Patients' Knowledge about Causes and Solutions of Infertility in South West Nigeria

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Abstract

Background: Infertility inability to conceive after exposure to continuous unprotected sex for twelve months, is a major cause of marriage conflict in south west Nigeria. Knowledge of causes and solutions to infertility among selected patients were assessed in 18 hospital/fertility centre across the 6 states in south west geo-political zone of Nigeria.

Aims and objectives: To assess the knowledge of patients about causes and solutions to infertility in south west Nigeria.

Methods/study Design: A survey of a consecutive sample of 390 cases of infertility were carried out in 18 hospital/fertility centers with a total of 65 cases of infertility evaluated in each of the 6 States centers between 2009 – 2012. Chi-square statistics was employed to test the hypotheses formulated at α=0.05 level of significance.

Results/Findings: The knowledge of causes and solutions to infertility in the patients were established in all the States; (Lagos, Ogun, Oyo, Osun, Ondo and Ekiti). The commonest causes of infertility among these patients were, RTIs, damaged fallopian tubes, anovulation, poor semen analysis, distorted uterus. Low libido, previous use of IUCDs and uterine fibroids representing 81%, 70%, 68.7%, 65.9%, 65.9%, 65.7%, 65.3% and 62% respectively. The least common causes were taking of psychoactive drugs and working in hot condition/wearing of tight underclothing which was seen in 33.7% and 38.5% of the patients respectively. The patients also have knowledge about solutions of infertility in this order, that ART, regular sexual intercourse, taking hormonal drugs, antibiotics of choice, multivitamins and surgical removal of fibroids as follows; 72.3%, 69.2% 69%, 66.9%, 65.4% and 64.6% respectively. However, the least common solutions according to the patients are seen thus; engaging in varieties of sexual styles/positions, adoption of a child, corrective tubal surgery and wearing of loose/free underclothing representing 25.1%, 33.6%, 33.8% and 35.4% respectively.

Conclusion: Patients have knowledge about causes and solutions of infertility at different rates. It was recommended among others that any one suffering from infertility should wear free/loose underwear and reduce working in a severely hot condition; they keep off from any psychoactive drugs, put into consideration sexual positions/styles they assume with their sexual partners.

Key words: Infertility, Patients, Reproductive Tract Infections (RTIs), Intra Uterine Contraceptive Devices (IUCDs), Assisted Reproductive Technology (ART).

Introduction

In as much as population explosion is on the rise in many counties of world today, in Nigeria to be precise, many are still battling with the problem of infertility, and as such they want to become parents at all cost. It is estimated that about 54% of 200 cases of infertility women in a south western part of Nigeria have incidence of high infertility[1]. The couples are desperately in search for baby and end up blaming the cause on one another. Female sometimes takes more blames from the male partners. However, the problems may not be that of the woman alone. In male, insufficient sperm production (fluid produced during ejaculation) contains less than 40 million sperm per ejaculate frequently have infertility problems[2]. This can be improved through a number of approaches amongst the simple approaches are the application of periodic cold packs on the scrotum and the use of boxer shorts instead of tight underwear. On whether increased frequency of intercourse improves fertility, reproductive and fertility experts recommend that couples should have intercourse at in between day 11 to day 16 of the cycle[3].

Causes of infertility in women mostly precipitated on complications and obstructions in the reproductive tract as well as inability to ovulate. These complications and obstructions sometimes results from reproductive tract infections, such as Chlamydia and gonorrhoea infections often produce fertility problems[4]. In some women the use of Intra-Uterine-Contraceptive-Devices (IUCD) has produced infections and Pelvic-Inflammatory-Diseases (PIDs); all these increase the chances of infertility among couples. Other possible causes of structural abnormalities include; scar tissue from previous pelvic region surgery, fibroid tumors, polyps, and endometriosis[5]. A variety of microsurgical techniques may correct some of these complications.

The followings could also be stated as factors that could determine the fertility of an individual:

a. Ability of the woman to ovulate regularly every month;
b. Ability of the man to produce normal and healthy sperm;
c. Ability of the man to carry out the sexual act, which is erection and ejaculate standard mature semen;

Causes of Infertility

Ignorance and Sexual Problem: Biomedical science has succeeded in pointing out that infertility is caused by certain "defects' either in the wife or husband. The first category relates to ignorance and sexual problem. Isaksson & Titinen confirmed that about 5% of couples complaining of infertility have not had any timing sexual relationship[6]. It is also obvious that if normal sexual relationship is not established between partners or that intercourse is infrequent as happened when a husband is frequently away on long travels and only available on weekends, pregnancy is unlikely to occur with ease.

