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Psychological Predictors of Health-Related Quality of Life Among Women With Polycystic Ovary Syndrome in Rivers State

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Abstract

The prevalence of polycystic ovary syndrome (PCOS) has significant implications on women's health-related quality of life (HRQoL). While the physical aspects of PCOS on HRQoL have been widely studied, studies linking psychological predictors of HRQoL among women with PCOS in Rivers State have received little investigation. Therefore, this study examines the predictive ability of psychological distress, anxiety, depression and stress on HRQoL among women diagnosed with PCOS in Rivers State, Nigeria. The study adopted cross-sectional survey design while purposive sampling technique was used to select the study population. Data were conveniently collected from 206 participants using validated scales and analyzed using multiple regression analysis to test five hypotheses which were accepted at p <.001 of significance. The results show that psychological distress, anxiety, depression and stress jointly predicted HRQoL among women diagnosed with PCOS (R^2 = .777, F(4, 202) = 174.780, p<.001). Furthermore, psychological distress, R^2= .748, F(1,204) = 605.644, p <.001; depression, R^2 = .461, F(1,204) =174.289, p <.001; anxiety, R^2 = .507, F(1,204) = 210.133, p <.001, and stress, R^2 = .551, F(1,204) = 250.086, p<.001 independently predicted HRQoL among study participants. The study comes as the first among this population and sample. The study recommends government agencies, healthcare providers and other stakeholders to combine gynecological, psychological and lifestyle management strategies to support women diagnosed with PCOS in order to improve their HRQoL.

Keywords: Psychological predictors, Health-Related Quality of Life, Polycystic Ovary Syndrome, Women, Rivers State/Nigeria

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INTRODUCTION

Health-related quality of life (HR-QoL) is the individuals' perception of their health and well-being, and the consequences and treatments of any disease that may affect their life conditions (Ibrahim et al., 2023; Sitlinger & Zafar, 2018; Ukandu et al., 2023). One group of individuals whose health-related quality of life needs to be regularly monitored is women diagnosed with polycystic ovary syndrome (PCOS). PCOS is a complex, multifaceted, heterogeneous disorder, affecting 10% -18% of reproductive-aged women which is associated with reproductive, metabolic and psychological dysfunctions (Zangeneh et al., 2012). The dimensions of PCOS are hyperandrogenism, ovulatory dysfunction and polycystic ovaries and these affects quality of life among women in different ways The global prevalence of PCOS is 9.2% (Salari et al., 2024) while in Nigeria, the prevalence of PCOS is about 8.6% though large number of cases remained undiagnosed (Makwe et al., 2023) causing a high health concerned. Devi et al. (2025) found PCOS to have significant effects on QoL across different domains including body mass index, psychological issues such as anxiety and depression. Symptoms such as irregular menstrual flow, weight gain, mood disorders and sleep disturbances were found to be key predictors of lower QoL among study participants. Other studies have also confirmed that PCOS significantly predicted QoL. For example, Borghi et al. (2017) found women with PCOS to have lower quality of life compared to non-PCOS women. In addition, Sidra et al. (2019) who evaluated clinical manifestations, health risks, and quality of life among women with polycystic ovary syndrome had found more patients (85%) reported low quality of life compared to the non-PCOS participants. Furthermore, Begum et al. (2024) who explored polycystic ovary syndrome and quality of life found polycystic ovary syndrome to significantly affect quality of life among their study participants. Finally, Tanogan et al. (2024) found polycystic ovary syndrome significantly correlated with quality of life among their study participants, confirming that PCOS is a major health issue among women which directly predicts their quality of life.

Some psychological factors affecting women diagnosed with PCOS have been investigated with varied results. One factor considered in this study is psychological distress which refers to a state of emotional discomfort or inner turmoil experienced by women such as those diagnosed with Polycystic Ovary Syndrome (PCOS). It encompasses feelings of unease, anxiety, and emotional strain (Williams et al., 2018). Some studies have found psychological distress to predict quality of life. For instance, Elstar et al.(2024) who explored the relationship between psychological distress and quality of health-related quality of life among women with polycystic ovary syndrome found nearly three-quarters (71.7%) of the participants to have severe mental distress and more than half (51.7%) to have moderate

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health-related quality of life. Zangeneh et al. (2012) found psychological distress to affect quality of life among PCOS patients in Tehran.

