

# ATTITUDE AND WILLINGNESS OF INFERTILE PERSONS TOWARDS THE UPTAKE OF ASSISTED REPRODUCTIVE TECHNOLOGIES IN IBADAN, NIGERIA

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## ABSTRACT

**Introduction:** In most developing countries, the joy of every married man and woman is to procreate and raise children of their own. However, this desire does not always find fulfilment among some couples because of primary or secondary infertility. The majority who experience this condition live in developing countries where fertility services including Assisted Reproductive Technologies (ARTs) are not always available. This study, therefore, investigated the attitude and willingness of infertile persons to uptake ARTs.

**Methods:** The study was a descriptive cross-sectional survey; a three-stage multi-stage sampling technique was adopted to select 202 married persons receiving fertility services at a gynaecological clinic in Ibadan, Nigeria. A validated interviewer-administered semi-structured questionnaire was used for data collection. Data were analysed using SPSS with descriptive and inferential statistics with the level of the significant set at  $\leq 0.05$ .

**Results:** Respondents' age was 34.3 years (SD  $\pm$  6.5); 88.6% were female; 55.5% had tertiary education; 54.5% reported a history of primary infertility. The negative attitude towards ARTs was observed among many of the respondents; however, some were willing to use ART services. In vitro fertilization (IVF) was the most preferred method; only 15.0% were optimistic of non-complications. The cost was the most mentioned barrier to use of ART. Positive association existed between attitude and willingness to use ART. Females are three times more likely than males to have a positive attitude toward the uptake of ART.

**Conclusion:** Public enlightenment and advocacy are recommended to influence negative attitude towards ARTs.

**Keywords:** Infertility, Couples, Assisted reproductive technologies, Attitude, Willingness

## INTRODUCTION

One of the reproductive health concerns of women and a common reason for gynaecological clinic consultations is infertility. In sub-Saharan Africa, the prevalence of infertility is about 30% and of this proportion, male contribution in most countries, including Nigeria, had been estimated to range from 30% to 50%<sup>1</sup>. In most communities in Nigeria, having children is a social obligation, parenthood is culturally mandatory, childlessness is socially unacceptable and stigmatized due to a high value placed on children<sup>2,3,4,5,6,7</sup>. For example, in South West Nigeria, premium is placed on children for both economic and social reasons<sup>8</sup>. Consequently, couples experiencing infertility may be rejected by the in-laws, causing many infertile couples to seek treatment through different pathways<sup>8</sup>.

As affected couples seek treatment options, they are faced with other serious challenges such as limited treatment facilities and the exorbitant cost of treatment in Nigeria<sup>2,5</sup>. Many couples are wary of choosing

adoption as a way of resolving infertility because of cultural factors and non-specific provisions for adoption in the Nigeria legal system<sup>2</sup>. Thus, the determination of infertile couples to find a solution to their gynaecological problem has resulted in the patronage of various treatment centres with different interventions. Assisted Reproductive Technologies (ARTs), including In Vitro Fertilisation IVF with fresh or frozen embryos as well as Intra-Cytoplasmic Sperm Injection (ICSI), have come into increasing use in Western nations since the late 1970s<sup>9</sup>, solving more than 50 per cent of infertility cases<sup>10</sup>. ART refers to all forms of treatments or procedures that include the in vitro handling of human oocytes and sperm or embryos for the purpose of establishing a pregnancy<sup>9</sup>. Previous studies in Nigeria have focused on prevalence, awareness, perception and attitude towards ARTs<sup>2,11</sup>, however, only a few studies exist on the willingness to use ARTs services. The study whose findings are reported in this article was, therefore, conducted to

determine the attitudinal disposition and willingness of infertile persons towards the uptake of ARTs in Ibadan, Oyo State, Nigeria.

## **METHODOLOGY**

### ***The Setting***

The study was a descriptive cross-sectional survey conducted in Ibadan North, one of the Local Government Areas (LGA) in Ibadan metropolis in South West region, Nigeria. Residents of this LGA are mostly of Yoruba ethnic group, which is the predominant ethnic group in the region. Most residents are in the low and middle socioeconomic status. The study site was Adeoyo Maternity Teaching Hospital, a facility owned by the Oyo State Government and highly utilised by Ibadan residents, especially those in the LGA. The facility also serves as a referral centre for many primary health centres and private clinics within Ibadan and neighbouring towns and communities.

