

The Donor Ability of Male Partners in *In-Vitro* Fertilization and Embryo Transfer (IVF-ET) in Nigeria: A Review

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Abstract

Background: One of the main reasons for marriage is procreation. Infertility subjects couples to great psychological and financial distress. The contribution of male factor is assuming a tremendous proportion, despite this, not much attention is paid to male factor infertility. The advent of assisted reproductive technology though still infantile in Nigeria, has revolutionized the treatment of infertility. **Objective:** The purpose of the study is to review studies in order to know the proportion of IVF-ET cycles that used male partners sperms and those that used donor sperms and factors that determine it. **Methodology:** A Pub-Med search, which was later expanded to SCOPUS and AJOL was performed on August 25, 2025. Primary articles published between Jan 2015 and August 2025 that investigated the donor ability of male partners in IVF-ET cycles were sought for. Snowballing to select references from the selected publications were also made and no publication selected. The following were keywords used for the search and the publications yielded: Category 1: Male partner sperms, donor ability, IVF cycles, sperm quality, Nigeria = 8 publications. Category 2: Male partner sperms, donor sperms, ART cycles, donor ability, Nigeria = 10 publications. Category 3: Male factors infertility, IVF cycles, donor sperms, Nigeria = 36 publications. **Results:** This gave a total of 54 publications. Of the 8 publications yielded in category 1, none met the study inclusion criteria. Out of the 10 publications in category 2, none met the inclusion criteria. For category 3, out of the 36 publications, none met the inclusion criteria. This gave a total of zero (0) publication that was selected and used for study. Consequently, all the 54 studies were excluded, leaving none (0) study for final review. **Conclusion:** The review has clearly shown that there is a gap

of primary evidence on the donor ability of male partners in IVF-ET in Nigeria. There is need to bridge the gap by carrying out research works in this area.

Keywords

Donor Ability, Male Partner Sperm, Donor Sperm, *In-Vitro* Fertilization & Embryo Transfer, Nigeria

1. Introduction

Infertility is defined as the inability of a couple of male and female to achieve conception after 12 months of regular unprotected sexual intercourse or six months if the woman is 35 years and above [1]. One of the main reasons for marriage is procreation [2]. Infertility continues to be a source of concern among married couples in our environment. Despite the fact that in most cases of infertility, both men and women contribute equally to the aetiological factors, women are usually blamed when there is a delay in childbirth [3] [4].

The contribution of male factor is assuming a tremendous proportion [5]. Male partners directly account for 25% - 30% of infertility and contribute to another 25% - 30% in conjunction with female partners [5]. Some authors reported that male infertility accounts for 50% of infertility cases [5].

To make diagnosis of male factor infertility and therefore determine the donor ability of a male partner requires the assessment of seminal fluid. Using the latest WHO reference criteria [6], the following seminal fluid analysis (SFA) is considered normal:

Volume— ≥ 1.5 ml per ejaculate

PH— ≥ 7.2

Total Sperm Number— $\geq 39 \times 10^6$ /ejaculate

Sperm concentration $\geq 15 \times 10^6$ /ml

Total Motility— $\geq 40 \times 10^6$ /ml (progressive + non-progressive)

Progressive motility $\geq 32\%$ /ml

Vitality— $\geq 58 \times 10^6$ /ml

Morphology— $\geq 4\%$ normal form/ml

Abnormal sperm parameters:

- Aspermia—no ejaculate
- Azoospermia—no sperm cell
- Oligospermia— $< 15 \times 10^6$ sperm cells/ml
- Severe oligospermia— $< 5 \times 10^6$ sperm cells /ml
- Asthenozospermia—abnormal motility
- Teratozpermia—abnormal morphology

The three parameters (sperm count, motility and morphology) are good predictors of fertility potential of a male partner [7]. OAT syndrome (existence of oligospermia, asthenozospermia and teratozpermia in a man) has poor prognosis with conventional fertility treatment requiring assisted reproductive technol-

ogy (ART). However, it has been noted that some men with normal sperm parameters (good motility, morphology and sperm count) may still experience male infertility due to high level of sperm DNA damage [8]. Such men have high oxidative stress markers and high DNA damage in their ejaculated spermatozoa [8] [9].

Since the birth of the first IVF-ET baby in 1978, the use of this fast-growing technology in the management of infertility has come to stay. IVF-ET has been available in Nigeria since 1989.

Some of the maternal indications for IVF-ET include: bilateral tubal blockage, ovulatory disorders, unfavourable maternal age for ovulation, prior to maternal chemotherapy or bilateral ovariectomy, postponement of marriage or child birth to unfavourable age for ovulation, endometriosis and unexplained infertility. Common paternal indications for IVF-ET include: aspermia, azoospermia, oligospermia, asthenozoospermia and teratozoospermia. In the presence of any of these abnormal sperm parameters, intracytoplasmic sperm injection (ICSI) or intramitochondrial sperm injection (IMSI) is preferable where the technology, expertise and finance are available [10].

