

REVIEW OF FACTORS INFLUENCING THE PRACTICE OF ASSISTED REPRODUCTIVE TECHNOLOGY SERVICES IN NIGERIA

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Abstract

Infertility is the inability of a man and his wife to produce their own offspring. Infertility is socially and culturally demanding and this result to psychological stress. Assisted Reproductive Technologies (ARTs) comprises of all treatment that involves the manipulation of eggs and sperms in a laboratory dish for the purpose of conception and the practice of gestational surrogacy on behalf of another woman. This paper is a review of the factors influencing the practices of ART utilization among couples in Nigeria. The study employed the use of secondary data from multiple sources. Search terms includes infertility in Nigeria, factors influencing none utilization of ART, ethics of ART in Nigeria and the practice of surrogacy in Nigeria. The study adopted symbolic interactionist theory as the theoretical framework. From this reviewed work, there were cogent reasons behind the practices of ART programmes among childless couples in Nigeria. Findings from this work showed that HIV virus can drastically be reduced if the affected persons opt for ART treatment. This will free the new born babies from being infected. It was also found that, surrogacy as a form of ART treatment for infertility is still frowned at. ART is recommended for childless couples who are unable to give birth through the normal sexual intercourse and also for people living with HIV/AIDS virus.

Keywords: Nigeria, Surrogacy, Gametes, Assisted Reproductive Technology

Introduction

Assisted Reproductive Technologies also known as Artificial Reproductive Technologies (ARTs) refers to all treatments or procedures that include the In Vitro Fertilization (IVF) handling of human oocytes and sperm or embryos for the purpose of establishing pregnancy (Sunderam, et al., 2018). ART is not limited to In Vitro Fertilization alone, but to every other forms of ARTs such as, trans cervical embryo transfer, gamete intra fallopian transfer, zygote intrafallopian transfer, tubal embryo transfer, gamete and embryo cryopreservation, oocyte and embryo donation, gestational surrogacy and the process of stimulating ovulation (Begum, 2008).

Globally, the emergence of Assisted Reproductive Technology (ART) is as a result of infertility. The incidence of infertility was not too pronounced in those days, but with lifestyle modifications of cultures, the kinds of food we eat, the environments we live among others are contributing factors of infertility problems. The World Health Organization (WHO 2017), cited in (Ailojo, 2018), defined infertility as a disease of the reproductive organ accompanied with the inability to have a clinical pregnancy after some months of regular unprotected sexual intercourse. Infertility is the inability of the man and wife to give birth to their own kind from the commencement of cohabitation as partners with unprotected sexual intercourse from one month to three months.

ART is not exclusively favourable to only infertile couples, but to single mothers, same sex and People Living with HIV virus. ART practices play an important part of procreation in the lives of the childless couples. The transfer of multiple embryos in ART procedures, often results into multiple gestation pregnancies and multiple births which is a risk factor to the mother and her baby. Also, Antiretroviral therapy (ART) has helped people living with Human Immunodeficiency Virus (HIV) to live healthier and longer lives in sub-Saharan Africa especially Nigeria (Krashin, et al., 2018).

One popular ART method is the practice of surrogacy. The practice of surrogacy is a situation where a woman bears a child for an infertile woman, using the surrogate gamete or borrowing surrogate's womb for conception (Dargahi, et al., 2014). Gestational surrogacy carries series of problems and controversies that can robes in the infertile woman, medical practitioners and the surrogate mother (Rahmani, et al., 2011).

The drugs administered to patients sometimes are a barrier to ART utilization. For instance, the ovaries are compelled to produce multiple eggs as the patients are on Gonadotropins (GnRH) injections daily. Human chorionic gonadotropin (hCG) injections trigger ovulation and also aids the eggs maturity in less than 48 hours after the administration of drugs and the eggs are ready. These drugs make the woman's brain to be inactive by compelling the ovaries to produce egg outside the ovulation within 2-3 weeks. The eggs are retrieved in less than 1 hour, with a needle pass through the vaginal wall down to the ovaries. Before then, the partner's sperm is ready and immediately the eggs are retrieved the eggs and the sperms are mix and incubate overnight. Finally, the embryos are transferred into the cervix or into the cavity of the uterus (Brezina, et al., 2012).

Both Christians and Muslims believe that children come from God. From inception, religion is a barrier to the utilization of ART because of it controversy as a phenomenon (Fortin & Abele, 2016). Most individuals who have gone deeply into religiosity have reservation towards genetic testing and ethical concerns towards ART procedures (Fortin et al., 2016). Globally, Catholic Church forbids the utilization of ART programmes and its practice (Fortin et al., 2016).