The second is anxiety which is referred to as a state of heightened nervousness, worry, and apprehension experienced by individuals such as those diagnosed with Polycystic Ovary Syndrome (PCOS) in Rivers State. Some studies have found anxiety to predict quality of life among PCOS women. For instance, anxiety was found to negatively affect quality of life among polycystic ovary syndrome women compared to those without the condition (Almeshari et al., 2021). In addition, Borghi et al. (2017) found anxiety to predict health related quality of life among PCOS women. Furthermore, Gorna et al. (2025) who examined the relationship between anxiety and quality of life among women diagnosed with polycystic ovary syndrome found that lower health-related quality of life was associated with higher levels of anxiety. Moreover, anxiety and depression were found to interact to predict health-related quality of life (Abdelarim & Thapa, 2022; Fakrogha et al., 2025).

The third is depression which refers to a clinical condition characterized by persistent feelings of sadness, hopelessness, and a lack of interest or pleasure in activities as experienced by women diagnosed with PCOS. Studies have found depression to predict quality of life among women diagnosed with PCOS. For instance, Almeshari et al. (2021) found that depression negatively affected health-related quality of life among PCOS women in their study population. Hofmann et al.(2025) found women with PCOS who reported higher depression also reported lower health-related quality of life compared to non-PCOS women. However, Borghi et al.(2017) did not find depression to predict health-related quality of life among PCOS women/patients. Also, Sidra et al. (2019) found depression as a significant contributor/predictor of low health-related quality of life among PCOS patients. In a combined study, Yang et al. (2025) reported the proportions of anxiety and depression among women with PCOS to be 48% and 40%, respectively, which contributed to their low quality of lifestyle. Also, Abdelarim and Thapa (2022) in a study that investigated anxiety, depression, and lower quality of life among Danish women with polycystic ovary syndrome, found 66% of the study participants to have anxiety, 40% to be depressed and 70% to have lower quality of life.

Finally, stress which is described as a psychological and physiological response to perceived challenges or demands experienced by individuals such as those diagnosed with Polycystic Ovary Syndrome (PCOS) in Rivers State. Altaf et al. (2023) found women with PCOS reported higher stress levels compared to those without PCOS which affected their quality of life.

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PCOS is a prevalent condition with significant implications for women's health-related quality of life. While the physical aspects of PCOS on the quality of life have been widely studied, however, the psychological predictors of HR-QoL among women with PCOS in Rivers State have received little investigation. Therefore, this study examines the predictive ability of psychological distress, anxiety, depression and stress on health-related quality of life among women diagnosed with polycystic ovary syndrome in Rivers State, Nigeria. The study sought to provide an answer to the question: Would psychological distress, anxiety, depression, and stress independently and jointly predict health-related quality of life among PCOS diagnosed women in Rivers State, Nigeria?

The answer to this question would provide insight into the psychological predictors of health-related quality of life among women diagnosed PCOS in Rivers State. In addition, the study would inform healthcare professionals, policymakers, and support groups in Rivers State to develop comprehensive approaches that integrate psychological care into the management of PCOS, which would ultimately improve the overall well-being and quality of life for the affected individuals.

The hypothesis tested was: Psychological distress, anxiety, depression, and stress would independently and jointly predict quality of life among women diagnosed with PCOS in Rivers State, Nigeria.

METHOD

Research Design

The study was a cross-sectional survey design that investigated psychological distress, depression, anxiety, and stress as predictors of health-related quality of life among women with polycystic ovary syndrome (PCOS). Validated questionnaires were used to gather data from study participants. Psychological distress, depression, anxiety, and stress constituted the independent variables while health-related quality of life was dependent variable.

Setting

The study was conducted at the Care Women's Clinic and PCOS Support groups in Port Harcourt, the capital city of Rivers State, Nigeria.

Sampling Size and Sampling Technique Procedure Purposive sampling technique was used to select the Care Women's Clinic and PCOS Support groups in Port Harcourt, Rivers State while convenience sampling method was used to select the study participants.

Instruments/Measures

The participant were assessed using multiple validated questionnaires.

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Kessler Psychological Distress Scale (K10, Kessler et al., 2003) was used to evaluate non-specific psychological distress to determine the severity of anxiety and depressive symptoms. The items are rated on a 5-point Likert's of "All of the time to None of the time". Sample items include: "In the past 4 weeks, about how often did you feel nervous?" and "In the past 4 weeks, about how often did you feel hopeless?" Higher scores indicate severe disorder. Cronbach's α = .84 was obtained.