In Nigeria, though Assisted Reproductive Technology (ART) is not new, the technology involving ICSI and IMSI is still evolving with enormous challenges and obstacles retarding its growth such as non-availability of many Centres offering the services, high cost of ART (especially ICSI and IMSI) beyond the reach of the common man and lack of evenly distributed expertise. Because of these, most Centres still offer IVF-ET in cases involving these sperm abnormality instead of using ICSI or IMSI. They make use of the donor sperms for fertilization [11].

Fresh sperm for *in vitro* fertilization (IVF) may come from: the male partner (partner sperm), a sperm donor (donor sperm) or sperm sharing. In some situations, previously frozen sperm, either from a partner or a donor, can also be used [12].

In cases where there is difficulty in ejaculating sperm by the male partner who does not want donor sperm, he may be encouraged to have coitus with his spouse and deposit the semen in the posterior fornix from where the ejaculated sperm is retrieved [13].

Where the male partner cannot produce sperm or the sperm parameters are abnormal for use in IVF-ET and he does not have the finance for ICSI or IMSI (where sperm can be gotten through testicular sperm extraction, TESE, Testicular sperm aspiration, TESA or Percutaneous sperm aspiration, PESA), the only available option is to use donor sperm, either from frozen or fresh or sperm sharing [14].

The male partner is therefore said to be able to donate sperm for his IVF-ET if he is able to produce good quality sperm either fresh or previously donated but frozen. On the other hand, the male partner is said to be unable to donate sperms for his IVF-ET, if the sperms he produces have abnormal parameters that render them not good for fertilization, or he is not able to ejaculate or release sperms for whatever reason [15].

There are a lot of issues involved when the male partner is unable to donate

sperm for his IVF-ET [13]. He and or the spouse may be subjected to psychological trauma either due to male egoistic characteristics or due to the concern of maintaining family genetic tree when donor sperm is used. Other concerns include the safety, ownership and future acceptability of the future offsprings. The probability that the man and or the couple will in future reject such an offspring as being not part of the family genetic tree has been expressed [16]. A number of factors have been adduced as responsible for the inability of male partners to donate sperm and include: psychological factors, unwillingness to donate sperm, poor quality sperm parameters and inability to release or ejaculate sperms [17] [18]. Since the commonest method of producing sperm for IVF-ET is via masturbation, it poses some psychological and religious concerns for men who abhor masturbation [13] [19]. Some men are also naturally unwilling to donate sperm for ART, insisting they are normal and have no problem and that the fault of infertility is solely from the woman and may prefer to marry another wife to prove it [5]. Some male partners can release sperm but their sperm parameters are poor to be used for IVF-ET while some others find it difficult to release or ejaculate sperm. All these constitute male partners who are unable to donate sperm for their IVF-ET.

The number of cycles using donor sperm has risen significantly in recent years [18]. What must have led to this increase? Could it be the inability of male partners to donate good quality sperm? Or could it be the current evidence that pregnancies conceived with donor sperm have a lower odds of early pregnancy loss and ectopic pregnancy compared to pregnancies conceived with partner sperm [18].

2. Objective

The objective of the study is to review studies in order to know the proportion of IVF -ET cycles that used male partners sperms and those that used donor sperms and factors that determine whether male partner's or donor's sperms will be used in IVF-ET cycles and make appropriate policy recommendations.

3. Review Method

3.1. Study Area

Nigeria is one of the countries in West African Sub-region. It has 36 states and Federal Capital territory (FCT) with estimated population of over 230 million people with a land mass of about 923,768 km² [20].

It has six geo-political zones of North-East, North Central, North -West, South-East, South and South-West.

The major occupations include farming, trading/business, public/civil service, artisanship, oil exploration and politics.

The fertility rate of Nigeria is about 4.48 births per woman [21].

It is estimated that about 46% of Nigerians live below poverty line [22]. The Gross Domestic Product (GDP) of the country is estimated at 187.8 Billion USD

with GDP per capita of 807 USD [23]).

3.2. Study Design

This was a rapid review of primary research studies.

3.3. Study Population

This consists of all primary studies published between Jan 2015 and August 2025 that investigated the donor ability of male partners in their IVF-ET cycles in Nigeria.

3.4. Inclusion Criteria

- 1) Studies done between Jan 2015 and August 2025;
- 2) Studies done in Nigeria.
- 3) Studies reported in English language.
- 4) Studies that provided information on the donor ability of male partners: whether male partners' sperms or donor sperms were used in IVF-ET cycles and factors that influence it.
- 5) Studies that are original (primary) articles and not review articles.

