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Comparison of Quality of Life among Fertile and Infertile Women in a Developing Country

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: Infertility is seen as embarrassment for couple who are willing and unable to fulfill the conjugal responsibility expected by the society. Most women bear the brunt with consequences of worsening lifestyle. The objective of this study is to evaluate the quality of life (Qol) and its associated factors among women living with infertility compared to control group.
Methods: One hundred and fifty-six (156) women attending the infertility clinic and 155 fertile women as a control group. A semi-structured questionnaire was designed to record socio-demographic and social variables. The World Health Organization Brief Quality of Life (WHOQol BREF) questionnaire was used to assess the Quality of life (Qol) of life of study participants.

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Results: A higher proportion of Women living with infertility (WLI) had overall poor Qol (22.4%) compared to the control (11.6 %). WLI had significantly lower mean scores on the physical (t = – 2.859, p = 0.005), psychological (t= – 3.085, p = 0.002), social relationship (t= –2.576,p = 0.010) domain of the Qol scales. Predictors of Qol include lack of good shelter, unemployment, relational stress (marital and sexual) impaired quality of the relationship between couple, and being deprived of involvement in community activities (p<0.05).
Conclusion: Infertility contributes to poor quality of life among infertile women when compared to control groups.

Keywords: Quality of life; Infertility; Predictors of overall Qol.

1. INTRODUCTION

Infertility is defined as failure of a couple to achieve conception within one year or more despite regular unprotected sexual intercourse [1]. Fertility is an essential goal of couples which often describes the quality of a marital relationship in this environment [2]. Fertility could also regarded as a measure of social responsibility for married partners, while infertility is seen as crisis and shame due to failure of couple to fulfill the conjugal responsibility expected by the society. This failure is socioculturally seen as the fault of the woman in the conjugal relationship [1,3]. Involuntary childlessness comes with sadness while fertility brings about a sense of responsible transformation of identity both personally and socially. Infertility poses loss of self-esteem and social recognition to married women especially, in developing countries which also impacts negatively on their quality of life (Qol) [4-7]. Also, it has being shown that infertility is associated with devastating cultural stigma attached to being childless with resultant poor self-esteem and reduction in quality of life [8,9]. In other words, infertility is associated with social injustice and inequality being meted out to infertile women, especially in developing countries [10,11]. Therefore poor Qol among women who were not being able to conceive and have a child could further worsen any existing psychological disturbances [6]. WHO defines quality of life (Qol) as an individual's perception of their position in life in the context of the culture and value systems in which they live and about their goals, expectations, standards, and concerns [12,13]. This statement reflects the views that quality of life is a perceptual and subjective evaluation of an individual personally, which is embedded in a cultural, social and environmental context of healthy state of an individual [14]. Likewise Qol also captures the general well-being of individuals within the view of the societies, outlining negative and positive features of life, life satisfaction, including everything from physical, health, family, education, employment, wealth, religious beliefs, finance and his environment [15]. Similarly, Qol among infertile women expresses their real perception about life which could affects the outcome of treatment [14]. The psychological impact of infertility is pervasive and destabilizing to infertile women and poor Qol have been reported to adversely affect the mental and social health of infertile couples. Therefore determination of the various factors affecting the Qol will help to understand the impact of infertility on quality of life and providing adequate intervention, which will possibly improve the outcome of treatment of infertility [14]. This study compared the Ool of infertile women attending a fertility clinic with that of fertile women. Additionally, it determined predictive factors associated with Qol among infertile and fertile women attending infertility clinic in this environment.

2. METHODOLOGY

This was a cross- sectional descriptive study conducted at the Gynaecology clinic of Ekiti State University Teaching Hospital (EKSUTH), Ado-Ekiti, Nigeria. The study population consisted of two groups of women that were recruited consecutively. The first group consisted of those who presented at the EKSUTH gynaecology clinic on account of their inability to conceive and were diagnosed to be infertile by the gynaecologists. They were consecutively recruited and were referred to as infertile women. The other group was the control group, they are married women who were not in puerperium (last delivery being at least a year before data collection).

