Third-Party Assisted Reproduction: Awareness and Acceptability among Women Attending Infertility Clinic in a Hospital in Northern Nigeria.

Irshad Asma[1], Adesiyun G. Adebiyi[1], Sulayman U. Hajara[1], Madugu H. Nana[1]

[1]Department of Obstetrics and Gynaecology,
Ahmadu Bello University Teaching Hospital, Shika, Nigeria.

Correspondence
Dr Irshad A,
Email: irshadasma9@gmail.com

How to cite this article:
Irshad A, Adesiyun G A, Sulayman U H, Madugu H N Third-Party Assisted Reproduction: Awareness and Acceptability among Women Attending Infertility Clinic in a Hospital in Northern Nigeria. NDJMS 2020; 2(4):58-67

Received 5th March, 2020 | **Accepted** 25th June, 2020 | **Published** 21st July, 2020

Abstract

Background: *Third-party assisted reproduction refers to assisted reproductive technique in which there is biological involvement or contribution from a person other than the individual or couple that plans to raise the child (intended parent[s]) in the process of reproduction. It includes the use of donated ova, sperm, or embryos (or their components) and gestational-carrier arrangements, in which the pregnancy is carried by someone other than the intended parent(s).*

Objectives: *To determine the awareness and acceptability of third-party assisted reproduction among women attending Ahmadu Bello University Teaching Hospital infertility clinic and to identify concerns which may hinder utilization of these services.*

Methods: *This is a cross-sectional study conducted among infertile women using an interviewer administered, structured questionnaire. The result was analyzed using SPSS version 20 and presented using Microsoft Excel 2017.*

Result: *A total of 274 women were interviewed and 189 (69%) of the respondents were aware of at least a method of third party reproduction. The majority (95.8 %) of them were aware of gamete donation followed by surrogacy (86.2%). On the contrary the acceptability was highest for surrogacy (36.5%) and lowest for gamete donation (15.9%). The reasons given for this low acceptability included: religious beliefs, the process seeming unnatural, ineffective and even harmful. Despite these, the respondents expressed that confidentiality would improve the acceptability of these services.*

Conclusion: *The study revealed a high disparity between awareness and acceptability of the various methods of TPR that will be interesting to explore in future studies.*

KEYWORDS: Third-party assisted reproduction, infertility, gamete donation, and surrogacy.

Introduction

Worldwide, infertility is generally quoted as occurring in 8-12% of couples.[1,3] Approximately 7.3 million women and their partners (about 12% of the reproductive-age population) are infertile.[1,2,3] Infertility affects men and women in equal numbers.[4] However, the incidence varies from one region of the world to the other, being highest in the so-called infertility belt of Africa that includes Nigeria.[2]

Overall, studies have found that female causes accounted for between 25 to 37 percent of infertility worldwide with larger proportions in sub-Saharan Africa and Southeast Asia. Male causes accounted for between 8 to 22 percent, and both male and female causes accounted for between 21 to 38 percent.[5,6,7]

The phrase "third-party reproduction" refers to ART in which there is biological involvement of someone other than the individual or couple that plans to raise the child (intended parent[s]) in the process of reproduction. For millions of couples around the world, the inability to have children is a personal tragedy. For a significant proportion of them, the private agony is compounded by a social stigma, which can have serious and far-reaching consequences with third party reproduction being the only acceptable option in some cases. It is not surprising therefore that the demand for assisted reproductive technologies (ART) including third party reproductive services is growing in all regions worldwide.[18] Third party reproductive services are becoming more popular worldwide. This is also the trend in third world countries like Nigeria. However, cultural and religious considerations may prove a unique obstacle to its use.

The aim of this study is to determine the awareness and acceptability of third party reproduction as well as to identify possible concerns which may hinder utilization of these services.