In Nigeria, the high costs of ART programme are a barrier to its usage as this has prevented some couples from accessing it. Even though ART is a matter of choice, most fruitless poor couples may not be able to access and afford it. ART cycle in Nigeria is about #500,000 to #3,000,000 depending on the clinic. Apart from this huge amount, there are other additional charges such as intracytoplasmic sperm injection, treatment of diseases/ test and the use of gamete donors (Omokanye, et al., 2017). There are couples who declined to the utilization of ART because of stigmatization and shame. The practice of surrogacy is one of the safest methods for infertile couples that have no hope to reproduce themselves. On the contrary, this practice is said to be dangerous because the surrogate mother can claim the child or abort the pregnancy after the agreement. The anticipation of childless women not to lose or have broken homes for the surrogates and stigmatization is a cogent reason/factor for non-utilization of gestational surrogacy. Biologically, there is a strong belief that the surrogate mother is related to the child. Most childless couples especially the women don't opt for surrogacy because of the controversy that surrounds it. The limitations to the practice of ART among Nigerian infertile couples include the practices of surrogacy, multiple transfers of fertilized oocytes, religion, cultural, time wasting and costs. This study therefore seeks to review factors influencing the practice of ART in Nigeria. This paper is also to contribute to knowledge gap, how to tackle the problems associated with infertility, and putting in place policies that can be use to significantly reduce infertility significantly via ART.

The specific objectives are to:

- i. identify the factors facilitating the utilization of assisted reproductive technology (ART) in Nigeria.
- ii. analyse the benefits of utilizing assisted reproductive technology (ART) in Nigeria.
- iii. identify and examine the factors posing as barriers to assisted reproductive technology (ART) in Nigeria.

Methods

This is a descriptive research, as this paper is dependent on secondary data searched and obtained from previous published articles and studies. This research was conducted by some researchers earlier, on factors influencing the practice of assisted reproductive technology in Nigeria. After thorough scrutiny, conclusions were therefore drawn from these articles.

Conceptual Framework

Conceptual framework is the basic ideas that form the structured ideas which provide support for this study. In the field of Sociology, the utilization of theories and models such as health belief model, theory of planned behaviour, functionalist theory, symbolic interactionist approach have been used to explain and understand those factors that influence assisted reproductive technology. According to Okafor et al., (2017), since the introduction of Assisted Reproductive Technology (ART), it has really helped many childless couples who are financially buoyant and are aware of this medical treatment. Assisted Reproductive Technology (ART) is the production of babies using technological power to aid the eggs and the sperms in a laboratory dish or incubators. This occurs without the man/husband having sexual intercourse with his woman/wife before conception. Childless couples are expected to be treated from every forms of infertility. This treatment provides healthy wombs, mother and as well as healthy babies. It also, provides protections for both mother and child, and it is an easy platform for conception. ART does not only prevent infertility, but also cures infertility related problems. The treatment of infertility via ART seems to be the most effective and is the easiest way in terms of preventive measures. This is in line with Fadare, et al., 2016; Van Niekerk, 2017, where infertility treatments involves the manipulation of eggs and sperms for conception. These include, In Vitro Fertilization (IVF), Embryo Transfer, Gamete Intrafallopian Transfer, Zygote Intrafallopian Transfer, Intracytoplasmic Sperm Injection, Tubal Embryo Transfer, Gamete and Embryo Cryopreservation, Oocyte and Embryo Donation, and Gestational Surrogacy. The manipulation of eggs and sperms in the laboratory increase the chances of a woman to achieve pregnancy outside the body. Be it the biological mother or surrogate mother.

In Vitro Fertilization (IVF), is the fertilization of the retrieved eggs from the woman's ovary and the collaboration of the sperms extracted from the man. These are mixed in the laboratory dish/culture outside the woman's body for further fertilization before implantation through the fallopian tube down into the uterus (Okwelogu, et al., 2012). This is also in line with Begum (2008). In Vitro Fertilization (IVF) is the manipulation of the sperms and eggs outside the woman's body in an artificial environment. Intrauterine Insemination (IUI), Gamete Intrafallopian Transfer (GIFT), Zygote Intrafallopian Transfer (ZIFT) and Gestational Carrier (GC). Intracytoplasmic Sperm Injection (ICSI) is the washing of infected sperm during IVF before fertilization/ implantation. It also includes the process of preventing the child from HIV/AIDS transmission during pregnancy using High Active Antiretroviral Therapy as supplement (Fadare, et al., 2015).

