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Psychological and Social Effects of Infertility on Women: A Mixed Method Research

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ABSTRACT

***Background**: Infertility is one of the most devastating experiences among infertile women in Nigeria. This is due to the socio-cultural significance attached to childbearing in Nigerian society. This study was conducted to assess and explore the psychological and social effects of infertility, identify the support system and coping strategies available to and utilized by infertile women selected from Gynecological Clinic of Owo Federal Medical Centre.*

***Methods:** The current research was a cross-sectional study and it used a convergent mixed method approach to collect data from September, 2017 to January, 2018. Structured questionnaire and in-depth interview guide were used to collect data from 152 and 10 infertile women who were selected by purposive sampling. Quantitative data were analyzed using descriptive statistics and multinomial logistics regression in SPSS20 at 0.05 level of significance. The interviews were analyzed via content analysis.*

***Results:** The most prevalent psychological and social effects of infertility experienced by the women were frustration with the different treatment procedures (79.6%) and having sex for purpose of procreation only (78.9%). Higher age (OR = 2.95, CI = 1.68 - 5.29, P=0.01), monogamous family (OR = 6.70, CI = 1.68 - 26.74, P = 0.01) and parity (OR = 4.21, CI = 0.42 - 41.76, P=0.03) significantly influenced psychological effects of infertility while zero parity (OR =1.34, CI = 0.89 - 4.56, P = 0.01) was the only factor that significantly determine the social effects of infertility. The qualitative results show that the women experienced a range of psychological and social issues ranging from grief to negative self-concept, inordinate desire for sexual intercourse, societal stigma, social withdrawal and isolation.*

***Conclusion:** The study concluded that infertile women experience a range of psychological and social issues. The findings from both the quantitative and qualitative assessment indicated the need to provide more psychosocial support for women with infertility.*

Keywords

Infertility, Women, Psychosocial problems, Coping and Support system.

Introduction

Infertility remains a major public health issue in Nigeria due to the socio-cultural significance attached to childbearing. Infertility has been defined as the inability to achieve a pregnancy after a period of at least 12 months of appropriately timed intercourse [1]. It is said to be primary infertility if there has not been any previous conception and secondary if there has been a previous conception irrespective of the outcome [2]. One in five of couples suffers the ill effects of infertility with the rate as high as 20-45% in Nigeria [3]. Infertility has been described as the most worrisome

reproductive health concern of Nigerian women, and it accounts for between 60% and 70% of gynecological consultations in tertiary health institutions [4]. It is a major stressor on couples who seek to have their own children and it can constitute a threat to their psychosocial health [5]. The burden of infertility is high on African women because not having a child or enough children as well as not having a particular gender most especially male child to sustain the family lineage threatens their marriage.

Research has shown that 30-40% of infertility is primarily attributable to female, 30-40% is to male factors and 10% to unidentified cases and the remaining 20-30% is attributable to an interaction between the two partners [6]. However, the burden of infertility affects women more than men in the Africa societies even if it has been proven that the male partner is the cause of the infertility [7]. Infertility is worrisome not only in the context of its physical entity but also as a social stigma with serious implications for the psychological and social well-being of both spouses. This is because in many cultures in Nigeria, motherhood is seen as a supreme achievement for a woman and a demonstration of physical and psychological adequacy [8]. In the family, having children determine the woman's continued stay in marriage, respect from spouse and in-laws, access to inheritance, economic security and domestic support [9]. Female infertility is stigmatized generally all over the world but the notion of children being the "crown" of marriage in the African culture makes the stigmatizing attitudes experienced by infertile women more severe when compared with women in the western world. Children are seen in the African context to be more important than loyalty to their spouse which is evidence in the practice of divorce due to inability to conceive [10].

The central difficulty associated with infertility in developing countries like Nigeria is that it transforms from an acute, private agony into harsh, public stigma with complex and devastating consequences. Infertility has an impact that extends beyond the individual and family, to the society at large and even to the world as a whole [11,12]. Women with infertility often experience societal rejection, shame and ridicule [13] and therefore are often seen as social deviants and face a wide range of societal problems compared with their counterparts in the western societies [14]. The rejection makes some of them to withdraw to themselves, become depressed and some may experience suicidal ideation. These symptoms, among others, have been the common psychological symptoms reported to be exhibited by women with infertility [15].

Despite the array of physiological, psychological, emotional, social and cultural problems experienced by women with infertility which compromise their quality of life, there is paucity of studies in the study setting focusing on their psychosocial problems, coping strategies and support system available to them. Also, to date, previous studies around the topic have been quantitative in nature and there has been no study in the setting that look into psychosocial effects of infertility on women using a mixed method approach. Therefore, there is need for empirical evidences to understand infertile women's psycho-social experiences, coping strategies and the support system available to them. This is necessary for healthcare intervention to infertility to be more responsive to other important dimensions of infertility. This study assessed the psycho-social effects of infertility on women, the coping strategies they adopted and the support systems available to them.

Definition of Terms

Psychological effects in this study include the negative emotion and feelings experienced by the women as a result of infertility.

Social Effects of infertility in this study include the sexual, relationship and the needs for parenthood concerns experienced by the women with infertility.

***Women*:** These are women attending selected infertility clinics and who have been diagnosed to have either primary or secondary infertility.

Methods

Research Design and Study Setting

The research was conducted as a cross-sectional study using convergent mixed (quantitative and qualitative) methods of data collection. This is to allow the data generated from the two methods to complement each other and yield a more robust data. In a convergent mixed method design, quantitative and qualitative data are collected at the same time, analyzed separately, and then the results are mixed during the interpretation of the data [16]. The study was conducted among women attending gynecology (infertility) clinics in a Federal Medical Center, located in a semi-urban community - Owo, in Ondo State, Southwestern part of Nigeria. The hospital is a tertiary institution that serves as a major referral centre for the people of Owo and other communities around it.