Materials and Methods

The study was carried out in Ahmadu Bello University Teaching Hospital in Zaria which is the one of the largest tertiary centers in the north and sees to the need of infertile women from all over Kaduna state and northern Nigeria. This was a hospital based descriptive cross-sectional study which sought to determine the awareness and acceptability of third party assisted reproduction. The study was carried out over a period of one year from 1st July 2018 to 31st June 2019. Sample size was calculated using the prevalence from a previous study.[20]

$N = Z^2pq \backslash d^2$

Where N = sample size,

Z = the normal standard deviation at 95% confidence interval = 1.96

In this case P = 0.765 =76.5%[20]

q = 1 – p, this is the population without the desired level of awareness and Knowledge

q = 1 – 0.765 = 0.235

d = Degree of precision at 95% confidence interval = 0.05

$n = (1.96)^2 \times (0.765 \times 0.235) / (0.05)^2$

n= 274

A Semi-structured, face to face, interviewer administered questionnaire comprising of close ended questions was used. The questionnaire contained five sections including socio-demographic data, gynecological history of the respondents, and awareness of third party reproduction (TPR), respondents' attitude towards TPR and their acceptability of third party reproduction. Respondents who had heard of at least a method of third party reproduction and could explain its general concept were classified as "aware" while

those who did not meet up with this criteria were classified as "not aware."

Data collected was entered, validated and analyzed using the IBM statistical package for social sciences (SPSS) Version 20 and presented using tables and charts with the aid of Microsoft excel 2017. When $P<0.05$, it implies a significant relationship. A P-value of 0.003 at a *df* of 1 means that there is a statistical relationship between type of infertility and awareness of TPR. And Crammer's value was used to indicate the strength of the relationship.

Ethical clearance to conduct the study was obtained from Ahmadu Bello Teaching Hospital Ethical review committee. Permission was also obtained from the consultant's in-charge of the clinics, while an informed consent was obtained from all selected individuals.

Results

A total of 274 women participated in the study following a systematic sampling technique using clinic records.

Table 1: Summary of Socio-demographic characteristics of respondents (N= 274)

Characteristics	Percentage	Frequency
Age group (years)		
≤34yrs	229	83.6
35-45	35	12.8
>45	10	3.6
Ethnic group		
Hausa	102	37.2
Fulani	48	17.5
Yoruba	70	25.5
Igbo	25	9.2
Others	29	10.6
Religion		
Islam	154	56.2
Christianity	120	43.8
Family setting		
Monogamous	139	50.7
Polygamous	135	49.3
Educational status of client		
Informal	42	15.3
Primary	64	23.4
Secondary	46	16.8
Tertiary	122	44.5
Occupation		
Unemployed	21	7.7
Employed	253	92.3

The ages of all the respondents ranged from 18 to 49 years with a mean age of 30.31 years (SD: ± 6.7 years). Over 80% of the respondents were aged 35 years and below. All the respondents were married. Their husbands' ages ranged between 23 to 53 years with a mean of 37.4 years (SD: ±7.2). A hundred and twenty two of the respondents had tertiary level education and the majority were gainfully employed.

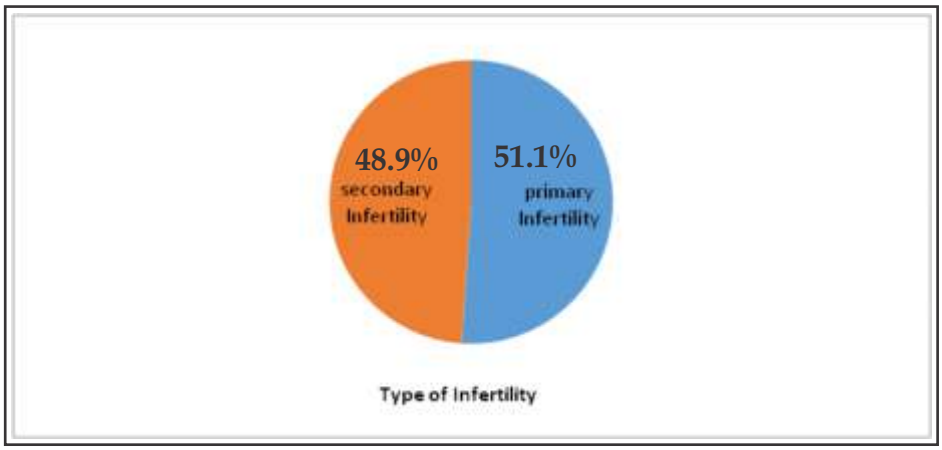

Figure 1: Pie Chart representation of type of infertility

One hundred and forty (51.1%) of the respondents had never been pregnant before (figure 1) while the remaining 48.9% had been pregnant before.