Theoretical Framework: Health Belief Model (HBM)

Health Belief Model was developed in 1950s; and emanated from social psychological and behavioural theories, especially Kurt Lewin's Field Theory and Expectancy-Value Orientation for motives and behaviours (Hsieh et al., 2018). Social scientists in U.S Public Health Services developed HBM in order to understand why people do adopt disease prevention strategies and screening tests for the early detection of disease. The HBM suggest that a person's belief on personal treatment of an illness or disease together with a person's belief on the effectiveness of the recommended health behaviour or practice will predict the likelihood of that person to adopt a healthy behaviour. The HBM was later developed in (1966) by Irwin Rosenstock. The HBM was derived from psychological and behavioural theories with the believe that these two components of health related behaviour are

- i. the desire to avoid illness or conversely get well if the person is already caught
- ii. the belief that some areas of health have specific health actions that can prevent or cure illness and disease.

The HBM is oriented towards and associated with health education, health prevention and disease prevention. It also provides a useful theoretical framework to understand what factors play into a woman's perception of her behavioural risk and predicting. HBM in most cases are frequently used models which explains behaviour and attitudes of an individuals and action/proactive towards healthier lifestyles and health change (Che, et al., 2014; Daniel, et al., 2016).

The important concepts of the Health Belief Model are: perceived susceptibility, perceived severity, perceived benefits, perceived barriers and cues to action (Hsieh, et al., 2018). First and foremost, the woman needs to consider herself to be susceptible to a condition, which is the risk of acquiring disease or illness (perceived susceptibility). The HBM argues that before a woman can be proactive in terms of reducing the health risk behaviour, such an individual also need to feel susceptible to the illness (Rosenstock, 1990) cited in (Fulford et al., 2013). Second, the feelings of the seriousness and it also consider the medical consequences. She must consider and believe that illness has serious consequences on family, community and society at large (perceived severity). Third, the woman's perception of the effectiveness of various actions available to reduce the threat of the disease or illness or to cure, to weigh against the costs of seeking health care services and its consequences of being ill, the evaluation of illness or disease relies on both perceived susceptibility and perceived benefit, such that the person would accept the recommended health action if it is beneficial. The woman must also understand that those risk factors that can result to illness or disease can be avoidable through health seeking behaviour and living a healthy life in order to reduce this threat (Perceived benefits). For example, a woman may perceive that living a healthy life and early marriage is a contributing factor to improve better fertility and to reduce exposure to infertility (Che et al., 2014).

This model suggests that as soon as the woman recognizes the threat of disease or illness, if the perceived benefits of health seeking services outweigh its perceived costs, she may likely seek for medical intervention (Che et al., 2014). Four, the person's feelings on the obstacles to perform the recommended health seeking behaviour. There are different options in a person's feelings of barrier which result to cost/benefit analysis. For example, the woman weighs the effectiveness of being proactive and that it may be expensive or dangerous and time-consuming or inconvenient (Perceived benefit). Five, the level of the person's confidence in his or her ability to carry out a health seeking behaviour successfully. Self-efficacy is very important in preventing health

behaviours, especially in a situation where change of behaviours is required for a conception (Self-efficacy) (Hsieh, et al., 2018). Six, the stimulus that is needed to fuel decision-making process in order to accept this recommended health seeking behaviour, depends on how ready the person may be.

Types of Assisted Reproductive Technology

In searching for a cure or solution to infertility, persons with infertility problems resort to different kinds of treatment methods in order to be fertile. There are good numbers of ART used for artificial conception. Among these are; In Vitro Fertilization, Intracytoplasmic Sperm Injection (ICSI), Intrauterine Insemination (IUI), Gamete Intrafallopian Transfer (GIFT), Zygote Intrafallopian Transfer (ZIFT), Gestational Carrier (GC) among others (Muller, et al., 2016).

Intrauterine Insemination (IUI): Is the manipulation of retrieved sperm from the male. IUI is an artificial aided pregnancy technique in which processed semen is deposited into the upper uterine cavity of the female in order to conquer some of the natural barriers of sperm movement upward into female reproductive tract. IUI treatment is basically done on patients whose tubes are active, those whose infertility is due to cervical factor, unexplained factors, ejaculatory disorders, immunological factor, anovulation and moderate male factor infertility (Allahbadia, 2017).