Acquired Injuries: If the Testes are swollen with fluid (hydrocele) or the veins are overdistended by blood (varicocele) or that the testes have been subjected to injury or excess X-Ray irradiation, healthy spermatozoa may fail to be produced to fertilize the eggs of a woman. The same condition applies if the testes are frequently subjected to excess heat during warm bath or by wearing tight or thick and heat inducing underwear. In the female similar injuries such as X-Ray or all sorts of

swelling may affect the ovaries preventing the release of normal ova. The tubes that usually conduct the ova to the womb may be distorted because of previous operations in the abdomen or they may be affected by adhesion therefore fail to allow a passage for the ova[7].

Infection: Male and Female can suffer from venereal diseases, tuberculosis and other infections, which can damage the reproductive organs. Gonorrhoea is particularly a hazard in this regard especially in a man and the condition treated. The same is not true for the female who may harbour gonorrhoea for a long time without knowing. By the time she starts to have ascended up to damage the tubes causing blockage. Tuberculosis spreading from the lungs can also descend to cause similar damage to the tubes[7]. Abortion may not ordinarily lead to infertility, but untreated infection arising from complications from abortion can cause some hazards[8].

Congenital Abnormality: Infertility will undoubtedly be a consequence of abnormal development of the reproductive organs. The male testes may be incompletely developed or may not have descended to the scrotum. Certainly, the aim to become pregnant will be futile in the presence of these abnormalities[9].

Male factor in infertility: Male infertility is shown when a semen analysis reveals inadequate sperm. A normal "sperm count' or semen analysis is as follows.

Standard test	
Volume	2ml or more
pH	7.2 – 8.0
Sperm concentration	20million or more
Total sperm count	40million / ejaculate or more
Motility	50% or more with forward progression or 25% with rapid progression within 60 minutes of ejaculation
Morphology	30% or more with normal forms
Vitality	75% or more live
Abnormal forms	20% or less

Source: WHO (2012)

Figure 1: Normal value of semen

It is not the number of sperm present in the sample that counts but the ability of motile sperms.

Abnormal Anatomy: Some men have anatomical abnormalities that impair or prevent fertility. The most common structural problem affecting male sperm levels is a varicocele, a tangle of swollen veins surrounding the testis[10, 11, 12].

a. **Hypospadias** is a condition in which the opening of the penis is on the underside possibly some distance back from the tip. Deposition of semen well within the vagina is obviously difficult in such situation and fertility reduced.

b. **Cryptochidism** is a condition in which one testis is twisted, or undescended testicles, in which the testes have remain within the abdomen instead of descending into the scrotum, the external pouch of skin that normally holds the testes. This is a situation usually diagnosed in earlier life but during the course of examining the male partner of an infertile couple, the scrotum will be felt for the presence of both testes.

c. **Klinefelter's syndrome** is a genetic anomaly, namely 47 (instead of 46) xxy (instead of xy, the normal male complement). Klinefelter individuals are tall, eunuchoid, with little facial or body hair and have very small inactive testes. Sexual potency is likely but no sperm is present.

d. **Absence of vas deferens and/or epididymis**: The vas deferens (tubes that carry sperm from the testes to the penis) In this structural abnormality, the route for the sperm from testes to penis is blocked. This could be as a result of past infection or injury, or may be absent altogether. Vasectomy – the operation for male sterilisation- will do this, of course, but the defect may be the result of a developmental abnormality.

e. **Varicocele**: This is one of the more common structural defects. It consists of enlarge veins (varicose veins) around the epididymis and vas deferens. Although why this defect should depress the production of sperm is not entirely clear it is thought that the varicosities create a higher local temperature thereby lowering production.