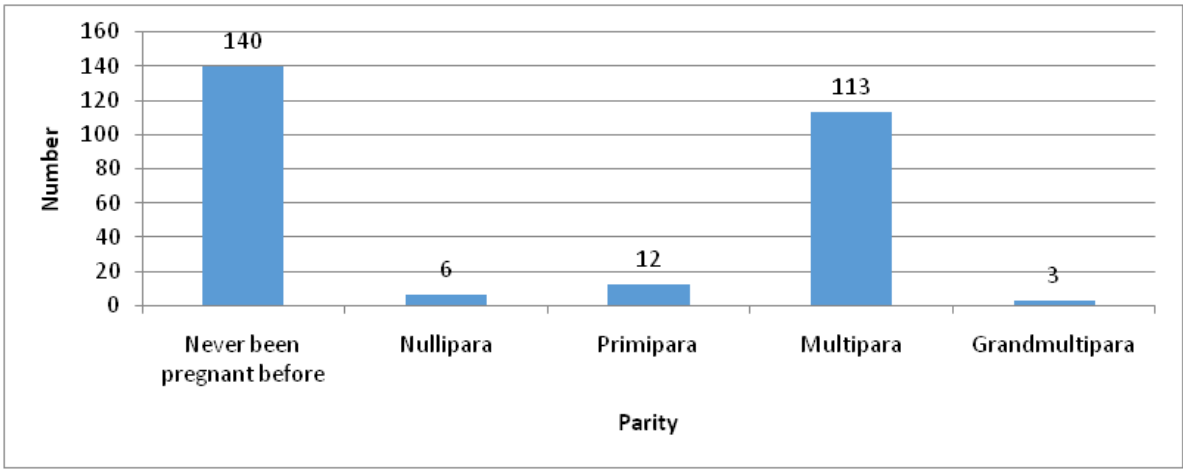

Figure 2: Bar chart representation of parity of women who had secondary infertility.

One hundred and thirty four women had secondary infertility. Of these, only six women (4.5%) had not carried a single pregnancy beyond the period of viability (figure 2). N = 134

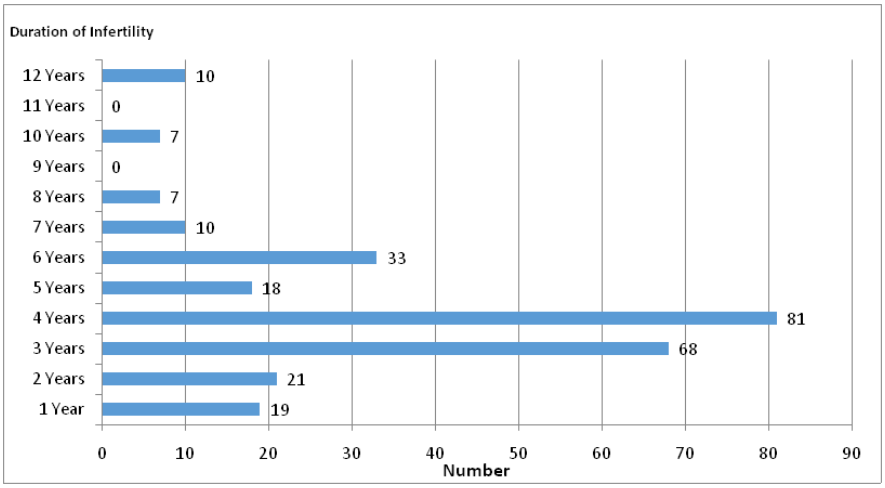

Figure 3: Bar chart showing the frequency distribution of respondents by duration of infertility.

Eighty one (29.5%) had been trying to conceive for the past 4 years. Only 6.9% had been unable to conceive for a year while 3.6% had been unable to conceive in the last 12 years (N= 274).