### ***Sampling and Procedures for Data Collection***

The study population were married individuals who were receiving care for fertility-related conditions at the gynaecological clinic of the facility. A three-stage sampling technique was used to select 202 consenting individuals among those who visited the clinic for fertility-related challenges during the period of the data collection. After briefing patients about the study, a consecutive number was assigned to every individual who submitted their cards on appointment or check-up on each day of data collection. An average of 10 patients with fertility-related health issues visited the gynaecological clinic on clinic days. The clinic runs from Monday to Thursday, making use of Mondays and Thursdays for registrations and booking of an appointment for new patients, while Tuesdays and Wednesdays were used for consultations with gynaecologists. Therefore, participants who were utilising the clinic for fertility-related problems were recruited from Monday to Thursday. The register in which these patients' data were recorded during their visit to the clinic served as the sampling frame.

A systematic random sampling of eligible patients was performed sequentially using every 2<sup>nd</sup> interval from the list of those who were present on each day of the clinic until the desired sample size was achieved. Thereafter, individuals selected were informed of the objectives of the study. Eligible participants who refused to participate were replaced with other patients who consented and signed the consent form before administration of instruments for data collection. Detailed information was also provided to those who sought further explanation on the various forms of ARTs under investigation through the use of animations

and pictorials. An average of 10 respondents was interviewed every clinic day for 6 weeks. A total of 255 patients were approached and invited to participate in the study. Of this number, 220 consented to participate, giving 88% response rate. Four trained interviewers conducted face-to-face interviews with study participants. Training of interviewers consisted of inter-personal communication, interview techniques, and ethical considerations. Interviewers' skills were verified through the display of a well-coordinated demonstration and return-demonstration skills. They also completed and signed confidentiality forms before the commencement of the study.

### ***Measures and Data Management***

A validated interviewer-administered semi-structured questionnaire (both English and Yoruba versions) was used for data collection. The questionnaire consisted of four sections on demographic characteristics, history of infertility, attitude towards and willingness to utilise ARTs. The questionnaire was pre-tested to establish its reliability; the Cronbach's Alpha correlation coefficient of the instrument was 0.744. Each questionnaire was checked in the field for completeness. They were later sorted, cleaned, coded and entered into a computer; analysis was performed using the IBM/Statistical Package for Social Sciences (IBM/SPSS) version 22 software. The analysis consisted of descriptive and inferential statistics (Chi-square test) with a level of the significant set at  $p \leq 0.05$ . Likert scale was adopted in developing a 9-point attitude scale with four options 'agree', 'disagree', 'undecided' and 'no response' used to assess attitude. All positive attitude statements were allotted 1 point while all negative attitude statements were allotted 0. Scores  $\leq 4$  and  $> 4$  were categorised as negative and positive attitudes respectively.

### ***Ethical Considerations***

Ethics approval was obtained from the Oyo State Ministry of Health Research Ethical Review Committee, Ibadan, Nigeria (AD 13/479). Written informed consent was obtained from each participant after explaining the objectives of the study, the procedures involved, assurance of confidentiality and that participation is voluntary.

## **RESULTS**

### ***Socio-demographic characteristics of respondents***

The demographic profile of the study participants is shown in Table 1. The ages ranged from 22 to 55 years with a mean age of 34.38 years, with a standard deviation of  $\pm 6.5$ . More than half (57.4%) belonged to the 30-39 years of age group. Most (92.1%) participants were Yoruba, 88.6% were female and almost all (98.5%) were married. Half (50.0%) of the

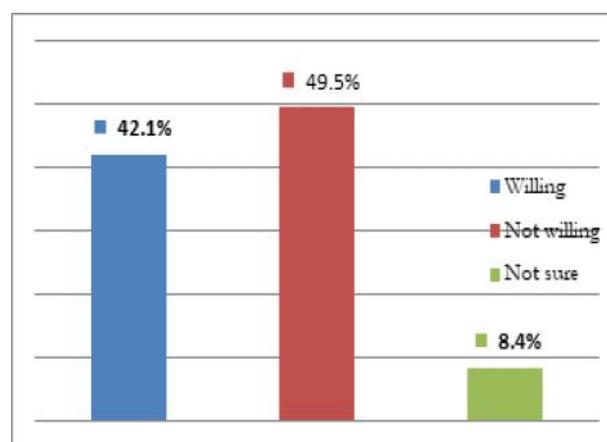
**Table 1:** Respondents' demographic characteristics (N = 202)