In Vitro Fertilization (IVF): IVF involves the mixture of eggs and sperms that are placed into a laboratory dish and later transfer the fertilized embryos into the womb of the woman for the purpose of conception. This is a process of conceiving without sexual intercourse, pregnancy takes place outside the woman's body (Mosalanejad, et al., 2014).

Intracytoplasmic Sperm Injection (ICSI): This is one of the ART infertility treatment in male. In ICSI, a single normal mature immobilized sperm is injected into a mature egg retrieved from the woman and later the embryo transferred back into her uterus or fallopian tube for further development. (Begum, 2008).

Gestational Carrier (GC): Is a surrogate mother who will carry someone else's baby for the period of nine months and deliver the child for the unfit mother through IVF process (Olobo-Lalobo, 2015).

Gamete Intrafallopian Transfer (GIFT): This is a situation where eggs are stimulated and harvested. The eggs and sperm are mixed together, placed into the fallopian tube for fertilization inside the body. This procedure is slightly different from IVF, and is mostly done for women whose intention is to adopt IVF and at the same time try to avoid conception outside the body (Mustapha, 2018).

Zygote Intrafallopian Transfer (ZIFT): ZIFT and IVF are similar but involve transferring of the fertilized egg (the zygote) into the fallopian tube at the time of laparoscopy. Before now, ZIFT was very effective with high success rate compared to IVF (American Society for Reproductive Medicine, 2015).

The Common Assisted Reproductive Technology Use

In Vitro Fertilization (IVF), simply means that, fertilization of the sperm and the egg is done outside the woman's body. IVF is one of the most effective ART treatments in the world. The manipulated sperms and eggs are implanted into the uterus. This is conducted on a woman whose fallopian tubes are blocked or when her husband has low sperm count (Mosalanejad, et al., 2014). Intracytoplasmic Sperm Injection (ICSI), this only involves men who are having serious issue

with their sperms, older men and those who had tried IVF before and it failed (Begum, 2008). Zygote Intrafallopian Transfer (ZIFT), this is similar to IVF where fertilization occurs in the laboratory. After this, the embryo is transferred into the fallopian tube (American Society for Reproductive Medicine, 2015). Gestational Carrier (GC) is a surrogate mother who will carry someone else's baby for the period of nine months and deliver the child for the unfit mother through IVF process (Olobo-Lalobo, 2015). Gamete Intrafallopian Transfer (GIFT), in GIFT, eggs and sperms are transferred into the woman's fallopian tube. This is quite different because fertilization takes place right inside the fallopian tube (inside body) (Mustapha, 2018). The IUI treatment is basically done on patients whose tubes are active, those whose infertility is due to cervical factor, unexplained factors, ejaculatory disorders, immunological factor, anovulatory and moderate male factor infertility (Allahbadia, 2017).

Literature Review

Brief History of Assisted Reproductive Technologies (ARTs)

The history of Assisted Reproductive Technologies (ARTs) dates back to as early as 1890s when one Prof. Walter Heape at the University of Cambridge in UK recorded the first embryo transplantation in rabbits. Gregory Pincus in 1934, mixed eggs and sperm in the glass of his watch and then the embryo were implanted into the surrogate rabbit. (Kamel, 2013). Min Chueh Chang a young Chinese, a reproductive investigator in 1959 achieved a successful live births for the first time from white rabbits when he used eggs and sperm of black rabbits (Kamel, 2013). In the history of human, the first unsuccessful IVF was in 1973 by Prof. Carl Wood and Prof. John Leeton Australia where the embryo died in less than one week (Kamel, 2013). In 1990s, Intra-cytoplasmic Sperm Injection (ICSI) came into being as the second and the most effective male factors treatment for ART. The first and successful pregnancy via Intracytoplasmic Sperm Injection (ICSI) in male took place in Brussels, Belgium in 1992 by Gianpiero Palermo and Andre Van-Steirteghem. The use of Testicular Sperm Extraction (TESE) and ICSI procedures were also carried out on men with non-obstructive azoospermia to treat infertility.

Patrick Steptoe and Robert Edwards from England aided the first successful test tube baby in the whole wide world, where Louise Joy Brown was delivered on the 25th of July, 1978 via IVF through assisted reproductive technology (ART) procedures (Ajayi, et al., 2017).

In Africa, precisely Nigeria, Dapo Ashiru and Giwa-Osagie introduced IVF in 1984 and shortly after that the first test tube baby was born on the 17th of March, 1989, at Lagos University Teaching Hospital (LUTH), Idi-Araba (Okafor, et al., 2017). Since the birth of the first test tube baby in 1989 in Nigeria, it was estimated that over 40,000 babies were born via the help of IVF (Okafor, et al., 2017).

