



## Knowledge and Perception Regarding Infertility among University Students in Ile-Ife: A view through Gender Lens.

Ayobami Atijosan<sup>1</sup>, Olajumoke Adeyeye<sup>2</sup> & Oluwatoyin Ogungbayi<sup>3</sup>

<sup>1,2&3</sup>Centre for Gender and Social Policy Studies, Obafemi Awolowo University, Ile-Ife  
larikecrown@gmail.com\*, jumoke.adeyeye@gmail.com;  
togungbayi@hotmail.com

**Received: 27.01.2019 Accepted: 05.03.2019 Date of Publication: June, 2019**

**Abstract:** The knowledge of infertility is a decisive and principal step to safeguard future infertility. Studies have shown that university students are at higher risk of being infertile because they are more likely to postpone parenthood due to their academic and professional pursuits. Furthermore, they have insufficient or distorted fertility knowledge, stemming from sociocultural norms, traditions and beliefs. However, not many researches have been conducted to study the knowledge and perceptions regarding infertility among university students from a gender perspective, especially in sub-Saharan Africa. Gender used in the context of this study refers to sociocultural norms or traditions that shape our behaviors, preferences and knowledge. This study investigated and analyzed gender-based perception and knowledge towards infertility amongst university students in Ile-Ife, Nigeria. The study adopted purposive sampling technique in which a total of 385 students were selected from Obafemi Awolowo University and Oduduwa University, Ile-Ife, Osun State. A questionnaire-based survey was used to assess their perceptions and knowledge on infertility. The study revealed that 59.7% of respondents believed that infertility is associated with female promiscuity and majority (53.2%) of respondents believed that infertility is a disease associated with women only. Through a gender lens, this study revealed that majority of the respondents (56%) have poor knowledge while 44% of the respondents have good knowledge regarding infertility. Increase in knowledge in order to deconstruct socio-cultural beliefs and norms regarding infertility is recommended for university students.

**Keywords:** Infertility, Gender, University students, Promiscuity

## **Introduction**

Infertility is an ailment characterized by the failure to establish a clinical pregnancy after twelve (12) months of consistent and unprotected sexual intercourse (Christine, 2018). It is a global public health problem which affects more than 10% of the world's population (Dierickx et al., 2019; Lawrenz et al., 2019; Christine, 2018; Emmanuel et al., 2018). Its frequency is higher in underdeveloped countries compared to the developed ones. In sub-Saharan Africa it is reported to be widespread, ranging from 13–17% (Infertility Survey in 27 Sub-Saharan African Countries including Nigeria) and connected with several social perceptions (Mukherjee et al., 2018; Dimka and Dein, 2013; Tabong and Adongo, 2013).

Sub-Saharan Africa is well known for its pronatalist cultural tradition, where infertile couples especially women are often seen as social deviants and face a wide range of societal problems compared to western societies (Ombelet, 2017; Dimka and Dein, 2013). Culturally, in Sub-Saharan Africa children are perceived as a mark of prestige, power and wealth (Tabong and Adongo, 2013). The result of infertility therefore, is a traumatic life burdened with suffering, personal grief, frustration, social stigma, ostracism, economic problems, mental or other health implications (Oche et al., 2018; Nahrin et al., 2017; Polis et al, 2017; Dimka and Dein, 2013; Tabong and Adongo, 2013). In Sub-Saharan Africa, it has been reported that socio-cultural norms and traditional influences on young people's sexual development negatively impact perceptions on infertility, potentially leading to wrong information and choices on fertility (Kyilleh, et al., 2018). For example, in

many sub-Saharan African cultures, it is a taboo for parents to participate in discussion on topics relating to reproductive health with their wards (Adesiyun et al., 2014). Therefore, the little but distorted information they may have is from peer groups (Adesiyun et al., 2014) and socio-cultural customs (Kyilleh, et al., 2018) thus exposing them to multiple infertility health risks.