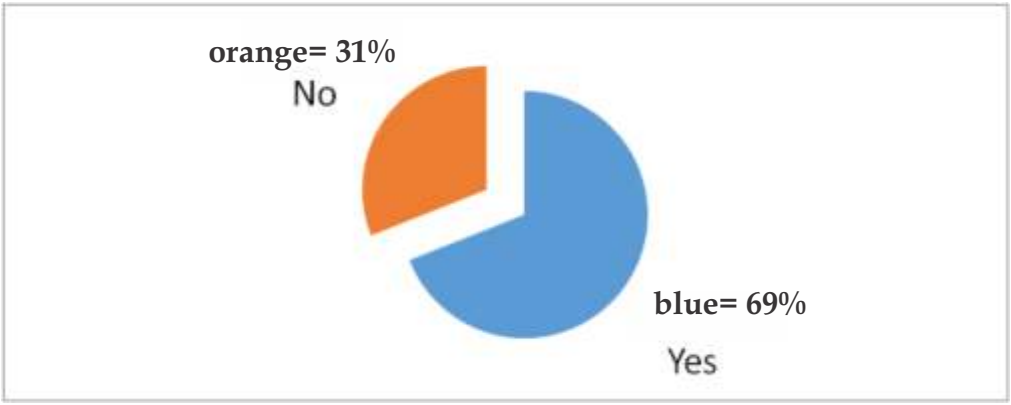

Figure 4: Aware of the concept of third Party Reproduction

The majority (189) of the respondents were aware of the concept of TPR and at least one method of third-party assisted reproduction while 85 were not aware of the concept (figure 4).

Table 2: Characteristic of respondents who were aware of TPR (N=189)

Characteristics	Frequency	Percentage
Knows Cause of infertility		
Yes	112	59.3
No	77	40.7
Source of Information		
Broadcast Media	55	29.1
Internet	18	9.5
Print Media	17	9.0
Friends and relatives	26	13.8
Health Professionals	52	27.5
Other	21	11.1
Aware of Gamete Donation		
Yes	181	95.8
No	8	4.2
Aware of mitochondrial donation		
Yes	47	24.9
No	142	75.1
Aware of embryo Donation		
Yes	76	40
No	113	59.8
Aware of Surrogacy		
Yes	163	86.2
No	26	13.8

Awareness was highest for gamete donation (95.8%) and lowest for mitochondrial donation

Table 3: Acceptability of Types of third party reproduction. N=189

Accept Gamete donation		
Yes	30	15.9
No	159	84.1
Accept mitochondrial donation		
Yes	49	25.9
No	140	74.1
Accept embryo donation		
Yes	42	22.2
No	147	77.8
Accept Surrogacy		
Yes	69	36.5
No	120	63.5

Awareness was highest for gamete donation (95.8%) and lowest for mitochondrial donation (24.9%).The most popular source of information was broadcastmedia.

Of those who were aware of third-party assisted reproduction, surrogacy had the highest (36.5%) acceptability while gamete donation had the lowest acceptability (15.9%).

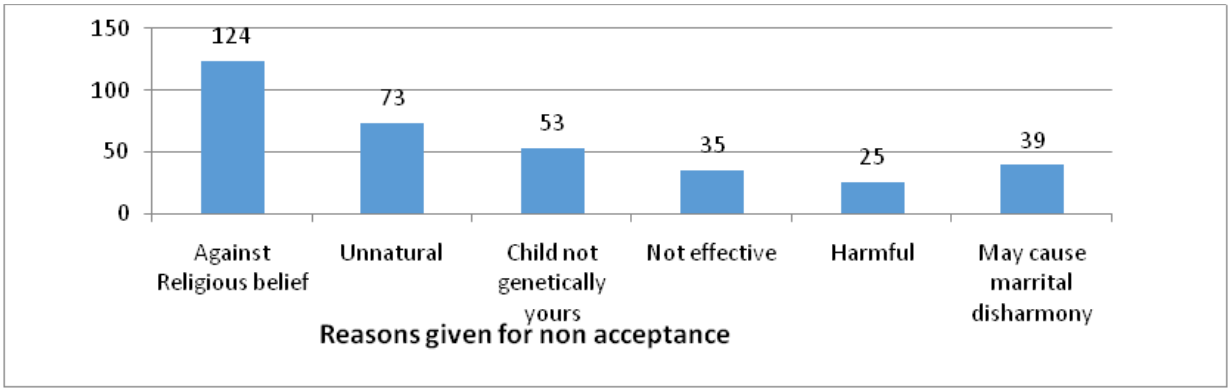

Figure 5: Reasons given by the respondents for non-acceptability of the various methods of TPR. N = 189

Most important hindrance noted was the respondent's religious beliefs (65.6%).