Factors influencing the utilization of ART

The age at which women get pregnant is on the increase because of the desire to pursue their carriers, independency and economic reasons. The higher the age of couples, the lower the success of ART. Also, the more the number of years of infertility, the higher the willingness to accept ART treatment. According to Begum (2008), ART success is reduced with increase age. At age greater than 35 years, the number of eggs, rate of fertilization, and rate of implantation are all reduced. Based on Fasouliotis et al., (1999), modern day women delay child bearing and so an increase in rate of older women who attempt pregnancies. Women age shouldn't be a barrier to this treatment as any woman who is in need of children should also be tested.

According to Okwelogu, et al., (2012) the reason why people go after ART treatment was awareness of the programme. In Nigeria, awareness of utilization is more with the educated, urban dwellers than in the rural areas. According to Okwelogu et al., 2012, ART usage is low due to lack of awareness and education (Okafor, et al., 2017). Based on the study carried out by Adesiyun et al., 2011, 36% of women are aware of ART treatment for fertility. This is in agreement with Okwelogu et al., 2012 assertion. Omokanye et al., 2017, found out that the level of ART awareness is higher in the North than in the Southwest. This does not mean that the uneducated are not aware of the treatment or have not utilized ART programme in Nigeria. There should be more awareness on infertility and ART as this is one of the factors that can lead to a higher success rate in aged women.

Another factor the mitigate couples to utilize ART is the success rate. According to Ajayi et al., (2017), there were two cases of a successful ICSI from a private IVF clinic in Lagos Nigeria. First, the case of a man that had no sperm in his semen. Sperm were extracted from his testes and it was used to fertilize the eggs retrieved from his wife via ICSI. The resulting embryo was transferred into the uterus of his 38-year-old wife. The second case was that of a 31-year-old woman who had tubal infertility and whose husband had low sperm counts. This couple delivered twins after ICSI was performed on her husband (Ola, 2012). The ICSI according to researchers is among the best procedures for the treatment of low sperm counts.

Benefits of Utilization of Assisted Reproductive Technology (ART)

Assisted Reproductive Technology (ART) programmes had relieved so many couples in Nigeria and across the globe and is still imparting in the life of childless couples worldwide. The benefits are as follows:

i. People living With HIV/AIDS

Infesting the uninfected partner with HIV virus has been curtailed through this treatment. For instance, sexual intercourse between the infected female and uninfected male can occur by timing only the ovulation periods when the woman's viral load is suppressed to undetectable levels with antiretroviral therapy in order not to infect the male. Better still, the male partner can also be on antiretroviral therapy as Pre-Exposure Prophylaxis (PrEP) (American Society for Reproductive Medicine, 2015). The HIV virus carriers are also beneficiaries of ART treatment. ART treatments are not restricted to HIV virus free men and women but also to the victims of HIV virus (Krashin, et al., 2018). Highly Active Antiretroviral Treatment (HAART) had dramatically reduced mortality and child morbidity and transmission of the virus to the newly born baby (iContinuing Education, 2004). This so called virus has been curtailed in the lives of people living with HIV virus with the above mentioned drugs. This instigates a surrogate mother whose business is to help women who are unable to give birth on their own. This may not be possible because, the surrogate mother might contact the virus during and after implantation especially in a country like Nigeria where things are not properly regulated and implemented.

The surrogate mothers too have to be very careful, just as the caregiver do. This is because HIV virus can be transmitted to anyone who is careless. Surrogate mothers should try to know the health status of their clients which they intend to assist. The physicians should make sure that every statement made, both written and spoken is clear and simple for health seekers and also make sure that the spoken languages are

understood. If physicians notice that the patients don't understand the language or what is on ground, the physicians should ask the patients to come along with someone who understand English language or the language that the health seekers understand.

ii. Posthumous Reproduction

The development and release of more than one egg per ovulatory cycle, and Intrauterine Insemination (IUI), a process by which sperm are placed inside a woman's cervix to facilitate fertilization and pregnancy with the new high-tech treatment is another benefit of Assisted Reproductive Technologies (ARTs) (Ola, 2012). Posthumous Reproduction PHR is a situation in where a husband or wife donated his/her gametes prior to death of either of them for future utility and benefits of the family members or a child born after the death of his/her parents (Van Niekerk, 2017). Similarly, deceased children donate their gametes to their parents so that if eventually they die, their parents can use their gametes to reproduce grandchildren for continuation of lineage (Van Niekerk, 2017). The practice of posthumous reproduction is contradictory in the sense that after the death of ones parent, the donated gametes are used for the production of grand children for the sake of lineage continuation for the deceased. However, will the physicians who are in charge of these gametes be faithful? Won't there be mistake since the rightful owner is dead? In as much as human beings are not perfect in doing thing, in the event of a mistake during the course of child production, the genetic status of the child can be tested to confirm, if the grandchild is genetically related to the family.