Studies have also shown that the problem of infertility continues for a huge percentage of highly educated people because they may delay parenthood due to their academic and professional pursuits (Prior et al., 2018; Nitsche et al., 2018; Channon and Harper, 2018; Sørensen et al., 2016). Studies have shown that a significant portion of university students underrate age-related infertility and have inadequate fertility knowledge leading them to postpone parenthood into their late 30s which can lead to infertility (Smith, 2018; Chan et al., 2015) because women are most fertile between the ages of 20 and 24 (Smith 2018). This necessitate the need for continued research, as the scourge of infertility continues for a higher proportion of educated people (Smith, 2018; Hampton et al., 2013) especially university students.

Although, several studies have established that increasing age, sexually transmitted infections, socio cultural norms, occupational and environmental exposures, and adverse impact of lifestyle factors like smoking, diet, and exercise, are important causes that can rapidly increase incidence of infertility (Alom et al., 2018; Pressman et al., 2018; Kumal et al., 2017; Van Leeuwen, 2016;). Unfortunately, the impartation of this information, especially to young people has not yet caught up with the education priorities

of many low and/or middle-income countries (Rouchou and Forde, 2015). Basic knowledge of the causes and potential treatment options of infertility also appears to be absent among adolescents and young adults living in several developing countries (Kyilleh, et al., 2018; Rouchou and Forde, 2015)

including university students. This is of significant importance because good reproductive health entails knowledge about fertility (Sørensen et al., 2016.) and lack of this knowledge has led to higher infertility incidence rate in developing countries (Siyez et al., 2018; Kyilleh, et al., 2018).

Furthermore, there have been very few published studies that addressed or assessed perceptions and knowledge on infertility among university students in Nigeria from a gender perspective. "Gender" used in the context of this study refers to sociocultural norms, roles or traditions that shape our behaviors, preferences and knowledge (Goldman, 2019; Mumtaz, et al., 2013; Torgrimson, and Minson, 2005). Gender based sociocultural norms and traditions goes a long way in impacting people's behaviors and beliefs on infertility (Mumtaz, et al., 2013; Greil, et al., 2011; West and Zimmerman 1987) especially young adults, which reflect in future fertility behaviors and beliefs.

In addition, identifying the need for public education on infertility causes and prevention in our universities is crucial. Knowing the extent of students' knowledge and perception on infertility would be very useful in the planning of educational programs relating to infertility prevention and

stigmatization due to infertility. Primary prevention of infertility has been identified as one of the key factors for decreasing infertility incidence (Rouchou and Forde, 2015) and increased knowledge level plays a key role in preventive measures (Siyez, et al., 2018).

It is against this background that this study was carried out to investigate knowledge and perception towards infertility amongst male and female university students from a gender lens. It is hoped that this study will be a springboard for providing information and creating awareness towards the prevention of infertility later in life among university students.

## Methodology

### Participants/instrument

A descriptive survey was used to assess gender-based perception and knowledge on infertility among male and female students in Obafemi Awolowo University (OAU) and Oduduwa University (OUI) which are the only two universities within Ile-Ife metropolis. The study adopted purposive sampling technique and a total of 385 students were selected from OAU and OUI for the study.

A structured self-administered questionnaire was developed for the purpose of data collection. The questionnaire consists of three sections. The first section (section A) captured socio demographic information. The second section (section B) consists of questions on knowledge of infertility while the third section (section C) consists of gender-based issues relating to infertility. The validity of the instrument was established by face and

content validity. The instrument was reviewed by relevant experts for its effectiveness and necessary amendments and modifications were made. The questionnaire was edited and compiled based on the amendments made.

### Data collection protocol

Permission to collect data was obtained from the Research and Ethical committee of Institute of Public Health, OAU, Ile-Ife. Consent of each respondents (students) was obtained after which the questionnaire was given to the students to fill appropriately. They were informed that all the information they provided was completely confidential. They were also monitored to ensure that the surveys were completed quietly and without collaborations.

### Data analysis

Data collection from the study was subjected to computer analysis using statistical package for service solution, SPSS version 20. Descriptive statistical techniques (percentages, frequency, mean) was used to report the results of

the study. Likert scale was adopted in determining factors on infertility. The knowledge of the respondents was assessed by giving a score of 1 to Yes options and a score of 0 to No options. Reverse scoring was done for negative statements. Mean score was determined and used for determining knowledge level (Good or Poor level of knowledge).

