

KNOWLEDGE AND PERCEPTION OF INFERTILITY AMONG ADULT MALES IN IBADAN, NIGERIA.

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ABSTRACT

Background: Infertility is a public health problem with significant social and psychological distress of the affected men due to the inability to achieve the desired social role of fatherhood. Men with infertility may experience lower life satisfaction, heightened distress and anxiety. This study assessed the knowledge, perception and factors influencing knowledge and perception of infertility among adult males in Ibadan, Nigeria.

Method: Cross-sectional descriptive survey was conducted among 388 adult males between April and November 2019 in the selected communities. Respondents were interviewed using a pretested structured questionnaire. Data was analysed with SPSS version 22. Descriptive and bivariate analyses were conducted. Level of significance was set at $p \leq 5\%$.

Result: The mean age of the respondents was 45.74 ± 10.76 years. Majority were married 310(80%) and had tertiary education 234(60%). Less than half (48.7%) understood the correct meaning of infertility, 170(44%) agreed that witchcraft could cause infertility while 230(59%) disagreed that infertility could be prevented. Two hundred and sixty (67%) and 283 (73%) of the respondents had good knowledge and perception towards infertility respectively. Religion, education and income were statistically significant with knowledge of infertility ($p < 0.05$). In addition, knowledge and perception of infertility showed statistically significant association ($p < 0.001$).

Conclusion: Knowledge and perception of respondents towards infertility was suboptimal in this study. Some cultural beliefs persist despite the high level of education of respondents. Community-based education on infertility to increase the knowledge and perception of men towards infertility is recommended.

Key words: Knowledge, Perception, Infertility, Adult males, Nigeria

INTRODUCTION

Infertility is a medical and social condition which poses a serious problem worldwide.¹ Generally, a couple is generally considered clinically infertile when there is no pregnancy occurring after a minimum of twelve months of regular unprotected sexual activity.² It is considered as a major life crisis with the potential to threaten the stability of individuals and relationships.³ Infertility has been documented to affect 10–15% of couples having to seek specialist fertility care at least once during their reproductive lifetime.^{4,5} Over 80 million couples suffer from infertility globally, majority of which reside in developing countries.^{6,7} The rate of infertility in Africa was documented to range between 8.6 to 21.5% in 2003.⁸

Infertility is a public health problem with significant social and psychological distress of the affected men

due to the inability to achieve the desired social role of fatherhood.^{9,10,11} Also, men with infertility has been documented to have lower overall life satisfaction, heightened distress, and higher treatment-related anxiety.¹²

Male infertility defined as the inability of a male to cause pregnancy in a fertile female account for 40–50% of infertility.¹ Inability to bear a child has been associated with raised anxiety, low self-esteem, mood instabilities, or depression in males.¹⁰

Some beliefs about causes of infertility include, witchcraft and possession by evil spirits, and these affect the management of infertility negatively.¹³ In a previous study on an adult population in Pakistan, evil forces and supernatural powers were widely held as causes

of infertility.⁹ Another study in Kuwait found that most educated participants felt infertility is caused by nutritional, marital, and psychosexual factors, while the non-literates mentioned supernatural causes, such as evil spirits, witchcraft, and God's vengeance as causes of infertility.¹⁴

Knowledge about infertility is insufficient in many parts of the world and it has been reported that husbands lost interest in their wives because of infertility, while some have had to marry another wife because of children.⁷ A study in Ile-Ife, Nigeria found a prevalence of divorce (38.9%) among the respondents because of infertility.¹⁵ Children in a family represent old age insurance and guarantors for generational continuity. In African settings especially, land sharing is commonly based on the number of children after a man's death.¹⁶ Among the Yoruba ethnic group in Nigeria, the number of children is usually considered in the distribution of properties after a man's death.⁷

Good knowledge and perception of infertility is very crucial among men as it may help to prepare their minds when they are having difficulty in having children. Knowledge of infertility may also help society to understand and help infertile couples with a reduction in social and psychological burden. A study confirmed that infertility is a major life-altering problem in sub-Saharan Africa, and that community mechanisms including family structures will go a long way toward mitigating the effects.¹⁷ Knowledge of the factors influencing infertility among men may help to design a focused and strategic intervention among the target population. This study was conducted to assess the adequacy of knowledge and perception of the target population and also, to identify factors that influences knowledge and perception of infertility among adult males in Ibadan city, Nigeria.