Sample Size and Sampling Method

The target population is women with infertility. Using a sample size formula for estimating true proportion in population ($n=z^2pq/d^2$) and a prevalence rate of infertility (11.2%) in gynecological consultation [17], substituting the prevalence rate in the formula, an estimated value of 150 was obtained but a total of 152 women participated in the study. The number of participants that took part in the qualitative aspect of the study was based on data saturation.

Selection and Description of the Participants

The participants were selected by purposive sampling. The inclusion criteria are females attending infertility clinic in the selected hospital who have been diagnosed to have both primary and secondary infertilities. Exclusion criteria include women that are currently undergoing treatment for psychiatric disorders, suffering from any co-morbid medical or surgical problems and who had used or are currently using assisted reproductive technology for treating infertility. The interviewed participants were selected by convenience sampling and were not part of those that participated in the quantitative study.

Instruments and Data Collection

The instrument used for collecting data on psychological and social effects of infertility was a structured questionnaire adapted from infertility problem inventory questionnaire [18] and it was measured on a 4-point Likert scale. Data on coping strategies adopted by participants and the support system available to them were collected using 8-item and 6-item structured questions respectively and were measured on Yes/No option. The qualitative data were collected through the use of in-depth interview guide. The validity of the instrument was determined by face validity by subjecting it to experts in the field of Nursing Science, Public health, Obstetrics and Gynecology, Psychology and Demography and Social Statistics. The instruments (structured questionnaire and interview guide) were translated to local language (Yoruba) and back translated to English by experts. The reliability of the questionnaire was established through a pre-test among 20 infertile women in similar setting. The Cronbach's alpha coefficients for the adapted psychological and social scales are *.83* (14-item) and .71 (13-item) respectively. The test-retest reliability for support system and coping scales yielded a correlation coefficient of *.8* and *.7* respectively. An additional open-ended question was also used to assess the level of support that respondents received from significant others and or institutions. All data were collected by interviewer-administered approach and data were collected from respondents in a secure place in the clinic after rapport and trust have been established and informed consent taken. Data were collected over a period of 5 months between September, 2017 and January, 2018.

For the qualitative aspect, 10 in-depth interviews were held among selected women (n=10) in a preferred location by them. The sample was based on data saturation and this is evident in the repetition of information given [19]. The participants were allowed to speak in either English or Yoruba (local) language based on their preference. But back-to-back translation was done by an expert in both languages, Yoruba and English. The in-depth interviews were tape-recorded and field notes were taken during the interview sessions. The interview was conducted within 40-60 mins. Trustworthiness was achieved by convincing the participants about the truthfulness of every stage of the research and how it coincides with the research objectives [20]. The confirmability of the data collected from the women was also upheld by a recap of data with individual participant to allow them verify the data themselves. All the interviewee participants found the recap of their responses to be a true picture of their experiences. Also, the first and the second authors analyzed the qualitative data separately and they compare their findings to arrive at a consensus. The fourth author who is an experienced qualitative research expert was asked to appraise the themes generated from the data and she was in agreement with the themes.

Data Analysis

The quantitative data were analyzed using descriptive and inferential statistics in Statistical Package for Social Sciences (SPSS) version 20. Responses (scoring) of the respondents to the psychological effects scale were added up, the lowest being 14 while the highest was 56 and the scores were categorized as mildly concerned (14-24), moderately concerned (25-35), very concerned (36-46) and very much concerned (47-56). The social effects scale was categorized into those with good and poor social relationship using the mean score (32) where scores greater than or equal to 32 is categorized as good while, less than 32 is categorized as poor. Participants' responses on the support system were presented using frequency and proportion while coping strategies of participants were presented using bar graph.

Relationship between the socio-demographic characteristics of participants and both psychological and social effects were assessed through multinomial logistic regression. A bivariate analysis using chi-square was first conducted to determine the social-demographic factors associated with each of the psychological and social effects of infertility. Significant factors from the bivariate analysis were taken to multivariate logistic regression analysis at $p<0.05$ to identify the socio-demographic factors that significantly predict psycho-social effects of infertility.

For the qualitative data, the interview was led by the first author and supported by two of the authors. Tape-recorded interviews and note taken were transcribed verbatim using Krippendorff's content analysis method [21]. Krippendorff defined content analysis as "a research technique for making replicable and valid inferences from texts to the contexts of their use" (p. 18). After analyzing the questionnaires and interviews separately, the results were presented together in the results and the discussion section.

Ethical Consideration

Ethical approval (HREC NO: FMC/OW/380/VOL.XLI/70) was obtained from the Federal Medical Center Owo Ethical Committee and written informed consent obtained from each respondent. A counsellor was detailed to attend to the special needs of the women during the interview. This is because recounting experiences relating to infertility might bring up emotions and distress to some participants, Names and all possible identifiers were removed from the field notes and pseudonyms were used in transcribing participant's responses. The purpose of the research was explained to the participants and they were assured of their right to withdraw from the study at any point. Individual interviewees were assured of confidentiality and how their personal identifiers will not be revealed.

Results

Population Characteristics

Table 1 shows the sociodemographic characteristics of participants in the quantitative study while Table 2 shows the characteristics of women in the qualitative study. The age of the women ranges between 21-50yrs with a mean age of 35.0±6.14 years for the women in the quantitative study while it was 33.4±6.43 for the women that participated in the qualitative study. The mean duration of infertility was 4.1 ± 3.52 years and majority (75.7%) had infertility duration of 1-5years. Also, the mean duration of relationship with spouses was 5.2 ± 4.13 years.

Table 1: Sample Characteristics for Questionnaire.