## Result

### Data analysis and interpretation

#### Socio-demographic

Table 1 shows the socio-demographic data of students in OAU and OUI who participated in this study. As detailed in table 1, most of the respondents were within the age group of 20-24(61.6%). Of the surveyed students 202 were female (52.5%) while 183 (47.5%) were male. The Yoruba ethnic group was predominant (271 respondents (70.4%)). 301 respondents (78.2%) were Christians. Institutionally, the highest respondents were students of OAU at 333(86.5%) respondents.

Table 1: Socio-demographic characteristics of the students.

Characteristics	Frequency N=385	Percentage %
Age (grouped in years):		
15-19	123	31.9
20-24	237	61.6
25-29	25	6.5
Gender		
Female	202	52.5
Male	183	47.5
Religion:		
Christian	301	78.2
Islam	78	20.3
Traditionalist	4	1.0
Others	2	0.5
Ethnicity:		

Yoruba	271	70.4
Hausa	20	5.2
Igbo	94	24.4
Institution:		
Obafemi Awolowo University (OAU)	210	54.5
Oduduwa university (OUI)	175	45.5

### Infertility Knowledge: Basic facts

Table 2 shows the level of knowledge of infertility among the respondents. Majority of the respondents (52.7%) reported that infertility is the inability to achieve pregnancy. More than half (54.3%) responded negative to the statement that says infertility affect both men and women at the same rate. A large percentage (80%) of the respondents supported the notion that infertility is caused majorly by sexually transmitted infections. Meanwhile 81.6% which reflect a higher percentage of the study population reported that abortion can also cause infertility.

More than half of the respondents (59.7%) believed that infertility is only

associated with female promiscuity. However, majority of the respondents (58.7%) held to the view that the use of condoms can curb infertility.

A slight majority (53.2%) agreed that infertility is a disease associated with women. While 33.5% of the respondent agree to the statement that says men are the major cause of infertility in our society.

### Distribution of respondents by level of knowledge on infertility

Table 3 shows that less than half (44%) of the respondents had good knowledge on infertility while more than half (56%) had poor knowledge on infertility.

Table 2: Knowledge of infertility among male and female respondents

Knowledge items	Yes F (%)	No F (%)
Infertility is the inability of couples to achieve pregnancy after 12 months of regular, unprotected sexual intercourse in the absence of contraceptives:	222(52.7)	163(42.3)
Infertility affects both men and women at the same rate	176(45.7)	209(54.3)
Infertility is largely caused by sexually transmitted infections	308 (80)	77(20)
Abortion can cause infertility	314(81.6)	71(18.4)
Infertility is only associated with female promiscuity	230(59.7)	155(40.3)
Use of condoms can prevent some of the causes of infertility	226(58.7)	159(41.3)
Infertility is a disease associated with women and not men. Therefore, women should bear the cost	205(53.2)	180(46.8)
Most men are the major cause of infertility in our society	129(33.5)	256(66.5)

Table 3: Distribution of respondents by level of knowledge on infertility

Knowledge Mean score 5.6	Frequency	Percentage %
Poor Knowledge $\leq 5.6$	215	56
Good Knowledge $\geq 5.6$	170	44

### Gender based issues on infertility

Table 4 reveals gender-based issues on infertility among respondents. Majority (51.9%) of the respondents agreed that husbands have a reason to separate from their wives if the woman cannot have a baby while 29.4% disputed this.

However, 51.3% disagreed that a wife does not have a reason to separate from the husband even if the husband is diagnosed to be infertile.

About 52.2% which reflects a majority of the respondents agreed that infertility is 100% curable when women remain as virgins till marriage, while 47.8%

disagreed. 69.6% of the respondents agreed to the statement that says anyone who is infertile must be promiscuous while 30.4% disagreed. A slight majority of the respondents (50.9%) also reported that infertility can be traced to previous abortion(s).