MATERIALS AND METHODS

Study design and location

Ibadan city is located in South-Western Nigeria, 128km Inland of Lagos and 5630km South-West of Abuja, the Federal capital. It is a prominent transit point between the coastal region and areas in the hinterland of the country. It is the capital and most populous city of Oyo State, Nigeria with a population of over 3 million. It is the country's largest city by geographical area with eleven local government areas (LGA). The study was a descriptive cross-sectional study carried out between April and November 2019.

Sample size determination

Sample size was calculated using a Cochran formula ($n = z^2 pq / d^2$) where n was the estimated minimum sample size; z-level of significance at 95% confidence

level (1.96); p was the proportion of good perception of infertility in a study in Nigeria (69.6%),³ q was (1-p) and d refers to the level of precision (0.05%). The calculated minimum sample size was 325, which was adjusted to 390 to make up for 20% non and incomplete responses. Respondents who were 18 years old and above were recruited into the study following consent approval. Those who were ill, or failed to give informed consent were excluded from the study.

Sampling technique

Multi-stage probability sampling technique was used for the study. Stage one involved simple random sampling of two (Ibadan North and Ona Ara) from the list of eleven Local Government Areas (LGA) contained in Ibadan through ballot. Five wards were selected from each from the list of twelve and eleven wards in the selected LGAs respectively by random sampling through ballot in stage two. Stage three involved selection of five streets each by simple random sampling through ballot in each ward from the list of streets obtained from LGA council secretariats. Eight houses were selected on each street by simple random sampling through ballot in stage four, while stage five involved the selection of household by simple random sampling via ballot where more than one household met the criteria. Where none of the household in a house met the criteria, the next house was used. This continued until eight households were selected on each street. In any of the selected household where more than one respondent met the criteria, a respondent was selected by simple random sampling through ballot. This process continued until the required respondents were recruited.

Data collection tool

A pretested self-administered questionnaire was used to obtain data from respondents. The questionnaire was adapted from previous studies and modified accordingly.^{3,17} The questionnaire was divided into three sections. Section A consisted of socio-demographic variables. Section B consisted of knowledge of infertility with 17 questions while section C consisted of perception of infertility with 10 questions on a three-point Likert's scale as agree, neutral and disagree. The English version of the questionnaires were translated to Yoruba Language, the indigenous language of the study population and back translation was done.

Data analysis

Data was analyzed with Statistical Package for Social Sciences (SPSS) version 22 statistical software. For knowledge questions, correct answers were scored one point, incorrect and don't know scored zero points. The minimum score was 0 and highest score was 17. The total score for the knowledge section was then

calculated by adding all the scores and these were converted to percentages. Knowledge grade was assigned to each respondent based on their total percentage score. Knowledge was graded as poor (0-49.99%) and (50-100.0%) as good. Ten questions were used to assess respondents' perception of infertility. Each question had a three Likert scale items; agreed, indifferent and disagreed and responses were scored based on good ($\geq 50\%$) or poor ($< 50\%$) perception. Categorical variables were presented as percentages or proportions while continuous variables were presented as mean \pm standard deviation (SD). Chi square was used to determine the association between categorical variables. Level of significance was set at $p \leq 5\%$.

Ethical consideration

Ethical approval was obtained from the Human Research and Ethics Committee (HREC) of the Lagos University Teaching Hospital. (ADM/DCST/HREC/APP/3027) Written informed consent was obtained from each respondent with assurance of confidentiality of information, right to withdraw from the study at any point in time and voluntariness of participation.

RESULTS

Respondents demographics

Table 1 shows that most of the respondents 130(33.5%) were between 41-50 years, with a mean \pm SD age of 45.74 ± 10.76 years. Majority 310(80%) were married, 265(79.3%) were in monogamous marriages and most 234(60.3%) had tertiary education.