Variable	Frequency (n= 152)	Percentage
Age of Respondents		
21-30	47	30.9
31-40	84	55.3
41-50	21	13.8
Marital Status		
Married	142	93.4
Remarried	10	6.6
Educational Status		
Primary	15	9.9
Secondary	38	25.0
Tertiary	99	65.1
Occupation		
Civil servant	70	46.1
Housewife	8	5.3
Self employed	74	48.7
Type of Marriage		
Monogamous	123	80.9
Polygamous	29	19.1
Religion		
Christian	129	84.9
Muslim	23	15.1
Gravidity		
0	107	70.4
1-2	26	17.1
3-4	10	6.6
5 and above	9	5.9
Parity		
0	113	74.3
1-2	35	23.0
3-4	4	2.6
Type of Infertility		
Primary	107	70.4
Secondary	45	29.6
Duration of Infertility		
1-5	115	75.7
6-10	29	19.1
11-15	7	4.6
16-20	1	0.7
Duration of Relationship		
1-5	98	64.5
6-10	39	25.7
11-15	11	7.2
16-20	4	2.6

Psychological Effects of Infertility

Table 3 shows the distribution of respondents based on the psychological effects of infertility. The most experienced psychological effect is frustration with the treatment procedure (79.6%) why the least psychological effect experienced is having suicidal ideation (17.3%). In summary, 12% of the women were already very much concerned, 47% were categorized as being very concerned and 34% and 7% of them were categorized as being moderately and mildly concerned respectively. Three themes emerged from the qualitative data on psychological effects of infertility on the women (Table 7). These include grief, negative self-concept and inordinate desire for sexual intercourse. And the themes and subthemes further reinforced the findings from the quantitative study that the women were psychologically concerned about their state of infertility.

Theme 1: Grief

All the participants experienced the feelings of sadness. Eight (8) out of the 10 participants were reported to have wept severally and 5 had fear that they might lose their spouse. Some of their responses are as stated below:

"I have wept severally since I've *been looking forward to having additional child, I wet my pillow with tears every day, and the experience is not palatable at all" ……. (Participant #7)*

"*I will be thinking if am not able to give my husband a child he may leave me and sometimes it makes me to transfer aggression to my husband thus leading to arguments between both of us." … (Participant #5)*

"I often experience feelings of deep sadness, loneliness, fear of insecurity and also feel frustrated always especially when I see my menses. My anxiety increases whenever I miss my period and become so depressed when the menses comes". (*Participant #6)*

Theme 2: Negative Self-concept

Feelings of negativity towards self were experienced by majority (9) of the participants and 2 out of the 10 participants have had suicidal ideation. Some of the excerpts from participants' responses are as stated below:

"*even an ugly, physically challenged woman can give birth but I that look beautiful and fresh outside cannot have a child because something is wrong with me inside" ..... (Participant #1)*

"What is the value of a woman who cannot give birth? I feel like a worthless person at times…. (Participant #9))

"Hunm, my sister, I don't think you can understand how I feel! I hate myself for my inability to become a mother. Why must it be me! How do I continue this way, I just hope that God will look down on me!… (Participant #6)

I find it difficult to sleep or eat well, and I do have a feeling of pain sensation inside my body and sometimes I feel like killing myself". (Participant #2))

Theme 3: Inordinate Desire for Sexual Intercourse

Some of the participant intention of engaging in sex is all about nothing other than for the sole purpose of getting pregnant to the extent that it has been affecting their spouses. Their experiences showed a compulsion anxiety driven copulation and anger-related incessant copulation. Some excerpts from their discussion are stated below:

"*I demand for sex even when it is not convenient for my husband or*

Table 2: Sociodemographic Characteristics of Interview Participants.

Participants	Age (yrs.)	Gravidity /parity	Occupation	Marital Status	Educational Level	Type of Infertility	Duration of Infertility (yrs)
1	34	G^0P^0	Housewife	Married	Tertiary	Primary	3
2	29	G^2P^0	Fashion Designer	Married	Secondary	Secondary	5
3	34	G^2P^1	Business	Married	Tertiary	Secondary	6
4	36	G^3P^1	Housewife	Married	Secondary	Secondary	5
5	35	G^0P^0	Business	Married	Tertiary	Primary	8
6	38	G^0P^0	Business	Married	Primary	Primary	15
7	28	G^1P^0	Housewife	Married	Secondary	Secondary	3
8	29	G^1P^0	Housewife	Married	Tertiary	Secondary	6
9	47	G^0P^0	Housewife	Married	Tertiary	Primary	22
10	24	G^0P^0	Business	Married	Secondary	Primary	3

Table 3: Descriptive Responses of Respondents on Psychological Effects of Infertility.

Psychological Effect Variables	Strongly Agree n (%)	Agree n (%)	Disagree n (%)	Strongly disagree n (%)	Proportion experiencing the problem (%)
I was shocked, and disappointed when I was told I have infertility problem	72 (47.4)	29 (19.1)	26 (17.1)	25 (16.4)	66.5%
I feel angry when I see people with pregnancy	14 (9.2)	40 (26.3)	53 (34.9)	45 (29.6)	35.5%
I feel afraid/scared that I can never have a child	34 (22.4)	37 (24.3)	42 (27.6)	39 (25.7)	46.7%
I worry about my future	48 (31.6)	55 (36.2)	26 (17.1)	23 (15.1)	67.8%
I feel anxious about by situation	48 (31.6)	69 (45.4)	27 (17.8)	8 (5.3)	76.9%
I feel so sad and depressed often about my situation	45 (29.6)	64 (42.1)	32 (21.1)	11 (7.2)	71.7%
I feel hopeless	25 (16.4)	33 (21.7)	57 (37.5)	37 (24.3)	38.2%
I think of my problems always	32 (21.1)	82 (53.9)	27 (17.8)	11 (7.2)	75.0%
I feel guilty of not being able to make my husband a father	33 (21.7)	59 (38.8)	31 (20.4)	29 (19.1)	60.5%
I cry whenever I see my menses	61 (40.1)	58 (38.2)	27 (17.8)	6 (3.9)	78.3%
I feel frustrated about the various treatments	52 (34.2)	69 (45.4)	21 (13.8)	10 (6.6)	79.6%
I think am worthless	10 (6.6)	41 (27.0	60 (39.5)	41 (27.0)	33.6%
I have trouble sleeping	23 (15.1)	74 (48.7)	38 (25.0)	17 (11.2)	63.8%
I think of killing myself	7 (4.6)	19 (12.5)	67 (44.1)	59 (38.8)	17.3%

Table 4: Descriptive Responses of Participants on Social Effects of Infertility.