Functional Defects

a. **Hypothalamic**- pituitary disorders: Just as ovulation is controlled by the higher centres of the brain (hypothalamus) through the pituitary gland so is testicular function although there is no cyclical activity as in the female. Follicle Stimulating Hormone and Luteinising Hormone are involved as is the hormone testosterone. Deficiency of one or all of these may produce abnormalities of sperm production. Abnormal function of other glands such as the thyroid or adrenal gland may indirectly affect testicular function.

b. **Disorders of the testes**: The production of sperm can be arrested at any stage in the seminiferous tubules. One rare developmental cause is the absence of spermatocytes – the cells which produce the sperm. There is, of course, no method of correcting this fundamental defect.

c. **Infection**: Probably the best known infection causing impairment of spermatogenesis- the production of sperm- is mumps. Orchitis is an inflammation of the testis causing swelling and pain and may be associated with infection by the mumps virus. When this happens (and it may occur in 25% of men developing mumps) the sperm – producing elements in the testes may be damaged to a greater or lesser extent. Other infections may cause similar damage – gonococcal, syphilitic and non-specific bacterial infections. Once damage has occurred as a result of any of these infections it is irreversible.

d. **Drugs**: Some drugs may affects spermatogenesis. For example, alcohol, tranquillisers and narcotics all depress the production of sperm.

Anti – cancer chemotherapy usually causes azoospermia (absence of sperm) and recovery, after therapy is discontinued, is very variable. Obviously anti-cancer therapy when it is needed is a 'must' and in such cases 'banking' of the sperm before the start of therapy may provide an answer[3, 4, 10, 11, 12].

Female factor in infertility

Female infertility factors are commonly grouped in two categories: abnormal anatomy and functional defects.

1. **Abnormal Anatomy:** Some women are born with reproductive systems that have anatomical irregularities, or infection or injuries may damage certain reproductive organs. In order to achieve a pregnancy these structures are necessary – and they must function normally – ovaries, tubes, uterus, and vagina. Absence or mal-development of organs: Although not a common cause of infertility, nevertheless abnormalities of the development of the essential female organs may be found.

Absence of a vagina may be partial or complete but this will usually have been detected much earlier in a woman's life. There are various conditions based on either chromosome or hormone abnormalities where abnormalities of sexual organ development occur.

2. **Functional Defects:** Blocked fallopian tubes are a frequent cause of female infertility, accounting for up to 35% of cases among females. Scar tissue that blocks the fallopian tubes – caused by infections, inflammation, or a condition called endometriosis – prevents ova from meeting sperm. Sometimes a woman is born with a malformed cervical canal. An impaired cervical canal can prevent passage of sperm from the vagina to the uterus as the sperm travel toward the fallopian tubes. If a woman is able to conceive, problems with the cervical canal can lead to miscarriage. In the uterus, non-cancerous growths, such as fibroid tumors and polyps, can prevent a fertilized egg from implanting in the uterine wall[3, 4, 10, 11, 12.]

Important aspects of failure to conceive in the female are as follows:

1. **The ovarian factor**: If the ovary does not function regularly – or at all to produce eggs there will obviously be resultant infertility.

a. Premature ovarian failure: Here the ovaries have simply stopped functioning at an earlier age than normally expected. This will be accompanied by failure to menstruate and is fortunately rare as it is irreversible.

Secondary ovarian failure may be the result of radiotherapy (x – ray therapy usually used for a malignancy) or surgery on the ovaries. In this latter case both ovaries may have been removed or such large areas excised that inadequate function remains in the portions left behind. These situations are fortunately very rare.

b. Hypothalamic – pituitary failure: More commonly the ovary is capable of function and menstruation is taking place but there is insufficient stimulus from the follicle stimulating hormone (FSH) and luteinizing hormone (LH) produced by pituitary under the influence of the hypothalamus. These are the hormones required for the maturation and development of an egg containing follicle in the ovary and its subsequent rupture and shedding of an egg.

Problems arising in the hypothalamus may be the result of anxiety and stress and are often associated with failure to menstruate also.

Problems in other glands of the body may affect the hypothalamic – pituitary system and either just occasional ovulation takes place or there is total shut-down – anovulation.

Malfunction of the adrenal or thyroid glands and the condition of diabetes are examples of other gland dysfunction influencing ovulation[13.]

2. **Tubal factors**: Tubal factor accounts for about 20 – 25% of all cases of infertility. This category includes cases in which the woman has completely blocked fallopian tubes and also women who have either one blocked tube or no tubal blockage but tubal scarring or other tubal damage[14]. For the successful pick-up and, transfer of the ovum, its subsequent fertilisation and continued transfer down the tube to the uterine cavity we need an undamaged tube preferably with intact fimbriae, an open tube, a tube that can move freely (mobile) and an intact lining membrane especially with undamaged specialised cells and their hair – like processes which waft the egg on its way. The tube's entry into the uterus should also not be blocked.