Table 1: Socio-demographic Characteristics of respondents

Socio demographic characteristics	Frequency (n=388)	Percentage (%)
Age group (in years)		
<30	32	8.2
31-40	110	28.4
41-50	130	33.5
51-60	84	21.7
>60	32	8.2
Mean age \pm SD = 45.74 \pm 10.76		
Range =20-85years		
Marital status		
Never married	54	13.9
Married/cohabiting	310	79.9
Divorced/separated/widowed	24	6.2
Type of marriage (n=310)		
Monogamous	265	79.3
Polygamous	69	20.7
Level of education		
None	9	2.3
Primary	20	5.2
Quranic	19	4.9
Secondary	106	27.3
Tertiary	234	60.3
Occupation		
Civil servants	178	45.9
Farmers	5	1.3
Business/traders/Artisans	205	52.8
Ethnic group		
Hausa	27	7.0
Igbo	36	9.3
Yoruba	317	81.6
Others	8	2.1
Religion		
None	1	0.3
Christianity	233	60.1
Islam	148	38.1
Traditional	6	1.5
Monthly income (N)		
< 50 000	243	62.6
\geq 50 000	145	37.4

About half 205(53%) were into private businesses and 243(62.6%) earned less than N50,000 (<USD100) monthly.

Knowledge of infertility among respondents

Table 2 shows that majority of the respondents 340(88%) correctly knew that low sperm count,

gonorrhoea 326(84%), damages to reproductive organs 324(84%) and lifestyle 314(81%) could cause infertility. A higher percentage of the respondents 303(77%) knew that both men and women are responsible for infertility. However, less than half 189(48.7%) correctly defined infertility as inability to give birth after one year of unprotected sexual intercourse while

Table 2: Proportion of respondents with correct answers to the knowledge assessment questions on infertility

Statement on knowledge assessments (correct answers only)	Frequency (n=388)	Percentage (%)
Low sperm count can cause infertility	340	87.6
Gonorrhoea/UTI could cause infertility	326	84.0
Damage to reproductive organs can cause infertility	324	83.5
Lifestyle could cause infertility	314	80.9
Both men and women are responsible for infertility	303	78.1
Late marriage can make a man infertile	300	77.3
Infertility could be treated by regular tests and medical treatment	300	77.3
Abnormal menstruation can be a sign of infertility	256	66.0
Infertility could be inherited	218	56.2
Infertility could be treated with IVF	198	51.0
Inability to give birth after 1 year of unprotected sexual intercourse	189	48.7
Tight underwear for men can cause infertility	157	40.5
Infertility could be treated by adoption	155	39.9
Late marriage can make a woman infertile	153	39.4
Use of contraception (family planning) make women infertile	139	35.8
Excessive weight in a woman can cause infertility	108	27.8
Supernatural could cause infertility	103	26.6

Table 3: Respondent's perception of infertility

Statement on perception	Frequency (n=388)	Percentage (%)
Witchcrafts could cause infertility		
Agree	170	43.8
Disagree	169	43.6
Not sure	49	12.6
Certain foods could infertility in men		
Agree	55	14.2
Disagree	289	74.5
Not sure	44	11.3
Infertility has more negative effects on men than women		
Agree	221	57.0
Disagree	112	28.8
Not sure	55	14.2
Infertility could be prevented		
Agree	94	24.2
Disagree	230	59.3
Not sure	64	16.5
Health education on sexual life for teenagers can prevent infertility		
Agree	281	72.4
Disagree	71	18.3
Not sure	36	9.3
Men are the sole cause of infertility		
Agree	32	8.3
Disagree	319	82.2
Not sure	37	9.5
Women are to be blamed for infertility		
Agree	49	12.6
Disagree	318	82.0
Not sure	21	5.4
Infertile man or woman should be divorced		
Agree	105	27.1
Disagree	263	67.8
Not sure	20	5.2
Native concoctions/herbs can treat infertility		
Agree	90	23.2
Disagree	249	64.2
Not sure	49	12.6
Infertile couple should be left to fate		
Agree	310	79.9
Disagree	46	11.9
Not sure	32	8.2

153(39.4%) identified that late marriage could be a cause for infertility in women. One hundred and eight (28%) knew that excessive weight in women could be a cause for infertility, while about 155(40%) identified that infertility could be treated by adoption and about half (51%) mentioned invitro fertilization (IVF) as a treatment method for infertility. Overall, 260 (67%) of respondents had good knowledge of causes and treatment of infertility.

