right to life, and this right must be protected at all costs. The whole world witnessed the devastating impact of Covid-19 on all spheres of life, including the economic, social, political, public and private sectors, and even the research community. The Nigerian government needs to urgently begin the process of codifying the laws relating to the reproductive health of its citizens. This is indeed a wakeup call. It does not suffice to leave all matters pertaining to assisted reproduction in the hands of a professional body like the Association for Fertility and Reproductive Health (AFRH), especially during a pandemic. All existing challenges regarding assisted production are magnified and worsened by a pandemic.

The underlying study of this chapter revealed that the Covid-19 vaccine did not disrupt an individual's fertility plan or reproductive process, although a large percentage of the participants stated that they didn't have access to adequate medical care during the Covid-19 lockdown. The lack of access to medical care for women who were going through assisted reproduction during the Covid-19 pandemic is indeed worrisome. People were scared of contracting the disease; hence, they stayed at home, with some discussing treatment with their doctors online. Yet a challenge encountered in course of speaking with a physician was often the limitation of a poor mobile network. Above all, the Federal Government should set up a structure to provide support to infertility patients during a crisis or pandemic. Although the legislation brought about by the Control of Infectious Diseases Bill, 2020, was a much-needed improvement to Nigeria's public health laws, it is the task of government to see beyond the Covid-19 pandemic and to prepare in the event that we are faced with similar situation in the future.

63 Cutting E et al. 2021. "The Impact Of Covid-19 Mitigation Measures on Fertility Patients and Clinics Around the World", *Reproductive Biomedicine Online* 44(4):755-763.

64 ASRM, "Patient Management and Clinical Recommendations".