Things that can go wrong with the tubes are as follows:

i.) Tubal factor infertility is usually caused by pelvic infection, such as Pelvic Inflammatory Diseases (PIDs)[14]. Infection can distort the tube, damage its fimbriae, block its canal and destroy the specialised lining cells and their hair- like processes.

ii. Previous surgery on the tubes may have been carried out in an attempt to open them up. Even although, the tube may now be opened, but may have almost certainly lost its motility and its specialised lining cells may have been damaged.

a. Other conditions may secondarily involve the tubes either by blocking them or causing adhesions which interfere with their function. Such condition is endometriosis and it is frequently associated with infertility.

Endometriosis: This is the inflammation of the lining of the cavity of the uterus is called the endometrium. The symptoms produced include dysmenorrhoea (painful menstruation) and dyspareunia (painful or difficult coitus) – may be a major problem[4].

iii. **Uterine factors**: Abnormalities of the cavity of the uterus such as fibroids which are benign tumours of the muscle of the uterus and which may protrude into the cavity grossly distorting it. In the absence of any other cause for infertility and where there are many fibroids present, surgery to remove these tumours and attempt to recreate a more normal uterus may be advisable.

iv. **Cervical factors**: The door of the womb may play quite an important part in infertility. In order for sperm to enter the uterus and get to the tubes to meet and fertilise the ovum it must first penetrate the mucus – the sticky watery material – which plugs the cervix. Favourable mucus is thin and clear and capable of being drawn out into long threads (this is called 'spinnbarkeit') and the mucus is made favourable by the high oestrogen levels present just before ovulation. At other times in the cycle the mucus is thick and cloudy and tends to inhibit the movement of sperm[15].

v. **Other factor**: Apart from these major causes of infertility which we have outlined there are several minor contributory factors. Infection of the vagina may contribute to failure to conceive. Problems of intercourse may as well become apparent, impotence in the man or failure to penetrate the vagina because of vaginismus in the woman. Vaginismus is an undue tightening and 'spasm' of the muscles of the vagina and may be due to fear, axiety or distate of intercourse or to local conditions such as scarring or infection producing pain[15].

Solutions to infertility

1. **Fertility Drugs:** Experts estimate that more than 75 percent of infertility cases due to hormonal problems can be treated with fertility drugs. One or more fertility drugs, such as clomiphene, human menopausal gonadotropin (HMG), human chorionic gonadotropin (HCG) and follicle stimulating hormone (FSH), may be prescribed to women to treat ovulatory disorders, such as failure to ovulate or infrequent or erratic ovulation. Fertility drugs may also be used to treat male infertility. Even, men may use clomiphene, HCG or HMG to stimulate sperm production[16].

However, fertility drugs can cause more than one egg to release during ovulation, increasing the risk of multiple pregnancies. Studies have shown that a combination of dietary counselling, exercise, and the drug, such as metformin (commonly used to treat diabetes mellitus) is equally effective as fertility drugs in regulating ovulation, with less risk to health and fewer multiple births[17]. Bromocriptine in high level of the prolactin then the drug will reduce the level. The effectiveness of the drug can be monitored by measuring prolactin levels in the blood but as menstruation has usually ceased with high levels of prolactin it will be restored as the prolactin level falls.

2. Treatment of problems of tubal patency

It must be noted that if one tube is shown to be open and apparently "free" and therefore capable of normal function surgery should not be attempted on the other blocked tube. Surgery always has the possibility of adhesions (where one structure sticks to another, Hydrotubation is the only non – surgical method that was popular. This involves the injection of a drug infiltration into the uterus with a view to separating areas of blockage in the tubes.

The main constituents of the drug are:

i. an antibiotic of one's choice e.g. a penicillin such as ampicillin 0.5 – 1g.

ii. hydrocortisone up to 100mg; and

iii. an enzyme hydroluronidase usually one or two ampoules all dissolved in sterile water for injection to a total of 20ml.

iv. Chymotrypsin and streptomycin in small quantity may be included to prevent inflammation and rule out tubal tuberculosis.

The injection is given slowly but with controlled pressure on the syringe and should be repeated on alternate days for at least 5 – 7 sessions beginning from the end of the menstrual period[18].

Tubal Surgery is necessary when tubal disease has been confirmed; tubal patency may be improved by surgery. The best results are obtained when surgery is performed by an expert trained in these techniques, using an operating microscope. The aim is to restore tubal patency and mobility.