Beck Anxiety Inventory (BAI, Beck et al., 1988) was used to measure the severity of anxiety symptoms, including cognitive, affective, and physiological symptoms. It is a 21-item scale presented on 4-point Likert's format of "Not at all to severely-it bothered me a lot". Sample items include: "Feeling hot","Unsteady", "Fear of losing control", and "Indigestion". Authors' obtained Cronbach's α = .92, and in this study, Cronbach's α = .89 was obtained.

The Beck Depression Inventory (BDI**,** Beck et al., 1988) is a 21-item, self-report rating inventory that measures characteristic attitudes and symptoms of depression. Each item is rated on a 4-point Likert scale from 0 to 3, making the minimum total score 0 and the maximum total score 63. Sample items include: "I do not feel sad" and "I am not particularly discouraged about the future". The authors obtained Cronbach's α = .909, and in this study Cronbach's α =. 89 was obtained.

Perceived Stress Scale (PSS-10, Cohen & Williamson, 1988) was used to evaluate the perception of stress that is the degree to which situations in participants' life are perceived as stressful. It is a 10-item scale presented on a 5-point Likert's format of "Never to Very Often". Sample items include: "In the last month, how often have you... been upset because of something that happened unexpectedly?" and "…. found that you could not cope with all the things that you had to do?" Higher scores indicate heightened stress levels. Authors' Cronbach's α = >.70, and in the present study, Cronbach's α =. 71

PCOS Quality of Life scale (PCOSQOL) was used to determine the quality of life among participants diagnosed with PCOS, focusing on domains such as emotions, body hair, weight, infertility, and menstrual problems. It is a 35-item scale presented on a 7-point format ranging from "Does not apply" to Usually Apply". Sample items include: I felt abnormal because of my PCOS" and "I felt depressed because of my struggle to have children". Authors' composite Cronbach α = .95, and in the present study, Cronbach's α = .89 was obtained.

Procedure

Participants who meet the inclusion criteria for the study were met in the clinic days and the purpose of the study was explained to them. Those who agreed to participate in the study were given the questionnaires to fill and were collected on the spot. Because of the length of the questionnaires, the process of data collection was slow which took over six

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weeks of continuous visits to the clinic by the researchers. The researchers minimally intruded the process. Only on very few occasions were the participants asked researchers questions which were politely responded to by the researchers. In all, a total of 209 were administered and collected on the spot. However, during screening and coding three were not properly filled which were removed leaving 206 used for the analysis.

Inclusion/Exclusion Criteria

The inclusion criteria were women diagnosed with polycystic ovary syndrome who were aged 16 years and above, who were willing to participate in the study. The exclusion criteria included those who were not willing to give their informed consent, those who had pre-existing mental health disorders that could confound or interact with the study variables of interest, and finally those who were pregnant or in the postpartum period.

Ethical Considerations

Ethical consideration was duly implemented in this study. Informed consent was sought and obtained from the potential participants. Voluntary participation was emphasized throughout the data collection process. Confidentiality was entrenched. No identifying codes/data were collected or assigned to any participant.

Data Analysis

IBM SPSS version 26 was used for data analysis. Descriptive and inferential statistics were computed. Hypotheses 1, 2 and 3 were tested using simple linear regression analysis while hypothesis 4 was tested using multiple regression analysis. All the hypotheses accepted at p <.001 level of significance.

RESULTS

Testing the hypotheses

H1: Psychological distress would independently predict health-related among participants with polycystic ovary syndrome (PCOs) in Rivers State. The hypothesis was tested using simple linear regression statistics and the result is presented in Table 1 a, b, & c.

Table 1a: Linear regression of psychological distress on HRQoL

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.865	.748	.747	4.59662

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Table 1b: ANOVA of psychological distress on HRQoL

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12796.570	1	12796.570	605.644	.000
	Residual	4310.289	204	21.129		
	Total	17106.859	205			

Table 1c: Coefficients of psychological distress on HRQoL

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.676	1.825		2.014	.045
	Psychological Distress	.684	.028	.865	24.610	.000

Table 1a, b & c presents linear regression of psychological distress on quality of life of patients with polycystic ovary syndrome (PCOs) in Rivers State. The results indicate that psychological distress independently predicted HRQoL among study participants, R^2= .748, F (1,204) = 605.644, p <.001. This means that psychological distress accounted for 74.8% variance in HRQoL among study participants. The hypothesis was supported.