iii. Gestational Surrogacy

The practice of surrogacy in in vitro fertilization is another option for childless couples who are unable to have their own biological children due to medical reasons. People with decreased fertility due to advanced age, single women and same-sex couples are now experiencing parental hood from the development of ART via surrogacy (Abiola, 2015; Fauser, et al., 2019). Yes, surrogate mother has to under go series of medical tests especially that of HIV virus and other illnesses, because of generational bloodline illnesses that cannot be easily detected via test. These include mental illness, epilepsy among others that the surrogate mother can pass on to the new born baby. Surrogate mothers are not restricted from movement, as such she might run away with baby or better still she can do away with the pregnancy after the payment. Utilization of the surrogate mother must be properly checked.

Since the surrogate mother might not be able to live with the couples she is assisting, the couples should make sure that the surrogate mother shouldn't be far away from them. This is to keep eyes on her closely. Surrogate mother should be taking care of by the couples who need her services financially and otherwise.

iv. Multiple Pregnancies

Gestational multiple pregnancies is the order of the day in the treatment of infertility. The secret behind multiple embryos implantation is to increase its success rate. This makes the transfer of multiple embryos into the uterus as clear indications of trial and error (Brezina, et al., 2012). For example, if multiple embryos are transferred into the uterus, the probability of these embryos to die at same time is unlikely. The physicians will load these embryos into the women waiting for the few that may likely survive. Multiple gestational pregnancies can increase health risks of both to mother and child,

as well as increased medical costs. This may also prevent couples from utilizing ART, and as such couples who don't have the means may likely remain childless (Brezina et al., 2012; Ola, 2012). Even though the transfer of multiple embryos can increase the risks health of both mother and child, if the couples can afford the cash, it will help them to have these children once and for all especially, if the woman is advance in age and as long as she will deliver them via caesarean section. Another implication is that, not every culture that permits caesarean section during delivery. So, some couples may find it difficult to go for assisted reproductive technology for the treatment of infertility.

Barriers to the Practice of ART Utility in Nigeria

i. Cultural and Religious Barriers

There are childless couples who refused to utilize ART programmes because of their culture and religion. In most of these developing countries, especially Nigeria, cultural norms and values are respected by individuals, groups and the society at large. Most couples suffer from infertility related problem and at the same time not remorseful towards the utilization of ART, because of their cultural beliefs and religion cited in Dargahi et al., (2014); Hampton, Mazza & Newton (2013), Nigerian cultures attach values to normal delivering of children by going through labour and having the babies delivered through the vaginal. Culture is viewed as the way of people's lives; this implies that, procreation is also a way of life in which all married couples most reproduce themselves. For childless couples, culture has to be flexible to allow the childless couples to go for ART treatment since is the winning factor for fertility. The main actors to religion advocates in Nigeria are the clergy men and women. These persons play vital and crucial roles in the lives of their followers, meaning that, what they are taught is what they see as the right thing. This makes religion and culture as opium of human thought. Whatever the case may be, it is very important to advice the childless couples to have their own children, as that may fulfil their cultural obligation as parents.

ii. Financial Barrier

In Nigeria In Vitro Fertilization (IVF) treatment only favour fewer persons who are aware and rich, that have access to health insurance and subscribe to it as an alternative to infertility issue, (Fadare et al., 2015). The cost of ART treatment in Nigeria varies from one's choice of clinic. ART will continue to be the products of the rich people as long as Nigerians relied on the minimum wage of 110 US Dollars per month (Fadare et al., 2015). Ola (2012) put the figures at US\$ 2000 – US\$ 2700 (250,000 to 350,000 Naira) as the cost of IVF cycle in Nigeria. The cost of ART in Nigeria is very high, considering the economic situation. This has posed barrier to the utilization of ART and accessibility (Jegede and Fayemiwo, 2010). Based on research done by Omokanye, et al., 2017, a cycle of ART in Nigeria cost between #500,000.00 to #3,000,000.00 Naira depending on the facility. In Northern Nigeria, only 2.7% could afford ART while 63% of the respondents could not afford ART. In other similar studies carried out by Adesiyun, et al., 2011, only 3% could afford ART treatment even though majority will like to undergo the treatment if recommended. All the researchers are in agreement that the cost is indeed a barrier to its utilization.