Perception of infertility among respondents

Table 3 shows that 170(43.8%) of the respondents agreed to the statement that “witchcrafts could be a cause of infertility”, while 221(57%) agreed that infertility had more negative effects on men than women. A higher percentage of the respondents 281(72.4%) agreed that health education on sexual life for teenagers could prevent infertility, while 263 (68%) disagreed that infertile man or woman should be divorced, and 310(80%) respondents agreed that infertile couple should be left to fate.

Also, a higher number 289(74.5%) of respondents disagreed that foods could cause infertility in men, while 230(59.3%) disagreed that infertility could be prevented and 318(82%) disagreed that men were the sole cause of infertility. Similarly, most 263(67.8%) respondents disagreed to the statement that “women are to be blamed for infertility” while 249 (64.2%) disagreed that native concoctions/herbs could treat infertility. Generally, 283 (73.0%) of the respondents had good perception of infertility.

Factors influencing knowledge of infertility

Table 4 shows that most respondents with tertiary education 185(79%), those with monthly income \geq N50,000 and those who were of Christianity religion 169(72.5%) had good knowledge of infertility. Statistically significant associations were found between level of education, monthly income, religion and knowledge of infertility among respondents ($p < 0.001$).

Table 4: Association of demographics variables and knowledge of infertility among respondents

Demographics variables	Knowledge of infertility		Total (n=388; 100%)	Test statis
	Poor (n=128; 33.0%)	Good (n=260; 67.0%)		
Age group (years)				
< 60	120 (33.7)	236 (66.3)	356 (100.0)	$\chi^2 = 1.007$
> 60	8 (25.0)	24 (75.0)	32 (100.0)	$p = 0.316$
Marital status				
Never married	15 (27.8)	39 (72.2)	54 (100.0)	$\chi^2 = 1.025$
Married	106 (34.2)	204 (65.8)	310 (100.0)	$p = 0.599$
Divorced/Separated	7 (29.2)	17 (70.8)	24 (100.0)	
Type of marriage (n = 169)				
Monogamous	84 (31.7)	181 (68.3)	265 (100.0)	$\chi^2 = 1.363$
Polygamous	27 (39.1)	42 (60.9)	69 (100.0)	$p = 0.243$
Occupation				
Civil servants	56 (31.5)	122 (68.5)	178 (100.0)	$\chi^2 = 1.880$
Farming	3 (60.0)	2 (40.0)	5 (100.0)	$p = 0.391$
Trader/Business	69 (33.7)	136 (66.3)	205 (100.0)	
Religion				
None	1 (100.0)	0 (0.0)	1 (100.0)	$\chi^2 = 9.847$
Christianity	64(27.5)	169 (72.5)	233 (100.0)	$p = 0.020$
Islam	60 (40.5)	88 (59.5)	148 (100.0)	
Traditional	3 (50.0)	3 (50.0)	6 (100.0)	
Level of education				
None	3 (33.3)	6 (66.7)	9 (100.0)	
Primary	8 (40.0)	12 (60.0)	20 (100.0)	$\chi^2 = 41.765$
Quranic	10 (52.6)	9 (47.4)	19 (100.0)	$p = 0.000$
Secondary	58 (54.7)	48 (45.3)	106 (100.0)	
Tertiary	49 (20.9)	185 (79.1)	234 (100.0)	
Monthly income (N)				
< 50 000	111 (45.7)	132 (54.3)	243 (100.0)	$\chi^2 = 47.362$
\geq 50 000	17 (11.7)	128 (88.3)	145 (100.0)	$p = 0.000$

Perceptions and knowledge of infertility

Table 5 shows the statistically significant associations of perception statements with knowledge of infertility ($p < 0.05$) and overall perception was statistically significant with knowledge of infertility among the respondents ($p < 0.001$).

outpatients who visited the respective healthcare centers found low levels of knowledge of fertility.¹⁸ Another study among Saudi couples reported poor knowledge of infertility among 59% of respondents.¹³ Also, a study conducted among staff of a tertiary institution in South-Southern Nigeria found 53.7% of respondents with good knowledge of infertility.¹ The

Table 5: Association between perception statements and knowledge of infertility among respondents

