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Original Research Article

Demographics, pre-procedure knowledge, and post-procedure experience of the oocyte donation process amongst young females in Northern Nigeria: a cross-sectional study

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ABSTRACT

Background: Oocyte donation is a third-party treatment employed in assisted reproductive technology where good-quality oocytes obtained from young females are used by females with advanced age, poor ovarian reserve, and poor oocyte quality for in-vitro fertilization. A major challenge facing this treatment option is the availability of donors, and this study was done to ascertain the demographics of donors and their prior knowledge and experience of the process. The aim is to provide information that can be used to improve awareness and execution of the process.
Methods: This is a multi-center cross-sectional study that enrolled 154 participants who donated their oocytes between May 1st, 2023, and June 30th, 2024, in five major fertility clinics located in Abuja, Nigeria. Questionnaires were used to obtain data from the donors; the information obtained was analyzed using IBM SPSS Statistics 29.0.1.1. and presented as simple descriptive statistics.
Results: Average age was 23.7 years, and 71% of the participants had secondary education as their highest level of education. A total of 45% admitted to having anxieties prior to the procedure, of which 7.3% graded their anxiety as severe. During the procedure, 29.9% experienced symptoms, but only 27.1% stated that they would be willing to undergo the procedure again.
Conclusions: Opportunistic health education and adequate pre-procedure counseling are recommended to increase awareness of oocyte donation and improve the experience of the participants.

Keywords: Assisted reproductive technology, Female infertility, In-vitro fertilization, Oocyte donation, Poor ovarian reserve, Reproductive health

INTRODUCTION

Infertility is the inability of a couple to achieve a successful pregnancy based on issues found in the medical, sexual, and reproductive history, age, physical findings, diagnostic testing, or any combination of those factors in either of the couple.[1] If sexual intercourse is regular and unprotected, and there are no history, physical findings, or

diagnostic test results pointing to reproductive system pathology, evaluation should be initiated at 12 months when the female partner is under 35 years of age and at 6 months when the female partner is 35 years of age or older. The diagnosis of infertility also requires the need for medical intervention, including, but not limited to, the use of donor gametes or donor embryos in order to achieve a successful pregnancy either as an individual or with a partner.[1] According to a published study, between 10% and 15% of couples worldwide have been diagnosed, with Southeast Asia and Sub-Saharan Africa having the highest rates.[2,3]

Infertility can be due to male reproductive issues, female reproductive issues, or both. For the females, the reproductive issues can range from ovarian disorders, ovulation disorders, fallopian tube disorders, uterine disorders, cervical disorders, and so on and so forth. A recent study reported that ovulation disorders were the most typical causes of female infertility, accounting for about 57.5% of female infertility cases, and polycystic ovarian syndrome (PCOS) was the most typical cause of non-ovulation disorders, accounting for 66.2% of anovulation cases.[4] With increasing age in women, the quality of the oocyte declines, and the chances of female infertility increase. In women aged 15 to 34 years, infertility rates ranged from 7.3% to 9.1%, and this increases to 25% at ages 35 to 39 years old and up to 30% in women aged between 40 and 44 years.[5]

One of the management modalities for female infertility is by use of in vitro fertilization, where the male and female gametes, that is, sperm cells and oocytes, are fertilized outside the body and later transferred back into the woman's uterus. Often-times, the quality of the oocyte is suboptimal, either due to advanced maternal age or some other reproductive pathology. In this scenario, donor oocytes can be used instead. Oocyte donation is a third-party program done in assisted reproductive technology (ART) procedures that involves the use of better-quality oocytes from a third-party to replace the suboptimal-quality oocytes of the women. It was first performed in 1983 in Austria, and since then it has become a part of routine ART treatments.6 Oocyte donation is usually indicated in women well advanced in age who are attempting ART, women with premature ovarian failure, and also women who have a heritable genetic disease.[6]

However, in addition to the ethical issues surrounding oocyte donation, the availability of oocyte donors still remains low, and there have been studies that suggested long-term risks of early menopause and ovarian cancer in oocyte donors, especially those who undergo multiple controlled ovarian stimulations (COS).

The purpose of this study was to determine the demographics, educational level, and number of previous oocyte donation cycles in the oocyte donors. The knowledge of the oocyte donation process before the process, the primary motivation, and the experience afterwards were also determined. The aim of the study is to provide information that can be used in hospital-based protocols and guidelines at large that aim to provide substantial awareness, counseling, and health education among potential oocyte donors, as well as improve the quality of the entire process.

