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Generalized Anxiety, Depressive Symptoms, and Fertility Quality of Life among Women Accessing Fertility Treatment in Nigeria: The Moderating Role of Coping Strategies

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Abstract

Infertility and fertility treatments are major stressors for women and are often associated with psychological and social challenges that may undermine fertility-related quality of life (QoL). This study examined the relationships between generalized anxiety, depressive symptoms, coping strategies, and fertility QoL in women undergoing fertility treatment in Nigeria. Specifically, this study investigated whether coping strategies buffer the associations between anxiety, depression symptoms, and fertility QoL. A two-wave research design was adopted among 251 women receiving fertility treatment in federal healthcare facilities in southeast Nigeria. Data were collected using the Generalized Anxiety Disorder Scale (GAD-2), Copenhagen Multi-center Psychological Infertility (COMPI) Coping Scale, Patient Health Questionnaire (PHQ-8), and FertiQoL questionnaire. Pearson's correlation and Hayes PROCESS Macro Model 2 were used for data analysis. Results showed that participants reported moderate fertility-related quality of life (FertiQoL mean = 71.18), elevated anxiety symptoms (GAD-2 mean = 4.82), and depressive symptoms (PHQ-8 mean = 10.62). Anxiety was significantly associated with poorer emotional and relational FertiQoL, whereas depressive symptoms were linked to poorer emotional, mind-body, and social FertiQoL domains. Coping strategies were positively associated with relational and social FertiQoL. However, coping strategies did not significantly moderate the relationship between anxiety, depressive symptoms, and fertility QoL. The findings indicate that anxiety and depressive symptoms substantially impair fertility-related QoL among women undergoing fertility treatment, highlighting the need for psychosocial and cognitive-behavioral interventions to improve well-being.

Keywords: *Coping Strategies, Depressive Symptoms, Fertility Quality of Life, Generalized Anxiety, Infertile.*

INTRODUCTION

Infertility has a tremendous negative effect on women's well-being. Those seeking fertility treatment often experience significant psychological distress, including anxiety and depression, which can severely impact their quality of life (QoL) (Hasanpoor-Azghdy et al., 2014). Globally, approximately 48.5 million couples are infertile, with female infertility being the most common (Obeagu et al., 2023). Notably, women are disproportionately affected by psychological distress, with one in ten women in the United States experiencing a major depressive episode in the last year (Centers for Disease Control and Prevention. Depression among Women. 2023), and one in eight women experiencing depression in their lifetime, at a rate twice that of men (Anxiety and Depression Society of America. Women and Depression,

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2024). Infertile women experience a range of psychological distresses, including anxiety and depression, which can negatively impact their quality of life. Research has shown varying prevalence rates of psychological distress and subsequent low quality of life among infertile women in different countries, such as Malaysia, where the prevalence ranges from 8% to 54% (Ibrahim et al., 2021; Sabki, 2010). In Turkey, the prevalence of psychological distress, including anxiety, is 86.8%, while depression affects 40.8% of infertile women, resulting in a negative impact on their health and quality of life (Erdem et al., 2014; Karaca et al., 2015).

In sub-Saharan Africa such as Nigeria, cultural, economic, and social connotations attached to children in marriages contribute to psychological distress among infertile women (Alhassan et al., 2014). Studies have shown that anxiety and depression are common psychological distresses experienced by infertile women (Thyagaraju & Naidu, 2021; Covington, 2015; Gda´nska et al., 2017). Infertile women in SSA face pressure from families and communities, leading to a poor quality of life and psychological distress [Thyagaraju & Naidu, 2021; Dasgupta & Dasgupta, 2017; Ibisomi & Mudege, 2014). The incidence of psychological distress among infertile women ranged from 34% to 54% (Wiweko et al., 2017). In Nigeria, infertility affects approximately 15.7% of couples (Azuonwu & Okoro, 2021), with regional prevalence rates varying: 32% in the Delta State (Odunvbun et al., 2018), 18.2% in Bayelsa State (Oriji et al., 2022), 23.9% in Bauchi State (Dattito et al., 2016), 16% in Kano State (Yusuf, 2016) and 5.5% in Enugu State (Obeagu et al., 2023).

Given the substantial evidence in literature on the high prevalence of anxiety and depression among infertile women both globally and across the sub-Saharan African context, and their subsequent impact on the quality of life of this group, it becomes important to explore what psychosocial factor that could mitigate the adverse impacts of these risk factors on fertility quality of life (FertiQoL) of women accessing fertility treatment in healthcare facilities in the South-eastern region of Nigeria, where infertility-related stigma, cultural pressures surrounding childbearing, and limited psychosocial support services seem to abound, and where women often bear a disproportionate emotional and social burden of infertility (Azuonwu & Okoro, 2021; Dattito et al., 2016; Dasgupta & Dasgupta, 2014; Ibisomi & Mudege, 2014; Odunvbun et al., 2018; Oriji et al., 2022; Wiweko et al., 2017; Yusuf, 2016). Such exploration could offer valuable insights into the best way interventions could be tailored to strengthen adaptive coping capacities, and enhance psychological resilience and overall well-being among women undergoing fertility treatment in this region. In the present study, therefore, FertiQoL is considered as the outcome or independent variable, generalized anxiety and depressive symptoms as the predictors or risk factors, and coping strategies as the moderator or protective factor.

Fertility quality of life (FertiQoL) is a complex and multidimensional concept that encompasses an individual's subjective evaluation of their overall well-being, including physical, psychological, emotional, and social aspects (Chadha et al., 2019; Yousefi et al., 2016). According to the World Health Organization (2020), quality of life refers to the extent to which individuals experience satisfaction and contentment in their lives. According to Boivin et al. (2011) FertiQoL is categorized into four domains: emotional (feelings such as sadness, depression, and resentment), mind-body (interplay between physical and mental health), relational (relationships, including communication, intimacy, and obligations), and social (social inclusion, expectations, stigma, and support). QoL in fertility is influenced by various factors, including emotional, relational, and social well-being (Jenkinson, 2020; Neyişci et al., 2021).