Adesiyun, et al opined that surgery on blocked tubes is of varying degrees depending on the problem[18]. If the tubes are simply 'fixed' and struck down by adhesions all that may be required is to dissect the adhesions and free the tubes – the operation of salpingolysis. Opening up the tubes that are blocked may be necessary – a comparatively simple procedure if the blockage is at the distal end of the tube, the operation of salpingosomy. Or a wedge of blocked tube can be cut out and the open ends of tube re-united – the operation of neosalpingosomy[18].

If the blockage is at the insertion of the tube into the uterus then the outer patent part of the tube can be cut away and re-implanted into the uterus – tubal re-implantation. The success of a particular procedure is not only influenced by which procedure has to be used but by the state of the tubes before surgery. For example, a tube that has been the site of previous infection is likely to have a damaged lining mucous membrane (which cannot be restored).

Gamete Intra – Fallopian Transfer (GIFT): This is method of assisted fertility, the procedure involves also minimal ovarian stimulation, the recovery of oocytes but in vitro fertilization (IVF) is not part of GIFT. Semen is collected in the usual way and with the aid of the operating laparoscope; a suitable sterile plastic tubing is threated through the fimbrial opening of the fallopian tube to the middle portion of the tube. The oocytes is flushed into the fallopian tube along with the semen after which the plastic tubing is removed and the operation completed then natural fertilization occurs followed by implantation and pregnancy. Higher pregnancy rates have been obtained in GIFT procedures than IVF[19, 20].

c). Uterine Factors: Where fibroids are considered a fertility problem, they are removed by the operation of myomectomy.

d). Cervical Factors: Mucus that is favourable to the passage of the sperm is thin, clear and shows the quality of spinnbarkeit (drawing out into long threads). Infection may be a cause of altering the favourable mucus and when detected should be treated - antibiotics for active infection (or other drugs depending on the organisms found) and cauterisation for the 'unhealthy' inflamed cervix[21].

e). In vitro fertilisation (IVF): This is one of the techniques that can assist couples in becoming pregnant. In IVF, a woman receives fertility drugs in order to produce multiple eggs. These eggs are removed from the female, then taken to a laboratory and mixed with specially treated semen in a Petri dish. If a sperm fertilizes an egg to form an embryo, an expert transfers the embryo into the woman's uterus, where it implants and develops as a normal pregnancy[22].

f). Artificial insemination is the placing of donated semen in the woman's vagina or uterus without intercourse. This method of impregnation is most typically used with couples in which the man's sperm count is low[22]

g). Adoption: Adoption is a possibility that must always be held in reserve for situations where absolute infertility is demonstrated. The idea behind adoption is that a child not born to by the couple is brought into the family and treated as child; a legally adopted child has the same rights as a natural child[23].

The problem statement is that, many homes have scattered in south west Nigeria due to problem of infertility. Most couples are not aware of knowledge about the cause of infertility; otherwise, they would have proffered solution to infertility and make their homes united.

Objective of the study

The objective of the study is to;

- assess the knowledge about the major causes of fertility among patients who suffer from infertility in south west Nigeria.
- assess knowledge about the common solutions to infertility among patients who suffer from infertility in south west Nigeria.

Research Questions

The following questions will guide the conduct of the study.

1. Are the patients knowledgeable about the causes of infertility?
2. Are the patients knowledgeable about the solutions to infertility?

Research Hypotheses

1 Patients who suffer infertility in south west Nigeria will not significantly have knowledge about the major causes of infertility.

2 Patients who suffer infertility in south west Nigeria will not significantly have knowledge about the common solutions to infertility.

Materials and Methods

A descriptive survey research method was adopted and a multistage sampling technique thus: stage 1; the whole south west Nigeria is divided into 6 states geographic clusters. Stage II; the states are formed into strata of areas (e.g. Federal/Teaching hospital, state and private hospitals): clusters were selected randomly from the strata. Stage III; simple random sampling method was adopted to selected 65 patients with infertility problem from gynaecology clinics and fertility centres in each of the state of south west Nigeria (Lagos, Ogun, Oyo, Osun, Ondo and Ekiti States). From each state, 30 respondents were selected from the Federal/Teaching Hospital, 25 from State/General Hospital and 10 from specialist private hospital/fertility centre to make a total of 390 respondents. This sample size was deemed appropriate, because, Fisher et al [24] asserted that, if a population is greater than 10,000, the sample size determination should be calculated thus:

$$n = \frac{z^2pq}{d^2}$$

where, n = the desired sample size (when population is greater than 10,000)

z = the standard normal deviate, usually set at 1.96 (or more simply at 2.0), which corresponds to the 95% confidence level.