In addition, about half (50.1%) of the respondents believed regular menstruation is linked with fertility whereas 49.9% disagreed. Most of the respondents (64.7%) agreed that excessive alcohol intake and smoking have no effect on fertility.

**Table 4: Gender based issues on infertility**

**SA- Strongly agree; A- Agree; D- Disagree; SD- Strongly disagree**

Gender based issues	SA	A	D	SD
A husband has a reason to separate from the wife if the woman cannot have a baby	133(34.5)	67(17.4)	55(14.3)	130(33.8)
A wife has a reason to separate from the husband even if the husband is diagnosed to be infertile	90(23.4)	96(24.9)	109(28.3)	90(23.4)
Infertility is 100% curable if women can remain as virgins till marriage	152(39.5)	49(12.7)	98(25.5)	86(22.3)
Anyone who is infertile must be a promiscuous person	131(34)	137(35.6)	58(15.1)	59(15.3)
Infertility can only be linked to previous abortion	63(16.36)	133(34.54)	87(22.6)	102(26.5)
Fertility may be linked with regular menstruation	66(17.1)	127(33.0)	105(27.3)	87(22.6)
Excessive alcohol and smoking intake do not have anything to do with my fertility	154(40.0)	95(24.7)	49(12.7)	87(22.6)

## **Relationships between sex of respondents and gender issues on infertility**

Table 5 reveals that more men (87%) do not support the statement that says infertility affect both men and women at same rate. On the contrary, most women (91.5%) supported the statement. However, most male respondents (63.9%) supported the notion that female promiscuity is associated with infertility while only 39.1% of female respondents supported this notion.

Majority (88%) of the male respondents proclaimed infertility as a woman's disease while 78.2% of the female respondents were against this notion.

An overwhelming majority of male respondents (81%) do not accept that they are the major cause of infertility while 46.5% of the female respondents reported that men are the major cause of infertility.

An overwhelming percentage of male respondents (92.9%) agreed that a husband can separate from his wife if she is infertile while 85% of female respondents were against this.

More than half of the male respondents (54.4%) do not agree that a wife should separate from their husband even if he is infertile while 50.4% of the female respondents reported positive to this statement.

Majority of the male respondents (75.4%) reported that infertility is 100% curable only if women can be virgins till marriage, while very few female respondents (26.2%) supported the statement. Majority of the male respondents (72.7%) also reported that an infertile woman must be promiscuous while, 91.6% of the female respondents said no to this statement.

More than half of the male respondents (59.6%) reported that infertility is linked to previous abortion while 58.4% of the female respondents were against this notion. A large percentage of the male respondents (81.4%) agreed that excessive alcohol and smoking do not affect infertility whereas 63.9% of the female respondents agreed that it affects fertility.

**Table 5: Illustrate the relationships between gender and gender issues on infertility.**

Gender issues	Male F (%)		Female F (%)	
	Yes	No	Yes	No
Infertility affect both men and women in the same rate	24(13)	159(87)	152(75.2)	50(24.8)
Infertility is only associated with female promiscuity	117(63.9)	66(36.1)	79(39.1)	123(60.9)
Infertility is a disease of the women and not men therefore women should bear the cost	161(88)	22(12)	44(21.8)	158(78.2)
Most men are the major cause of infertility in our society	35(19.0)	148(81.0)	94(46.5)	108(53.5)
A husband has a reason to separate from the wife if the woman cannot have a baby	170(92.9)	13(7.1)	30(15.0)	172(85.0)
A wife has a reason to separate from the husband even if the husband is diagnosed to be infertile	84(46.0)	99(54.0)	102(50.4)	100(49.6)
Infertility is 100% curable if women can remain as virgins till marriage	138(75.4)	45(24.6)	53(26.2)	149(73.8)

Anyone who is infertile must be a promiscuous person	163(72.7)	20(27.3)	72(8.4)	130(91.6)
Infertility can only be linked to previous abortion	109(59.6)	74(40.4)	84(41.6)	118(58.4)
Excessive alcohol and smoking intake do not have anything to do with fertility	149(81.4)	34(18.6)	73(36.1)	129(63.9)