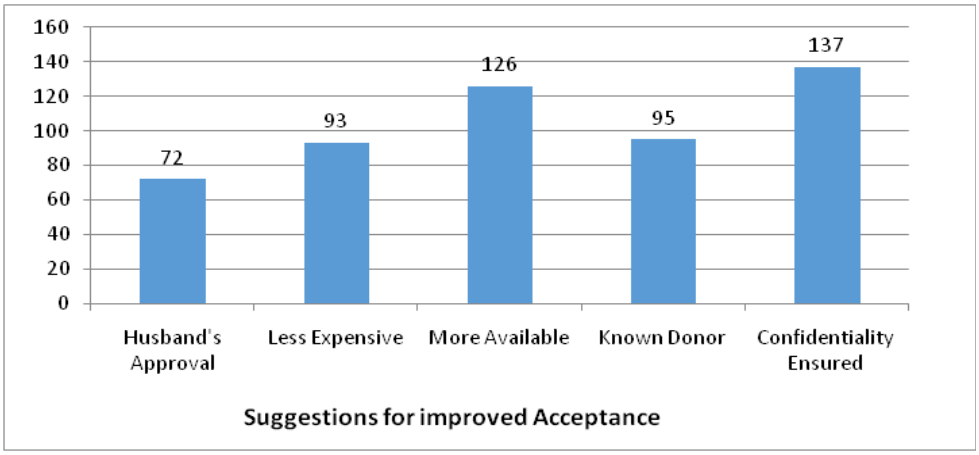

Figure 6: Reasons suggested by the respondents to improve utilization of Third party

Confidentiality was identified as the most important determinant for acceptance of these services (72.5%).

Table 4: Relationship between type of Infertility and Awareness of TPR.

Type of Infertility	Awareness of TPR		*P*-value
	Aware	Not aware	
Primary	81	53	0.003
Secondary	108	32	Crammers V= 0.302
Total	189	85	274

Table 4 shows the relation between type of infertility and awareness of TPR**.** When P<0.05, it implies a significant relationship

Discussion

In this study to assess the awareness and acceptability of third party reproduction, a total of 274 clients were interviewed. The age of the women interviewed ranged between 18 to 49 years with an average age of 30.3 years (SD ± 6.7). Only ten women were older than 45 years. The average age of women interviewed was lower than that found in studies in Enugu, Ibadan and Iran.[20,21,22] This may be associated to the early age at marriage and child rearing prevalent in the North.

A higher proportion of the respondents belonged to the Hausa ethnic group accounting for 37.2% followed by Yoruba ethnicity accounting for 29.5% of the sampled population. This reflected a diverse representation of the ethnic groups. About 56.2% of the respondents were Muslims and 43.8% were Christians. All (100%) of the respondents were married with the majority in a polygamous setting accounting for 50.7% of them. This represented the prevailing pattern in the North. The majority of the respondents had tertiary level of education while the minority (15.3%) had no formal education. This is reflective of location of the study which is a few kilometers from the University itself and its staff quarters. Most of the respondents were employed while 7.2% were unemployed.

Most of the respondents had never been pregnant before accounting for a primary infertility prevalence of 51.1%. This finding was similar to that in a study in Ibadan[26] which expected to have a higher rate of secondary infertility as reported in most sub-Saharan regions of Africa.[1] This may be due to the fact that this is a hospital based study and not a true reflection of community based data. It also seems logical to infer that given the premium on fertility in our society, women who have never conceived are more likely to seek care when compared to women who had been pregnant before. It was also noted that the majority of women with secondary infertility were multipara and the minority were grand multipara. This further buttresses the earlier point. For those who had been pregnant before, a minority were nullipara accounting for 2.2% while most

were multipara accounting for 41.2%. Parity was noted to have a weak relationship with the level of awareness of third party reproduction. It seems that women who had been pregnant in the past were more likely to make more inquiries about such services making them more knowledgeable on the subject. Even though a number of multiparous women were among the respondents, most (32%) had no child alive while only 4 women had 3 children alive. There is a high desire in women to have more children explaining the drive for a large family. This is highly important in women who are married in a polygamous setting as this enables them to establish their place in the family and the society. The duration in years since their last child birth was noted to be 3-5 years in the majority accounting for about 56.7% of multiparous women.