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Anxiety and depression can adversely impact FertiQoL among women undergoing fertility treatment (Jenkinson, 2020). Thus, generalized anxiety and depression are significant concerns for infertile women, because of the emotional traumas that accustom it (Goodwin, 2015), which can lead to a negative state of individual's perception of themselves and their surroundings as well as impaired daily life management (Arvidsdotter et al., 2016). Anxiety appears to be a common mental health problem that affects women seeking fertility treatment. Anxiety is a natural physiological and psychological response to stressful situations, characterized by mental, emotional, physical, and behavioural responses to perceived future threats (American Psychological Association, 2022). Infertility can be a significant source of anxiety for both men and women, transcending cultural boundaries (Braverman et al., 2024). Lack of social support, coping strategies and resilience, emotional distress and uncertainty during infertility treatment can lead to feelings of powerlessness and anxiety (Hecht et al., 2024; Iordăchescu et al., 2021), because anxiety levels increased with treatment failure and duration. Infertility is linked to increased mental health disorders including anxiety (Bagade et al., 2022), which can significantly impair quality of life. Infertile women often experience anxiety, a physiological and instinctive reaction to stressful situations.

In addition to anxiety, depression (National Institute of Mental Health, 2016), a condition characterized by sadness and emotional disturbance that impacts both physical and mental well-being, resulting in psychological, bodily, and social symptoms affects individuals QoL (Dhara & Jogsan, 2013; World Health Organization, 2021). Aligning with the above postulation, the World Health Organization (2021) noted that depression is a common mental health problem characterized by feelings of melancholy, dissatisfaction, reduced energy, guilt, and low self-esteem, as well as disrupted sleep, loss of appetite, and difficulty concentrating. It could therefore be inferred that, infertile women usually exhibit depressive symptoms due to the multifaceted impact of infertility on significant aspects of life, including biological, psychological, social, and cultural factors. This phenomenon is largely attributable to the strong association between motherhood and feminine identity in many cultures (Braverman et al., 2024). This is pertinent because the inability to conceive can lead to chronic stress, uncertainty, threats to identity and self-worth, experiences of grief and loss, social and cultural pressures, marital and sexual strain, maladaptive coping strategies and insufficient social support (Iordăchescu et al., 2021; Hecht et al., 2024). Thus, infertility may be seen as a chronic, stigmatized, and identity-threatening stressor that disrupts expectations, relationships, and social standing, particularly when coping resources and support are inadequate.

However, studies have consistently shown that anxiety and depression are prevalent psychological distresses experienced by infertile women across various cultures and communities (Gda´nska et al., 2017). Anxiety can intensify the likelihood of depression in infertile women (Iordăchescu et al., 2021), and childlessness can compromise emotional well-being, leading to a profound negative effect on the quality of life (Bagade et al., 2022). Additionally, the experience of infertility can lead to numerous psychological problems, such as distress, guilt, impaired self-esteem, and stress susceptibility (Gda´nska et al., 2017), which lead to a significant decline in the FertiQoL and contribute to the high prevalence of depression and anxiety among women undergoing fertility treatment.

In the present study, coping strategies is considered a potential buffer against the deleterious impact of generalized anxiety and depressive symptoms in accessing fertility treatment in healthcare facilities in South-eastern Nigeria. Coping strategies encompass the cognitive, emotional, and behavioural efforts employed by individuals to manage, mitigate, or

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endure stress, challenging circumstances, or emotionally demanding experiences (Alanazi et al., 2025). These strategies are the mechanisms through which individuals respond to stressors to safeguard their psychological well-being and maintain their functionality. In the context of this study, coping strategies specifically refer to the cognitive, emotional, and behavioural efforts utilized by women accessing treatment in healthcare facilities in South-eastern Nigeria to navigate the stress, emotional distress, and social challenges associated with infertility and its treatment. In this scenario, a coping strategy represents the manner in which these women address infertility-related stressors such as repeated treatment failures, societal pressure to conceive, and marital strain. These strategies are pivotal in determining fertility-specific quality of life, as they influence emotional well-being, interpersonal relationships, social functioning, and treatment adherence. According to Schmidt (2006), coping strategies, including active avoidance, active confronting, passive avoidance, and meaning-based coping. Effective coping mechanisms, such as active-confronting and meaning-based coping, can reduce anxiety and depression, while maladaptive strategies, such as passive avoidant coping, can worsen mental health outcomes (Gda´nska et al., 2017). Developing adaptive coping strategies can help individuals manage stress and improve mental well-being, including quality of life (de la Fuente et al., 2021; Alanazi et al., 2025; Nelson et al., 2019), while undergoing infertility treatment. Although the relationship between anxiety, depression, and fertility quality of life in women undergoing fertility treatment, is complex, coping strategies may play a crucial role in cushioning such relationship.

