**ORIGINAL RESEARCH ARTICLE**

# In-vitro Fertilization, Gamete Donation and Surrogacy: Perceptions of Women Attending an Infertility Clinic in Ibadan, Nigeria

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## Abstract

Infertility affects 20% of couples in Nigeria. Assisted reproductive techniques (ART) offered in Nigeria include in-vitro fertilization (IVF), gamete donation and surrogacy. This cross-sectional questionnaire study aimed at assessing the acceptability of ART to women seeking infertility treatment at the University College Hospital, Ibadan, Nigeria. Of the 307 respondents, 58.3% were aware of IVF and 59.3% would accept it as treatment; 35.2% would accept donor eggs and 24.7% would accept donor sperms—a smaller proportion anticipated acceptability by their husbands. Thirty five percent were aware of surrogacy, 37.8% would accept it as treatment; most preferring a stranger as a surrogate. Most felt surrogates should not be paid. Acceptance of ART was associated with older age, longer duration of infertility, previous failed treatment and women without other children. As chances of successful pregnancy are improved in younger individuals, counselling towards overcome barriers to accepting gamete donation and surrogacy should be instituted early. *Afr J Reprod Health 2014; 18[2]: 127-133).*

**Keywords:** infertility, IVF, gamete donation, surrogacy, Nigeria

## Résumé

L'infertilité touche 20% des couples au Nigeria. Les techniques de la reproduction assistée (TRA) disponibles au Nigeria comprennent la fécondation in-vitro (FIV), le don de gamètes et la maternité de substitution. Cette étude fondée sur le questionnaire transversale vise à évaluer l'acceptabilité de la TRA pour les femmes qui recherchent un traitement de l'infertilité au Centre Hospitalier Universitaire d'Ibadan au Nigeria. Parmi les 307 interviewées, 58,3 % étaient au courant de la FIV et 59,3 % l'accepteraient comme traitement; 35,2 % accepteraient un don d'ovules et 24,7 % accepteraient des spermatozoïdes - une proportion plus faible ont prévu l'acceptabilité par leurs maris. Trente-cinq pour cent étaient au courant de la maternité de substitution, 37,8 % des acheteurs l'accepteraient comme traitement ; la plupart préféraient un étranger comme un substitut. La plupart ont pense qu'il ne faut pas payer les substituts. L'acceptation de la TRA a été associée avec l'âge, à l'infertilité de plus longue durée, au traitement précédent échoué et à des femmes sans autres enfants. Comme les chances de réussite d'une grossesse sont améliorées chez les sujets jeunes, il faut tot mettre en place des conseils qui permettront de surmonter les obstacles à l'acceptation du don de gamètes et la maternité de substitution. *Afr J Reprod Health 2014; 18[2]: 127-133).*

**Mots-clés**: infertilité, FIV, don de gamètes, maternité de substitution, Nigeria

## Introduction

Infertility affects up to 10.5% of couples of reproductive age globally, according to a WHO study[1]; and 20% of couples in Nigeria[2]. Its impact is particularly prominent in cultures where a high premium is placed on childbirth (as it is in Nigeria), leading to social, psychological and economic challenges. Its prevalence may be expected to rise as women increasingly defer childbearing till older ages, while they get higher education and concentrate on advancing in their chosen career fields[3]. Assisted reproductive techniques (ART) overcome many barriers to procreation; thus offering a chance for many couples, for whom parenthood might otherwise have been impossible. ART has evolved to include in-vitro fertilization (IVF), the use of donor gametes for men and women with absent or dysfunctional gonads, surrogacy for women with absent or damaged uteri; and child adoption as a method of overcoming infertility.

Surrogates could be genetic (involving artificial insemination of the surrogate by the commissioning father, thus making her the genetic mother) or gestational (involving IVF by the commissioning parents and embryo transfer to the surrogate; or transfer of embryos created from

gametes donated by others to the surrogate)[4,5]. A 15-year retrospective study by the earliest providers of IVF-surrogacy cycles showed that the success rate was comparable with that of conventional IVF cycles[6]. This comparison was also reported by other authors[7].