2.1 Study Procedure

The objectives of the study were duly explained to the women and written informed consent was obtained. A total of 320 women were initially recruited for the study.

The inclusion criteria for infertile groups were: Marital status (currently married), age 18-50 years, diagnosed as being infertile by a gynecologist (either primary or secondary infertility) and those that gave consent. While inclusion criteria for fertile group include those married, last delivery was more than a year ago and those that gave consent.

The exclusion criteria for both groups: included presence of medical and psychiatry conditions and participants who did not give their consent.

2.2 Instruments Measures

1. Questionnaire on sociodemographic characteristic of participants using a proforma, designed by the authors, to elicit socio- demographic and psychosocial variables.
2. World Health Organization Quality of Life Brief (WHOQol-Bref): it is an abbreviated 26-item version of the WHOQOL-100 assessment instrument, developed by the World Health Organization (WHO) along with several countries representing different cultures and has been internationally recognized. It has been validated providing an overall score for QOL, as well as individual scores by domain. The higher the scores the better the QoL. It has four domains which are physical health (energy and fatigue, sleep, pain and discomfort, and mobility), psychological health (positive and negative feelings, self-esteem, and body image), social relationships (interpersonal relationships, social support, and sexual life), and environment (financial situation, housing, opportunities to be involved in leisure activities, and access to health care). The suitability of WHOQOL-BREF to assess QoL in several health conditions, including infertility has been demonstrated in several studies.

2.3 Data Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS) software version 23. The data was presented using frequency tables and bar-chart. Various statistical analyses were performed as necessary. Binary logistic regression (multivariate analysis) was used to identify the predictors of Qol. Probability (p) values less than 0.05 were accepted as significant and a confidence interval (CI) of 95% was used for all statistics.

3. RESULTS

Table 1 shows the relationship between socio-demographic characteristics and the overall quality of life of WLI. The educational status, place of residence and occupation of WLI were found to be statistically significantly associated with the overall quality of life, (p values <0.05); none of WLI (0%) of WLI with no formal education, compared to 13.4% of the control with tertiary education, had poor overall QoL, this was statistically significant, (p value= 0.001). Also, significant proportion of WLI who resided in urban area (80%) had good overall QoL compared to that (39%) of those staying in the rural area with poor overall quality of life, this was statistically significant (p value =0.038). It was also observed that 86% of WLI who were gainfully employed compared with 58% who were unemployed; these differences were statistically significant (p-values <0.05).

WLI who enjoy support from husband and those husbands with child from other women outside marriage had better overall QoL (p = 0.040 and p= 0.001). Similarly, WLI (31%) who perceived that causes of infertility were due to diseases, tubal blockage and infections had a poor overall quality of life compared to those (17%) that did not perceive that causes of infertility could probably due to infection, tubal blockage, and infections, this is statistically significant (p value= 0.037).

Similarly, previous treatment consultation was found to be significantly associated with overall QoL, around 33% of WLI that have gone for treatment previously have poor overall QoL compared to about 11% of those who have not (p value= 0.010). However, there were no statistically significant differences among WLI for other variables such as tribe, religion, and current marital status (p values > 0.05).

Tables 2 depict the association between associated stress factors and the overall QoL of the subjects. All the other variables in this section were significantly associated with poor QoL (p values <0.05) except variables such as specific forms of abuse suffered and experiences of abuse and hostility from any source (p values > 0.05).