Contrary to the above insinuation with respect to the cost of ART treatment, with an increased in minimum wage and government's readiness to subsidise the treatment, Nigerians of all classes can have access to ART treatment. The physician should always interrogate the patients, trying to know the kind of job they do, the kind of family they belong to (nuclear and polygamous), the number of children they have, how are they coping, how many times they have gone to the hospital for the last two (2) years and so on. The physicians should try and advice the patients on the need to key into the programme of National Health Insurance Schemes (NHIS), as this may help in the reduction of cost of ART treatment.

iii. Social Barrier to the Utilization of ART Programmes

Infertility in Nigeria has a social implication, stigma and severe consequences on childless women who adopt surrogacy as a form of procreation. This has made both Christians and Muslims not comfortable with the practice of surrogacy. This is because socially, the child is not viewed as normal human being and this may affect the child psychologically (Ojelabi, et al., 2015, cited in Makinde, et al., 2017). This is because this child was given birth to through the manipulation of eggs and sperms. With mass education and enlightenment from the major religious groups on their subjects, the social barrier associated with ART utilization in Nigeria will be a thing of the past.

iv. Psychological and Stigmatization Barriers

Most societies place values on childbearing. This makes parenthood as important as life project which must be achieved by childless couples to reproduce themselves. This is why involuntary childlessness drives infertile couples crazy as it is associated with strong psychological consequences on both couples. Most especially, the women are stigmatized and isolated and this makes them face societal problems (Makuch, et al., 2012). People living with HIV virus are also shy because of stigmatization and psychological trauma of HIV in their society/community. The fear of giving birth to HIV-infected babies into the world has its own psychological consequences on both parents and children (Fadare, et al., 2015). As real as these barriers are, the society need to be told that childlessness among couples does not rest only on the women. Couples must take bold steps to have their babies either biological or by assistance. Through ART, HIV/AIDs patients can have HIV/AIDs free children unlike before now.

v. An Increased in Caesarean Sections and induced Secondary Infertility

The fear of been operated upon as a result of giving birth, and induce secondary infertility is a barrier to ART programmes. For instance, couples whose intention is to give birth to six (6) children may end up giving birth to two or three if it is via ART treatment. This is because not all couples can afford multiple pregnancies. This advance technological treatment has always been a contributing factor to the rapid increase in rate of caesarean sections and induced secondary infertility in women who undergo caesarean sections as a result of infertility treatment (Florio, et al., 2012). As also noted by (Mosalanekjad et al., 2014), some of these medications for IVF and others related to ART treatment before implantation can cause infertility, chronic disease, harm and distress on the affected individuals and long term health crisis are some of the barriers. Caesarean section and induced secondary infertility are common among ART patients. With improved technology and medication, these twin increased can be reduced drastically.

vi. Time wastage

Even as necessary as IVF treatment is, time factor can constrain its utilization. This implies that, couples who are childless, whose jobs are time demanding won't able to have children since the process can take a long period of time. ART procedure segments takes roughly close to fourteen days excluding check-up after insemination. It starts with consultation, test, administration of drug-induced ovarian stimulation to produce eggs, surgical removal of the eggs from the ovaries, and then the sperm and the eggs are mixed in the laboratory for fertilization (Sunderam, et al., 2018). Studies conducted by Daar and Merali, (2002); Dyer et al., (2002); cited in Makuch, et al., (2012), identified barriers to the utilization of ART in Nigeria to include time wastage. Studies conducted by Adesiyun, et al., (2011), revealed that In Vitro Fertilization (IVF) across the globe is endowed with several benefits for the people in the developed world as ART has spread her roots into every place. But in sub-Saharan Africa, precisely Nigeria, there is an insufficient ART treatment facility even as infertility has eaten deeply into most of her families. This makes infertility stressful and time wastage in Nigeria and on her citizens who are in need of ART treatment. The time wastage during ART treatment can be improved upon if we have more advanced equipment, experienced and more medical personnel and if we can reduce centralization of these centres in cities.