Variable	No	%
<b>Sex</b>		
Male	23	11.4
Female	179	88.6
<b>Age (years)</b>		
20-29	51	25.2
30-39	116	57.4
40-49	26	12.9
50 +	9	4.5
<b>Ethnicity group</b>		
Yoruba	186	92.1
Igbo	11	5.4
Delta	3	1.5
Hausa	1	1.0
<b>Marital status</b>		
Married	199	98.5
Divorced/Separated	2	1.0
Widowed	1	0.5
<b>Number of children</b>		
None	110	54.5
1	45	22.3
2	31	15.3
3	13	6.4
4	3	1.5
<b>Religion</b>		
Islam	101	50.0
Christianity	99	49.0
African tradition	2	1.0
<b>Level of Education</b>		
No formal education	5	2.5
Primary education	15	7.4
Secondary education	71	35.1
Tertiary education	111	55.5
<b>Occupation</b>		
White collar job (Office/Govt. workers)	65	32.2
Blue collar Job (Artisan/Trader)	121	59.9
Not employed (Homemaker/Retired/No work)	16	7.9

respondents were Muslims. Slightly more than half (55.5%) had tertiary school education while only 59.4% were traders/artisans.

### ***History of infertility***

More than half (54.5%) reported a history of primary infertility while 45.5% had secondary infertility. Of the latter, 15.3% still want more children even after two children, while 6.4% desired to have more children after having three. The period of reported pregnancy delay varied in the two groups: those with a history of 10-12 months dominated both groups (32.5% and 31.8% respectively). (Table 2)



**Fig. 1:** Respondents' willingness towards the uptake of ART

**Table 2:** Reported duration of infertility

Clinic Visit	Primary infertility (n=110)		Secondary infertility* (n=92)	
	N <sub>o</sub>	%	N <sub>o</sub>	%
Within a year	35	31.8	29	32.5
Between 1 and 2 years	32	29.1	14	15.7
Between 3 and 4 years	17	15.5	20	22.4
Between 5 and 6 years	7	6.4	6	6.7
Between 7 and 8 years	6	5.5	4	4.9
Between 9 and 10 years	4	3.6	3	3.3
Ten years and above	9	8.2	13	14.5
<b>Total</b>	<b>110</b>	<b>100</b>	<b>89</b>	<b>100</b>

\* Total does not add up to 92 because non-responses were removed

**Table 3:** Respondents' attitudes towards the uptake of assisted reproductive technology (GIFT, ICSI, GS, IVF and DSI).

Statement	Agree		Disagree		Undecided		Total*
	N <sub>o</sub>	%	N <sub>o</sub>	%	N <sub>o</sub>	%	
Don't believe ART is a new way of finding a lasting solution to infertility	82	41.2	86	43.2	31	15.6	199
Prefer ART to the use of herbs or local concoctions	102	52.3	59	30.3	34	17.4	195
Would not encourage anyone to access ART services for conception	52	26.3	127	64.1	19	9.6	198
Religion does not go against ART	103	50.0	69	34.8	26	13.1	198
Cost of ART would not encourage it use	65	33.5	82	42.3	47	24.2	194
Will never be in support of ART because it is against my beliefs and faith	59	30.1	114	58.2	23	11.7	196
Praying/waiting is better than making use of ART	106	53.0	69	34.5	25	12.5	200
Cannot encourage my spouse to make use of ART for conception	99	50.8	77	39.5	19	9.7	195
Cannot withstand the procedures of ART, will cause harm	49	24.6	100	50.3	50	25.1	199
Babies born through ART will be deformed	49	24.3	100	49.5	53	26.2	202
Women and men who seek for ART are reproductively weak	51	26.2	107	54.9	37	18.9	195

GIFT= Gamete Intrafallopian Transfer, ICSI=Intra-Cytoplasmic Sperm Injection

GS =Gestational carrier (surrogate), IVF=In Vitro Fertilization, DSI=Donor's Sperm Insemination

\*Some of the totals did not add up to 202 because non-responses have been removed.