Perception statements	Knowledge of infertility		Total (n=388; 100%)	Test statistics
	Poor (n=128; 33.0%)	Good (n=260; 67.0%)		
Witchcrafts can cause infertility				
Agreed	84(38.4)	135(61.6)	219(100.0)	$\chi^2 = 6.550$
Disagreed	44(26.0)	125(74.0)	169(100.0)	$p = 0.010$
Some foods cause infertility in men				
Agreed	53(53.5)	46(46.5)	99(100.0)	$\chi^2 = 25.380$
Disagreed	75(26.0)	214(74.0)	289(100.0)	$p = 0.000$
Health education on sexual life for teenagers can prevent infertility				
Agreed	59(55.1)	48(44.9)	107(100.0)	$\chi^2 = 32.791$
Disagreed	69(24.6)	212(75.4)	281(100.0)	$p = 0.000$
Men are the sole cause of infertility				
Agreed	30(43.5)	39(56.5)	69(100.0)	$\chi^2 = 4.176$
Disagreed	98(30.7)	221(69.3)	319(100.0)	$p = 0.041$
Women are to be blamed for infertility				
Agreed	32(45.7)	38(54.3)	70(100.0)	$\chi^2 = 6.256$
Disagreed	96(30.2)	222(69.8)	318(100.0)	$p = 0.012$
Infertile man or woman should be divorced				
Agreed	55(44.0)	70(56.0)	125(100.0)	$\chi^2 = 10.113$
Disagreed	73(27.8)	190(72.2)	263(100.0)	$p = 0.001$
Native concoctions/herbs can treat infertility				
Agreed	57(45.9)	82(59.0)	139(100.0)	$\chi^2 = 6.298$
Disagreed	71(28.5)	178(71.5)	249(100.0)	$p = 0.012$
Overall Perception				
Poor	56(53.3)	49(46.7)	105(100.0)	$\chi^2 = 26.951$
Good	72(25.4)	211(74.6)	283(100.0)	$p = 0.000$

DISCUSSION

Determining the level of men's knowledge and perception of infertility would go a long way in planning for education programs related to the prevention and management of infertility. The age of the respondents in this study ranged from 20 to 85 years with a mean age of 45.74 ± 10.76 years. This is similar to the findings of a study in Osun State, Nigeria.³ About two-third (67%) of respondents in this study had good knowledge of infertility, similar to the report of the study in Osun State, Nigeria (65.5%).³ In contrast, a study in Indonesia among the

higher knowledge found in our study may be attributed to the fact that majority of respondents were married and had tertiary level of education.

However, less than half understood the correct meaning of infertility, similar to a study in Pakistan among adults who accompanied patients at two tertiary care hospitals where only 25% of the participants correctly recognized the meaning of infertility.⁷ In contrast, the study among staff of a tertiary institution in South-Southern Nigeria in 2018 found over 68% respondents

had good knowledge about what infertility is.¹ Most people usually expect a woman to be pregnant immediately after marriage without the consideration of frequency of intercourse. Just a few of the respondents understood that late marriage for a woman can be a cause for infertility. It is a known fact that as women age, their reproductive cycle becomes less viable.³ Similarly, very few of the respondents in this study knew that excessive weight in women can be a cause of infertility. Obesity has however been associated with infertility in both men and women.¹⁹ In women, obesity has been linked with higher risk of menstrual dysfunction, anovulation, miscarriage, and pregnancy complications.²⁰ While in men, there has been evidence of impaired spermatogenesis.²¹