Social Effect Variables	Strongly agree n (%)	Agree n (%)	Disagree n (%)	Strongly disagree n (%)	Proportion experiencing the effects (%)
It bothers me that my husband does not want to participate in treatment	15 (9.9)	52 (34.2)	57 (37.5)	28 (18.4)	44.0%
When we talk about our problems, it seems to lead to argument or fight	7 (4.6)	52 (34.2)	65 (42.8)	28 (18.4)	38.8%
Because of the infertility, I worry that my partner and I are drifting apart	13 (8.6)	60 (39.5)	44 (28.9)	35 (23.0)	43.0%
Infertility is causing relationship gap between me and my husband'	16 (10.5)	78 (51.3)	42 (27.6)	16 (10.5)	61.8%
Husband has extramarital affair/children outside the home.	10 (6.6)	20 (13.2)	66 (43.4)	56 (36.8)	19.8%
Sometimes I feel so much pressured to demand for sex all the time	32 (21.1)	71 (46.7)	30 (19.7)	19 (12.5)	67.8%
During sex, all I think about is wanting a child.	59 (38.8)	61 (40.1)	19 (12.5)	13 (8.6)	78.9%
Family get-togethers are especially difficult for me	12 (7.9)	51 (33.6)	59 (38.8)	30 (19.7)	21.7%
I can't help comparing myself with friends who have children	14 (9.2)	72 (47.4)	52 (34.2)	14 (9.2)	56.6%
I always get insults from family members, friends or husband	13 (8.6)	59 (38.8)	48 (31.6)	32 (21.1)	47.4%
I feel lonely always	14 (9.2)	70 (46.1)	49 (32.2)	19 (12.5)	55.3%
I find it hard to spend time with friends who have children	6 (3.9)	56 (36.8)	58 (38.2)	32 (21.1)	40.8%
It doesn't bother me when am asked questions about children	16 (10.5)	44 (28.9)	57 (37.5)	35 (23.0)	39.4%

he's not interested. This because I do not know when the pregnancy will come and sometimes, I get so angry and refuse my husband sex because the sex does not give me the child I want" .... (Participant #3)

Sometimes, I can demand for sex several times in a day as if it is a food. In fact during my ovulation period, I feel I should just be having sex all the time. It got to a level that my husband became so frustrated. ... (Participant #4)

Social Effects of Infertility

Table 4 shows responses on social relationship. The most experienced social effect of infertility by respondents is having sex for the purpose of children only and not for pleasure (78.0%) while the least social effect experienced is dealing with husband extramarital affairs or husband having children outside of their marriage (19.8%). In summary, more than half (55%) of the women had good social relationship and 45% had poor social

Table 5: Multinomial logistics regression analysis predicting factors that influence psychological scores of the respondents.

Variable	Statistical significance	Odds Ratio	Confident Interval	
			Lower level	Upper Level
Age of Respondents				
21-30		1(ref)		
31-40	**0.01***	2.21	2.92	9.29
41-50	**0.01***	2.95	1.68	5.29
Marital Status				
Married	0.16	5.76	0.49	7.68
Remarried		1(ref)		
Educational Status				
Primary		1(Ref)		
Secondary	0.95	0.92	0.07	12.13
Tertiary	0.46	1.85	0.35	9.79
Occupation				
Housewife		1(Ref)		
Civil servant	0.11	0.41	0.13	1.24
Self employed	0.87	1.20	0.12	11.58
Type of Marriage				
Monogamous	**0.01***	6.70	1.68	26.74
Polygamous		1(Ref)		
Religion				
Christian	0.14	0.16	0.01	1.83
Muslim		1(Ref)		
Gravidity				
0		1 (Ref)		
1-2	0.41	1.41	0.04	3.53
3-4	0.61	0.64	0.11	3..55
5 and above	0.60	0.65	0.12	3.32
Type of Infertility				
Primary		1(Ref)		
Secondary	0.06	0.22	0.04	1.10
Duration of Infertility				
1-5		1(Ref)		
6-10	0.98	1.02	0.09	10.73
11 and above	0.55	0.46	0.03	5.90
Duration of Relationship				
1-5		1(Ref)		
6-10	0.68	0.60	0.05	6.79
11-15	0.42	0.33	0.02	5.02
16-20	0.20	0.19	0.01	2.50
Parity				
0	**0.03***	4.21	0.42	41.76
1-2	0.38	2.83	0.26	29.95
3-4		1(Ref)		

relationship. Three main themes emerged from the exploration of social effects of infertility as expressed by the participants (Table 7). These include perceived social pressure, social withdrawal and isolation, and inordinate desire for sexual intercourse.