3.5. Exclusion Criteria

All studies that did not meet the inclusion criteria.

3.6. Sampling Technique

A total population review of all studies that met the inclusion criteria was used.

3.7. Data Extraction Form

A data extraction form was prepared in line with the objectives of the review to capture the following information:

- 1) Author(s)'s name
- 2) Journal and date of publication
- 3) Type of Study and study design
- 4) Country of study
- 5) Outcome of the study
- 6) The documentation of whether male partner sperms or donor sperms were used
- 7) Possible factors that determined which sperms were used

3.8. Data Collection Methods

This review done by the two authors involved studies that were carried out in Nigeria and reported in English. It investigated the donor ability of male partners in IVF-ET cycles to determine the proportion of IVF-ET cycles that used male partners sperms and those that used donor sperms. A Pub-Med search was performed on August 25, 2025. Primary articles published between Jan 2015 and August 2025

that investigated the donor ability of male partners in IVF-ET cycles were sought for. Snowballing to select references from the selected publications were also made and no publication selected. The absence of primary publications on this topic from Pub-Med search necessitated the broadening of the search to include SCOPUS and AJOL databases and no publication was selected. There was consensus in the search results by the two authors involved in the review.

The following were keywords used for the search and the publications yielded:

Category 1: Male partner sperms, donor ability, IVF cycles, sperm quality, Nigeria = 8 publications

Category 2: Male partner sperms, donor sperms, ART cycles, donor ability, Nigeria = 10 publications

Category 3: Male factors, infertility, IVF cycles, donor sperms, Nigeria = 36 publications

This gave a total of 54 publications.

The studies were further screened to exclude studies that did not fulfil the following criteria:

- 1) Studies done between Jan 2015 and August 2025;
- 2) Studies done in Nigeria;
- 3) Studies that provided information on the donor ability of male partners and utilization of male partners sperm or donor sperms in an IVF-cycles;
- 4) Studies done in English language
- 5) Studies that are original articles and not review articles.

Of the 8 publications yielded in category 1, none met the study inclusion criteria.

Out of the 10 publications in category 2, none met the inclusion criteria.

For category 3, out of the 36 publications, none met the inclusion criteria.

This gave a total of zero (0) publication that was selected and used for study. The flow chart of the selection procedure is shown below.

Consequently, all the 54 studies were excluded, leaving none (0) study for final review. The flowchart showing the search protocol is shown in **Figure 1**.

The systematic review would have analyzed the studies if any were selected with respect to the setting, type of study, whether or not the source of sperms used was indicated vis-à-vis male partner sperms or donor sperm and authors using the tables below:

4. Results

The search did not provide any primary study done in Nigeria where the ability of the male partner to donate sperm for his IVF-ET was evaluated. The search did not also provide any information on any study done in Nigeria where there was a comparison between the outcomes of IVF-ET using donor sperm versus male partner's sperm. Only one of such study was seen done in the UK which showed that with donor sperm use in IVF-ET, there were reductions in the rates biochemical pregnancy, miscarriage and ectopic pregnancy.

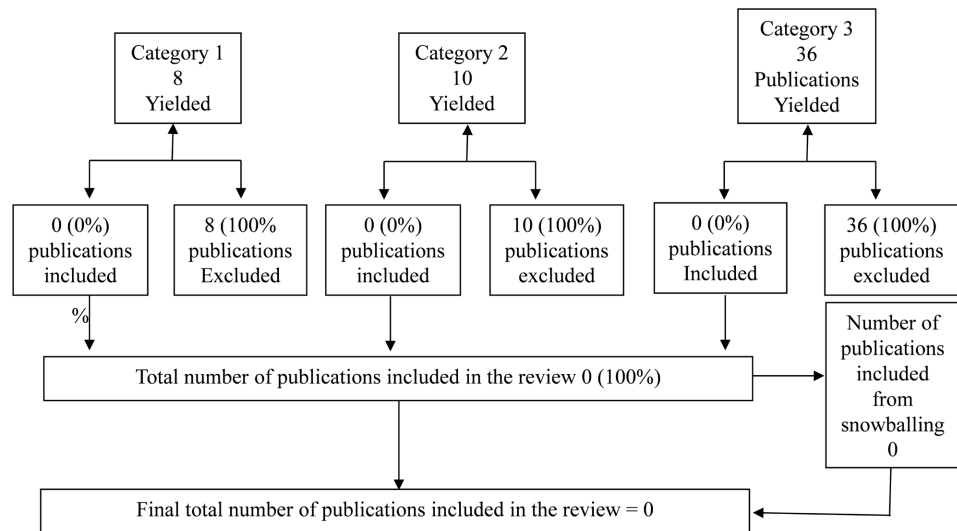


Figure 1. Flow chart of publication search protocol.

