

Awareness and perception of assisted reproductive technology practice amongst women with infertility in Northern Nigeria

Adebiyi Gbadebo Adesiyun*, Nkeiruka Ameh, Solomon Avidime, Abdulsalam Muazu

Department of Obstetrics Gynaecology, Ahmadu Bello University Teaching Hospital, Zaria, Nigeria.
E-mail: *Biyi.adesiyun@yahoo.com

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ABSTRACT

Background: Involuntary infertility is a tragedy in most African setting. This is due to premium placed on fertility as a result of roles children fulfill in the family and the society. Aetiologic factors of infertility in sub-Saharan Africa are mostly infection related and they are mainly associated with poor treatment outcome to conventional non assisted conception technique. **Objective:** To evaluate the level of awareness and perception of assisted conception treatment among women attending fertility clinic. **Methods:** A descriptive cross-sectional study. **Results:** One hundred and ninety six women attending fertility clinic were interviewed. Mean age was 34.8 years and mean duration of infertility of 4.1 years. Of the 196 infertile women interviewed, 150 (76.5%) have heard of Assisted Reproductive Technology treatment. Sources of information were mainly family relation (46%) and friends (28.7%). Knowledge on some of Assisted Reproductive Technology practices showed that 50.7% were aware that the treatment could fail, 36.8% knew it could be applied for male infertility treatment, 9.3% and 18.7% respectively are aware that donor oocyte and sperm could be used for treatment. Perception on babies conceived from assisted conception treatment revealed that 52% of patients interviewed could not comment if they are normal and natural babies. Majority of patients could not affirm if they will agree to the use of donor gamete or zygote for their treatment. **Conclusion:** Awareness of assisted conception treatment was high, however knowledge on specifics of treatment was low and perception on some of the practices was unfavorable. Sensitization of the public will help overcome some beliefs that may be at tangent to some practices of assisted conception.

Keywords: Awareness; Perception; Infertility; Assisted Reproductive Technology

1. INTRODUCTION

In sub-Saharan Africa, about one-third of couples are reported to be infertile [1]. Female infertility was reported to account for about 55% of infertility cases, male factor for about 30% to 40% of cases and unexplained infertility accounted for the remaining 5 to 15 percent [2, 3,4]. In most African setting, parenthood is culturally mandatory and childlessness is socially unacceptable; this is because children are highly desired addition to the family and the society [5]. The repercussions of infertility go beyond 'not just having a child of your own'. It is associated with incomprehensible and immeasurable psychological and social consequences which impact more on the female. In Africa, infection is the most common cause of infertility [2,6]. Sexually transmitted infections mainly from gonorrhoea and Chlamydia, and pregnancy related infections during or after abortion and childbirth are the main culprit. In Africa, infections resulting in tubo-peritoneal factor and oligo-azoospermia are the two leading causes of infertility [2,3,4]. The place of tubal surgery versus IVF (*in vitro* fertilization) in the treatment of tubal infertility showed that patients are optimally treated with IVF [7]. A study from Nigeria, reported an estimate of 30 to 40 percent of patients with tubal factor infertility would need ART (assisted reproductive technology) treatment [8].

Assisted Reproductive technology has been reported to relieve more than 50 percent of infertility cases [9]. However, to set up this technology in the developing world is capital intensive and to access the treatment is reciprocally expensive. These pose barriers to the spread of ART treatment in the developing world where this technology is mostly needed. On the contrary, in the developed countries, ART treatment has made substantial contribution to the alleviation of infertility burden. In Latin America and Egypt, the proportion of the population that have access to ART treatment is less than 2 percent, while rates as high as 37 percent have access to ART treatment in Denmark [9]. Determining the level of

awareness and perception on ART treatment practises among infertile women would be useful in sensitizing and planning public enlightenment programmes on advanced infertility treatment. We hypothesize that the constraints of low spread of ART treatment option in the developing countries may have a negative impact on knowledge and perception on ART treatment.