The duration of infertility in about a third of the respondents was 4 years accounting for about 30% of the sample size. Only 19 women presented following failure to conceive after a year and 10 women presenting after 12 years of infertility. This variant picture represents the sociodemographic diversity of sampled population. It also reflects the reluctance in women with infertility to seek care as seen in other similar studies in the region.[20]

As expected with the high educational level of most of the clients the awareness of TPR was high with 69% (189) of them been aware of at least one method. The oldest method of TPR i.e. gamete donation had the highest level of awareness while newer methods as expected had lower level of awareness. Only 24.9% of the women were aware of mitochondrial donation accounting for the least popular method. This may be due to technicality of the procedure of mitochondrial donation which may deter interest and also due to popularization of older methods in the media. About 86.2% of the women were aware of surrogacy while 40.2% were aware of embryo donation.

Only 47.1% of the respondents knew where these services were offered and o these the majority (29.1%) identified the broadcast media and health professionals (27.5%) as their main source of information. The remaining identified the internet (9.5%), print media (9.0) and friends (13.8%) as sources of information.

Even though there was high level of awareness of the gamete donation method of TPR, acceptability was quite low. Only 15.9% of the respondents found gamete donation to be acceptable. Surprisingly acceptability was higher for mitochondrial donation and embryo donation at 25.9% and 22.2% respectively. This may reflect a poor understanding of the terminology or a desire for the infertile woman to have a greater genetic or psychological attachment to pregnancy thus conceived.
Surrogacy had the highest acceptability at 36.7% and this seems to be on the rise as noted by a similar study.[9] A possible explanation could be the ready availability of this option to most women who may view this an extension of the age old practice of polygamy. It may also seem appealing as a lot of the tedious sessions of medical counselling, preparation, procedures and expenses associated with IVF techniques are avoided. Also the law monitoring and guiding the practice of surrogacy in Nigeria is in its infancy if not non-existent. This allows for informal or social arrangements for surrogacy which may make it appealing.

In general, religious beliefs were identified as the main reason or non-acceptability of

the various methods of TPR accounting for 45.2%. This is similar to findings in Ibadan.[9] This reflects the high import placed on religion as a guiding pillar in the daily life decisions of the average Nigerian as identified by the study in Ibadan.

Other reasons identified include: respondents believing it was unnatural (26.6%), the child produced was genetically unrelated (19.3%), the process was not effective (12.7%), it was considered harmful (9.1%) and that it may be a source of marital disharmony (14.2%).

The respondents identified the following as factors that may improve acceptability: husband's approval (26.2%), less expensive (33.9%), more available (45.9%), had a known donor (34.7%) and assurance of confidentiality (50%).

This research work was hospital based and therefore may not have been representative of the larger society. Another limitation of this study was the communication ambiguity which could not be totally eliminated during administration of the questionnaires.

Conclusion:

The study revealed a high disparity between awareness and acceptability of the various methods of third party reproduction that will be interesting to explore in future studies.