Theme 1: Perceived Social Stigma

Five of the participants experienced labeling while 3 women had fear related to the discipline of other people's children. The underlisted excerpts provides the summary of participants' responses:

"What increased my concern was when a customer stored my name as "onibata" (Shoe seller) because she does not know the name of my child and she kept asking me for my child's name". I find it difficult to dress up very well because of what people will say……. somebody told someone else that instead of her to concentrate on giving birth she is looking all gorgeous" …… (Participant #9)

"there is a feeling of incompleteness in me and I also feel that people see me as such. You know how people perceive infertile women! some will even say you have aborted all the pregnancies that God assigned to you. I feel like a rejected person" .... (Participant #5)

"I find it difficult to discipline another person's child because of the fear of what their mother would say (Participant #6)

Theme 2: Social Withdrawal and Isolation

Six out of the ten participants experienced social withdrawal and isolation as major social effects. Their experiences could be best captured by the two excerpts below:

"*I don't feel alright whenever I am supposed to go for a function because I will think people will be looking at me, therefore, I decide to stay in my house alone" …… (Participant # 6)*

"*I find it difficult to stay where there are women especially those who have children. In fact, I tend to avoid many people because I don't want them to ask me questions about what I am doing to address my infertility." ….. (Participant #2)*

Support System for Women with Infertility

Majority (84.8%) of the respondents received support from husband, 59.8% received support from friends, 34.2% received support from family members, and 55.2% received support from Counsellor, 33.5% from infertility support organization and 38.8% from healthcare providers. When asked to rate the level of support received from identified people, 46% (n=70) rated it to be good while 54% (n=82) rated it to be poor. The women that participated in the qualitative aspect of the study buttressed the point from the quantitative data that husband was the major source of support to the women. Seven (7) of the 10 participants benefited from reassurance from spouse, family or friends. Some excerpts from participants are as stated below:

External Support

"*my husband always gives me assurance that I am secured in the marriage and that I need not worry. In fact, if not for his support, my in-law would have sent me packing" …. (Participant #10)*

"My husband and one of my childhood friends remain a major source of emotional support to me during this period. Both are really good source of comfort …. (Participant #4)

"I received major support from my own family. They often assured me of their commitment to me and offer necessary supportive counsels at different points of my life. My husband and his family have not been supportive. In fact, he has been disturbing me to allow him marry another woman because he felt that the birth of a child in our home can help me to get pregnant." …. (Participant #9)

Coping Strategies Adopted by Women with Infertility

Figure 1 shows the coping strategies adopted by respondents. Five main coping strategies adopted by respondents are being optimistic, prayer, getting busy, denial and verbalizing feelings in this order. Eight of the ten participants in the in-depth interviews reported that they mainly keep their issue to themselves and mostly talk to God through prayers and that this has been very helpful to them.

"what do I do than to talk to God about it and believing that He will remember me one day. Honestly prayer and trust in God is the only way out. You see people can only add to your problem by backbiting about you" …. (Participant #8)

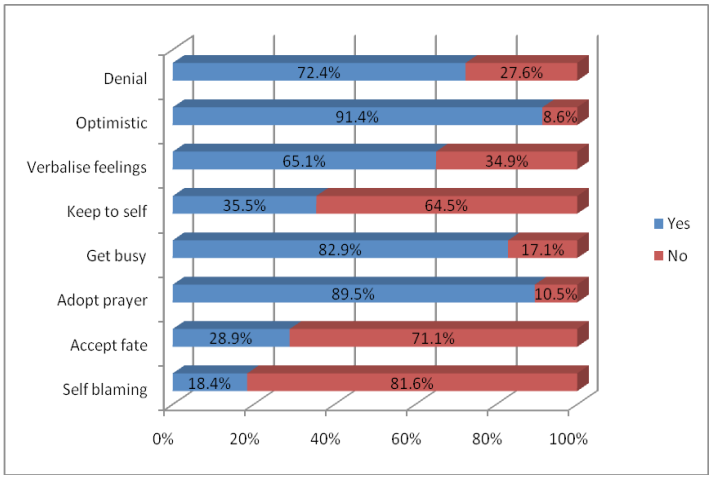

Figure 1: Coping Strategies Adopted by Respondents.

"*even if you don't tell people, they already know what you are passing through both physically and spiritually, hence there is no need for me to tell people as they may aggravate my problem" ….* (Participant #1).

Relationship between the Socio-Demographic Characteristics and both Psychological and Social effects of Infertility

A multinomial logistics regression analysis on Table 5 shows that women in the age category of 31-40 (OR = 2.21, CI = 2.92 - 9.29, P = 0.01) were about 2-times more likely to have a higher psychological effect of infertility than women within the lower age group. Also, women in the age category of 41-40 were about 3-times more likely to have higher psychological effects of infertility than women in the lesser age category (OR = 2.95, CI = 1.68 - 5.29, P = 0.01). Also, women in the monogamous family were about 7-times more likely to have higher psychological effects than those in polygamous family (OR = 6.7, CI =1.68 - 26.74, P=0.01). For the social effects, the result on Table 6 shows that women with zero parity had higher possibility of having more social effects of infertility than other women (OR = 1.34, CI = 0.89 - 4.36, P = 0.01).

Discussion

This study assessed the psychosocial effects of infertility on the women. It also examined the coping strategies as well as the support from significant others among women attending gynecological clinic in a Nigerian tertiary Institution in Owo, Ondo State. This study has shown that a notable proportion of the women in the study are experiencing psychosocial problems as a result of infertility. Frustration with the different treatment procedures (79.6%) and having sex for purpose of procreation only (78.9%) were the most experienced psychological and social effect of infertility.

Table 6: Multinomial logistics regression analysis predicting factors that influence social effects scores.