2. PATIENTS AND METHODS

This was a descriptive cross-sectional study carried out in two public hospitals (Ahmadu Bello University Teaching Hospital, Zaria and 345 Aero medical Hospital, Kaduna) and one cosmopolitan multidisciplinary private hospital (Alba hospital, Kaduna), all located in Kaduna state, Northern Nigeria. All consenting infertile women that attended the infertility clinic between July 2006 to March 2007 and May to October 2010 were interviewed in accordance with the questions on a pre-tested designed questionnaire. Women who have undergone ART treatment before were excluded from the study. For this study, infertility was defined as inability of a couple to conceive despite one year of unprotected sexual intercourse. In this study *in-vitro* fertilization popularly known as 'Test-tube baby technology' was used as reference to ART.

The patients were personally interviewed by the doctors running the infertility clinic. Protection of subjects rights in terms of anonymity and confidentiality was ensured. The easy-to-use questionnaire include section on socio-demographic characteristics, type of infertility, source of ART information, affordability of ART treatment, knowledge on some ART practices, perception on ART conceived babies and attitude donating and use of donor gamete and zygote.

3. RESULTS

One hundred and ninety six women with the diagnosis of infertility were interviewed for this study and 150 of them have heard of ART. This gives an awareness rate of 76.5%. Analysis of the 150 patients that have heard of ART showed their mean age to be 34.8 years with an age range of 18 to 46years. Mean duration of infertility was 4.1 years with a range of 12 to 144 months. Of the 150 patients, 123 (82.0%) had secondary infertility and 27 (18.0%) presented with primary infertility. When asked about the first source of ART information, 69 (46%) patients heard from family relation, 43 (28.7%) from friend, 27 (18%) from health facility, 6 (4.0%) through the mass media and the remaining 5 (3.3%) patients could not remember the source of information. Should an ART treatment cycle cost 4000 United States dollars, only 4 (2.7%) patients of the 150, said they can afford the treatment **Table 1**.

Table 1. Demographic characteristics and source of ART information.

CHARACTERISTICS / SOURCE OF INFORMATION	DATA N = 150
AGE (years)	
Mean and range	34.8 (18 – 46)
HIGHEST LEVEL OF EDUCATION n (%)	
Illiterate	28 (18.7)
Primary	34 (22.7)
Secondary	66 (44.0)
Post secondary	11 (14.7)
OCCUPATION n (%)	
Unskilled workers	62 (41.3)
Semi skilled workers	66 (44.0)
Skilled workers	13 (8.7)
Professional	9 (6.0)
TYPE OF INFERTILITY n (%)	
Primary	27 (18.0)
Secondary	123 (82.0)
SOURCE OF ART INFORMATION n (%)	
Family relation	69 (46.0)
Friends	43 (28.7)
Health facility	27 (18.0)
Mass media	6 (4.0)
Others	5 (3.3)
AFFORDABILITY OF ART TREATMENT n (%)	4 (2.7)

ART- Assisted Reproductive Technology.

Knowledge about ART practice revealed that 76 (50.7%) of the 150 patients knew that ART treatment could fail to produce pregnancy, also 54 (36.8%) patients were aware that ART could be applied in the management of male infertility. Of the 150 patients, 14 (9.3%) and 28 (18.7%) patients knew that donor oocyte and sperm could be used for treatment in ART procedure. Only 2 (1.3%) patients had knowledge on the use of donor zygote. Awareness on cryopreservation revealed that 28 (18.7%) patients know that oocyte and sperm can be preserved for future use while only 2 (1.3%) of the 150 patients were aware of ovarian and testicular tissue preservation **Table 2**.

Patients perception of babies conceived through ART showed that 28 (18.7%) of the 150 patients view them as naturally normal babies, 21 (14%) view them as normal but not natural babies, 22 (14.7%) view them as not naturally normal babies, while the remaining 79 (52.7%) patients do not know how normal and natural such babies are. However, when asked if they would undergo ART treatment should it be affordable and the only solu-

Table 2. Knowledge of some ART practice.