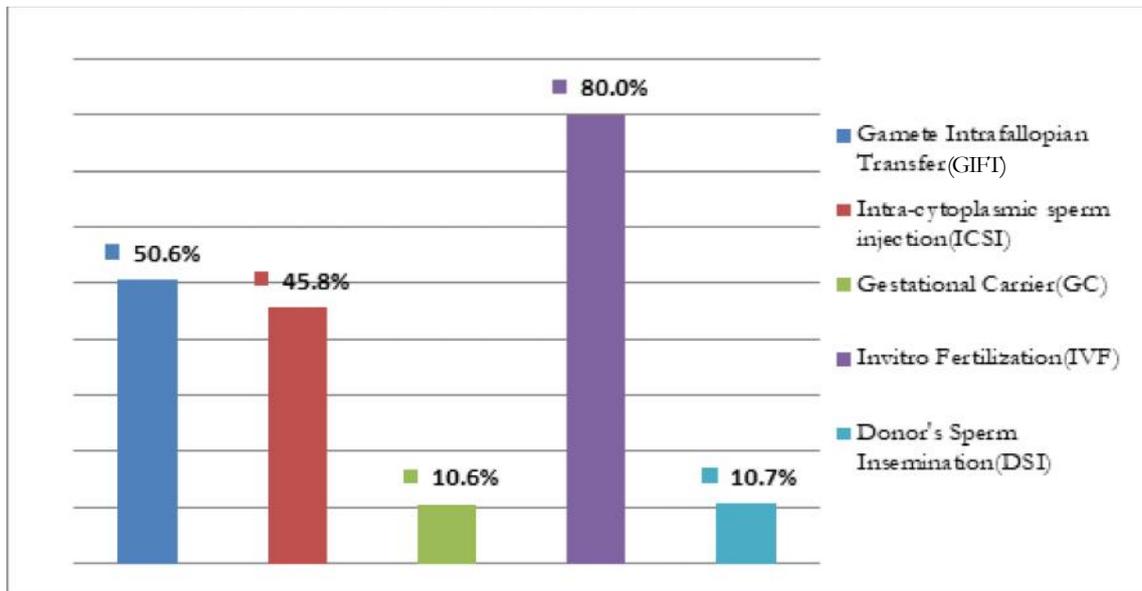
### Attitudes towards the uptake of ARTs

Fifty-two per cent of the respondents held a negative attitude towards the use of ART. More than half (53.0%) preferred spiritual exercise (praying and fasting) as an alternative to the uptake of ARTs, while 50.8% would not encourage the spouse to make use of the services. However, 64.1% would encourage anyone to access ART services with 50.0% expressing non-religious sentiments towards ARTs (Table 3).

### Willingness towards the uptake of ART

Less than half (42.0%) of the respondents were willing to adopt ART if provided in public hospitals (Fig. 1).

Among those respondents with a reported history of primary infertility, 45.0% indicated their willingness to uptake ART services as against 31.0% with a history of secondary infertility. Most preferred type of ARTs were IVF (80.0%) and gamete intra-fallopian transfer (GIFT) (50.6%)(Fig. 2). In addition, a few respondents (10.7%) were willing to make use of donors' sperm insemination (DSI) method, while 10.6% reported a willingness to accept donors' egg for conception (Fig. 3).