Variable	Statistical Significance	Odds Ratio	Confident Interval	
			Lower level	Upper Level
Age of Respondents				
21-30		1(Ref)		
31-40	0.29	1.76	0.60	5.13
41-50	0.38	0.65	0.24	1.70
Marital Status				
Married	0.12	0.28	0.05	1.40
Remarried		1(Ref)		
Educational Status				
Primary		1(Ref)		
Secondary	0.25	1.95	0.62	6.16
Tertiary	0.18	1.67	0.77	3.63
Occupation				
Housewife		1(Ref)		
Civil servant	0.37	1.38	0.67	2.87
Self employed	0.47	1.76	0.37	8.34
Type of Marriage				
Monogamous	0.99	1.00	0.44	2.26
Polygamous		1(Ref)		
Religion				
Christian	0.89	1.06	0.43	2.59
Muslim		1(Ref)		
Gravidity				
0		1(Ref)		
1-2	0.61	0.69	0.16	2.90
3-4	0.39	0.55	0.10	2.43
5 and above	0.11	0.21	0.03	1.48
Type of Infertility				
Primary		1(Ref)		
Secondary	0.50	1.26	0.63	2.55
Duration of infertility				
1-5		1(Ref)		
6-10	0.31	0.43	0.08	2.23
11 and above	0.14	0.27	0.04	1.57
Duration of relationship				
1-5		1(Ref)		
6-10	0.40	0.37	0.03	3.75
11-15	0.66	0.59	0.05	6.27
16-20	0.20	0.19	0.01	2.50
Parity				
0	**0.01***	1.34	0.89	4.56
1-2	0.80	0.78	0.10	5.74
3-4		1(Ref)		

Table 7: Themes and sub-themes on Psychological and Social Effects from the Qualitative Study.

Study Variables	Theme	Subtheme
Psychological Effects	Grief	• Sorrowfulness • Fear of Separation
	Negative self-concept	• Unworthiness • Anger/self-disgust • Suicidal ideation
	Inordinate desire for sexual intercourse	• Compulsive anxiety driven copulation • Anger related incessant copulation
Social Effects	Perceived social stigma	• Labelling • Fear of reaction formation
	Social withdrawal and isolation	• Self-isolation • Social withdrawal

Women in this study experienced psychological symptoms such as shock and disappointment following the diagnosis of infertility, frustration following treatments, crying whenever they see their menstruation, and feeling of guilt. This finding was in agreement with the previous study that showed that many of the infertile women extensively described their emotional turmoil as emotions of disappointment, shock, anger and frustration [22]. Anxiety and depression level was very high amongst the women in this study and the guilt of not being able to give their husband a child, these findings support previous studies [2,23]. A notable proportion of the women in this study have had suicidal ideation as a result of infertility. The risk of suicide among infertile women has been previously reported in literature [24]. The women were preoccupied with thoughts related to husband getting another wife if infertility should persist and also found it difficult to sleep. Shahraki and colleagues reported sleeping problem as one of the problems of infertile couple [25].

Generally, the findings from the psychological effects of infertility in this current study show that a notable proportion of the women were really concerned about not being able to have children. This could be attributed to possible pressure associated with childlessness especially in African culture and society. This was also corroborated by the qualitative study result which shows that the women experienced a range of emotional issues ranging from grief to negative self-concept and inordinate desire for sexual intercourse. Both the quantitative and qualitative findings show that women with infertility show a concerned level of psychological disturbance. This is expected in a Nigerian setting where women with only one child is often categorized as barren. An adage among the Yorubas ethnic group where the study was conducted says that "*olomo kan o kuro lagan".* Meaning that, there is no difference between a person that has only one child and a barren woman. This could be attributable to the reason why many women in Nigerian setting are desperate to have a child of their own and in fact, the number of children they so desired with their spouse because of the social stigma associated with infertility whether primary or secondary.

The logistic regression analysis shows that women within the older age range had more psychological concern than the women in the lower age group. The reason for this may be the fear of reaching menopause without having a child of their own or the fear of losing their husband to a much younger women as reported in the qualitative findings of the current study. Women in the monogamous family have more psychological concern compared with the ones in the polygamous family. The women in polygamous relationship may not be under pressure as those in the monogamous family because their spouses would have had children from other woman/women and thus may be free from pressure from spouse, in-laws and extended family. Infertile women who accept polygamy may have a feeling that the "womb is jealous" which mean that the presence of children in the family could facilitate their own conception [26]. Acceptance of polygamy as a means of solving infertility problem among couple is common among the Yoruba ethnic group of Nigeria. Also, women with zero parity had higher psychological effects score compare with other women, this is expected considering the value placed on children in African culture. Most often, women who have not given birth at all (zero parity) are called 'barren' and the family and society at large cast aspersion on them. This may likely result in higher level of psychological disturbance compared with other women with secondary infertility who had previously given birth to a child or children.

Infertility is experienced within the context of ever-changing interpersonal relationships, predominantly family relationships. The findings from the current study on social effects of infertility show that little above half of the women had good social relationship with their spouse or people and a lower proportion complained of relationship changes with spouse or people. This finding was in line with the findings from previous study that some of the women reported good relationship between them and their spouses [27]. Some couples have found infertility as a life-crisis that brings them together and strengthens their relationship [28, 29]. From the qualitative responses, some of the women raised concern relating to their sexual relationship. Previous literature has reported that couple's relationship often suffers because of the loss of spontaneity linked to timed intercourse to facilitate conception as this can have a considerable negative impact on desire and sexual function [30].

As previously stated in literature [30], majority of the women in this current study reported social withdrawal, loneliness, social pressure and social alienation as social effects of infertility. In fact, the proportion with poor social relationship score (45%) raises a concern for appropriate psychosocial intervention among women with infertility. Previous study reported that women tend to choose not to enter settings where intrusive questions and critical comments are routinely encountered as a result of infertility [31]. Such questions or comments may further worsen social alienation often experience by women with infertility.

From the qualitative responses, pressure from in-laws and the feelings of the women on the fear that their husband might marry another wife is noteworthy. It is not unusual for pressure to come from husbands' family for a man to take another wife that could bear him children most importantly among the Yoruba ethnic group where the study was conducted. This is because more often than not, family members often perceive woman as the cause of infertility [13,32]. Also, the continuous pressure from the in-laws could constitute a potent source of distress to the women [33].