This study is built on two theoretical foundations: (a) the Transactional Model of Stress and Coping (TMSC) (Lazarus & Folkman, 1984), which provides a framework for understanding how coping strategies moderate the generalized anxiety → FertiQoL link, and (b) Beck's Cognitive Theory (Beck et al., 1979), which serves as an anchor for understanding the moderating role of coping strategies in the link between depressive symptoms and FertiQoL. Lazarus and Folkman's TMSC (1984) propose that stress is not caused solely by the situation itself, but by how individuals appraise the situation and the coping strategies they use in response. Within the context of fertility treatment, a setting often marked by emotional uncertainty, women with generalized anxiety may automatically appraise fertility challenges as more threatening or overwhelming. Based on this model, effective coping strategies (especially problem-focused or adaptive emotion-focused coping) may buffer these appraisals by enabling individuals to reinterpret stressors, seek support, or regain a sense of control. Thus, coping strategies may operate as a moderating mechanism: women with high anxiety who rely on adaptive coping may experience less deterioration in fertility-related quality of life (Zurlo et al., 2019; Péloquin et al., 2024). Conversely, those relying on maladaptive coping (e.g., avoidance, disengagement) are more likely to see that their anxiety translates into poorer emotional, relational, and overall fertility well-being (Péloquin et al., 2024). In essence, the model suggests that anxiety alone may not shape fertility QoL, but the interaction between anxiety and the coping processes that women mobilize in navigating fertility treatment.

Furthermore, Beck's Cognitive Theory (1979) states that depression arises from negative cognitive schemas, distorted thinking patterns and maladaptive beliefs about oneself, the world, and the future. Women undergoing fertility treatment may already grapple with feelings of loss, inadequacy, or hopelessness, and depressive symptoms can intensify these negative interpretations (Hamid et al., 2024; Assaysh-Öberg et al., 2023). In line with Beck's theory, these distorted cognitions may shape how women perceive fertility challenges, often leading to negative global conclusions such as "I will never conceive," "My body is failing me". Coping strategies may moderate this relationship by influencing the management of depressive

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cognition. Adaptive coping, such as seeking emotional support, positive reappraisal, or active problem solving, may help interrupt negative automatic thoughts and reduce their impact on fertility-related quality of life. Conversely, maladaptive coping (e.g., rumination, withdrawal, and denial) may reinforce depressive thought patterns, amplifying their harmful effects on the emotional, relational, and social aspects of fertility QoL.

Although a growing body of research has documented the high burden of anxiety and depressive symptoms among women experiencing infertility, as well as their detrimental effects on fertility-related quality of life, empirical studies that explicitly examine the buffering role of coping strategies in this relationship remain lacking, particularly within low- and middle-income settings.

Existing studies have largely focused on the direct impacts of anxiety, depression, and coping strategies on quality of life, with far less attention given to whether coping strategies can attenuate the negative impact of anxiety and depression on FertiQoL. Moreover, evidence from the African context, and Nigeria in particular, is sparse, despite the strong sociocultural emphasis on childbearing and the heightened stigma, marital pressure, and emotional burden faced by infertile women. To bridge these gaps, the present study aims to examine the moderating role of coping strategies in the relationships between generalized anxiety, depressive symptoms, and fertility-related quality of life among women accessing fertility treatment in South-eastern Nigeria, in order to provide context-specific evidence on adaptive and maladaptive coping processes that may protect or undermine women's well-being during infertility treatment.

Understanding these mechanisms is critical for informing psychosocial interventions that go beyond symptom reduction to strengthening women's psychological resources and resilience. Thus, this first study is one of the first to simultaneously investigate anxiety, depression, coping strategies, and FertiQoL within a single moderated framework among infertile women receiving fertility care in sub-Saharan Africa (e.g. Nigeria), thereby contributing novel empirical insights to both the infertility and psychosocial health literature.

Based on the above premise, the researchers therefore hypothesized that:

H1: Higher levels of generalized anxiety will predict poorer fertility quality of life (FertiQoL: emotional, mind-body, relational, and social) among women accessing fertility treatment in healthcare facilities in south-eastern Nigeria.

H2: Higher levels of depressive symptoms will predict poorer FertiQoL (emotional, mind-body, relational, and social) among women accessing fertility treatment in healthcare facilities in south-eastern Nigeria.

H3: Coping strategies will predict better FertiQoL (emotional, mind-body, relational, and social) among women accessing fertility treatment in healthcare facilities in south-eastern Nigeria.

H4: Coping strategies will moderate the relationship between generalized anxiety and FertiQoL (emotional, mind-body, relational, and social) among women accessing fertility treatment in healthcare facilities in south-eastern Nigeria.

H5: Coping strategies will moderate the relationship between depressive symptoms and FertiQoL (emotional, mind-body, relational, and social) among women accessing fertility treatment in healthcare facilities in south-eastern Nigeria.

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METHODS

Study Area and Design

The study was conducted across three federal government owned health facilities in Enugu and Ebonyi States in south-eastern Nigeria, where fertility treated are done. Enugu and Ebonyi States are located in the southeastern geopolitical zone of Nigeria. Enugu State covers 17,161 km² with a projected population of 4,505,928, while Ebonyi State covers approximately 5,935 km², with a projected population of approximately 3.52 million people [56-58]. This study utilized a two-wave cross-sectional design, conducted from March to June 2025, across University of Nigeria Teaching Hospital (UNTH), Enugu State University of Science and Technology Teaching Hospital (ESUTH), Enugu, and the National Obstetric Fistula Centre (NOFIC), Abakaliki, Ebonyi State.

Participants

The participants in this study were 251 infertile women aged between 18 and 55 years old (average mean age= 27.51, SD =4.75) who visit the University of Nigeria Teaching Hospital (UNTH), Enugu State University of Science and Technology Teaching Hospital (ESUTH), and the National Obstetric Fistula Center (NOFIC), Abakaliki for fertility treatment. For demographics, most of the participants had tertiary education (74.5%), while (25.5%) had secondary school education. For religion, majority were Christians (98.0%), while (12%) were from other denominations. The infertility duration was 1-2 years (46.6%), 2-5 years (29.1%), and 6+ years (24.3%). The inclusion criteria were as follows: (1) experiencing primary or secondary infertility, (2) being married, (3) residing in Enugu or Ebonyi State, (4) able to read and understand English, and (5) consenting to participate in the study. The exclusion criteria were: (1) severe medical or psychiatric conditions, (2) non-consent and (3) currently pregnant.