Table 1. Relationship between socio-demographic characteristics and overall quality of life of WLI

	Overall quality of life					
	Good	**Poor**	**Total**	**df**	**χ^2**	***p* value**
Variables	**n=121(%)**	**n=35(%)**	**N=156**			
Age (years)						
21 – 30	34(73.9)	12(26.1)	46	2	3.674	0.159
31 – 40	69(83.1)	14(16.9)	83			
41 – 50	18(66.7)	9(33.3)	27			
Mean ± SD	35.06±6.30	34.60±5.95			0.383[t]	0.702
Range	21–50	28–45				
Educational status						
No school	0(0.0)	6(100.0)	6	3	26.747[F]	**<0.001***
Primary	6(54.5)	5(45.5)	11			
Secondary	18(66.7)	9(33.3)	27			
Tertiary	97(86.6)	15(13.4)	112			
Tribe						
Yoruba	113(79.6)	29(20.4)	142	1	3.686[F]	0.860
Others	8(57.1)	6(42.9)	14			
Religion						
Christianity	117(77.0)	35(23.0)	152	1	1.187[F]	0.575
Islam	4(100.0)	0(0.0)	4			
Place of residence						
Urban	107(80.5)	26(19.5)	133	1	4.321	**0.038***
Rural	14(60.9)	9(39.1)	23			
Current marital status						
Staying together	109(75.7)	35(24.3)	144	1	3.760[F]	0.052
Not staying together	12(100.0)	0(0.0)	12			
Occupation						
Employed	67(85.7)	10(14.3)	70	1	13.191	**0.0003***
Unemployed/ housewife	54(41.7)	25(58.3)	12			
Enjoy support from husband						
Yes	96 (74.4)	33 (25.6)	129	1	4.238	**0.040***
No	25 (92.6)	2 (7.4)	27			
Husband with child from another woman						
Yes	18 (54.5)	15 (45.5)	33	1	12.744	<**0.001***
No	103 (83.7)	20 (16.3)	123			
Perception of infertility due to tubal blockage and infection						
Yes	42 (68.9)	19 (31.1)	61	1	4.368	**0.037***
No	79 (83.2)	16 (16.8)	95			
Had previously gone for treatment						
Yes	54 (66.7)	27 (33.3)	81	1	11.497	**0.010***
No	67 (89.3)	8 (10.7)	75			

*χ^2: Chi square test; F: Fisher's exact test; *: p value <0.05; WLI: Women Living with Infertility*

Table 3 shows that about 6% of WLI experienced poor quality of life compared to none of the healthy control and this was statistically significant (p= 0.006). About 12% of WLI were dissatisfied with their lives, while only 3% of the control had dissatisfaction with their lives (p = 0.007). Likewise, 22.4% of WLI had overall poor quality of life compared to 11.6% of the control, this differences was statistically significant (p=0.011).

Table 2. Association between associated stress factors and overall quality of life of WLI

	Overall quality of life					
	Good	**Poor**	**Total**	**df**	**χ^2**	***p* value**
Variables	**n=121(%)**	**n=35(%)**	**N=156**			
Lack of sexual relationship						
Yes	25(20.7)	25(71.4)	50(32.1)	1	32.127	**<0.001***
No	96(79.3)	10(28.6)	106(67.9)			
Quality of relationship between husband and wife						
Yes	29(24.0)	26(74.3)	55(35.3)	1	30.113	**<0.001***
No	92(76.0)	9(25.7)	101(64.7)			
Diminished relationship with others within and outside the family						
Yes	24(19.8)	24(68.6)	48(30.8)	1	30.271	**<0.001***
No	97(80.2)	11(31.4)	108(69.2)			
Being irrelevant						
Yes	19(15.7)	21(60.0)	40(25.6)	1	27.940	**<0.001***
No	102(84.3)	14(40.0)	116(74.4)			
Problem with self control						
Yes	38(31.4)	21(60.0)	59(37.8)	1	9.439	**0.002***
No	83(68.6)	14(40.0)	97(62.2)			
Feeling of incompetence						
Yes	28(23.1)	23(65.7)	51(32.7)	1	22.362	**<0.001***
No	93(76.9)	12(34.3)	105(67.3)			
Change in social and family interaction						
Yes	32(26.4)	19(54.3)	51(32.7)	1	9.562	**0.002***
No	89(73.6)	16(45.7)	105(67.3)			
Any form of social stigma						
Yes	22(18.2)	16(45.7)	38(24.4)	1	11.169	**0.001***
No	99(81.8)	19(54.3)	118(75.6)			
Feeling of inadequacy						
Yes	24(19.8)	20(57.1)	44(28.2)	1	18.660	**<0.001***
No	97(80.2)	15(42.9)	112(71.8)			
Indifferent in community participation						
Yes	25(20.7)	17(48.6)	42(26.9)	1	10.749	**0.001***
No	96(79.3)	18(51.4)	114(73.1)			
Suffers insults						
Yes	28(23.1)	14(40.0)	42(26.9)	1	3.992	**0.048***
No	93(76.9)	21(60.0)	114(73.1)			
Specific forms of abuse suffered (n=47)						
Verbal	8(28.6)	4(28.6)	12(28.6)	2	0.702^F	0.837
Physical	7(25.0)	2(14.3)	9(21.4)			
Both	13(46.4)	8(57.1)	21(50.0)			
Enjoy support from immediate family						
Yes	52(43.0)	18(51.4)	70(44.9)	1	0.784	**0.376**
No	69(57.0)	17(48.6)	86(55.1)			