Social support can be a critical component of how a woman adjusts to the unexpected stress of infertility. Findings from this study also revealed that majority of the women get reassurance and support mainly from their husbands. A study by Donkor & Sandall [34] in Ghana allude to the importance of partners' support for women during infertility. Also, family and friends were a source of emotional support to some of the women especially

those that participated in the qualitative study. This was in line with the finding of Anokye *et al.* [35], who reported family as a major source of emotional support to infertile couple. A few of the women get support from support group and organization. This could be as a result of presence of few support groups in the study setting. Most support groups are located in the big cities where they can easily attract funding. Consequently, it becomes inaccessible to women who live outside the big cities. The study also showed that professional counselors were the least among the support services accessed by women. Latifnaejad and Allan [36], noted that women rely less on formal support group and resources like counseling service. The logistic regression results revealed parity as the only factor that influence the social effects score of the women where those who had never had a child had higher social effects score. Studies in the Nigeria have shown that women who failed to give birth 'barren' as they are called, suffer social rejection, stigmatization and ostracism [37,38]. This may be related to the misconceptions about infertility especially in a situation where the woman has never had a child. In Nigeria context and culture, the inability of a woman to give birth is a reflection of her moral integrity [38].

Most prevalent coping strategies adopted by the women in this study were mainly optimism, prayer, getting busy, denial and verbalizing feelings. These coping strategies were similar to what was reported in a study by Donkor and Sandall [34] in a study conducted in Ghana among women seeking infertility treatments. A possible explanation for frequent use of optimism and prayers to God for miracle by the participants in this current study may be based on the religious belief in Nigeria that God owns children and that they have less control over their infertility condition and thus the need for one to be optimistic and to look up to the supreme being for divine intervention. Getting busy and denial on the other hand are forms of diversional therapy used by the women to take their mind off the problem while verbalizing feelings to others is a way of getting emotional support to cope with infertility from significant others. It can be argued that both active and passive avoidance was a form of defense mechanism, protecting the infertile women from emotional and social burdens of infertility [35,39,40].

Implication of the Finding for Nursing Practice and Research

Considering the psychological and social effects of infertility on women in this study, nurses have a unique role to play because they are the first point of contact in the healthcare facilities for all diverse of patients. Infertility demands a total package of care which must include psychological care and support. Infertility could impact negatively on the life of people affected by it. Having this understanding should encourage nurses and other healthcare providers to offer humane care and show empathy while caring for the women and their spouses who seek treatment support at healthcare facilities. Displaying understanding will also encourage couples to open up on their psychosocial experiences which may have impact on the outcome of care. An unaddressed psychosocial distress in an infertile woman may affect other aspects of the woman's life such as her general health, relationship with spouse and other people, her performance at work and it may consciously or unconsciously affect the treatment process and the outcome of the treatment.

Also, providing detailed information of what the treatment process entails; the time, cost, procedures at the different stages of the treatment could help alleviate the distress associated with the treatment plans. In addition, finding suggests a comprehensive care approach involving multidisciplinary team to the management of infertility. Future research could assess the effectiveness of psychosocial intervention on coping and treatment outcomes among infertile women and couples. Finally, nurses should work more closely with other healthcare providers as clients advocate in order to facilitate necessary emotional support needed for infertile women or couples to navigate the treatment process successfully.

Strength and Limitations of the Study

The mixed method approach to data collection in this current study contributes to a more accurate depiction of participants' experiences and provides rich data on psychosocial experiences of infertile women. However, women who patronize the traditionalist and those who use assisted reproductive technology were not captured in this study. The authors are aware that their experiences may differ from the women captured in this study.

Conclusion

This study concluded that women with infertility undergo both psychological and social problems and that their ability to survive the infertility experience is enhanced by the availability of support system and the coping strategies employed by the women. The findings of the study and their narratives ignite a level of awareness about the need for nurses and other healthcare providers to display a good understanding of the uniqueness of psychosocial experiences associated with infertility when caring for women or couples with infertility.

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Ethical Approval

Ethical approval (HREC NO: FMC/OW/380/VOL.XLI/70) was obtained from the Federal Medical Center Owo Health Research Ethical Committee.

References

1. Vander Borght M, Wyns C. Fertility and infertility: Definition and epidemiology. Clin Biochem. 2018; 62: 2-10.
2. Olarinoye AO, Ajiboye PO. Psychosocial characteristics of infertile women in a Nigerian tertiary hospital. Trop J Obstet Gynaecol. 2019; 36: 252-257.
3. Omo-Aghoja L. Infertility and assisted conception in tropics. 1st ed, Delta Reproductive Health Initiative and Research Center. Delta State, Nigeria. 2015.