Surrogacy is, however, fraught with ethical, legal, moral, emotional and psychological dilemmas and difficulties. These include conflict of interests that may occur if pregnancy complications arise, the legal and emotional difficulties that may surround the relinquishment of the infant to the intending parents, and problems with the acceptance of a congenitally abnormal infant. The International Federation of Gynecology and Obstetrics recommends that surrogacy should be only gestational (not genetic) to reduce the psychological attachment to the baby; should not be commercial; should respect the surrogate's autonomy; and where there is no legislation concerning surrogacy (as it is in Nigeria), the two parties should get independent legal advice as to their rights and responsibilities[5]. In general, compensation for expenses directly incurred by pregnancy and for loss of income is acceptable. Anything beyond this may be regarded as undue financial inducement, which runs the risk of exploiting the surrogate, who is often of a lower socio-economic status. Legislation varies widely in different countries, for example the United Kingdom[8] and Canada[9] allow only non-commercial surrogacy, India allows private financial arrangements[10], Japan prohibits surrogacy altogether[11], while in the United States and Australia[12], different states have differing regulations. IVF services, including gamete donation and surrogacy, are available in Nigeria[13,14]. Religion and culture play prominent roles in Nigeria, and these are potential factors that may influence the acceptance of reproductive techniques. The aim of this study was to assess the perceptions and acceptability of assisted reproductive techniques by women seeking treatment for infertility, as the University College Hospital, Ibadan, Nigeria, prepared to launch its assisted conception facility. We anticipated that the finding of this study might offer insights into the counselling of potential patients seeking infertility management at this facility.

# Methods

This was a cross-sectional study carried out in Ibadan, South-West Nigeria. The study setting was the gynaecology clinic of the University College Hospital (UCH), Ibadan; an 800-bed tertiary teaching hospital. Ibadan is a large town in south-western Nigeria with a population of about 1.3 million, which consists of urban, suburban and rural communities. UCH mainly serves as a referral centre for south-west Nigeria. Most of the population are government employees or run private businesses (often small- to medium-scale). Religion (most are Christians or Moslems) is actively practised.

Five general gynaecology clinics are run each week at UCH. A total sample of all clients who presented to these clinics on account of infertility over a three-month period, between August and November 2011, was taken. Informed consent was obtained, and information was obtained by a self-administered structured questionnaire with both open- and close-ended questions. The defined outcome variables were acceptability of IVF, gamete donation and surrogacy. Explanatory variables included the respondents' demographic data, socio-economic proxies, duration of infertility and previous failed treatment for infertility.

Data analysis was carried out with Stata® 11 (Statacorp, Texas, USA). Univariate analysis was performed with chi-square test and Fisher's exact test for categorical variables and students' t-test for continuous variables. Mann-Whitney U test and the chi-square test for the median were used for non-parametric intervals or ranked variables. Level of statistical significance was set at $p<0.05$.

Ethical approval was obtained from the UI/UCH Ethics Committee.

# Results

### *Demographic characteristics and previous history*

Three hundred and seven respondents completed the questionnaire. Their demographic characteristics are depicted in Table 1. They were aged between 22 and 45 years, with a mean age of 34.6±4.4 years. Primary infertility accounted for

157 (51.1%) cases, while 150 (48.9%) had secondary infertility. Eighty-six women (28.0%) had voluntarily terminated pregnancies previously, while 64 (20.9%) had had miscarriages. Most of them were nulliparous (75.9%); 19.9% had one child, while 4.2% had two. No one had more than two children. The duration of infertility ranged from less than a year to 25 years.