METHODS

Study type

This is a multi-center cross-sectional study that was carried out in North Central Nigeria that involved the five fertility centers in the Federal Capital Territory, Abuja, Nigeria, which included Primecare fertility clinic, DEDA hospital fertility clinic, NISA hospital fertility clinic, Excel hospital fertility clinic, and MOM fertility center.

Study population and data extraction

The study enrolled 154 participants who attended the above-mentioned fertility clinics from May 1st, 2023, to June 30th, 2024. Data was extracted from the participants after the completion of their oocyte donation program and receipt of oral consent. A two-page multiple-questionnaire was used to gather information not limited to but including their demographics, level of education, occupation, amount and method of research before the procedure, level of anxiety prior to commencement, primary motivation, symptoms experienced during the procedure, and possibility of repeating the procedure.

Summary of the oocyte donor process

The oocyte donation process was relatively similar across the five fertility centers involved in this study. Potential donors were screened with an extensive medical history, physical examination, laboratory testing, and diagnostic imaging. There were slight differences in the amount of laboratory tests done amongst the involved fertility centers, but most centers did a serum pregnancy test, infectious screening (hepatitis B and C, HIV and syphilis), blood group and genotype, and anti-mullerian hormone levels. All centers performed a trans-vaginal ultrasound scan on day 2 of the donor's cycle for proper ovarian assessment and determination of antral follicular count (AFC).

After a successful screening process, the donors were commenced on daily injections of gonadotropin-releasing hormone (GnRH) agonists for pituitary downregulation. The most common amongst the fertility centers was subcutaneous injection of buserelin at a dose of 0.5 mL daily. Gonadotropins contain follicle-stimulating hormone (FSH) or a combination of FSH and luteinizing hormone (LH), and the initiating dose is usually between 75 and 150 IU daily. Most centers added prophylactic antibiotics and a few anti-malaria prophylaxis. Trans-vaginal ultrasound scans were done on days 6, 9, and 12, and depending on the ovarian response, the dose was either adjusted upwards

or downwards. On day 12, five or more follicles on each ovary with a widest diameter of 17 mm each were used as criteria for a trigger shot. A trigger shot that mimics the 'LH surge' of the natural ovulatory cycle was done with beta-human chorionic gonadotropin at a dose that ranged between 7,500 and 10,000 IU.

At about 36 hours after the trigger shot, the donors were taken to the theatre for oocyte retrieval under general anesthesia. Most centers discharged the donor the same day as the oocyte retrieval, but a few discharged 3 days later, after a follow-up clinical visit to rule out the presence of 'ovarian hyperstimulation syndrome' (OHSS).

Exclusion criteria

Donors with questionnaires that were incorrectly filled out or significantly incomplete were excluded from the study. Questionnaires filled out by hospital staff on behalf of the donors were also excluded to mitigate any form of bias.

Data analysis

The data extracted from the questionnaires were input into a spreadsheet and analyzed using IBM SPSS Statistics 29.0.1.1 and presented by simple descriptive statistics using frequencies and the measures of central tendency like the mean and range.

RESULTS

Out of 204 enrollees, only 154 of them were participants in the study. The average age of the participants was 23.7 years, with an age range of 8 years (19 to 27 years). The level of education of the majority of the participants was secondary level; 71.7%, 13.1% had a diploma certificate, and 14.4% had a bachelor's degree. Only 1 of the participants (0.6%) was undergoing postgraduate studies. The geopolitical regions of the country from which the participants have their origins are represented in Figure 1.

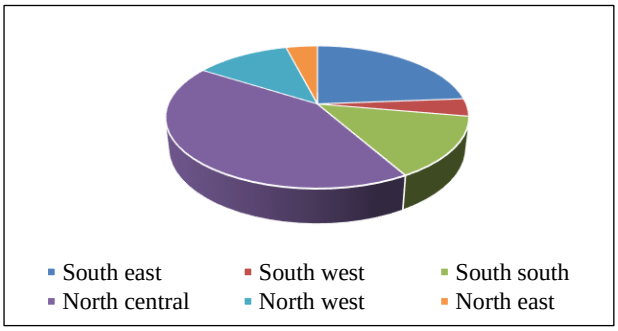

Figure 1: Highlighting the distribution of the states of origin of the participants according to the six geo-political zones of Nigeria.