## Discussion

This study revealed that there are gaps in the knowledge of respondents regarding the possible causes of infertility because more than half (56%) of the respondents have a poor level of knowledge on infertility with only 44% having good knowledge of infertility. This is in accordance with the work of Brittany and Martin (2015) who reported in their study that there exist gaps in the knowledge of youth regarding infertility. One area of concern is that majority of male respondents (88%) believe that infertility is a woman's disease and that women should bear the cost. In the African culture, infertility is socially constructed in many communities, it is believed that men and women are meant to be parents but women are especially socialized to become mother (Owonikoko et al., 2018) and as a result, infertile women are blamed and stigmatized for their inability to conceive. Majority (81.4 %) of respondents also believe that excessive alcohol and smoking do not have anything to do with infertility. Research has identified the damaging effect of some life style factors such as smoking and excessive alcohol among many others on infertility (Pressman et al., 2018; Kumal et al., 2017; Brittany and Martin 2015). From this study, majority of the respondents do not believe that this life-style factors could lead to infertility which make them to be at risk of

infertility in future if their wrong perceptions are not corrected.

In addition, a greater percentage of male respondents (92.9%) compared to 15% of female respondents, believe that a man should separate from the woman if she is unable to bear children. Also 46% of male respondent compared with 50.4% of female respondents, believed that the woman should stay with the man even if he is diagnosed to be infertile. This shows higher levels of negative perception against infertile women compared to infertile men and a general perception that tends to exempt men from bearing the burden of infertility. It is also very clear from this study that women often carry the burden of infertility.

In this study, despite the fact that the respondents were educated and enlightened, a large population still believe that infertility is a problem of women alone. More than half of the respondents (53.2%) believe that infertility is a disease of women. More than half of the respondents (59.7%) believe that infertility is linked to promiscuity and 81.6% believe that it is linked to abortion. The perception of majority of the respondents is that abortion and promiscuity are the major causes of infertility. Abortions are often linked with promiscuity, and waywardness is often believed to be responsible for infertility rather than abortions (Okonofua et al., 1997).

Although, there is the believed that infections (notably sexually transmitted infections) can cause infertility, many still feel that immorality is responsible, rather than the infections (Okonofua et al., 1997). From this study, it shows that being academically enlightened did not change the perception about infertile women being promiscuous and generally, academic knowledge did not basically influence the perception of the respondents about infertility.

More than half of the respondents (52.2%) agreed to the fact that infertility is 100% curable only when women are virgins before marriage. Researches have pointed to inequality in the treatment meted out to infertile women, especially in sub-Saharan Africa (Hess et al., 2018; Chimbatata et al., 2016). Infertility is supposed to involve the couple but women are always singled out. This is basically because Africans traditionally have a patriarchal structure characterized by gender inequality between males and females. Thus, in a patriarchy structure, women's activities are largely confined to the household (Makama, 2013). In these wise, African women are expected to get married early enough, produce and care for their children (Makama, 2013). Where they fail to produce these children, the dominant male society turns against such women. This is evident in this study as indicated by the belief of an appreciable number of the male respondents (92.9%) that a man has every reason to separate from the woman if she cannot produce children while it was agreed that the woman should stay with the man even if he is diagnosed to be infertile. A common consequence of a couple's infertility is the expulsion of the

woman from the husband's house, with or without divorce. Thus, in Africa having children is clearly more important than loyalty to one's spouse, which is evidenced by the common practice of divorce due to inability to conceive (Afolabi, 2017), or forceful ejection of the wife from the husband's home, either by the husband himself or by his family members. This is as a result of wrong knowledge and cultural beliefs about infertility which is socially constructed. These social construct (i.e gender issues) regarding infertility must be deconstructed to prevent future infertility among university students.