vii. The practice of surrogacy

As mentioned earlier, the danger in this practice is that the child born by the surrogate mother is genetically related to the surrogate mother and not the intended mother (Dargahi et al., 2014). The practices of third-party had made ART treatment worrisome because of the surrogate mother, sperm and eggs/embryos donor's responsibilities and collectively they bring forth a baby into the world, (Fasouliotis et al., 1999; Olobo-Lalobo, 2015). The child will face social discrimination in his/her immediate family, the society which will lead to Psychological problem, as the child has the right to claim five (5) parents. These include the surrogate mother, the two (2) social parents, and the egg and sperm donors. The practice of surrogacy is still not common in Nigeria. The discrimination the child will face and the issues that surrounds the ownership of the child can be reduce through enlightenment, education and change in our perceptions and our attitudes towards the practice.

viii. The fate of extra embryos

The remaining surplus egg and sperm retrieved from couples that are kept may sometimes get to other couple if they are unable to produce their eggs and sperm for the production of their baby. In fertility clinics there are surplus embryos and sperms in frozen rooms and as these embryos and sperm are kept for a long period of time they depreciate in values. Also with the problem of non power supply in Nigeria, ART/IVF centres are faced with the challenge of storing of sperms and embryos for future use (Fadare, et al., 2015). According to Begum, (2008), using sperm donor is classified as committing adultery, a grievous crime and a sin in Islam. Research by Begum (2008), found out that 70% studied population said their religion forbid them from using ART, while 30% feel comfortable using ART. Based on the same study by Begum (2008), Islam allows ART as a treatment procedure without involvement of third party such as surrogate mother or sperm donor. Catholic injunction does not support ART because it is immoral, illegal and affects human lives by separating procreation and normal sexual function. The Catholics believed that a child must be conceived through the act of love and sexual intercourse. A study by

Okwelogu et al., (2012), revealed that children are gifts from God. It is immoral to spend money on other means of giving birth, because this will promote babies as products rather than as human beings. Embryos and sperms can be stored longer for future use with improved source of power supply thereby reducing depreciation, proper records and handling of these embryos and sperms. This will make them not to get into the wrong hands.

ix. Ethical issues

Most of the ART centres in Nigeria are owned by private individual or collectively with some technical and collaborative support from institutions in Europe and the United States of America. Worldwide, IVF clinics have no regulatory body and lay down rules, to set up standard and to oversee the affairs of reproduction health organization (Fadare, et al., 2015). This is why there is an increased rate of risk factors of perinatal, infant morbidity, mortality and shortage of gametes as some couples adopt the use of multiple gestations to defeat infertility problem (Ola, 2012). ART programmes has opened up a reciprocative business avenues for both physicians and patients, as the couples select of sex of the baby, the numbers of embryos implant per pregnancy (Fortin, et al., 2016). According to (Giwa-Osagie, et al., 2013) mentioned in Bingel (2013), none regulatory framework for fertility treatment in the country had continually put couples in need of IVF on the vulnerable edge. The need for regulation cannot be overemphasised as most countries who have accepted Assisted Reproduction Technologies (ARTs) have also set up bodies to regulate the practices. In Nigeria, regulatory rules and stringent ones at that should be put in place to guide the practice and use of ART. This will go a long way in restoring sanity in the practice and access to ART treatment.

Conclusion

Though infertility is viewed as one of the greatest challenges childless couples are facing, there is still a way out and hope for the affected couples with the aid of assisted reproductive technology (ART). There are factors and cogent reasons why infertile couples opt for ART treatment so as to eradicate infertility in their lives. These factors ranges from surrogacy, multiple pregnancies, gamete donor, HIV/AIDS patients and others related problems of utilization of ART. Infertility can be reduced if only the affected individuals most especially, people living with HIV/AIDS (HAAT) are aware, adopt and utilize the programmes.

Recommendations

- i. The fertility clinics must be accessible, close to the people and at low cost for all patients who are affected with infertility in one way or the other.
- ii. Highly Active Antiretroviral Therapy (HAAT) is capable of producing a baby with zero level of HIV/AIDS virus. It is recommended that, there should be more attention paid to the issues of childlessness and more efforts in creating awareness on the benefits of HIV/AIDS victims who are afraid to have an infected child.
- iii. Social, cultural, religion among others has been identified as barriers to treatment of infertility among couples in Nigeria. Interface between community leader, religious and medical practitioners to create awareness is recommended. Affected couples who really need children have to do away with some of these factors if they want the growth and development of their society.

- iv. The federal, state, local governments and nongovernmental organizations should pay attention into the affairs of private clinics in order to deter them from exploiting and causing more harm to the affected persons.

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