Measures

Fertility Quality of Life (FertiQol): Fertility Quality of Life (FertiQol) was assessed using the FertiQol scale (Boivin et al., 2011). The scale consists of 26-items divided into four subscales: emotional (six items), mind-body (six items), and relational (six items), and social (six items). Participants rated each item on a 5-point Likert scale ranging from 1 (very poor) to 5 (very good). Sample items included: "Are you sad when you think about your infertility?" (Emotional), "Do you feel drained or worn out due to infertility?" (Mind-body), "Has your relationship with your partner suffered because of infertility?" (Relational) and "Do you feel isolated because of infertility?" (Social). The developers' Cronbach's alpha coefficients for the subscales were emotional (0.85), mind-body (0.84), relational (0.83), social (0.81), and overall score of (0.85) for FertiQoL (Boivin et al., 2011). In the current study, the researchers reported Cronbach's alpha coefficients for emotional (0.876); mind-body (0.649); relational (0.701); social (0.677); and overall FertiQoL (0.817).

Generalized Anxiety: Generalized Anxiety was measured using the Generalized Anxiety Disorder-2 (GAD-2) scale (Kroenke et al., 2007). The scale consists of two items scored on a 4-point Likert scale (0 = "not at all" to 3 = "nearly every day"). The participants rated each item based on their feelings over the past two weeks. Sample items include "Feeling nervous, anxious, or on edge" and "Not being able to stop or control worrying." The developers' Cronbach's alpha coefficient was 0.80-0.82 (Kroenke et al., 2007). In the current study, the researchers reported Cronbach's alpha coefficient of 0.74, indicating acceptable internal consistency.

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Depressive symptoms: Depressive symptoms was assessed using the Patient Health Questionnaire-8 (PHQ-8) (Kroenke et al., 2008). The scale consists of eight items scored on a 4-point Likert scale (0 = "not at all" to 3 = "nearly every day"). The participants rated each item based on their feelings over the past two weeks. Sample items included "Little interest or pleasure in doing things" and "Feeling down, depressed, or hopeless." The Cronbach's alpha coefficient for the PHQ-8 scale was 0.86-0.89 (Kroenke et al., 2008). The Cronbach's alpha coefficient of the current study was 0.85, indicating excellent internal consistency.

Coping strategies: Coping strategies were assessed using the Copenhagen Multi-centre Psychological Infertility (COMPI) Coping Scale **(Volmer** et al., 2020). The scale consists of 19 items that asses coping strategies across such areas as active avoidance, active confrontation, passive-avoidance, and meaning-based coping. Participants rated each item on a 4-point scale (1= not used, 4= used a great deal). Sample items included: "I avoid being with pregnant women or children", "I ask other childless people for advice", and "I find other life goals". The developers reported full-scale Cronbach's alpha coefficient of 0.878, indicating excellent reliability. In the present study the researchers reported a full-scale Cronbach's alpha coefficient of .82.

Sample Size Determination

A priori sample size determination was conducted using G*Power version 3.1 to ensure adequate statistical power for the proposed moderation model. Based on an anticipated medium effect size ($f^2 = 0.15$), a specified alpha level of .05, and three predictor variables, the analysis indicated that a minimum sample size of 119 participants was required to achieve an actual statistical power of .95.. Consequently, the final sample size of 251 participants used in the present study exceeded the minimum requirement, indicating that the study was sufficiently powered to detect meaningful effects within the proposed model.

Study Procedure

A purposive sampling method was employed to select participants, targeting infertile women accessing treatment at these hospitals. These hospitals were selected because of their speciality, manpower and resources. The study utilized a two-wave design, collecting data at two measurement points with a one-month interval between Times 1 and 2. Prior to the administration of standardized measures, the participants were assigned code numbers. This was facilitated by the use of serial numbers, as these hospitals maintained their medical records. Participants recorded their serial numbers, which functioned as code numbers, in their private diaries, which served as references for subsequent responses. In the first wave, 305 participants were contacted to provide data on the control, independent and intervening variables, resulting in 297 responses (97.4%) at Time 1. During this wave, the researchers collected data on control variables (age, educational level, religion, infection duration and infection type), the moderating variable (coping strategies), and the antecedent variables (generalized anxiety and depressive symptoms). At Time 2, data on the dependent variable (Qol) were collected solely from participants who provided information in the first wave. In total, 273 responses were received during the second wave. Code numbers were used to match the data from the two measurement points, resulting in 251 responses that matched the assigned codes in the second wave. Consequently, a sample of 251 infertile women accessing treatment completed the questionnaire twice, with a one-month interval between T1 and T2, and their valid responses were utilized for data analysis. This approach aligns with that of (Podsakoff *etal., 2012)* regarding the temporal, proximal, and psychological separation between the predictor and

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criterion variables. The attrition rate across the two waves (Times 1 and 2) was 82.3%. According to (Ike *et al., 2025)* and (Nnadozie *et al., 2025),* a wave design with one- or two-month intervals between waves is adequate for observing the potential effects of the antecedent variable on the outcome variable. This is pertinent because short intervals yield more significant effects when examining individual behavioural manifestations. The demographic characteristics of the participants are presented in Table 1 (See Table 1).

Ethical Considerations

Informed consent was obtained from all participants prior to the commencement of the study. The study was approved by the Institutional Ethics Research Board (blinded for review). All procedures adhered to the ethical standards of the responsible committee on human experimentation, both institutional and national, and conformed to the Helsinki Declaration of 1975 as revised in 2013.