The summary of the result is shown in **Tables 1-3**.

Table 1. Summary of the profile of the studies showing the setting, type of study, and Authors & year of publication.

S/N	Setting (in Nigeria)	Type of study	Author & year of publication (reference)
0	Nil	Nil	Nil

Table 2. Shows Authors/year of publication and source of sperms for IVF-ET.

S/N	Author & year of publication (reference)	Source of sperm	
		Male partner	Donor
0	Nil	Nil	Nil

Table 3. Shows Authors and year of publication, source of sperms and Outcome of IVF-ET.

S/N	Author & year of publication (reference)	Source of sperm		Outcome of IVF-ET	
		Male partner	Donor	Positive	Negative
0	Nil	Nil	Nil	Nil	Nil

5. Discussion

The study clearly indicates not only a research gap but a complete absence of primary evidence on the subject matter of male partner involvement in the “creation” of lives of their intended children in Nigeria. The absence of primary evidence on this topic could be due to the keyword combinations or narrow methodological search limited by time and too few databases. It could also be attributed to the same lackadaisical attitude played on men by the society in an etiology of infertility. This is rather absurd because male partner contributes about 50% of the causes

of infertility [5]. It has also been shown that the success and outcome of IVF is also influenced by the quality of sperm used in fertilization [9].

The paucity of information on this subject matter may also be due to the fact that IVF in Nigeria is still growing with a lot of challenges of which research is one of them. It may also be the outcome of poor documentation which is fueled by absence of regulations guiding IVF in Nigeria [24]. Everybody therefore practices according to his/her conscience as there is no law guiding the practice of IVF in Nigeria.

Lack of information on donor ability of male partners in IVF and lack of information comparing the outcome of male partner-sponsored fertilization/creation of embryo and donor sperm-sponsored fertilization in the practice of IVF in Nigeria may also be due to the fact that it is easier to just produce sperm compared to the stress and rigorous activities and procedures the IVF specialist and Embryologist go through to get even an egg [13]. So, it is easy to just ignore the vital roles of sperm in the embryo creation. Simply put, the paucity of information on the subject matter may be due to “taking male partners for granted in the scheme of IVF-ET in Nigeria”.

This study has therefore shown the research gaps that need to be filled in the Nigerian Public Health and Assisted Reproductive Technology (ART) research, namely, the urgent need to research on the proportion of IVF cycles in Nigeria that utilize male partners sperms and those that utilize donor sperms and compare the outcome in terms of pregnancy rates, miscarriage and live birth rates. Research gap on factors that determine or influence the choice of whether male partners' sperms or donor sperms are used should be filled.

The authors acknowledge that the keyword combinations, the limitation of time and the number of databases searched may have contributed to the weakness and outcome of this review. A more comprehensive search involving Pub-Med, Cochrane and Embase are advised

6. Policy Implication

This review clearly shows the existence of a research gap to be filled in the practice of Assisted Reproductive Technology in Nigeria. It is this evidence-based research in ART that will guide Policy Markers in the making of policies that will guide and shape the practice of ART in Nigeria.

Globally, both sperm and egg donations are gaining ground in the bid to overcome the challenges of lack of viable gametes necessary for fertilization and creation of embryos for IVF and Nigeria is not exempted. There is need for a thorough national and wide spread Centre-based research on the donor ability of male partners in Nigeria in order to have a documented evidence of the ability of male partners in Nigeria to sperm-fund their ART cycles.

It will also be necessary to compare the outcome of the donor sperm-funded IVF cycles with the partner sperm-funded IVF cycles in terms of pregnancy rate, miscarriage rate and live birth rate.

The outcome of these research works will help in shaping the policy development and practice of IVF-ET in Nigeria especially in the area of sperm usage in IVF.

7. Recommendation

1) There is need to urgently carry out research works in IVF Centres in Nigeria to assess the proportion of IVF cycles in Nigeria that utilize male partners sperms and donor sperms and factors that determine or influence the choice or decision to use either male partners sperms or donor sperms

2) It is necessary to carry out researches in Nigeria's IVF Centres that will compare the outcome of the utilization of male partners sperms and donor sperms

3) There is need to pay attention to male partner participation in IVF cycles to avert a situation where he will disown the fatherhood of the IVF offspring

4) It is necessary to develop policy that will guide sperm donation and utilization in Nigeria to avoid exploitation of the vulnerable groups and the under-aged male children.

8. Conclusion

This review has exposed the non-availability of primary research works on sperm donation in Nigeria thereby throwing up a veritable *terra incognita* in the Nigerian Public Health and ART space. It is also possible that time frame and limitation of databases searched, might also have influenced the results. It shows that there is little or no attention paid to male partners' participation in deciding who is born to their families. Perhaps all attention is given to ovum production by the female partners leaving out male partner's contribution.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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