**Figure 2:** Respondents' preferred choice of assisted reproductive technologies (n=85)

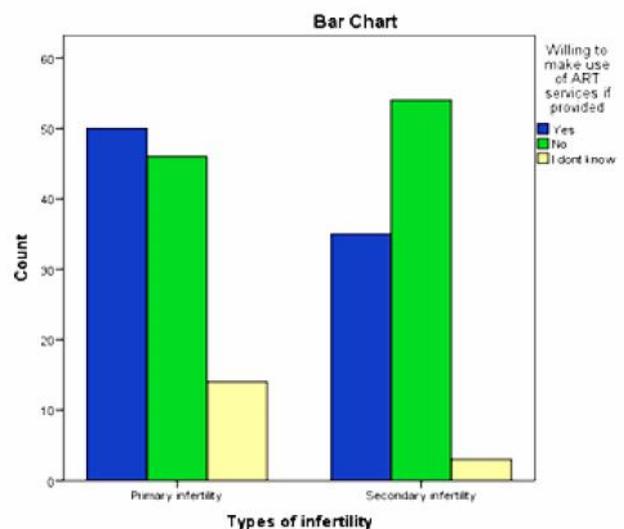
**Table 4:** Reasons for non-willingness for the uptake of ART (n=117)

Reasons*	No	%
The cost to procure ART too expensive or non-availability of money/funds	84	71.8
I don't like, believe or have an interest in the use of ART/machine for conception and I can conceive by myself	75	64.1
Belief in God's intervention and I prefer natural sexual intercourse	40	34.2
The procedure may not be perfect, effective, natural and baby will be deformed and abnormal	39	33.3
Procedures, side effects, fear of risks and hospital visits may be too stressful/painful and unbearable	32	27.4
Spousal agreement or willingness to opt for ART	32	27.4
Religion and belief negate the use of ART for conception	27	23.1
Poor knowledge of ART procedures by patients, access to ART clinic and absence of qualified medical personnel	25	21.4
Child will be segregated/ stigmatized or regarded as bastard by people, relatives/in-laws/friends	22	18.8
No factor can prevent me except if there is age restriction from making use of ART	19	16.2

\* Multiple responses

Of those willing to adopt ART, only 15.0% were optimistic that the procedures will be successful. For those not willing to utilise ARTs, most common reasons given were perceived exorbitant cost of the services (98.8%), preference for natural conception (88.2%), belief in God's intervention (47.1%) and the view that the procedures may result to deformed and abnormal babies (45.9%) (Table 4).

The relationship between respondents' attitude and their willingness to make use of GIFT, ICSI, GS, IVF and DSI was statistically significant ( $X^2=61.481$ , p-value=0.000) (Table 5). Likewise, the relationship between respondents' attitude towards the uptake of ART and willingness to donate fertile egg/sperm was statistically significant ( $X^2=19.040$ , p-value=0.000). The types of infertility reported by respondents were also



( $X^2=8.871$ , p-value=0.012)

**Fig. 3:** The relationship between types of infertility and willingness towards ART

**Table 5:** Association between the attitude of the respondents and their willingness toward the uptake of ART (GIFT, ICSI, GS, IVF and DSI)

Variables	Willingness to use any ARTs				Df	X <sup>2</sup>	P-value
	Yes N <sub>o</sub> (%)	No N <sub>o</sub> (%)	Don't know N <sub>o</sub> (%)	Total			
<b>Attitudinal disposition</b>							
Negative	17 (16.2)	73 (69.5)	15 (14.3)	105	1	61.481	0.000
Positive	68 (70.1)	27 (27.8)	2 (2.1)	97			
<b>Total</b>	<b>85</b>	<b>100</b>	<b>17</b>	<b>202</b>			
<b>Sex</b>							
Male	6 (26.1)	17 (73.9)	-	23	1	6.972	0.013
Female	99 (55.3)	80 (44.7)	-	179			
<b>Total</b>	<b>105</b>	<b>97</b>	<b>-</b>	<b>202</b>			

**\*Reference category**

statistically significant when compared with attitude ( $X^2=8.871$ ,  $p\text{-value}=0.012$ ) (Figure 5). Findings also showed that a significant relationship existed between respondents' attitude towards the uptake of ART and the duration of infertility among those with reported secondary infertility ( $X^2=13.034$ ,  $p\text{-value}=0.029$ ). Those who reported a history of infertility within 10-12 months are 5 times less likely to have a positive attitude towards the uptake of ART, compared to others who have waited for more years ( $p\text{-value}=0.026$ ,  $OR =0.200$ , 95.0% CI: 0.049-0.824). Logistic regression also showed that female respondents are 3.5 times more likely to have a positive attitude towards the uptake of ART than male respondents ( $p\text{-value}=0.012$ ,  $OR =3.508$ , 95% CI: 1.321-9.307).