	Overall quality of life					
	Good	**Poor**	**Total**	**df**	**χ^2**	***p* value**
Variables	**n=121(%)**	**n=35(%)**	**N=156**			
Experienced hostility in the last one month						
Yes	24(19.8)	15(42.9)	39(25.0)	1	7.674	**0.006***
No	97(80.2)	20(57.1)	117(75.0)			
Source of abuse or hostility experienced (n = 39)						
Husband	7(29.2)	11(73.3)	18(46.2)	3	7.371^F	**0.045***
Other wives	5(20.8)	1(6.7)	6(15.4)			
Siblings	4(16.7)	0(0.0)	4(10.3)			
Husband's relatives	8(33.3)	3(20.0)	11(28.2)			
Job satisfaction						
Yes	89(73.6)	22(62.9)	111(71.2)	1	1.513	0.219
No	32(26.4)	13(37.1)	45(28.8)			

*χ^2: Chi square test; F: Fisher's exact test; *: p value <0.05*

Table 3. Comparison of quality of life of the participants

	WLI	**Control**	**df**	**χ^2**	***p*-value**
Variable	**n=156**	**n=155**			
Quality of life					
Very poor / Poor	9(5.8)	0(0.0)	2	10.170^F	**0.006***
Neither poor nor good	17(10.9)	16(10.3)			
Good / very good	130(83.3)	139(89.7)			
Satisfaction with life					
Very dissatisfied / Dissatisfied	19(12.2)	5(3.2)	2	9.993	**0.007***
Neither satisfied nor dissatisfied	11(7.1)	18(11.6)			
Satisfied / very satisfied	126(80.8)	132(85.2)			
Overall quality of life					
Poor	35(22.4)	18(11.6)	1	6.442	**0.011***
Good	121(77.6)	137(88.4)			

*χ^2: Chi square test; F: Fisher's exact test; *: p value <0.05; WLI: Women Living with Infertility*

Table 4 shows the mean scores of the physical, psychological and social relationships domains of QoL of WLI and these were significantly lower compared to those of the control (p values < 0.05). However, the difference for the environmental domain, though also lower for WLI, the difference was not statistically significant (p=0.596).

Table 5 shows that the predictors of overall quality of life among WLI were; place of residence, occupational status of WLI, stress of marital and sexual relationship, impaired quality of relationship between husband and wife, being deprived of involvement in community activities and psychological distress. The odds of WLI who resided in urban locations were 8 times that of those in rural areas to have a poor quality of life (df=1, OR: 7.983;95% CI: 1.933-32.973;*p* values 0.004). Also, those who were unemployed had an odds of 8 times to have poor quality of life compared to those who were at the highest cadre of their occupation (df=1, OR: 8.000; 95% CI: 3.524-21.948; p value=0.001). WLI who experienced stress on marital and sexual relationship had an odd of less than 1 to have poor quality of life (df=1, OR: 0.183: 95%CI: 0.045-0.742; p value=0.017). Similarly, WLI with impaired quality of relationship between husband and wife had an odd of less than 1 to have poor quality of life (df=1; OR: 0.190; CI: 0.048-0.750; p value= 0.018). In the same vein, WLI being deprived of involvement in community activities had an odd of more than 5 times to experience poor quality of life (df=1; OR: 5.997; CI: 1.042-34.497; p value= 0.045), while WLI who experiences psychological distress had odds of about 4 times to those without psychological distress to have poor quality of life (df=1, OR: 4.336; 95% CI: 1.009-19.634; p=0.049), Table 5.