p = the proportion in the target population estimated to the particular characteristics, if there is no reasonable estimate, then use 50% (0.50)

q = 1.0 – p

d = degree of accuracy desired, usually set at 0.05

therefore, $n = \frac{(1.96)^2(0.5)(0.5)}{(0.05)}$

$= 384$

All the respondents that signed informed consent participated in study. The instrument used was a structured questionnaire comprised items on knowledge of causes and solutions to infertility among patients in Nigeria following a Focus Group Discussion (FGD) on the causes and solution to infertility. The face validity of the instrument was ascertained and later tested for reliability by using test re-test method on 40 patients with infertility problem from North Central Nigeria (Kwara State) for a pilot study and a correlation coefficient "r" 0.83 was obtained. The researcher and 6 trained research assistants distributed and collected the questionnaire; the subjects were made to contribute to issues raised during the FGD. The items of the questionnaire were descriptive statistics of frequency count and simple percentage, while inferential statistics of chi-square was employed to analyse the hypotheses formulated at 0.05 level of significance.

Results

Table 1 shows that all the states in south west Nigeria have equal representation in the study as follows: from Lagos State; 7.6% from LUTH, 6.4% from IGH and 2.6% from TBC. From Ogun State: 7.6% from FMC Abeokuta, 6.4% from OOUTH and 2.6% from SHH. From Oyo State; 7.6% from UCH, 6.4% from AMH and 2.6% from OHM. From Osun State, OAUTHC, 6.4% from LAUTECHTH and 2.6% from JCH. From Ondo State; 7.6% FMC Owo, 6.4% from SGH and 2.6% from SJMH. From Ekiti State; 7.6% from FMC Ido-Ekiti, 6.4% from UTH and 2.6% from IAH. On gender, female respondents constitute 72.6%, while 27.4% are male.

This shows that majority of the patients with the problem of infertility are female. On the Educational status of the respondents, 39.2% have secondary education, 28.8% have primary education, 18.2% do not have any education and 13.8% have Post-Secondary education.

This implies that of all the respondents, those that have secondary education are more than others. On the occupation of respondents, 33.1% are artisan/self employed, 31.8% are civil servants, 17.9% are unemployed and 17.2% are others. On the religion, 49.7% of the respondents are Christians, 42.3% are Moslems and 8% belong to other religious sects. This shows that majority of the patients suffering infertility in south west Nigeria are Christians (see Table 1).

Table 1: Percentage distribution of respondents by location, gender, educational status, occupation and religion **N=390**

	Freq./No	(%)
Location		
Lagos		
Lagos University Teaching Hospital (LUTH) Idi-araba	30	7.6
Ikeja General Hospital (IGH), Ikeja	25	6.4
The Bridge Clinic (TBC) Victorria Island	10	2.6
Ogun		
Federal Medical Centre (FMC) Abeokuta	30	7.6
Olabisi Onabanjo University Teaching Hospital (OOUTH) Sagamu	25	6.4
Sacred Heart Hoapital (SHH) Abeokuta	10	2.6
Oyo		
University College Hospital (UCH) Ibadan	30	7.6
Adeoyo Maternity Hospital (AMH) Yemetu-Ibadan	25	6.4
Olives Hospital and Maternity (OHM) Ojoo-Ibadan	10	2.6
Osun		
Obafemi Awolowo University Teaching Hospital Complex (OAUTHC) Ile-ife	30	7.6
Ladoke Akintola University of technology Teaching Hospital (LAUTECHTH) Osogbo	25	6.4
Jaleyemi Catholic Hospital (JCH) Osogbo	10	2.6
Ondo		
Federal Medical Centre (FMC) Owo	30	7.6
State General Hospital (SGH) Akure	25	6.4
St. John & Mary Hospital (SJMH) Akure	10	2.6
Ekiti		
Federal Medical Centre FMC) Ido-Ekiti	30	7.6
University Teaching Hospital (UTH) Ado-Ekiti	25	6.4
Ile Abiye Hospital (IAH) Ado-Ekiti	10	2.6
Gender		
Male	107	27.4
Female	283	72.6
Educational status		
No school	71	18.2
Primary	112	28.8
Secondary	153	39.2
Post secondary	54	13.8
Occupation		
Civil servant	124	31.8
Artisan /self employed	129	33.1
Others	67	17.2
Unemployed	70	17.9
Religion		
Christianity	194	49.7
Islam	165	42.3
Others	31	8
Total	**390**	**100**