References

1. World Health Organisation (WHO); Mother of nothing; the agony of infertility. In: *WHO Bulletin*. 2010. pp. 877-953.
2. Okonofua FE, Obi H. Specialized versus conventional treatment of infertility in Africa: time for a pragmatic approach. *Afr J Reprod Health*. 2009.**13**:9-15.
3. Inhorn MC. Global infertility and the globalization of new reproductive technologies: Illustrations from Egypt. *Soc Sci Med*. 2003.;**56**(9):1837-51.
4. Asch A, Marmor R. Assisted Reproduction. In: Mary Crowley (ed).From Birth to Death and Bench to Clinic: The Hastings Center Bioethics Briefing Book for Journalists, Policymakers, and Campaigns. Garrison, NY. The Hastings Center. 2008; 5-10.
5. Okonofua, F.E. The case against new reproductive technologies in developing countries. *British Journal of Obstetrics and Gynecology*. 1996. **103**:957-962
6. Ekwere PD, Archibong EI, Bassey EE, Ekabua JE. Infertility among Nigerian couples as seen in Calabar. P*ort hacourt Med J*. 2007;**2**.
7. National Collaborating Centre for Women's and Children's Health (UK). Fertility: Assessment and Treatment for People with Fertility Problems. London: Royal College of Obstetricians & Gynaecologists; 2013: (NICE Clinical Guidelines, No. 156.)pp 21
9. Bello FA, Akinajo OR, Olayemi O. In-vitro Fertilization, Gamete Donation and Surrogacy?: Perceptions of Women Attending an Infertility Clinic in Ibadan , Nigeria. *African J Reprod Heal June* 2014;**18**:127-33.
10. Adenike OB, Wasiu AO, Sunday OO, Olaniyan BA, Olufemi OS. Prevalence of Infertility and Acceptability of Assisted Reproductive Technology among

Women Attending Gynecology Clinics in Tertiary Institutions in Southwestern Nigeria. *Gynecol Obs.* 2014;**4**(3).
11. Series PI. Third-Party Reproduction A Guide for Patients.
12. Reproductive Medicine. In: Goldfarb JM (ed). Third-Party Reproduction: A Comprehensive Guide. 1st edition. Springer-Verlag New York. 2014pp 1-234
13. Lutjen P, Trounson A, Leeton J, Findlay J, Wood C, Renou P. The establishment and maintenance of pregnancy using in vitro fertilization and embryo donation in a patient with primary ovarian failure. *Nature*. 1984;**307**:174-5.
14. Trounson A, Leeton J, Besanko M, Wood C, Conti A. Pregnancy established in an infertile patient after transfer of a donated embryo fertilised in vitro. Br Med J (Clin Res Ed). 1983;(286:):pp835-8.
15. ESHERE Task Force on Ethics and LAw. Gamete and embryo donation. *Hum Reprod?*. 2002:**17** (5):407-8.
16. Soderstrom-Anttila V, Foudila T, Ripatti U, Siegberg R. Embryo donation: outcome and attitudes among embryo donors and recipients. *Hum Reprod*. 2001;**16**:1120-1128.
17. Ajayi AB, Ajayi VD. Gestational Surrogacy in Nigeria. In: Handbook of Gestational Surrogacy. 2018. pp. 212-6.
18. World Health Organization (WHO). Assisted reproduction in developing countries - facing up to the issues ART in developing countries - a response to individual need or a social priority?? 2004: (63); pp9.
19. Wanggren K, Bergh T, Svanberg AS. Attitudes towards embryo donation among infertile couples with frozen embryos. *Hum Reprod.* 2013;**28**(9):2432-9.
20. Sohrabvand F, Jafarabadi M. Knowledge and attitudes of infertile couples about assisted reproductive technology. *Iran J Reprod Med.* 2005;**3**(2):pp90-4.
21. Obajimi G, Ogunbode O, Adetayo C, Ilesanmi A. Acceptability of artificial insemination by donor among infertile women attending the Gynaecological Clinic of the University College Hospital , Ibadan. *Trop J Obstet Gynaecol*. 2018;**34**(3).
22. Ugwu EO, Odoh GU, Obi SN, Ezugwu FO. Acceptability of artificial donor insemination among infertile couples in Enugu , southeastern Nigeria. *Int J Women's Heal.* 2014;**6**:201-5.
23. Abieyuwa O, James O, Michael A, Orhue OAA. Gamete donation?: knowledge , attitude and perception of infertile couple in a public hospital in nigeria. *Trop j obs gynaecol*. 2011;**28**
24. Omokanye LO, Olatinwo AO, Durowade KA, Raji ST, Biliaminu SA, Salaudeen GA. Assisted reproduction technology?: Perceptions among infertile couples in Ilorin , Nigeria. *Saudi J Heal Sci.* 2017;**6**:14-8.
25. Adesiyun AG, Ameh N, Avidime S, Muazu A. Awareness and perception of assisted reproductive technology practice amongst women with infertility in Northern Nigeria. *Open J Obstet Gynecol.* 2011;**1**:144-8.