Table 4. Domains of quality of life of the participants

	WLI	Control	df	t	*p* value
Domains of quality of life	**n=156**	**n=155**			
Physical					
Mean ± SD	13.36 ± 2.36	14.06 ± 1.96	309	-2.859	**0.005***
Range	6.29 – 19.43	8.00 – 18.86			
Psychological					
Mean ± SD	14.27 ± 2.50	15.07 ± 2.03	309	-3.085	**0.002***
Range	8.67 – 19.33	7.33 – 20.00			
Social relationships					
Mean ± SD	14.09 ± 3.38	15.03 ± 3.01	309	-2.576	**0.010***
Range	5.33 – 20.00	4.00 – 20.00			
Environment					
Mean ± SD	13.61 ± 2.30	13.75 ± 2.23	309	-0.531	0.596
Range	8.50 – 20.00	4.50 – 18.50			

WLI: Women Living with Infertility

Table 5. Predictors of overall quality of life

Variable	B	*df*	OR	95% CI		*p* value
				Lower	Upper	
Educational status						
No school	1.289	1	3.630	0.272	18.441	0.329
Primary	1.743	1	5.713	0.991	9.926	0.051
Secondary	1.246	1	3.478	0.933	12.958	0.063
Tertiary [REF]			1			
Place of residence						
Urban	2.077	1	7.983	1.933	22.973	**0.004***
Rural [REF]			1			
Occupation						
Unemployed [REF]			1.000			
Employed	4.009	1	5.097	2.006	57.722	**0.003***
Enjoy support from husband						
Yes	0.259	1	1.296	0.411	4.086	0.659
No			1			
Husband with child from another woman						
Yes	0.525	1	1.690	0.275	10.399	0.571
No [REF]			1			
Disease/blockage/infection as perceived cause of infertility						
Yes	0.228	1	1.256	0.179	8.812	0.818
No [REF]			1			
Ever gone for treatment						
Yes	0.104	1	1.109	0.298	4.127	0.877
No [REF]			1			
Stress on sexual relationship						
Yes	-1.699	1	0.183	0.045	0.742	**0.017***
No [REF]			1			
Quality of relationship between with spouse						
Yes	-1.661	1	0.190	0.048	0.750	**0.018***
No [REF]			1			

Variable	B	*df*	OR	95% CI		*p* value
				Lower	Upper	
Diminished relationship outside the family						
Yes	-0.634	1	0.531	0.125	2.245	0.389
No **REF**			1			
Being irrelevant						
Yes	-0.615	1	0.541	0.117	2.489	0.430
No **REF**			1			
Problem with self control						
Yes	0.549	1	1.732	0.298	10.067	0.541
No **REF**			1			
Feeling of incompetence						
Yes	-0.411	1	0.663	0.121	3.641	0.636
No **REF**			1			
Change in social and family interaction						
Yes	-0.511	1	0.600	0.146	2.464	0.479
No **REF**			1			
Any form of social stigma						
Yes	-0.607	1	0.545	0.076	3.931	0.547
No **REF**			1			
Feeling of inadequacy						
Yes	-1.246	1	0.288	0.040	2.049	0.213
No **REF**			1			
Indifferent in community participation						
Yes	1.791	1	5.997	1.042	34.497	**0.045***
No REF			1			
Suffers insults						
Yes	1.808	1	6.098	1.047	35.529	0.054
No REF			1			
Experience hostility in the last one month						
Yes	-0.538	1	0.584	0.059	5.741	0.645
No			1			
Psychological distress						
Yes	1.467	1	4.336	1.009	18.634	**0.049***
No **REF**			1			