In Nigeria, there has been a prevalent belief that women are at fault for any case of infertility. That is why in some communities in Mbano (a local government in Imo State, Nigeria), according to Uzma, 2017, there exist a name for infertile women (Nwanyiaga) but no name for an infertile man (Uzma, 2017). This is evident in this study with a great percentage of respondents (53.2 %) believing that infertility is a disease of women and not men and women should bear the cost. It was also observed in this study that culture has a stronger influence on people than academic education. Despite the fact that the respondents were university students, this did not significantly influence their knowledge and perception about infertility. This is because majority of them have internalized the gender issues regarding infertility which must be corrected by demystifying these issues. The poor knowledge of the respondents about infertility is of great concern because according to Smith 2018, university students are at risk of being

infertile in future due to age related decline in fertility arising from their postponement of parenthood due to academic and professional pursuits (Smith, 2018). This requires urgent attention in order to prevent future infertility problems.

Despite the fact that researches have proved that male contribute up to 40% to the problem of infertility (Kropp et al., 2017; Uzma, 2017; Nwosu, 2010) men are exempted from bearing the burden of infertility in Nigeria. Only less than 20% of people in Africa believe strongly that men could be infertile (Nwosu and Friday, 2015). Various studies have revealed that men contribute to the infertility pool, some causes of infertility which have been associated specifically to men include abnormal sperm production or function, varicocele, undescended testicle, testosterone deficiency; inflammation of the prostate, urethra or epididymis; erectile dysfunction, premature ejaculation, retrograde ejaculation, blockade of ejaculatory ducts, lack of semen to transport sperm, anti-sperm antibodies and depressant drugs (Lotti, 2018; Jodar et al., 2017; Mohammed 2015). In a patriarchal society such as Nigeria, men are exonerated from being infertile due to socially constructed gender issues regarding infertility. These wrong cultural beliefs and norms are passed from generation to generation leading to delay in seeking medical help and increase in the number of infertile couples. There is an urgent need to deconstruct gender issues regarding infertility among university student as they are within their reproductive age

and have high probability of delaying parenthood due to academic and career pursuits which makes them to be at higher risk of future infertility.

### Conclusion

It was observed in this study that majority of the university students who participated in this study have poor knowledge regarding infertility due to socially constructed belief passed to them from the society which may in turn jeopardize their reproductive health. It was gathered from this study that women are strongly stigmatized in Nigeria while men are exempted from issue of infertility. This may lead to increase in percentage of infertile couples especially among university students who are most likely to delay parenthood and this poor knowledge may hinder them from seeking the right medical help. The socially constructed issues about infertility need to be corrected and policies should be put in place that will address the challenges encountered by the infertile women. General public especially university students should be educated on issues about infertility. In particular, the cultural myth that blames women solely for infertility should be unambiguously denied while correct information is provided. Adequate and accurate information on infertility should be made available and easily accessible. It is recommended that teaching modules should be incorporated into the tertiary education curriculum in Nigeria that will specifically addresses issues relating to infertility. This we believe will substantially reduce the incidence of infertility in Nigeria.