Only 64 out of 153 participants (41.8%) were undergoing oocyte donation for the first time; the rest, representing 58.2% of the participants, had donated their oocyte at least once in the past. Those who donated once comprised 34%, twice, 19%, and three times, 5.2%. However, only 66% of them admitted to doing any personal research concerning the procedure, either by online search or physical interactions with friends, relatives, or healthcare workers. Out of 153 participants, 45% of them admitted to having anxieties before the procedure, with 14.5% indicating mild anxiety, 23.2% moderate anxiety, and 7.3% severe anxiety before the procedure. The primary motivation for 53.2% of all the participants was the financial compensation, while 31.1% indicated other non-financial reasons for embarking on the procedure. The remaining 15.5% chose not to answer that particular question.

During the procedure, 70.1% of the total participants claimed to have not experienced any worrisome symptoms, but the remaining 29.9% experienced a variety of symptoms, which have been represented in Table 1.

Table 1: Showing the number and proportion of the different symptoms experienced by oocyte donors during the procedure.

Symptoms experienced	Number of participants	Percentage of participants
Breast pain and tenderness	5	3.2
Abdominal pain	19	12.3
Abdominal bloating and discomfort	6	3.9
Nausea and vomiting	5	3.2
Internal heat sensation	2	1.3
Increased appetite	3	1.9
Vaginal bleeding	2	1.3
Persistent headaches	4	2.6

Overall, the grading of the oocyte donation process by the donors was good; out of the 150 participants who graded the process, 31.3% graded their experience as 3 out of 5, 37.3% graded a 4 out of 5, and 31.3% graded a 5 out of 5. When asked if they would do oocyte donation again, only 27.1% answered yes, 23.1% replied no, and the majority of them, representing 49%, answered 'not sure'. The remainder did not provide an answer.

DISCUSSION

Oocyte donation is gradually becoming widespread and popular; the indications include women with hypergonadotropic hypogonadism, advanced reproductive age, and those with diminished ovarian reserve. They are also considered in women with a history of poor oocyte or embryo quality or multiple previous failed IVF attempts, and also in couples who are biologically males and are interested in starting a family.[7] One large study done in the United States found that outcomes with donor oocytes were steadily improving, with one study suggesting patient

age and response to estrogen therapy as possible determinants for good outcomes.[8,9]

There are requirements and guidelines that exist for the oocyte donation process in certain cities, but their acceptance and practice are not universal. Some of the Food and Drug Administration of the United States requirements state that donors must be thoroughly screened for infectious diseases within 30 days before or 7 days after acquisition of the oocytes to avoid transmission of communicable diseases through the gametes. The American Society for Reproductive Medicine (ASRM) also recommends psycho-educational counseling, genetic testing, and legal consultation before oocyte donation.[7] While all these are highly valuable, in the developing countries, carrying out genetic testing for all the potential oocyte donors may not be feasible due to the cost, and the transmission of chromosomal and genetic aberrations can actually occur. This drawback can also be a factor for increased anxiety levels in oocyte recipients.

The result of this study reported that 45% of the participants, almost 70 of them, reported different levels of anxiety prior to the procedure. This anxiety is hypothesized to be directly linked to the 'fear of the unknown', which is bound to happen when pre-procedure counseling is inadequate. The oocyte donation process is not without risks, which may include possible complications of ovarian stimulation and the oocyte retrieval process, the possible issues that can occur with use of general anesthesia, and also the psychological impact.[10] A thorough counseling session dwelling on these areas, coupled with realistic reassurance, can be a major way of handling pre-procedure anxiety and increasing the number of potential donors. Some studies have also been carried out on oocyte donors in the past, which did not clearly show a correlation between oocyte donation and the occurrence of breast or ovarian cancer and a diminished ovarian reserve.[11,12] Most of the complaints identified by the participants during this study were due to the adverse effects from the use of the gonadotropins and are mostly considered to be temporal.[13]

The gains of the oocyte donation process still remain one-sided, as the recipient stands to gain more, with the oocyte donor only getting compensation or emotional satisfaction from participating in an altruistic act. From our findings, the primary motivation for 53.2% of the participants was the financial gains; this can be contrasted with the findings of some studies done abroad that identified altruism as the primary motivation, and the act of reciprocacy as another valuable reason.[14,15] The major factor responsible for this disparity in result findings lies primarily in the level and extent of pre-procedure counseling or general reproductive health education that is available for potential donors.