*B: Coefficient of Binary Logistic Regression; OR: Odds ratio; 95% CI: 95% Confidence Interval; *: df=1, p value <0.05; WLI: Women Living with Infertility*

4. DISCUSSION

The prevalence of poor overall QoL among WLI in this study was found to be 22.4%, while that of the control group was 11.6%. In a similar study, Bakhtiyar et al., found that infertile women had relatively lower scores in Qol sub-scales (domains) of mental, physical, psychological and environmental health [16], similar to this study. This current study further obtained specific values for the overall QoL for both groups, to ascertain the association of infertility and quality of life among WLI. The prevalence of poor Qol is high compared to the rates obtained by Aduloju et al., in a study done in 2015 among infertile women [14]. The differences in the rates may probably be due to the worsening economic situation in the country making healthcare spending to be burdensome. Other studies also support this finding that infertility negative impacts on Qol of WLI in developing countries [6,17,18].

This current study observed some factor associated with poor Qol among WLI and these include; poor levels of support, poor knowledge of the cause of infertility [19] and spouse having child outside marriage [2,20,21]. Furthermore, poor treatment-seeking behaviours which may be linked to poor knowledge and

misperception of the probable causes of infertility were found to be associated with poor overall QoL among WLI [16,22].

Various authors had reported similar findings. For instance, in a study by Drapeau et al. it was reported that various stressful factors can affect individuals such as women with infertility to experience poor Qol [16]. Similarly, in a study by Stefano Palomba et al., it was reported that lifestyle challenges and stressful lifestyle among WLI accounts for the overall poor quality of life. Also, Aduloju et al., reported that the prolonged duration of infertility, polygamous family setting, and poor financial contribution to family upkeep has a harmful and negative impact on total QoL scores [14]. This probably could be due to the interplay between theproblemof being childless and psychosocial stressors, which may account for the overall poor quality of life among infertile than fertile women [23].

This study found out that living in a good siren-urban settlement couple with higher education status were significantly associated with good overall QoL among WLI. Likewise, WLI with gainful employment and spousal supports contributes to good Qol among WLI. Similar findings were reported by Aduloju et al., in Nigeria, in a cross-sectional study. The study reported that the higher education and good employment status of WLI alongside legal constitution of a marriage has positive impact on Qol of WLI [14].

Using multivariate regression analysis, the independent predictors of poor overall Qol among WLI include poor place of residence, unemployment, stress on sexual relationship, quality of relationship between with spouse, and being indifferent to community participation. All these were observed as distressing factors for WLI in this study which worsens their lifestyles. In a study on" predictors of Quality of Life in Infertile Couples" by Zahra Royani et al., 2019 in Iran, it was reported that resilience, gender and educational level had a significant relationship with the quality of life [24], however, none of these factors were significant in this current study and this could probably be due to cultural differences of participants and the differences in the methodology of the studies. While this study used only the females, the other study included the spouses of the women as well.

Other studies have also reported various predictors of poor QOL among WLI to include; primary infertility, prolong duration of infertility, lack of psychological support, place of residence (rural), lower education, and poor husband's occupational status [25].

5. CONCLUSION

This study revealed that infertility is associated with poor Qol among infertile women when compared to fertile women. Various factors associated with poor Qol among the women were lack of good place of residence, unemployment, stress on a marital and sexual relationship, impaired quality of the relationship between couple, and being deprived of involvement in community activities. Hence, incorporating psychological assessment and intervention into the comprehensive infertility treatment may perhaps improve the outcome of infertility treatments.

6. LIMITATIONS

The cross-sectional nature of the study could limit the interpretation between the diagnoses of infertility and overall quality of life among participants. Self report measures may likely result in recall bias in this study. Culturally sensitive issues could also have resulted in some form of bias. Perhaps, influence of spouse could be another factor to be evaluated in future studies.

CONSENT

As per international standards or university standards, respondents' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

This study was granted ethical approval by the Ethics and Research Committee of EKSUTH, Ado-Ekiti, Nigeria.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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