4. Adewunmi AA, Ottun TA, Abiara T, et al. Socio-demographic and clinical characteristics of clients seeking assisted conception at Lagos State University teaching hospital, Ikeja, Nigeria. Journal of Obstetrics and Gynaecology. 2017; 37: 902-905.
5. Hess RF, Ross R, Gililland JL. Infertility, psychological distress, and coping strategies among women in Mali, West Africa: a mixed-methods study. African Journal of Reproductive Health. 2018; 22: 60-72.
6. Zuraida AS. Psychological distress among infertile women: exploring bio-psychosocial response to infertility. Malaysia Journal of Psychiatry. 2010; 19: 1-11.
7. Chimbatata NBW, Malimba C. Infertility in Sub-Saharan Africa: A Woman's Issue for How Long? A Qualitative Review of Literature. Open Journal of Social Sciences. 2016; 4: 96-102.
8. Begum SH. Motherhood Paradigm in African Fiction: A Study. International Educational Scientific Research Journal. 2016; 2: 16-20.
9. Dyer SJ, Patel M. The economic impact of infertility on women in developing countries: a literature review. Int J Obstet Gynecol. 2012; 42: 102-109.
10. Afolabi BM. The dilemma and psycho–social challenges of un–intentional infertility in sub-Saharan Africa. Open Access J Trans Med Res. 2017; 1: 6-7.
11. Naab F, Lawali Y, Donkor ES. My mother in-law forced my husband to divorce me. Experiences of women with infertility in Zamfara State of Nigeria. PLoS One. 2019; 14: e0225149.
12. Öztürk R, Bloom TL, Li Y, et al. Stress, stigma, violence experiences and social support of US infertile women. Journal of Reproductive and Infant psychology. 2021; 39: 205-217.
13. Atijosan A, Adeyeye O, Ogungbayi O. Knowledge and perception regarding infertility among university students in Ile-Ife: a view through gender lens. Covenant Journal of Business and Social sciences. 2019; 10: 2006-2030.
14. Ombelet W. The revival of intrauterine insemination: evidence-based data have changed the picture. Facts Views Vis Obgyn. 2017; 9: 131-132.
15. Galhardo A, Moura-Ramos M, Cunha M, et al. The infertility trap: how defeat and entrapment affect depressive symptoms. Human reproduction. 2016; 31: 419-426.
16. Creswell JW, Plano Clark VL. Designing and conducting mixed methods research. Thousand Oaks, CA: Sage. 2011.
17. Umeora OU, Ejikeme BN, Sunday-Adeoye I, et al. Sociocultural impediments to male factor infertility evaluation in rural South-east, Nigeria. Journal of Obstetrics and Gynaecology. 2008; 28: 323-326.
18. Newton CR, Sherrard MA, Glavac I. The fertility inventory measuring perceived infertility stress. Fertility and Sterility. 1999; 72: 1-9.
19. Hancock ME, Amankwaa L, Revell MA, et al. Focus group data saturation: A new approach to data analysis. Qualitative Report. 2016; 21: 2124-2130.
20. Holloway I, Wheeler S. Qualitative research in nursing and healthcare (3rd ed.). Southern Gate, United Kingdom. John Wiley and Sons Blackwell Publishing Limited. 2013.
21. Krippendorff K. Content analysis: An introduction to its methodology. Thousand Oaks, CA. Sage. 2013.
22. Pitta P. Complicated loss, grieving, and infertility: Assimilative family therapy. Integrative couple and family therapies. Treatment models for complex clinical issues. American Psychological Association. 2019; 25-46.
23. Ramamurthi R, Kavitha G, Pounraj D, et al. Psychological impact and coping strategies among women with infertility: a hospital based cross sectional study. International Archive of Integrated Medicine. 2016; 3: 114-118.
24. Shani C, Yelena S, Reut BK, et al. Suicidal risk among infertile women undergoing in-vitro fertilization: Incidence and risk factors. Psychiatry Research. 2016; 240: 53-59.
25. Shahraki Z. Investigation of effects of sleep disorder in infertile couples. Int J Adv Res Biol Sci. 2017; 4: 107-111.
26. Dierickx S, Coene G, Jarju B, et al. Women with infertility complying with and resisting polygyny: an explorative qualitative study in urban Gambia. Reprod Health. 2019; 16: 103.
27. Aseffa F. Socio-cultural Perceptions of Infertility and their Implications: A Study of Women Experiencing Childlessness in South Gondar, Ethiopia. Master of Philosophy in Gender and Development, Faculty of Psychology, Department of Health Promotion and Development. 2011.
28. Schmidt L. Social and psychological consequences of infertility and assisted reproduction - what are the research priorities?. Human Fertility. 2009; 12: 14-20.
29. Klock S. Psychological Issues related to infertility. Global Library of Women's Medicine. 2011.
30. https://www.researchgate.net/profile/Reza_Kormi-ouri/publication/322576007_A_Cross-Cultural_Study_about_Positive_and_Negative_Emotions_and_Well-being_in_Infertile_Women/links/5b8a9917299bf1d5a7364057/A-Cross-Cultural-Study-about-Positive-and-Negative-Emotions-and-Well-being-in-Infertile-Women.pdf
31. Singh D. Coping characteristics of women suffering from primary infertility. International Journal of Contemporary Medical Research. 2019; 6: F15-F20.
32. Lawrence-Hart G, Onah GA. The Blame of Infertility in Families amongst the Ikwerre People of Rivers State. American Journal of Humanities and Social Sciences Research. 2019; 3: 127-134.
33. Mustapha A, Adesiyun AG, Yusuf AJ, et al. Psychosocial morbidity in women attending an infertility clinic in Northwestern Nigeria: 'Its the Worst Misfortune of a Woman'. Journal of Gynecology and Obstetrics. 2015; 3: 6-12.
34. Donkor ES, Sandall J. Coping strategies of women seeking infertility treatment in southern Ghana. Afr J Reprod Health. 2009; 13: 81-93.
35. Anokye R, Acheampong E, Mprah WK, et al. Psychosocial

effects of infertility among couples attending St. Michael's Hospital, Jachie-Pramso in the Ashanti Region of Ghana. BMC research notes. 2017; 10: 690.

36. Latifnejad Roudsari R, Allan HT. Women's Experiences and Preferences in Relation to Infertility Counselling: A Multifaith Dialogue. Int J Fertil Steril. 2011; 5: 158-167.
37. Larsen U, Hollos M, Obono O, et al. Suffering infertility: the impact of infertility on women's life experiences in two Nigerian communities. Journal of Biosocial Science. 2010; 42: 787-814.
38. Dimka RA, Dein SL. The Work of a Woman is to give Birth to Children: Cultural Constructions of Infertility in Nigeria. Afr J Reprod Health. 2013; 17: 102-117.
39. Cunha M, Galhardo A, Pinto-Gouveia J. Experiential avoidance, self-compassion, self-judgment and coping styles in infertility. Sexual & Reproductive Healthcare. 2016; 10: 41-47.
40. Marroquín B, Tennen H, Stanton AL. Coping, emotion regulation, and well-being: Intrapersonal and interpersonal processes. In The happy mind: Cognitive contributions to well-being. Springer. 2017; 253-274.