## References

- Adesiyun, A. G., Ameh, N., Zayyan, M., Umar-Sullayman, H., Avidime, S., Koledade, K., & Bakare, F. (2014). Awareness perception and attitudes of adolescent towards infertility in Kaduna State, Northern Nigeria. *Journal of Gynecology and Obstetrics*, 2(6), 127-130.
- Afolabi, B. M. (2017). The Dilemma and Psycho-Social Challenges of Un-Intentional Infertility in Sub-Saharan Africa. *Open Access J Trans Med Res*, 1(1), 00002.
- Alom, M., Wymer, K., & Trost, L. (2018). The Impact of Lifestyle Factors on Male Reproduction: Body Composition, Diet, Exercise, and Recreational Drug Use. In Bioenvironmental Issues Affecting Men's Reproductive and Sexual Health (pp. 85-105).
- Brittany, R. and Martin, S.F. (2015). Infertility Knowledge , Attitude and beliefs of College Students in Grenada. *Science Journal of Public Health*, 3(3):353-360.
- Chan, C., Chan, T., Peterson, B., Lampic, C., & Tam, M. (2015). Intentions and attitudes towards parenthood and fertility awareness among Chinese university students in Hong Kong: A comparison with Western samples. *Human Reproduction*, 30, 364–372. doi:10.1093/humrep/deu324.
- Chimbatata, N. B., Malimba, C., & Chimbatata, N. B. W. (2016). Infertility in sub-Saharan Africa: a woman's issue for how long? A qualitative review of literature. *Open Journal of Social Sciences*, 4(08), 96.
- Christine, W. (2018). Fertility and infertility: Definition and epidemiology. *Clinical Biochemistry*.
- Dierickx, S., Balen, J., Longman, C., Rahbari, L., Clarke, E., Jarju, B., & Coene, G. (2019). 'We are always desperate and will try anything to conceive': The convoluted and dynamic process of health seeking among women with infertility in the West Coast Region of The Gambia. *PloS one*, 14(1), e0211634.
- Dimka, R. A., & Dein, S. L. (2013). The work of a woman is to give birth to children: Cultural constructions of infertility in Nigeria. *African Journal of Reproductive Health*, 17(2), 102-117.
- Emmanuel, M. O., Olamijulo, J. A., & Ekanem, E. E. (2018). Risk factors associated with secondary infertility in women of childbearing age: A matched case-control study. *Tropical Journal of Obstetrics and Gynaecology*, 35(3), 249-255.
- Goldman, D. (2019). From Gender and Race to Eidos: A broader term for culturally defined roles based on biological traits.
- Greil, A., McQuillan, J., & Slauson-Blevins, K. (2011). The social construction of infertility. *Sociology Compass*, 5(8), 736-746.
- Hampton, K. D., Mazza, D., & Newton, J. M. (2013). Fertility-awareness knowledge, attitudes, and practices of women seeking fertility assistance. *Journal of Advanced*

- Nursing, 69, 1076–1084.  
doi:10.1111/j.1365-2648.2012.06095.x
- Hess, R. F., Ross, R., & Gililand Jr, J. L. (2018). Infertility, psychological distress, and coping strategies among women in Mali, West Africa: a mixed-methods study. *African journal of reproductive health*, 22(1), 60-72.  
<http://doi.org/10.1186/s12864-017-3673-y>.
- Jodar, M., Soler-Ventura, A., & Oliva, R. (2017). Semen proteomics and male infertility. *Journal of proteomics*, 162, 125-134.
- Kropp, J., Carrillo, J. A., Namous, H., Daniels, A., Salih, S. M., Song, J., & Khatib, H. (2017). Male fertility status is associated with DNA methylation signatures in sperm and transcriptomic profiles of bovine preimplantation embryos. *BMC Genomics*, 18, 280.
- Kumar, S., Thaker, R. A., Jaiswal, D., Patel, S., & Parmar, D. (2017). Awareness of Lifestyle, Occupational and Host Factors with respect to Reproductive Health among Students, Western India. *Community & Family Medicine*, 3(02).
- Lawrenz, B., Coughlan, C., Melado, L., & Fatemi, H. M. (2019). Ethnical and sociocultural differences causing infertility are poorly understood—insights from the Arabian perspective. *Journal of assisted reproduction and genetics*, 1-5.
- Lotti, F., & Maggi, M. (2018). Sexual dysfunction and male infertility. *Nature Reviews Urology*.
- Makama, G. A. (2013). Patriarchy and gender inequality in Nigeria: the way forward. *European Scientific Journal, ESJ*, 9(17).
- Muhammad, H., Shah, A. A., Nabi, G., & Farooqi, N. (2015). Male Infertility: Etiological Factors [A Review]. *American-Eurasian J. Toxicol. Sci.*, 7, 95-103.
- Mukherjee, B., Chakrabarti, S., & Dasgupta, P. (2018). Psychological Impact of Infertility and Role of Counseling. *Practical Guide in Infertility*, 78.
- Mumtaz, Z., Shahid, U., & Levay, A. (2013). Understanding the impact of gendered roles on the experiences of infertility amongst men and women in Punjab. *Reproductive health*, 10(1), 3.
- Nahrin, N. E., Ashraf, F., Nessa, K., Alfazzaman, M., Anwary, S. A., S. A. A., & Rahman, M. M. (2017). The Emotional-Psychological Consequences of Infertility and Its Treatment. *Medicine Today*, 29(1), 42-44.
- Nitsche, N., Matysiak, A., Van Bavel, J., & Vignoli, D. (2018). Partners' educational pairings and fertility across Europe. *Demography*, 55(4), 1195-1232.
- Nwosu, I., & Friday, O. (2015). The plight of infertile women in Nigeria. *Journal of Policy and Development, Studies* 9(3), 39-44.
- Oche, O. M., Ango, J. T., Gana, G. J., Oladigbolu, R. A., Okafogu, N. C., Umar, A. S., ... & Gatawa, A.