Statistical Analysis

Descriptive statistics, including means, frequencies, percentages, and standard deviations, were used to summarize the demographic characteristics of the participants. Pearson's correlation analysis was used to investigate bivariate relationships between the demographic variables and other variables of interest. To assess the hypothesized moderation model, a regression-based PROCESS macro for SPSS Model 2, version 3 was applied. The data for the study satisfied the normality criterion, as indicated by skewness and kurtosis estimates ranging from -.47 to 1.63 and -1.72 to 1.68, respectively. These values fall within the acceptable thresholds of >2.0 for skewness and >3.0 for kurtosis, indicating a normal data distribution (Hatem et al., 2022).

RESULTS

Table 1: Demographic characteristics and descriptive statistics of study participants (N = 251)

Characteristic	Frequency (*n*)	Percentage (%)	Mean (*M*)	*SD*
Age			2.51	0.75
15–24 years	17	6.8		
25–34 years	110	43.8		
35–44 years	103	41.0		
45 -55years	21	8.4		
Education Level				
NFE	3	1.2		
Primary Education	12	4.8		
Secondary Education	49	19.5		
Tertiary Education	187	74.5		
Income Level				
Low	158	62.9		
Medium	75	29.9		
High	18	7.2		
Religion				
Christianity	246	98.0		
Islam	3	1.2		
ATR	2	0.8		
Infection Duration			1.78	0.81
1–2 years	117	46.6		
2–5 years	73	29.1		

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6 years & above	61	24.3		
Type of Infection				
Primary Infertility	133	53.0		
Secondary Infertility	118	47.0		
Generalized Anxiety			4.82	1.90
Depressive Symptoms			10.62	6.87
Coping Strategies			33.22	11.53
Fertility Quality of Life			71.18	13.87

Notes: *NFE = Non-formal education; ATR = African Traditional Religion. For Age, Infection Duration, Generalized Anxiety, Depressive Symptoms, Coping Strategies, and Fertility Quality of Life, mean (M) and standard deviation (SD) are reported. Percentages may not sum to 100% due to rounding.*

The demographic details of the participants are presented in Table 1. The sample consisted of 251 participants, with the majority falling within the 25–34 years age range (n = 110, 43.8%), followed by those aged 35–44 years (n = 103, 41.0%). Participants aged 15–24 years (n = 17, 6.8%) and those aged 45 years and above (n = 21, 8.4%) were relatively few, indicating that most participants were young to middle-aged adults (M = 2.51, SD = .75; age categories coded numerically). The majority reported low income levels (n = 158, 62.9%), followed by medium income (n = 75, 29.9%), with a small proportion having high income (n = 18, 7.2%). Regarding infection-related characteristics, the mean duration of infection was 1.78 years (SD = .81), with nearly half of the participants reporting infection duration of 1–2 years (n = 117, 46.6%), 2–5 years for 29.1% of participants (n = 73), and 6 years or longer for 24.3% (n = 61). Approximately half of the participants reported primary infertility (n = 133, 53.0%), while the remainder had secondary infertility (n = 118, 47.0%). Further details are provided in Table 1.

Table 2: Correlations between Study Variables (N=251)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	-												
2. Educational Level	.02	-											
3. Income Level	.08	.003	-										
4. Religion	.09	-.08	.06	-									
5. Infection Duration	**.43*****	-.07	.12	.01	-								
6. Type of Infection	.11	-.02	.10	-.01	.003	-							
7. Generalized Anxiety	.03	-.06	-.02	-.02	.04	**-.16***	-						
8. Depressive Symptoms	.10	**-.18****	.01	-.06	.07	-.07	**.47*****	-					
9. Coping Strategies	-.07	**-.13***	-.08	-.03	.06	-.07	**.29*****	**.34*****	-				
10. FertiQoL_Emotional	.06	-.06	**-.17****	-.08	.11	-.12	**-.17****	**-.43*****	.13*	-			
11. FertiQoL_Mind-Body	.09	-.07	-.01	-.06	.11	-.11	**-.13***	**-.37*****	.10	**.71*****	-		
12. FertiQoL_Relational (Partner)	.12	.08	.04	-.01	**.15***	-.10	**-.15***	-.04	**-.14***	**.35*****	**.48*****	-	
13. FertiQoL_Social	-.02	-.02	.02	-.05	.06	-.12	-.11	**-.21****	**.21****	**.47*****	**.50*****	**.26*****	-

Note: ****p < .001; **p < .01; *p < .05 (Bold indicates significance). FertiQoL=Fertility Quality of Life*

Table 2 shows the bivariate correlation results between demographic, psychological, coping, and fertility-related QoL (FertiQoL). Age was positively correlated with infection duration (r = .43, p < .001), indicating that older women accessing fertility treatment in healthcare facilities in South-Eastern Nigeria tended to live longer with infertility. Educational level was negatively correlated with depressive symptoms (r = -.18, p < .01) and coping

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strategies (r = -.13, p < .05), suggesting that those with higher education reported lower depressive symptoms and slightly less reliance on coping strategies. Generalized anxiety was positively correlated with depressive symptoms (r = .47, p < .001) and coping strategies (r = .29, p < .001), indicating that participants with higher anxiety also reported higher depressive symptoms and more frequent use of coping strategies. Depressive symptoms were negatively correlated with the emotional (r = -.43, p < .001) and mind-body (r = -.37, p < .001) domains of FertiQoL, suggesting that higher depressive symptoms were linked with poorer quality of life in these domains. Coping strategies were positively correlated with all FertiQoL domains, though modestly, with significant correlations for the emotional (r = .13, p < .05), relational (partner) (r = -.14, p < .05), and social (r = .21, p < .01) domains. This indicates that participants who reported higher engagement in coping strategies tended to experience a better fertility-related quality of life, particularly socially and emotionally.