Majority of respondents in this study felt that the use of contraception (family planning) could make women infertile, while some believed that supernatural powers could cause infertility. A study in Pakistan found that correct knowledge of infertility was limited amongst the participants with misinformation that use of oral contraceptives may cause infertility and beliefs in evil forces and supernatural powers as causes of infertility.⁷ Another similar study in Indonesia reported a common misconception on the use of contraception as risk factors of infertility among respondents.¹⁸ The study in Saudi Arabia also reported use of contraceptive pills as a cause of infertility among most of the respondents.¹³ Less than half of the respondents in this study knew that tight underwear for men can cause infertility. A similar study among patients with infertility problem from gynaecology clinics and fertility centres in each of the states of south west Nigeria (Lagos, Ogun, Oyo, Osun, Ondo and Ekiti States) also reported limited knowledge on wearing of tight underclothing for men as a cause for infertility.²² About half of the respondents in this study believed that infertility could be treated with In Vitro Fertilization. A similar study among selected adult population in Pakistan found IVF as unfamiliar among 78% and an unacceptable option among 55% respondents.⁷ More than three quarters of respondents in this study correctly identified that both men and women were responsible for infertility. This finding is similar to a study in an urban community in Indonesia where majority (93.4%) of the respondents consider both female and male should be investigated for infertility, but in the rural communities only 55.4% agreed while 33.1% considered only females for infertility investigation.¹⁸ Similarly, a study in South-South, Nigeria found that over 91% of respondents regarded infertility as a condition that requires the treatment both of the male and female partners.¹ However, the study among selected adult population in Pakistan reported lower finding (40%).⁷ The difference may be due to

difference in level of education of respondents in the various studies. Majority of respondents in this study knew that gonorrhoea and urinary tract infections among others could cause infertility, similar to previous findings.²³ Very few respondents in this study accepted that infertility could be treated by child adoption, similar to findings by another author.⁷ Child adoption has been reported as an available option for infertile couples and it's a common practice among couples with incurable infertility in developed countries.¹³

About half of the respondents in this study agreed that infertility could be caused by witches and witchcrafts. This is in support of other authors which reported prevalent beliefs of supernatural causes of infertility in the society and the belief that a woman who is not able to get pregnant is most likely possessed by an evil spirit.^{7,23} Majority of the respondents in this study disagreed that eating certain foods could cause infertility in men. This finding corroborates that of the study in Osun state, Nigeria among married men.³ However, a research finding had reported deleterious effects of some foods on some male reproductive parameters in rats.²⁴ Surprisingly, the findings of this study revealed that most of the respondents agreed that infertility has more negative effects on men than women and disagreed that women were to be blamed for infertility. This is contrary to the study which reported respondent's agreement that infertility has more negative effects on women than men.³ The finding is a surprise because, the common belief is that women with infertility problem had lived promiscuous lifestyle or had a previous history of contraceptive use or that some have had their womb removed. Oftentimes, women are blamed for infertility, perhaps due to the cultural belief that men are complete creatures and that women are the main cause of infertility.³ The finding in this study may however, be due to the fact that majority of the respondents had tertiary level of education. Majority of the respondents in this study disagreed that men were the sole cause of infertility. It has been documented that in approximately 40% of infertile couples, the male partner is either the sole or a contributing cause of infertility,²⁵ while another study had also reported isolated male factor infertility contributes as high as 20% of all infertile couples.¹¹

Majority of respondents in this study were of the opinion that infertile couples should be left to fate, other studies had however reported that majority believed that if infertility is properly managed, couples could achieve pregnancy.^{3,7} Majority of the respondents in this study agreed that health education on sexual life for teenagers could prevent infertility, similar to the report of other authors.^{3,23,26} Health education has been

documented as an essential preventive approach especially for the younger group as many of the perceived causes of infertility are consequences of illicit behaviors during youthful age.²³ Most of the respondents disagreed that infertile couples should be divorced in this study. This finding is similar to a study where over 80% of the respondents felt that infertility is not enough reason for divorce or marriage to a second wife.¹ A study reported infertility as a good reason for divorce among a particular ethnic group leading to loss of a woman access to her husband's land.²⁷

Religion, level of education and income were statistically significant with knowledge in this study. A similar study also found a statistically significant association between level of education and knowledge of infertility.³ Similarly, significant association between level of education and perception had been reported by another study.¹ Also, this study finding shows that most of the respondents with good knowledge of infertility had good perception towards it.

CONCLUSION

Knowledge and perception of respondents towards infertility is suboptimal in this study. Some cultural beliefs persisted even with the high level of education of the respondents. Most of the respondents did not understand the correct meaning of infertility. Religion, education and income were found to influence knowledge.

RECOMMENDATIONS

Therefore, we recommend community-based education on infertility causes, management and prevention among men to increase the knowledge and perception regarding infertility. This can be done through the media and organized community-based health education intervention with focus on men. Involvement of religious leaders could help to influence the perception of infertility.

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