KNOWLEDGE	DATA (N = 150)
ART failure n (%)	76 (50.7%)
ART for male infertility treatment n (%)	54 (36.8)
Use of donor oocyte n (%)	14 (9.3)
Use of donor sperm n (%)	28 (18.7)
Use of donor zygote n (%)	2 (1.3)
Preservation of gamete n (%)	28 (18.7)
Preservation of ovarian tissue n (%)	2 (1.3)
Preservation of tissue n (%)	2 (1.3)

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tion to having their own baby, 138 (92%) said Yes and the remaining 12 (8.0%) do not know. On the possible use of donated oocyte for their ART treatment, 44 (29.3%) said Yes to its use, 9 (6.0%) said No to its use while 97 (64.7%) patients do not know if they will use oocyte from a donor for ART treatment. Concerning donated sperm to fertilize their oocyte, 27 (18.0%) would not mind the use of donor sperm, 5 (3.3%) will not consent to use of donor sperm while the remaining 118 (78.7%) patients do not know if they will consent to use of donated sperm. When asked about the possible use of donor zygote for ART treatment, 11 (7.3%) of the 150 patients will agree to use it, 62 (41.3%) will not agree, and 77 (51.3%) do not know if they will use donated zygote. Patients were asked if they will be willing to donate their oocyte for someone else use, 63 (42.0%) said Yes, 11 (7.3%) said No and 76 (50.7%) do not know.

Table 3.

4. DISCUSSION

A major challenge to ART especially in developing countries is how to make the technology accessible with reference to availability and affordability. The World Collaborative Report on IVF revealed a satisfying spread of ART in the developed countries; however the same cannot be said in the developing countries where the need for this technology is highest [10]. Nigeria has a population of 150 million with only about 15 ART centres that are mainly privately owned. In this study, it is not surprising that about three percent of the surveyed population could afford a treatment cycle even though majority would like to undergo ART treatment if recommended. Similar survey among infertile women in Mali, West Africa sub-region reported 78.9 percent were ready to resort to ART but only 24.9 percent would be able to mobilize the required resources [11]. In Nigeria, the minimum monthly wage of public worker is about 100 United States Dollar. In an international survey, about seventy percent felt that IVF treatment should be re-

Table 3. Perception of ART conceived babies and use of donor gamete/zygote.

PERCEPTION	DATA N = 150
ART CONCEIVED BABIES n (%)	
Normal and natural babies	28 (18.7)
Normal but not natural babies	21 (14.0)
Not normal and not natural	22 (14.7)
Do not know	79 (52.7)
USE OF DONOR SPERM n (%)	
Yes	27 (18.0)
No	5 (3.3)
Do not know	118 (79.7)
USE OF DONOR OOCYTE n (%)	
Yes	44 (29.3)
No	9 (6.0)
Do not know	97 (64.7)
USE OF DONOR ZYGOTE n (%)	
Yes	11 (7.3)
No	62 (41.3)
Do not know	77 (51.3)
DONATION OF OOCYTE/ SPERM n (%)	
Yes	63 (42.0)
No	11 (7.3)
Do not know	76 (50.7)

imbursable by the government [12]. In the developing countries reimbursement for fertility treatment has not been in practice due to financial constraints and insensitivity to the plight of the infertile couple. For those unfamiliar with the burden and consequences of infertility in the sub-Saharan Africa, it is not unusual to ask for the justification to use scarce resources to provide more offspring to an already overpopulated setting bemoan by high maternal, perinatal, infant and under five childhood mortality mainly from preventable causes.