Regarding fertility-related quality of life domains, the emotional and mind-body domains were strongly positively correlated (r = .71, p < .001), highlighting that participants' emotional well-being was closely linked with their perceived physical and psychological health. The relational (partner) domain was positively correlated with the emotional (r = .35, p < .001) and mind-body (r = .48, p < .001) domains, indicating that better partner relationships were associated with better emotional and physical well-being. Similarly, the social domain of FertiQoL was positively correlated with all other FertiQoL domains (emotional: r = .47, p < .001; mind-body: r = .50, p < .001; relational: r = .26, p < .001), suggesting that participants who experienced better social support and engagement also reported better overall fertility-related quality of life. Overall, these findings indicate interconnected relationships between generalized anxiety, depression, coping strategies, and fertility-related quality of life. Higher anxiety and depressive symptoms were linked to poorer FertiQoL, whereas effective coping and strong partner and social relationships were associated with better fertility-related quality of life.

Moderation Analysis

Table 3: Hayes PROCESS Macro Results for Generalized Anxiety (GAD) and Depressive Symptoms (DEPS) Predicting Domains of Fertility Quality of Life (FertiQoL) with Coping Strategies (COPS) as a Moderator (N=251)

Domains of QoL	Variables	*B*	*SE*	*T*	*95% CI*	R^2	*F*
	IV_1: Generalized Anxiety (GAD)						
Emotional QoL	GAD	-.496	.232	**-2.14***	[-.952, -.039]	.052	**2.66(5,244)***
	COPS	.046	.039	1.19	[-.030, .122]		
	GAD × COPS	-.023	.018	-1.26	[-.059, .013]		
	AGE	.271	.634	.43	[-.978, 1.520]		
	Duration of Infection	.608	.584	1.04	[-.544, 1.759]		
Mind-Body QoL	GAD	-.182	.114	-1.59	[-.407, .044]	.045	**2.30(5,245)***
	COPS	.017	.019	.88	[-.021, .054]		
	GAD × COPS	-.015	.009	-1.69	[-.033, .002]		
	AGE	.266	.313	.85	[-.351, .882]		
	Duration of Infection	.255	.289	.88	[-.314, .824]		
Relational QoL	GAD	-.276	.137	**-2.01***	[-.546, -.006]	.070	**3.70(5,244)****
	COPS	-.041	.023	-1.78	[-.085, .004]		
	GAD × COPS	-.018	.011	-1.66	[-.040, .003]		
	AGE	.352	.381	.92	[-.399, 1.102]		
	Duration of Infection	.571	.351	1.63	[-.120, 1.261]		
Social QoL	GAD	-.097	.112	-.87	[-.318, .123]	.048	**2.49(5,245)***
	COPS	.053	.019	**2.83****	[.016, .090]		

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	GAD × COPS	.002	.009	.26	[-.015, .020]		
	AGE	-.138	.306	-.45	[-.742, .465]		
	Duration of Infection	.240	.283	.85	[-.317, .797]		
	IV₁: Depressive Symptoms (DEPS)						
Emotional QoL	DEPS	-.449	.061	**-7.35*****	[-.569, -.328]	.203	**12.41(5,243)*****
	COPS	.026	.036	.72	[-.097, .045]		
	DEPS × COPS	.008	.004	1.97	[-.017, .000]		
	AGE	-.060	.581	-.10	[-1.204, 1.084]		
	Duration of Infection	.565	.529	1.07	[-.478, 1.607]		
Mind-Body QoL	DEPS	-.186	.031	**-6.02*****	[-.247, -.125]	.148	**8.51(5,244)*****
	COPS	.014	.018	.73	[-.050, .023]		
	DEPS × COPS	-.003	.002	-1.37	[-.007, .001]		
	AGE	.099	.297	.33	[-.485, .683]		
	Duration of Infection	.271	.271	1.00	[-.262, .804]		
Relational QoL	DEPS	-.039	.040	-.97	[-.117, .040]	.062	**3.24(5,243)****
	COPS	.055	.023	**2.33***	[.009, .101]		
	DEPS × COPS	.005	.003	1.72	[-.001, .010]		
	AGE	.150	.387	.39	[-.611, .911]		
	Duration of Infection	.726	.350	**2.07***	[.035, 1.416]		
Social QoL	DEPS	-.079	.032	**-2.49***	[-.142, -.017]	.065	**3.42(5,244)****
	COPS	.038	.019	**2.02***	[.001, .075]		
	DEPS × COPS	-.002	.002	-.67	[-.006, .003]		
	AGE	-.167	.305	-.55	[-.767, .434]		
	Duration of Infection	.179	.278	.64	[-.369, .727]		

Note:*QoL=quality of life, GAD=generalized anxiety disorder symptoms, DEPS=depression symptoms, COPS=coping strategies, 95% CI=confidence intervals, SE=standard error, R^2=proportion of variance in QoL explained by predictor and moderator, Int_1=interaction term; ***p<.001; **p<.01; *p<.05; Process Model=Model 1. Bold indicates significance.*