Table 2: Data analysis of respondents on the research questions and hypotheses testing N = 390

The following under-listed is/are the cause(s) of infertility	SA	A	*%FV (%)*	D	SD	*%UV (%)*	Calc X^2 Value	Df	Table Value	Decision
Working in too hot condition and wearing of tight underclothing	51 (13.1%)	92 (23.6%)	*33.7*	141 (36.1%)	106 (27.2%)	*63.3*	58.2*	27	40.11	Rejected
Low libido (poor sexual performance)	136 (34.9%)	120 (30.8%)	*65.7*	87 (22.3%)	47 (12%)	*34.3*				
Poor semen analysis (Low Sperm count)	139 (35.6%)	118 (30.3)	*65.9*	102 (26.2%)	31 (7.9%)	*34.1*				
Distorted uterus	122 (31.3%)	135 (34.6%)	*65.9*	93 (23.8%)	40 (10.3%)	*43.1*				
Reproductive Tract Infections (RTIs)	178 (45.6%)	138 (35.4%)	*81*	25 (6.4%)	49 (12.6%)	*19*				
Uterine fibroid	109 (27.9%)	133 (34.1%)	*62*	90 (23.1%)	58 (14.9%)	*38*				
Anovulation (absence of ovulation)	129 (33.1%)	139 (35.6%)	*68.7*	37 (9.5%)	85 (21.8%)	*31.3*				
Damaged fallopian tube	142 (36.4%)	131 (33.6%)	*70*	60 (15.4%)	57 (14.6%)	*30*				
Previous use of Intra Uterine Contraceptive Devices (IUCDs) as family planning,	107 (27.4%)	148 (37.9%)	*65.3*	82 (21.1%)	53 13.6%)	*34.7*				
Intake of psychoactive drugs	81 (20.8%)	69 (17.7%)	*38.5*	142 (36.4%)	98 (25.1%)	*61.5*				
Solutions to infertility is possible through:										
Taking multivitamins, such as Vitamin E	145 (37.2%)	110 28.2%)	*65.4*	101 (25.9%)	34 (8.7%)	*34.6*	41.9*	27	40.11	Rejected
Taking antibiotics of choice to *MCS*	122 (31.3%)	139 (35.6%)	*66.9*	56 (14.4%)	73 (18.7%)	*33.1*				
Taking hormonal therapy drugs, such as clomiphene	104 (26.7%)	165 (42.3%)	*69*	90 (23.1%)	31 (7.9%)	*31*				
Wearing free/loose underwear	53 (13.6%)	85 (21.8%)	*35.4*	143 (36.7%)	109 (27.9%)	*64.6*				
Surgical removal of fibroids, such as myomectomy	119 (30.5%)	133 (34.1%)	*64.6*	83 (21.3%)	55 (14.1%)	*35.4*				
Corrective tubal surgery, such as salpingosomy	91 (23.3%)	41 (10.5%)	*33.8*	135 (34.7%)	123 (31.5%)	*66.2*				
Regular sexual intercourse	135 (34.6%)	135 (34.6%)	*69.2*	70 (18%)	50 (12.8%)	*30.8*				
Engaging in varieties of sexual styles/positions	59 (15.1%)	39 (10%)	*25.1*	140 (35.9%)	152 (39%)	*74.9*				
Assisted Reproductive Technology (ART) such as IVF, IUI, ICSI, AID	143 (36.7%)	139 (35.6%)	*72.3*	98 (25.1%)	10 (2.6%)	*27.7*				
Adoption of a child	28 (7.2%)	103 (26.4%)	*33.6*	137 (35.1%)	122 (31.3%)	*66.4*				

$P \leq 0.05$,

Key: %FV=percentage favourable views, %UV=percentage unfavourable views, * = significant
SA = strongly agree, A = agree, D = disagree, SD = strongly disagree, Df = degree of freedom

Table 2 shows that in hypothesis 1, the calculated X^2 value of 58.2 is greater than Critical/Table value of 40.11 at degree of freedom (df) 27and 0.05 α level significant. Therefore, hypothesis was rejected, meaning that infertility patients in south west Nigeria have knowledgeable of the major causes of infertility (see Table 2).
On hypothesis 2, the Calculated X^2 value of 41.9 is greater than the Critical/Table value of 40.11 at df 27 and 0.05α level of significant, the hypothesis was rejected. This means that infertility patients in south west Nigeria are significantly knowledgeable of the common solution to infertility (see Table 2).