**DISCUSSION**

Majority of the respondents were female; this finding is similar to that reported by Schmidt *et al.* in a study in Denmark where it was found that the highest numbers of patients seen at the fertility clinic were female<sup>12</sup>. The preponderance of female in our sample is explained by the context in Nigeria where more women than men bear the socio-cultural and psychological brunt of infertility<sup>13</sup>. More respondents with primary infertility attended the clinic at the time of data collection. The predominance of those with primary infertility is similar to findings reported by Bello and colleagues in Ibadan where most of the respondents surveyed reportedly had primary infertility, but different from findings by other Nigerian authors who reported preponderance of secondary infertility<sup>14,15,16</sup>.

More than half of the survey respondents fell into the 30 and 39 years age category. This finding is similar to that of Ugwu *et al.* who found that the incidence of infertility was more within the 30–39-years age category for female respondents<sup>13,14</sup>. This could be related to the concern of women approaching pre-menopause age hence, their frequent visit at the clinics.

The majority of the study participants held a negative attitude towards the uptake of ARTs. A similar study by Jimoh *et al* showed that 70.4% of the respondents had a negative attitude towards ARTs<sup>7</sup>. Their negative attitude towards ARTs was found to be significantly related to willingness to utilise ARTs. Some respondents also indicated their unwillingness to opt for ART because they do not believe or have an interest in the use of ARTs for conception. Cost, culture, fear of medical risk/complications and religion play a significant role in decision making in this part of the world, hence, respondents may repose their confidence or believe in God's intervention and not see the need to opt for ARTs<sup>6,13</sup>.

Although respondents' willingness to utilise ARTs services was low generally; most respondents willing to uptake these technologies were of the view that ART is beneficial in the long run. This finding is consistent with the views of Okonofua and Obi<sup>5</sup> in Benin City and Jimoh *et al*<sup>7</sup> in Ilorin, Nigeria. Majority of the respondents indicated their intention to advise and share information about the existence of ARTs with friends, relatives, neighbours and couples with infertile couples and encourage them to opt for IVF and other ART procedures if the need arises.

As reported by Orhue and Aziken,<sup>15</sup> IVF was the most common choice of ARTs among participants in the current study. Preference for this technology could be related to the level of awareness and non-complex nature of this procedure which is also widely adopted in Europe and the United States of America (USA)<sup>18</sup>. By contrast, gestational surrogacy (GS), a legal arrangement whereby a woman agrees to carry a pregnancy for another person who will become the parent of the child, was the least preferred because of the general belief that a woman who wants to be a "mother," should deliver her baby through the natural means<sup>14</sup>. Fadare and Adeniyi also reported that "this

feeling has led to non-acceptance of caesarean section by some women as it makes them less than a mother”, accounting for the lack of popularity of this method in developing countries such as Nigeria<sup>20,14</sup>.

Similarly, majority of the respondents were not favourably disposed to the use of DSI, a method which allows the third party to donate sperms for those in need because of concern about the genetic makeup of the donor and risk of stigmatization of the offspring<sup>14,20</sup>. It is therefore not surprising that almost all respondents were not willing to serve as egg donors. This finding is in disagreement with what was found by Adesiyun *et al.*<sup>21</sup> where most male respondents had the intention to donate sperms. Jimoh and colleagues have suggested a novel egg sharing scheme which allows a donor who is financially incapable of paying for her own ART treatment to donate some of her own eggs for a more financially capable person in need of donated eggs, as a means of reducing the stigma, logistical problems and scarcity of donors<sup>7</sup> since ARTs may not be affordable to the indigent couples who need the service.

#### Conclusion and implications for programming

Many participants held a negative attitude towards the use of ART services and the willingness to use the service is low. These findings have implications for the planning and implementation of infertility-related programmes that will help to tackle inherent challenges undermining the full utilization of ART services in Nigeria. Consistent and age-tailored public enlightenment program about the availability of the services is necessary. Also important is education about the dangers involved in infection with sexually transmitted infections, many of which cause infertility. The creation of more ART centres by government and other agencies in the country and reduction in the cost of the services will go a long way in encouraging more persons to use the services.

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