With IVF as a reference, about seventy percent of the population have heard of the technology. This is high but not unexpected because the study was carried out in urban setting and infact the perception that ART is the solution to hitherto 'hopeless' cases may have helped propagate the awareness. Knowledge of failure rate was known by half of infertile women surveyed. This is an important factor in ART treatment, especially in the developing countries where the treatment is privately funded in the midst of lack. Similar survey among the general population in Europe and the U.S showed that 90 percent knew of IVF, but less than 25 percent knew about the chances of success [12]. Studies have shown a positive relationship between IVF failure and emotional

trauma [13] and increased level of anxiety and depression that negatively impacts on their life [14,15]. Treatment of male infertility in this sub-region is of paramount importance because the often domineering male partners do confuse sexual potency with fertility capability there by transferring the blame to the woman in most situations. This study showed that 36 percent of the women knew that ART could be applied for treatment of male infertility. This figure is low considering that male infertility due to oligospermia is the second common cause of infertility in Africa after tubo-peritoneal factor [2,3,4]. Knowledge on the use of donor gamete and zygote and their preservation was low in this study. This may not be unrelated to the rarity of ART treatment in this part of the world and the depth and correctness of the patient's source of ART information which was mainly from family relation and friends in this study. In contrast to an Iranian study that reported ART centre as the source of information among their infertile women, thereby exposing them to accurate and detailed information [16].

Response from this study showed that perception on ART babies and use of donated gametes and zygotes for their ART treatment was mainly. I do not know by patients. This response may be interpreted as uncertainty and ignorance surrounding ART treatment or some of the ART practices may be in collision with their cultural and religious beliefs. Similarly, authors from Turkey reported low acceptance rates of donated gametes by infertile women if needed for their treatment [17]. On the contrary, studies from Greece revealed that about 50 percent of the surveyed participant would be prepared to use donated gametes, though men are more likely than women to use donated gametes [18]. Although that study pointed out that confidence in emotional relationship is negatively associated with intention to use donor gamete [18]. In consonance with this, authors from a developing country found out that most respondents would accept donor gamete for their treatment only if it was kept private for others to consider their offspring as biological [19]. On the issue of donating gamete for other persons treatment, about 42 percent signified intention to donate, which is similar to rate from a developed country, although donor anonymity and refusal of children's right were enhancing factors in that study [20]. On the contrary, a Meta analysis revealed that a significant proportion of oocyte donors and women from the general population were prepared to donate their oocyte as identifiable donors [21].

Societal institution may be slow to cope with the ideas and practice of ART especially in Africa where the technology is still relatively new. Contentious issues like reproduction without sex, sanctity of family genetic line-

age, involvement of third party and commercialization of gametes and embryos are some of the attitudinal challenges to contend with in primitive societal settings of Africa. International machinery to facilitate globalization of ART services with special attention to man power training, subsidization of drugs supply and establishment of linkages towards global partnership as obtained in the Millennium Development Goals are enhancing steps to be taken for the benefit of the less privileged countries.