H2: Depression would independently predict health-related quality of life among participants with polycystic ovary syndrome (PCOs) in Rivers State. The hypothesis was tested using simple linear regression statistics and the result is presented in Table 2a, b, & c.

Table 2a: Linear model of depression on HRQoL

Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
	.679	.461	.458	6.72471

Table 2b: ANOVA of depression on HRQoL

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	7881.628	1	7881.628	174.289	.000
	Residual	9225.231	204	45.222		

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	Total	17106.859	205			

Table 2c: Coefficients of depression on HRQoL

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	18.054	2.309		7.820	.000
	Depression	1.757	.133	.679	13.202	.000

Table 2a, b, &c shows the result of the linear regression analysis of depression on HRQoL among participants diagnosed with polycystic ovary syndrome (PCOs) in Rivers State. The result revealed that depression independently predicted HRQoL among study participants, $R^2 = .461$, F (1,204) =174.289, p <.001. This implies that depression accounted for 46.1% of variance explained in HRQoL among study participants. Therefore, the hypothesis was confirmed.

H3: Anxiety would independently predict quality of life among participants with polycystic ovary syndrome (PCOs) in Rivers State. The hypothesis was tested using simple linear regression statistics and the result is presented in Table 3a, b, & c.

Table 3a: Model of anxiety on HRQoL

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.712	.507	.505	6.42710

Table 3b: ANOVA of anxiety on HRQoL

Model		Sum of Squares	df	MeanSquare	F	Sig.
1	Regression	8680.105	1	8680.105	210.133	.000
	Residual	8426.754	204	41.308		
	Total	17106.859	205			

Table 3c: Coefficients Associated with Regression Summary of Anxiety on the HRQoL

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	18.183	2.098		8.666	.000
	Anxiety	2.085	.144	.712	14.496	.000

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Table 3a, b,& c shows the result of the linear regression analysis of anxiety on HRQoL among participants diagnosed with polycystic ovary syndrome (PCOs) in Rivers State. The result indicated that anxiety independently predicted HRQoL among study participants, R^2 = .507, F (1,204) = 210.133, p <.001. This connotes that anxiety explained 50.7% of variance in HRQoL among study participants. Thus, the hypothesis was accepted.

H4: Stress would independently predict quality of life among participants with polycystic ovary syndrome (PCOs) in Rivers State. The hypothesis was tested using simple linear regression statistics and the result is presented in Table 4a, b, & c.

Table 4a: Model of stress on HRQoL

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.742	.551	.549	6.13785

Table 4b ANOVA of stress on the HRQoL

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9421.528	1	9421.528	250.086	.000
	Residual	7685.332	204	37.673		
	Total	17106.859	205			

Table 4c: Coefficients of stress on HRQoL

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	15.124	2.116		7.147	.000
	Stress	1.960	.124	.742	15.814	.000

Tables 4 a, b & c presents the result of the linear regression analysis of stress on HRQoL among participants diagnosed with polycystic ovary syndrome (PCOs) in Rivers State. The result demonstrates that stress independently predicts HRQoL among study participants, R^2 = .551, F (1,204) = 250.086, p <.001. This implies that stress explained 55.1% of variance in quality of life among study participants. This means that the hypothesis was supported.

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H5: Psychological distress, depression, anxiety and stress would jointly predict quality of life among participants diagnosed with polycystic ovary syndrome (PCOs) in Rivers State. The hypothesis was tested using multiple regression analysis and the results are presented in Table 5a &b.

Table 5a: Model of psychological distress, depression, anxiety and stress on HRQoL

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.881	.777	.772	4.35948

Table 5b: ANOVA of psychological distress, depression, anxiety and stress on HRQoL

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13286.839	4	3321.710	174.780	.000
	Residual	3820.020	201	19.005		
	Total	17106.859	205			

Table 5 a & b shows the result of the multiple regression analysis of psychological distress, depression, anxiety and stress on HRQoL among participants diagnosed with polycystic ovary syndrome (PCOs) in Rivers State. The results show that psychological distress, anxiety, depression and stress jointly predicted HRQoL among study participants, $R^2 = .777$, $F (4, 202) = 174.780$, $p < .001$. This indicates that all the independent variables combined accounted for 77.7% variance on HRQoL among study participants. This confirms the hypothesis.