- M. (2018). In vitro fertilization: Perceptions and misperceptions among women of reproductive age group in Sokoto, Nigeria. *Journal of Reproductive Biology and Health*, 6(1), 1.
- Okonofua, F. E., Harris, D., Odebiyi, A., Kane, T., & Snow, R. C. (1997). The social meaning of infertility in Southwest Nigeria. *Health transition review*, 205-220.
- Ombelet, W. (2017). Accessible Infertility Care: From Dream to Reality. In *Development of In Vitro Maturation for Human Oocytes* (pp. 281-295). Springer, Cham.
- Ownonikoko, K.M., Bobo, T.I., Tijani, A.M. and Atanda, O.O. (2018). Adversities of Being Infertile an Infertile woman in Ogbomosho-Semi Urban Town in Nigeria. *Annals of Infertility and Reproductive Endocrinology*, 1 (1):1006
- Polis, C. B., Cox, C. M., Tunçalp, Ö., McLain, A. C., & Thoma, M. E. (2017). Estimating infertility prevalence in low-to-middle-income countries: an application of a current duration approach to Demographic and Health Survey data. *Human Reproduction*, 32(5), 1064-1074.
- Pressman, A., Hernandez, A., & Sikka, S. C. (2018). Lifestyle Stress and Its Impact on Male Reproductive Health. In *Bioenvironmental Issues Affecting Men's Reproductive and Sexual Health* (pp. 73-83).
- Prior, E., Lew, R., Hammarberg, K., & Johnson, L. (2018). Fertility facts, figures and future plans: an online survey of university students. *Human Fertility*, 1-8.
- Rouchou, B., & Forde, M. S. (2015). Infertility knowledge, attitudes, and beliefs of college students in Grenada. *Science Journal of Public Health*, 3(3), 353.
- Siyez, D. M., Seymenler, S., Esen, E., Siyez, E., Kağnıcı, Y., Baran, B., & Öztürk, B. (2018). Investigating knowledge levels of university students about infertility. *Turkish journal of urology*, 44(2), 153.
- Smith, A. M. (2018). Knowledge, Intentions, and Beliefs about Fertility and Assisted Reproductive Technology Among Illinois College Students (Doctoral dissertation, Southern Illinois University Carbondale).
- Sørensen, N. O., Marcussen, S., Backhausen, M. G., Juhl, M., Schmidt, L., Tydén, T., & Hegaard, H. K. (2016). Fertility awareness and attitudes towards parenthood among Danish university college students. *Reproductive health*, 13(1), 146.
- Tabong, P. T. N., & Adongo, P. B. (2013). Understanding the social meaning of infertility and childbearing: a qualitative study of the perception of childbearing and childlessness in Northern Ghana. *PloS one*, 8(1).
- Torgrimson, B. N., & Minson, C. T. (2005). Sex and gender: what is the difference?
- Uzma, E. (2017). Knowledge, attitude and myths on infertility: a review article. *International Journal of*

Research Science & Management, 4(2), 23-24.

van Leeuwen, E. (2016). The Impact of Human Immunodeficiency Virus (HIV) and Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) on Male and Female

Fertility. In Assisted Reproductive Technologies and Infectious Diseases (pp. 1-30). Springer, Cham.

West, C., & Zimmerman, D. H. (1987). Doing gender. *Gender & society*, 1(2), 125-151.