The fact that the post-procedure experience rating was good, coupled with the fact that a quarter of the participants were willing to donate again, goes a long way to show that the physical and psychological impacts of the procedure are not negatively impacting. Hence, most of the attention should be focused on the education and counseling that should occur before the potential oocyte donor embarks on the procedure. However, there are suggestions that have led to recommendations that there should be a limit of 6 oocyte donation cycles per donor.

Previous expert opinion has suggested a limit of six cycles per donor due to concerns over the potential cumulative risk accrued after a donor undergoes six ovarian stimulation and egg retrieval procedures.[10]

A major limitation of this study is the small number of participants, which makes it difficult to make generalized statements, and secondly, the fact that outcomes of the IVF process using donor oocytes were not included.

CONCLUSION

The burden and negative impact infertility can have on a family is beyond doubt, and the importance and role of oocyte donation in female infertility is indispensable. Data has shown that the demand for oocyte donors and donor gametes far outweighs the availability of these donors and the donor oocytes. One way of bridging this gap is through health education and adequate counseling, where young females who attend reproductive health centers for a wellness checkup or some other reason can be educated on the positive impact they can have on the lives of couples battling infertility through oocyte donation. Oocyte donors can, on the other hand, be counseled appropriately and adequately so that not only will their anxieties concerning the procedure be allayed, but they can also be agents to spread word to their peers and encourage more young females to participate in the oocyte donation process.

Non-governmental organizations concerned with female reproductive health, fertility clinics, and volunteers can also be involved in this process.

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REFERENCES

1. Practice Committee of the American Society for Reproductive Medicine. Definition of infertility: A committee opinion. Fertil Steril. 2023;120(6):1170.

2. Agarwal A, Mulgund A, Hamada A, Chyatte MR. A unique view on male infertility around the globe. Reproduct Biol Endocrinol. 2015;13(1):1-9.
3. Mascarenhas MN, Flaxman SR, Boerma T, Vanderpoel S, Stevens GA. National, regional, and global trends in infertility prevalence since 1990: a systematic analysis of 277 health surveys. PLoS Medi. 2012;9(12):e1001356.
4. Obeagu EI, Njar VE, Obeagu GU. Infertility: Prevalence and consequences. Int. J. Curr. Res. Chem. Pharm. Sci. 2023;10(7):43-50.
5. Walker MH, Tobler KJ. Female Infertility. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2024.
6. Tulay P, Atılan O. Oocyte donors' awareness on donation procedure and risks: A call for developing guidelines for health tourism in oocyte donation programmes. J Turkish German Gynecol Associat. 2019;20(4):236.
7. Practice Committee of the American Society for Reproductive Medicine, Practice Committee for the Society for Assisted Reproductive Technology. Guidance regarding gamete and embryo donation. Fertil Steril. 2021;115(6):1395-410.
8. Kawwass JF, Monsour M, Crawford S, Kissin DM, Session DR, Kulkarni AD, Jamieson DJ. Trends and outcomes for donor oocyte cycles in the United States, 2000-2010. JAMA. 2013;310(22):2426-34.
9. Robin FK, Andrade GM, Bos-Mikich A, Frantz N, Zocche DA, Leal SM. Donor oocyte cycle characteristics and outcomes: factors potentially linked with successful endings. JBRA Assisted Reproduct. 2023;27(2):185.
10. Repetitive oocyte donation: a committee opinion. Fertil Steril. 2020;113(6).
11. Vaughan S, Coward JI, Bast RC Jr, Berchuck A, Berek JS, Brenton JD, et al. Rethinking ovarian cancer: recommendations for improving outcomes. Nat Rev Cancer. 2011;11:719-25.
12. Bukulmez O, Li Q, Carr BR, Leader B, Doody KM, Doody KJ. Repetitive oocyte donation does not decrease serum anti-mu€llerian hormone levels. Fertil Steril. 2010;94:905-12.
13. Vintilă BI, Butucă A, Morgovan C, Vonica AL, Rus LL, Muntean AC, Juncan AM, Gligor FG. Adverse effects of gonadotropins used in infertility treatment. InCBU Internat Conference Proceed. 2019;7:846-852.
14. Borgstrøm MB, Nygaard SS, Danielsen AK, Kesmodel US. Exploring motivations, attitudes and experiences of oocyte donors: a qualitative study. Acta Obstetr Gynecol Scandi. 2019;98(8):1055-62.
15. Pennings G, Ravel C, Girard JM, Domin-Bernhard M, Provoost V. Attitude towards reciprocity as a motive for oocyte donation. Euro J Obstetr Gynecol Reproduct Biol. 2018;225:194-8.

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