**Table 1:** demographic characteristics of the respondents

| ***Variable*** | | ***No (%)*** |
|---|---|---|
| Age | <24 | 2 (0.6) |
| | 25-29 | 44 (14.3) |
| | 30-34 | 88 (28.7) |
| | 35-39 | 134 (43.7) |
| | 40-44 | 37 (12.1) |
| | >45 | 2 (0.6) |
| Marital status | Married | 300 (97.7) |
| | Unmarried | 7 (2.3) |
| Religion | Christianity | 185 (60.3) |
| | Islam | 122 (39.7) |
| Education | No formal education | 0 (0) |
| | Primary | 53 (17.3) |
| | Secondary | 98 (31.9) |
| | Tertiary | 122 (39.7) |
| | Postgraduate | 34 (11.1) |
| Occupation | Student | 8 (2.6) |
| | Unemployed | 14 (4.6) |
| | Trader/artisan | 65 (21.2) |
| | Semi-skilled/skilled | 110 (35.8) |
| | Professional | 110 (35.8) |
| Husbands' education | No formal education | 0 (0) |
| | Primary | 9 (3.0) |
| | Secondary | 79 (26.0) |
| | Tertiary | 149 (49.0) |
| | Postgraduate | 67 (22.0) |
| Husbands' occupation | Student | 0 (0) |
| | Unemployed | 4 (1.3) |
| | Trader/artisan | 16 (5.3) |
| | Semi-skilled/skilled | 98 (32.1) |
| | Professional | 187 (61.3) |

One hundred and sixty-five respondents (53.8%) had previously sought fertility treatment. Of all the study's respondents, 21.5% had only been previously investigated, 14% had used medication for infertility, 4.6% had had surgery and 13.4% had undergone traditional treatment. All the respondents who indicated they had had treatment (and many who said they had not had treatment), totaling 239 (77.9%), indicated they had had a faith-based 'treatment' of some sort—prayers, faith healing and so on.

**Table 2:** Association of demographic characteristics and attitude towards IVF

| | **Can accept IVF *n(%)*** | **Cannot accept IVF *n(%)*** | ***P*** |
|---|---|---|---|
| *Age group* | | | |
| <24 | 2 (100) | 0 (0) | <0.001 |
| 25-29 | 20 (45.4) | 24 (54.6) | |
| 30-34 | 37 (42.1) | 51 (57.9) | |
| 35-39 | 84 (62.7) | 50 (37.3) | |
| 40-44 | 37 (100) | 0 (0) | |
| >45 | 2 (100) | 0 (0) | |
| *Type of infertility* | | | |
| Primary | 88 (56.1) | 69 (43.9) | 0.238 |
| Secondary | 94 (62.7) | 56 (37.3) | |
| Any living children? | | | |
| No | 156 (66.9) | 77 (33.1) | <0.001 |
| Yes | 26 (35.1)) | 48 (36.6) | |
| *Marital status* | | | |
| Married | 177 (59.0) | 123 (41.0) | 0.705 |
| Unmarried | 5 (71.4) | 2 (28.6) | |
| *Family setting* | | | |
| Monogamous | 123 (53.7) | 106 (46.3) | 0.001 |
| Polygamous | 59 (75.6) | 19 (24.4) | |
| *Religion* | | | |
| Christianity | 99 (53.5) | 86 (46.5) | 0.011 |
| Islam | 83 (68.0) | 39 (32.0) | |
| *Education* | | | |
| Primary/secondary | 88 (58.3) | 63 (41.7) | 0.724 |
| Tertiary/postgraduate | 94 (60.3) | 62 (39.7) | |
| *Husband' education* | | | |
| Primary/secondary | 56 (63.6) | 32 (36.4) | 0.316 |
| Tertiary/postgraduate | 124 (57.4) | 92 (42.6) | |
| *Occupation* | | | |
| Student/unemployed | 14 (63.6) | 8 (36.4) | 0.138 |
| Trader/semi-skilled worker | 111 (63.4) | 64 (36.6) | |
| Professional | 57 (51.8) | 53 (48.2) | |
| *Husband's occupation* | | | |
| Unemployed | 4 (100) | 0 (0) | 0.084 |
| Trader/semi-skilled worker | 73 (64.0) | 41 (36.0) | |
| Professional | 103 (55.8) | 84 (44.9) | |
| *Family income/month** | | | |
| <₦50,000 | 74 (62.7) | 44 (37.3) | 0.382 |
| ₦50,000-₦100,000 | 69 (60.0) | 46 (40.0) | |
| ₦100,001-₦200,000 | 39 (52.7) | 35 (47.3) | |