Discussion of findings

Findings of hypothesis 1 may be due to the fact that, these sets of respondents are selected from the hospitals/fertility centres, and as such they are aware of the information giving to them by their reproductive health /fertility specialists. This finding corroborates with the statements of Larsen, Olaitan, Rutstein &Shah, Ahmad, Madaen, Haj, Nejad & Koushavar, and Olaitan et al, that many are aware of the fertility problem that can emanate from anatomical abnormalities, such as uterine fibroids, distorted uterus and so on, as they can even cause miscarriage and infertility in women[3, 4, 10, 11, 12]. Although, it is contrary to the findings of Isaksson & Titinen that 5% of the couple suffering from infertility are ignorant about the correct timing of sex, because many of the partners are week end husbands or wives[6]. Even though, majority of the respondents have favourable views and are knowledgeable about low libido (65.7%), poor semen analysis (65.9%), distorted uterus (65.9%), RTIs (81%), uterine fibroids (62%), anovulation (68.7%), damaged fallopian tubes (70%) and previous use of IUCDs for family planning (65.3%) as causes of infertility, yet, they have limited knowledge that working in too hot weather/ wearing of tight underclothing and use of psychoactive drugs can cause infertility with percentage favourable views of 33.7% and 38.5% respectively (see Table2).
Findings of hypothesis 2 may be the reason why many of them still seek treatment from the reproductive health/gynaecology experts. This finding is in line with the findings of George et al, Elizur & Tulandi, Adesiyun et al, Ben et al, ESHRE and deMouzon et al all of who asserted that taking multivitamins, fertility drugs, hormonal therapy, hydrotubation, myomectomy and in vitro fertilization (IVF) as the solutions to infertility respectively[16, 17, 18, 20, 21, 22]. However, the finding is contrary to the statement of Moe et al who opined that adoption is a solution to infertility[23]. The percentage favourable views of the common solutions to infertility are as follows in this order; ART (72.3%), regular sexual intercourse (69.2%), taking hormonal therapy drugs (69%), taking antibiotics of choice to MCS (66.9%), taking vitamin E (65.4%) and surgical removal of fibroids (64.6%). However, the respondents are not knowledgeable of the following as shown in their favourable views responses thus; only 35.4% are knowledgeable that wearing of free/loose underclothing by men could improve the male sex cell, 33.8% are knowledgeable that corrective surgery of the tube is a form of solution to infertility, 33.6% are of the view that adoption is a solution to infertility and 25.1% believed that engaging in different types of sexual position could be a solution to the problem of infertility (see Table 2).

Conclusions and recommendations

Based on the findings of the study, it is concluded that majority of the patients in south west Nigeria who suffer from infertility are knowledgeable about the major causes of infertility such as, RTIs, damaged fallopian tubes, anovulation, damaged uterus, low sperm count, low libido, previous use of IUCDs as contraceptives and uterine fibroids. Whereas, only a few of them are

knowledgeable that use of psychoactive drugs and working in hot condition/wearing of tight underclothing could cause infertility. These patients are also knowledgeable about common solution to infertility, such as, ART, regular sexual intercourse, taking hormonal therapy drugs, antibiotics and vitamin E as well as surgical removal of fibroids. However, their knowledge is limited on wearing of free/loose underclothing, corrective surgery of tubes, adoption and engaging in different varieties of sexual positions as parts of the solution to infertility,

It is therefore recommended that, any one suffering from infertility should ensure that, they always wear free/loose underwear and reduce working in a severely hot condition such as bakery oven, It is also advisable that they keep off from any psychoactive drugs, except, the drugs recommended by their doctors, It is recommended as well that, sexual positions/styles should be put into consideration, especially in relation to the weight and body structure of the sexual partner.

Acknowledgement

The researcher is very grateful to the following for making this research a success. The respondents for signing informed consent and participating in the study without any fallout. The researcher is also grateful to the Clinic/fertility centres' heads for honouring and considering the ethical issues by allowing their patients to participate in the research. I thank all the patients who completed the ethical consent forms and participated voluntarily in the study. I thank my research assistants who are the staff of various clinics/fertility centres to ensure maximum cooperation of the respondents. Finally, to Professor J.O. Odeyemi of University of Ibadan, Nigeria who took his time to work on the data analysis.

Conflict of Interest: None declared

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