DISCUSSION

The result confirms that psychological distress independently predicted quality of life (HRQoL) among women diagnosed with polycystic ovary syndrome (PCOs) in Rivers State. This supported previous findings that psychological distress contributed to HRQoL among polycystic ovary syndrome patients Elstar et al. (2024). Moreover, the finding aligned with Zangeneh et al.'s (2012) results that psychological distress affects quality of life among PCOS patients in Tehran.

In addition, the data reveal that depression independently predicts HRQoL among women diagnosed with polycystic ovary syndrome (PCOs) in Rivers State. The findings are in line with the result obtained by Dybciak et al. (2022) who found depression to have a

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significant effect on HRQoL among women with PCOS. The PCOS women had a significantly higher severity of depression symptoms compared to non-PCOS participants. Other studies also confirmed that depression significantly reduced HRQoL among women diagnosed with PCOS (Almeshari et al., 2021; Fakrogha et al.,2025; Hofmann et al., 2025; Borghi et al., 2017; Sidra et al., 2019).

Moreover, the result demonstrates that anxiety independently predicts HRQoL among women with polycystic ovary syndrome in Rivers State. The result explains 50.7% of variance in HRQoL among women suffering from polycystic ovary syndrome. PCOS women reported lower level HRQoL compared to women with non-PCOS. The result lent credence to findings by Yang et al. (2025) and Abdelarim and Thapa (2022) that anxiety even in association with depression significantly affects HRQoL among women diagnosed with PCOS in their studied populations.

Furthermore, the result confirms that stress independently predicts HRQoL among patients with polycystic ovary syndrome in Rivers State. Stress significantly contributes to HRQoL among women diagnosed with PCOS in Rivers State, Nigeria. This finding corroborated Asdaq and Yasmin (2020) who found stress to significantly affect HRQoL among women suffering with PCOS. In addition, the study supports Altaf et al.'s (2023) finding that women with PCOS reported higher stress levels compared to those without PCOS which affected their HRQoL.

Finally, the results support the hypothesis that psychological distress, depression, anxiety and stress would jointly predict HRQoL among patients with polycystic ovary syndrome (PCOS) in Rivers State. This means that the interaction of psychological distress, depression, anxiety and stress was a significant factor in the determination of the HRQoL among PCOS patients in the study population. This finding aligns with the result obtained by Abdelarim and Thapa (2022) who found the interaction of anxiety and depression to predict lower HRQoL among Danish women with polycystic ovary syndrome. In addition, the result of this study lent credence to that obtained by Gül et al. (2025) that women diagnosed with PCOS demonstrated low HRQoL. This finding emphasizes the intricate relationship between psychological distress, clinical characteristics of PCOS, and their impact on the overall well-being of individuals diagnosed with PCOS. Finally, this finding corroborated with Borghi et al.(2017) that women with PCOS suffered from low HRQoL.

CONCLUSION

The findings collectively reveal that psychological distress, depression, anxiety, and stress significantly affects HRQoL among women diagnosed with polycystic ovary syndrome (PCOS) in Rivers State, Nigeria. These factors individually and jointly contributed to

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variations in the HRQoL, emphasizing the crucial role of psychological well-being in shaping the experiences of those with PCOS in the study population.

The study recommends implementing integrated care models that combine gynaecological, psychological, and lifestyle management services on patients diagnosed with PCOS. This approach would address both their physical and mental health needs. In addition, there is a need to establish accessible and specialized psychological support services tailored to address the unique challenges faced by individuals with PCOS that involve counselling, support groups, and interventions targeting depression, anxiety, and stress management. Furthermore, there is a need to develop educational programs aimed at increasing awareness about PCOS and its psychological effects among healthcare professionals, patients, and the wider community to help reduce stigma and facilitate early identification and intervention. Finally, there is a need to encourage healthcare providers to adopt holistic treatment plans that considers not only the physical symptoms but also the psychological well-being of individuals with PCOS in terms of lifestyle modifications, stress reduction techniques, and mental health interventions.

One significant limitation of this study is the sensitive nature of this study where potential participants were not willing to participate in the study, therefore, further study should involve creating awareness that PCOS is not a death sentence sickness when early diagnosis and treatment would improve quality of life. In addition, the use of key informant and focus group discussion for data collection in further study would triangulate data collected from self-reported questionnaires. Furthermore, longitudinal study with increased sample size and including more geographical regions would enhance generalization of study findings. Finally, inclusion of social support and socio-demographic variables rather than only psychological factors would provide more understanding of the PCOS condition among study samples and population.

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