*US Dollar conversion rate was about ₦150 to $1 at the time of data collection

### *Attitude towards in-vitro fertilization*

One hundred and seventy-nine women (58.3%) indicated that they had been aware of IVF before reading information about it in the questionnaire;

131 (42.7%) were aware that it was available in Nigeria. One hundred and eighty-two (59.3%) would accept it as treatment for infertility. The demographic characteristics of acceptors vs. non-acceptors are shown in Table 2. Older women were significantly more likely to accept IVF ($p$<0.001), as were those had been infertile for longer ($p$<0.001), corroborated by both rank-sum and median tests. Women with previous fertility treatment were also more likely to accept IVF ($p$<0.001), as well as women without children, Moslems, and those in polygamous marriages. There were no associations with either partner's education or occupation, or with family income. Those who had been aware of IVF were more likely to accept it ($p$=0.02). Table 3 shows that most women who would decline IVF would do so because they had faith that God would provide them with babies without having to resort to this intervention (55.2%); followed by a desire to conceive by themselves (28%).

### *Attitude towards gamete donation*

Sixty-four women (35.2%) would accept donor eggs, but only 45 (24.7%) would accept donor sperms. Forty-four women (24.2%) felt their husbands would approve of donor eggs, while 33 (18.1%) felt that their husbands would accept donor sperms. Older women and those who had been infertile for a longer period were more likely to accept oocyte and sperm donations ($p$<0.001). There were no significant differences in their perception of their husbands' acceptance.

**Table 3:** Explanations offered by respondents for attitude towards IVF

| | **No (%)** |
|---|---|
| ***Reasons given to accept IVF (N=182)*** | |
| They want children; and they will accept if this is the suitable treatment | 178 (97.8) |
| No reason given | 4 (2.2) |
| *Reasons given to decline IVF (N=125)* | |
| Faith that God will provide a baby | 69 (55.2) |
| Desire to conceive by themselves | 35 (28.0) |
| They have a child/other children already | 2 (1.6) |
| It is not important enough | 2 (1.6) |
| Fear (including anticipation of pain) | 4 (3.2) |
| They are 'confused' | 3 (2.4) |
| Would rather do insemination | 2 (1.6) |
| No reason given | 8 (6.4) |