Table 3 shows the moderation models examining the roles of generalized anxiety (GAD) and depressive symptoms (DEPS) in predicting domains of fertility quality of life (FertiQoL) among women undergoing fertility treatment, with coping strategies (COPS) as a potential moderator. Moderation occurs when the relationship between a predictor and outcome changes depending on the level of the third variable [67]. The models were controlled for participants' age and duration of infection. For generalized anxiety, increased anxiety was significantly associated with poorer emotional (B = -.496, t = -2.14, p < .05) and relational (partner) (B = -.276, t = -2.01, p < .05) domains of FertiQoL, indicating that women with higher anxiety experienced lower emotional well-being and poorer partner relationships. The association between generalized anxiety and mind-body or social QoL was not statistically significant. Coping strategies did not significantly moderate any of the relationships between generalized anxiety and FertiQoL domains, suggesting that coping did not buffer the negative impact of anxiety on fertility-related quality of life among women undergoing fertility treatment (See Table 3 for details). In contrast, depressive symptoms showed a stronger and more consistent negative impact across FertiQoL domains. Higher depressive symptoms were significantly associated with poorer emotional (B = -.449, t = -7.35, p < .001), mind-body (B = -.186, t = -6.02, p < .001), and social QoL (B = -.079, t = -2.49, p < .05). The relational QoL domain was not directly predicted by depressive symptoms, but coping strategies were positively associated with relational (B = .055, t = 2.33, p < .05) and social QoL (B = .038, t = 2.02, p < .05), indicating that women accessing fertility treatment who reported a higher use of coping strategies experienced better partner relationships and social well-being. However, the interaction terms between depressive symptoms and coping strategies were not significant across all FertiQoL domains, suggesting that coping strategies did not significantly moderate

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the negative impact of depressive symptoms on FertiQoL. Overall, these findings indicate that both generalized anxiety and depressive symptoms are significant risk factors for certain aspects of FertiQoL, with depressive symptoms having a broader impact. Although coping strategies were directly beneficial for social and relational QoL, they did not significantly buffer or moderate the negative impacts of anxiety or depressive symptoms, highlighting the need for interventions that address both psychological distress and coping among women undergoing fertility treatment.

DISCUSSION

The main aim of this study was to investigate the influence of generalized anxiety and depressive symptoms on fertility quality of life among women accessing fertility treatment in healthcare facilities in south-eastern Nigeria and to examine whether coping strategies moderate these relationships. The findings revealed differential associations across FertiQoL domains. Specifically, higher levels of generalized anxiety were significantly associated with poorer emotional and relational FertiQoL, indicating that women with higher anxiety levels experienced lower emotional well-being and poorer partner relationships. However, the association between generalized anxiety and mind-body or social QoL was not statistically significant. These findings provide partial support for the first hypothesis, which stated that higher levels of generalized anxiety would predict poorer FertiQoL among women accessing fertility treatment in healthcare facilities in south-eastern Nigeria. These findings do not fully agree with those of previous studies (Hecht et al., 2024; Kamışlı et al., 2021; Yusuf, 2016) that demonstrated a negative association between anxiety and global FertiQoL.

The findings of the present study suggest that anxiety may exert its strongest influence on domains of fertility well-being that are internally regulated (such as emotional functioning) or relationally dependent (such as partner support), rather than on the physical or social aspects of functioning. It could be that women are better able to compartmentalize or manage the physiological and social consequences of fertility challenges despite experiencing heightened anxiety (Hamid et al., 2024), thereby weakening associations in the mind–body and social domains. Women accessing fertility treatment in healthcare facilities in south-eastern Nigeria may draw on sociocultural norms, community support systems, or spiritual coping, which could buffer the impact of anxiety on broader aspects of FertiQoL even when emotional distress remains elevated. Thus, anxiety-related impairments may manifest more selectively, influencing domains closely connected to internal distress and intimate relationships, rather than exerting a uniform effect across all areas of fertility quality of life. In partial agreement with extant literature findings such as Chaudhari & Kapadiya, 2020; Chowdury et al., 2019; Greil et al., 2011), the findings of this study showed that women who received fertility treatment and scored high on depressive symptoms also reported poorer emotional, mind-body, and social FertiQoL. Nonetheless, depressive symptoms did not predict the relational FertiQoL domain. Thus, the second hypothesis, which stated that higher levels of depressive symptoms would predict poorer FertiQoL among women accessing fertility treatment in healthcare facilities in south-eastern Nigeria, was partially supported by the present study findings. This suggests that depressive symptoms may have a pervasive influence on the personal and social dimensions of fertility-related well-being, affecting emotional regulation, physical vitality, and social engagement in women accessing fertility treatment in south-eastern Nigeria. Although depression is known to affect interpersonal functioning (Bian et al., 2023; D'Iuso et al., 2018), it may not necessarily disrupt partner-related quality of life when couples share a strong sense of mutual support, shared goals, or joint investment in fertility treatment. Partners may play a

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compensatory or buffering role, mitigating the spillover effects of depressive emotions into the relational domain. Thus, while depressive symptoms compromise individual and social functioning, the relational bond in some couples undergoing fertility treatment may remain resilient, highlighting the potential protective role of dyadic adjustment in the context of infertility. Furthermore, this study revealed that, although coping strategies were positively associated with relational and social FertiQoL, they did not predict the emotional and mind-body domains of FertiQoL in this population. This is partially supported by the third hypothesis, that coping strategies would predict better FertiQoL among women accessing fertility treatment in healthcare facilities in south-eastern Nigeria. This is partially consistent with existing studies, such as (Naab et al., 2021; D'Iuso et al., 2018), which demonstrated that global coping strategies are a valuable resource for improving QoL. In the present study, these findings suggest that coping strategies may offer greater benefits in domains that rely on interpersonal connections and social integration rather than in areas tied to internal emotional processing or physical well-being (Kyei et al., 2022; Marroquín et al., 2017). This finding demonstrates that domain-specific effects are a notable indication that the usefulness of coping may depend on the type of stressor and contextual resources available to women undergoing fertility treatment. It is probable that women rely on social or relational coping mechanisms, such as partner communication, community engagement, or spiritual support, to strengthen relational and social QoL (Bedrov & Gable, 2023; Smith & Weihs, 2019), while emotional and mind–body challenges may require more targeted psychological or medical interventions that general coping strategies cannot adequately address (Oshodi-Bakare et al., 2025). Thus, although beneficial, coping strategies may not uniformly enhance all domains of fertility-related quality of life, highlighting the need for tailored psychosocial support that complements women's existing coping repertoires.