REFERENCES

- [1] Reproductive Health Outlook. (RHO) Overview and lessons learned. Infertility. <http://www.rho.org/html/infertility-overview.html>.
- [2] W. Cates, Farley, T.M. and Rowe, P.J. (1985) Worldwide patterns of infertility: Is Africa different? *Lancet*, **2**, 596-598. doi:10.1016/S0140-6736(85)90594-X
- [3] Giwa-Osagie, O.F. (1984) Aetiologic classification and sociomedical characteristics of infertility in 250 couples. *International Journal of Fertility*, **29**, 104-108.
- [4] Osegbe, D.N. and Amaku, E.O. (1985) The causes of male infertility in 504 consecutive Nigerian patients. *International Urology Nephrology*, **17**, 349.
- [5] Inhorn, M.C. and Buss, K.A. (1994). Ethnography epidemiology and infertility in Egypt. *Social Science Medicine*, **39**, 671-686.
- [6] Oye-Adeniran, B.A. and Giwa-Osagie, O.F. (2000) Bacterio-spermia in fertile and infertile men. *Nig Medicine Journal*, **38**, 53-56.
- [7] Hull, M.G.R. and Fleming, C.E. (1995) Tubal surgery versus assisted reproduction: Assessing their role in infertility therapy. *Current Opinion in Obstetrics and Gynecology*, **7**, 160-167. doi:10.1097/00001703-199506000-00002
- [8] Ogedengbe, O.K., Giwa-Osagie, O.F. and Ogunyemi, O. (1987) Implications of pattern of tubal disease for microsurgery and *in vitro* fertilization in Lagos. *Journal of National Medical Association*, **79**, 510-512.
- [9] Cooke, I.D. (2007) The globalization of reproductive technology. In Kruger TF, van der Spuy Z, Kemper BD (eds). *Advances in fertility studies and reproductive medicine. Cape Town Juticalpa*, 234-240.
- [10] Adamson, G.D., de-Mauzon, J., Lancaster, P., Nygren, K.G., Sullivan, E. and Zegers-Hochschild, F. (2006) World Collaborative Report on *in-vitro* fertilization, 2000. *Fertility and Sterility*, **85**, 1586-1662. doi:10.1016/j.fertnstert.2006.01.011
- [11] Moreira, P., Fall, C., Dieng, T., Fall, A., Diouf, A. and Moreau, J.C. (2008) Assisted reproductive technology-indications and perceptions among couple presenting with infertility at Dakar university hospital. *Medicine for Mali*, **28**, 50-56.
- [12] The Bertarelli Foundation Scientific Board (2000) Public perception on infertility and its treatment: An international survey. *Human Reproduction*, **15**, 330-334. doi:10.1093/humrep/15.2.330
- [13] Milne, B. (1988) Couples experience with *in vitro* fertilization. *Journal of Obstetric Gynaecologic Neonatal Nursing*, **17**, 347-352.

- [doi:10.1111/j.1552-6909.1988.tb00454.x](https://doi.org/10.1111/j.1552-6909.1988.tb00454.x)
- [14] Laffont, I. and Edelman, R.J. (1994) Psychological aspects of *in vitro* fertilization: A gender comparison. *Journal of Psychosomatic Obstetrics and Gynaecology*, **5**, 85-92.
- [15] Newton, C.R., Hearn, M.T. and Yuspe, A.A. (1990) Psychological assessment and follow-up after *in vitro* fertilization: Assessing the impact of failure. *Fertility and Sterility*, **54**, 879-886.
- [16] Sohrabund, F. and Jafarabadi, M. (2005) Knowledge and attitudes of infertile couples about assisted reproductive technology. *Iranian Journal of Reprod Medicine*, **3**, 90-94.
- [17] Baykal, B., Korkmaz, C., Ceyhan, S.T., Goktolga, U. and Baser, I. (2008) Opinion of infertile Turkish women on gamete donation and gestational surrogacy. *Fertility and Sterility*, **89**, 817-822.
- [doi:10.1016/j.fertnstert.2007.04.022](https://doi.org/10.1016/j.fertnstert.2007.04.022)
- [18] Chliaoutakis, J.E. (2002) A relationship between traditionally motivated pattern and gamete donation and surrogacy in urban area of Greece. *Human Reproduction*, **17**, 2187-2191. [doi:10.1093/humrep/17.8.2187](https://doi.org/10.1093/humrep/17.8.2187)
- [19] Annas, G.J. (1998) The shadowlands-secrets, lies and assisted reproduction. *New England Journal of Medicine*, **339**, 935-939. [doi:10.1056/NEJM199809243391325](https://doi.org/10.1056/NEJM199809243391325)
- [20] Chliaoutakis, J.E., Koukouli, S. and Papadakaki, M. (2002) Using attitudinal indicators to explain the public's intention to have resource to gamete donation and surrogacy. *Human Reproduction*, **17**, 2995-3002. [doi:10.1093/humrep/17.11.2995](https://doi.org/10.1093/humrep/17.11.2995)
- [21] Purewal, S., van den Akker, O.B.A. (2009) Systematic review of oocyte donation: Investigating attitudes, motivations and experiences. *Human Reproduction Update*, **15**, 499-515. [doi:10.1093/humupd/dmp018](https://doi.org/10.1093/humupd/dmp018)