**Table 4:** Association of demographic characteristics and attitude towards surrogacy

| | **Can accept surrogacy *n(%)*** | **Cannot accept surrogacy *n(%)*** | ***P*** |
|---|---|---|---|
| *Age group* | | | |
| ≤24 | 2 (100) | 0 (0) | <0.001 |
| 25-29 | 9 (20.4) | 35 (79.6) | |
| 30-34 | 13 (14.8) | 75 (85.2) | |
| 35-39 | 60 (44.8) | 74 (55.2) | |
| 40-44 | 30 (81.1) | 7 (18.9) | |
| >45 | 2 (100) | 0 (0) | |
| *Type of infertility* | | | |
| Primary | 67 (44.7) | 83 (55.3) | 0.015 |
| Secondary | 49 (31.2) | 108 (68.2) | |
| Any living children? | | | |
| No | 96 (41.2) | 137 (58.8) | 0.009 |
| Yes | 14 (22.9) | 47 (77.1) | |
| *Marital status* | | | |
| Married | 113 (37.7) | 187 (62.3) | >0.05 |
| Unmarried | 3 (42.9) | 4 (57.1) | |
| *Family setting* | | | |
| Monogamous | 73 (31.9) | 156 (68.1) | <0.001 |
| Polygamous | 43 (55.1) | 35 (44.9) | |
| *Religion* | | | |
| Christianity | 54 (29.2) | 131 (70.8) | <0.001 |
| Islam | 62 (50.8) | 60 (49.2) | |
| *Education* | | | |
| Primary/secondary | 67 (45.3) | 81 (54.7) | 0.004 |
| Tertiary/postgraduate | 46 (29.5) | 110 (70.5) | |
| *Husband' education* | | | |
| Primary/secondary | 42 (47.7) | 46 (52.3) | 0.036 |
| Tertiary/postgraduate | 77 (34.8) | 144 (65.2) | |
| *Occupation* | | | |
| Student/unemployed | 6 (27.2) | 16 (72.7) | 0.034 |
| Trader/semi-skilled worker | 77 (44.0) | 98 (56.0) | |
| Professional | 33 (30.0) | 77 (70.0) | |
| *Husband's occupation* | | | |
| Unemployed | 2 (50.0) | 2 (50.0) | 0.173 |
| Trader/semi-skilled worker | 50 (43.9) | 64 (56.1) | |
| Professional | 64 (34.2) | 123 (65.8) | |
| *Family income/month** | | | |
| <₦50,000 | 49 (41.5) | 69 (58.5) | 0.015 |
| ₦50,000-₦100,000 | 32 (27.8) | 83 (72.2) | |
| ₦100,001-₦200,000 | 35 (47.3) | 39 (52.7) | |

*US Dollar conversion rate was ₦150 to $1 at the time of data collection

**Table 5:** Explanations offered by respondents for attitude to surrogacy

| | No (%) |
|---|---|
| ***Reasons given to accept surrogacy (N=116)*** | |
| If it is what it takes to have a child, they will do it | 116 (100) |
| *Reasons given to decline surrogacy (N=191)* | |
| A desire to carry one's own pregnancy | 66 (34.7) |
| Faith that God will provide a baby | 75 (39.3) |
| They do not like the idea | 10 (5.2) |
| It does not sound like it is any better than adoption | 18 (9.4) |
| They have a child/other children already | 2 (1.0) |
| They will not be able to afford it | 2 (1.0) |
| Fear | 9 (4.7) |
| They are 'confused' | 3 (1.6) |
| 'It won't be necessary, as I have had surgery' | 1 (0.5) |
| No reason given | 5 (2.6) |

### *Attitude towards surrogacy*

One hundred and eight respondents (35.2%) were aware of surrogacy as an intervention for infertility; 59 (19.2%) indicated that they knew it was available in Nigeria. One hundred and sixteen (37.8%) would accept it as treatment for infertility. The demographic characteristics of acceptors vs. non-acceptors are shown in Table 4. Older women, women with a longer duration of infertility, Moslems, women in polygamous unions and those who had previously received fertility treatment were significantly more likely to accept this method ($p<0.001$), as were women who had no children. Awareness of surrogacy predicted acceptance ($p<0.001$). Women with lower education and non-professional jobs were more likely to accept surrogacy. Table 5 showed that religious faith was the most common reason to decline surrogacy (39.3%); followed by a desire to carry their own pregnancies (34.7%). Some women (9.4%) declined surrogacy because they felt it was not different from child adoption.

Information was sought about whom the respondents would prefer to be their surrogates: 82 (76.6% of those that indicated they could consider surrogacy as a treatment option) would prefer a stranger, while 25 (23.4%) would prefer a relative or a friend. Eighty-five percent (99) of the respondents that would accept surrogacy would accept to use the surrogate's eggs for the conception; the rest (14.7%) would not. If required (or if possible), 182 (60.9%) women would be willing to be a surrogate for someone else. One hundred and eleven (36.1%) respondents felt that surrogates should be paid for their services; 180 (58.6%) felt they should not be, while the rest (5.2%) were undecided. Ninety-three respondents suggested the amount they felt a surrogate should be paid: the range was from ₦20, 000 to ₦500, 000 ($133 to $1,333); most of them specified ₦100, 000 ($666).