Contrary to expectation, coping strategies did not moderate the relationship between generalized anxiety and any of the FertiQoL domains, suggesting that coping did not buffer the negative impact of anxiety on FertiQoL in this group. This finding suggests that the coping mechanisms available to women in this context may not be sufficiently strong, adaptive, or consistently applied to counteract the intensity of anxiety experienced during fertility treatments. Although, the Transactional Model of Stress and Coping theory (Lazarus & Folkman, 1984; Zurlo et a., 2019; Péloquin et al., 2024; Hamid et al., 2024) demonstrates that the effectiveness of coping depends heavily on both an individual's appraisal of the stressor and the availability of appropriate coping resources, this may not translate into measurable buffering effects for women navigating fertility challenges in resource-limited clinical environments, where emotional strain may exceed their coping capacity. Therefore, it is probable that the high psychological burden of infertility, cultural expectations surrounding child-bearing and limited access to structured psychosocial support may weaken the moderating influence of coping strategies. Thus, coping processes may be present, but not robust enough to alter the anxiety–FertiQoL pathway in this population. Similarly, the last hypothesis that, coping strategies would moderate the relationship between depressive symptoms and FertiQoL among women accessing fertility treatment in healthcare facilities in south-eastern Nigeria, was not supported by the present study's findings, given that coping strategies did not moderate the negative impact of depressive symptoms on FertiQoL across domains in this group. Although, the Cognitive Theory (Beck et al., 1979) posits that coping should help interrupt maladaptive thought patterns and reduce the functional consequences of depressive symptoms, this was not the case in the present study. It could be that depressive symptoms in this setting operate with greater psychological rigidity, making them less

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responsive to general coping strategies and more dependent on specialized psychological interventions. Thus, coping strategies alone may be insufficient to counteract the deep-seated negative cognition and hopelessness characteristics of depressive symptoms during fertility treatment. Therefore, interventions should incorporate targeted cognitive-behavioral approaches, counselling, and structured psychosocial support to strengthen coping resources and address the cognitive mechanisms underlying depressive symptoms.

Implication of Findings

This study has theoretical and practical implications. Theoretically, the findings of this study add to the ongoing discussion on the Transactional Model of Stress and Coping theory and Cognitive Theory, suggesting that while these models provide strong conceptual foundations for understanding how coping should function as a protective mechanism, real-world contexts such as fertility treatment in south-eastern Nigeria may limit the extent to which coping strategies effectively buffer psychological distress. The findings therefore highlight that coping processes may not operate in isolation, but may be shaped by cultural pressures, emotional demands, and the availability of psychosocial resources, calling for a more context-sensitive interpretation of both theories. Practically, the present study's findings underscore the urgent need for integrated psychosocial support within fertility treatment settings given that anxiety and depressive symptoms significantly undermine multiple domains of fertility-related quality of life. Strengthening adaptive coping alone may not be adequate. Rather, comprehensive interventions that combine coping skills training with emotional support, psychoeducation, and cognitive-behavioral techniques are needed to improve the overall well-being of women undergoing fertility treatment. Policymakers, married couples, mental health practitioners, and religious and community leaders are therefore urged to take collaborative steps to reduce the psychological burden associated with infertility by promoting supportive environments, reducing stigma, and improving access to mental health services within fertility clinics and communities. Policymakers need to integrate mental health screening and counselling into standard fertility treatment protocols, fund community-based fertility education programs, and ensure that women have access to trained mental health professionals in public and private reproductive health facilities. Married couples should foster open communication, provide mutual emotional support, and actively seek professional help when distress or strain emerges during fertility treatment, recognizing that shared coping strengthens relational well-being. Mental health practitioners in their own part could design and deliver culturally sensitive interventions, such as CBT-based counselling, stress-management programs, and coping-skills enhancement workshops, to help women manage anxiety, depressive symptoms, and maladaptive cognitive patterns more effectively. These interventions have been proven effective in the past (Amirshahi et al., 2024; Golshani et al., 2021). For community and religious leaders, promoting compassionate, non-judgmental attitudes toward infertility, challenging harmful cultural beliefs, and creating safe spaces where women and couples can seek support without fear of stigma would greatly enhance coping resources and the overall fertility quality of life.

Limitation of Study and Suggestion for Further Research

While the present study provides valuable insights into the psychological factors affecting fertility quality of life among women undergoing fertility treatment, it is not without its limitations. First, reliance on self-report measures introduces the potential for social desirability bias and common method variance, as participants may have underreported or over-reported their levels of anxiety, depressive symptoms, or coping strategies. Second, the cross-

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sectional design limits our ability to infer causal relationships among generalized anxiety, depressive symptoms, coping strategies, and fertility quality of life, even though the use of lagged design has cushioned the effect. Third, contextual and cultural factors such as socioeconomic status, family expectations, and cultural norms around childbearing likely influence both psychological distress and coping patterns. Future research should include more diverse samples and explicitly assess cultural and contextual variables to enhance the understanding of these relationships.

CONCLUSION

In conclusion, this study contributes to the growing literature on fertility-related quality of life by highlighting the role of psychological distress and coping strategies among women undergoing fertility treatment in south-eastern Nigeria. While coping strategies did not moderate the association between psychological distress and FertiQoL, higher levels of generalized anxiety and depressive symptoms were linked to poorer fertility quality of life across specific domains. These findings underscore the importance of identifying and addressing emotional and relational vulnerabilities in women undergoing fertility treatment, and provide direction for evidence-based interventions, including targeted psychosocial support, cognitive-behavioural strategies, and community-informed programs to enhance overall well-being.

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