## Discussion

Most of the respondents surveyed had primary infertility. This finding was surprising as secondary infertility is reportedly more common in sub-Saharan Africa[15,16]. This study may be more representative of patients who sought treatment at a tertiary hospital than the general public. Most of the patients previously had some form of infertility treatment, as is expected of referred patients. Women of relatively lesser means (as ascribed by their education, occupation and income) were more likely to accept surrogacy. The link between this was not immediately clear; it was possible that the women with limited education did not fully grasp the financial implications of surrogacy. The strong influence of religion could be seen in the explanations offered for declining IVF or surrogacy, as well as the interesting fact that most respondents listed religious interventions as part of their previous treatment. Studies have shown that people that practise a religion[17] and people that attend church[18] are less accepting of surrogacy. Focus group discussions on local cultural issues surrounding ART revealed various responses that pointed towards the negative influence of both Christianity and Islam on the acceptance of ART[19]. Women in polygamous relationships were more willing to accept ART, probably because it offered them a means of establishing their place in their homes by having children. It appears that the respondents accepted that ART and its various components are the last resort to overcoming infertility, as evidenced by the strong association between acceptance and older age, longer duration of infertility, previous failed treatment and having no other children. Nevertheless, the acceptance of IVF was still relatively high. It is possible that the respondents were not aware of the high cost of IVF and that knowledge of the cost might have

altered their attitudes. We did not provide information on the cost of ART in the questionnaire to ensure that the responses given truly reflected the respondents' acceptance of ART, not just their ability to afford it. As no one indicated that they earned more than ₦200,000 monthly, IVF might be relatively difficult to afford for this population. The information about family income is admittedly limited as it is obtained from women, and traditionally, many Nigerian men do not share information about their income with their wives. But even if the stated figures were inferences, they would likely be close to accurate.

Gamete donation was not well received by the study group, suggesting a desire for genetic relationship with their offspring. It appeared that those who would accept surrogacy would be more accepting—or would resign themselves— to the use of eggs donated by potential surrogates.

In this study, surrogacy was better accepted than in another study on rural-dwelling infertile women in South-Eastern Nigeria, where zero-acceptance was reported[20]. It was interesting that surrogacy was likened to adoption, as noted by some respondents. The negative attitude towards adoption for infertility treatment in a similar population has already been demonstrated[21]; only 17% were willing to adopt. The information given in the questionnaire concerning surrogacy only covered gestational surrogates or carriers, who carry pregnancies conceived by IVF for intended parents—it did not include surrogate mothers who get artificially inseminated by the intended father's sperms. There, however, was an item that elicited information on respondents' attitudes to using their surrogates' oocytes; which was well-accepted by those who would consider surrogacy in the first place. This option is not recommended[5], however, due to the emotional and legal implications involved. Respondents were asked, as a proxy to acceptance, if they would be willing to be surrogates themselves. While most indicated their willingness; this should be interpreted with caution, as infertile women may think that they are not likely candidates for surrogacy. Most of our study participants did not feel that surrogates should be paid. There is no legislation in Nigeria concerning surrogacy at present, but the same considerations about undue inducement will hold-especially as many Nigerians live below the poverty line[22]. The suggested compensation mostly did not appear to be unduly generous, however.

Familial surrogacy (which is not recommended, as moral issues surrounding familial coercion may arise[5]) was mostly not desirable in this study, probably because of the perceived need to maintain anonymity.

In conclusion, it would appear that ART, including its components of gamete donation and surrogacy are relatively acceptable to infertile women. Counselling is important to overcome the barriers to acceptance which we assessed in this study. Women need not be older before ART becomes a viable option, as the chances of success are improved in younger patients.

### *Contribution of Authors*

Bello FA conceived and designed the study. Akinajo OR assisted in the study design, and collected and collated the data. Olayemi O contributed to the study design and analyzed the data. Bello FA prepared the initial manuscript, while the others reviewed it critically. All authors approved of the final manuscript.

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