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Socio-Demographic Correlates of Comorbid Anxiety and Depression Among Women Attending Antenatal Clinic in A Tertiary Health Institution in Ondo City, Southwestern Nigeria

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ABSTRACT

Background: Pregnancy is often a joyful experience; however, many women experience psychological challenges, such as anxiety and depression, due to hormonal changes, physical discomfort, and the anticipation of motherhood. **Aim:** To determine the prevalence and patterns of anxiety, depression, and comorbid anxiety and depression in pregnant women attending antenatal care at UNIMEDTH Ondo. **Method:** A descriptive cross-sectional design was used, employing a validated questionnaire. **Results:** Anxiety was prevalent across the trimesters, with rates of 31.1%, 47.9%, and 14.7% in the first, second, and third trimesters, respectively. The prevalence of depression was 50.3%, 46.5%, and 47.0%, while comorbid anxiety and depression rates were 18.6%, 13.3%, and 15.5% in the first, second, and third trimesters. Respondents with primary education or less had 3.522 times higher odds of experiencing comorbid anxiety and depression compared to those with tertiary education (OR=3.52, p=0.018). Additionally, a notable correlation was found between comorbid anxiety and depression and average monthly income, with a 1-unit increase in income associated with higher odds of these conditions (OR=1.00, p<0.009). Respondents who preferred a male child had a 3.819 times higher likelihood of experiencing comorbid anxiety and depression, while those who preferred a female child had a 4.201 times higher likelihood, both statistically significant compared to those indifferent to gender (OR=3.819, p=0.018, OR=4.201, p=0.009). **Conclusion:** These findings underscore the multifaceted nature of predictors influencing comorbid anxiety and depression. Relevant stakeholders must be involved in the prevention of these disorders.

Keywords: Anxiety, Depression, Comorbid, Antenatal, Nigeria

INTRODUCTION

The mental health of pregnant women is a critical public health concern, as pregnancy is a period of significant emotional and physical change. Anxiety and depression are among the most common psychological disorders during pregnancy, and when they co-occur, the burden on both the mother and fetus can be severe.[1] Comorbid anxiety and depression can lead to adverse maternal outcomes such as increased risk of preterm birth, low birth weight, and complications during labor. The emotional toll can also affect postpartum mental health, influencing mother-infant bonding and the overall well-being of the child.[2]

Several factors contribute to the prevalence of anxiety and depression during pregnancy, including socioeconomic status, educational level, access to healthcare, social support, and cultural pressures. Women with lower educational attainment, economic instability, and limited access to health information are often at greater risk of developing comorbid mental health disorders.[3] High-income women without adequate emotional support may also experience elevated anxiety and depression due to isolation or unmet societal expectations. Additionally, gender preference during pregnancy, influenced by cultural and societal pressures, can further exacerbate emotional distress.[4]

Despite growing recognition of these issues, there is a need for a more comprehensive understanding of the predictors and prevalence of comorbid anxiety and depression among pregnant women. Identifying these predictors is crucial for developing effective interventions and support systems to improve maternal mental health outcomes.[5]

Studies show that around 20% of pregnant women experience anxiety and depression, with much higher rates among those with a history of pregnancy loss, where 40.7% reported post-traumatic stress symptoms (PTSS) linked to elevated anxiety and depression. Similarly, pregnant women with diabetes face alarming rates of anxiety (74.9%) and depression (79.4%), particularly those with pre-existing diabetes.[6] Coping mechanisms play a critical role in managing these mental health issues, with effective strategies mitigating stress and symptoms, emphasizing the need for tailored psychological support. The COVID-19 pandemic further exacerbated these challenges, with 60.1% of pregnant women reporting anxiety, particularly among those with unplanned pregnancies.[7] While these findings highlight the urgent need for mental health screening and support, it is important to acknowledge that some women may exhibit resilience despite adverse conditions.[1]

It is crucial for healthcare professionals to recognize the predictors of anxiety and depression in pregnant women so that appropriate support can be provided. Hence, the need for this study with aims to explore the prevalence of comorbid anxiety and depression in pregnant women and identify the key predictors that contribute to these mental health conditions.

Specific Aims

(1) To determine the prevalence and pattern of anxiety, depression and comorbid anxiety and depression in the pregnant women attending antenatal care in University of Medical Sciences Teaching Hospital Ondo, Ondo State, Nigeria (UNIMEDTH).

(2) To determine the predictors of comorbid anxiety and depression in pregnant women attending antenatal care in UNIMEDTH Ondo.

METHODOLOGY

Study Location

The study was conducted at the University of Medical Sciences Teaching Hospital (UNIMEDTH), Medical Village, Ondo. The hospital is the only teaching hospital in Ondo State with 272 beds and four major clinic days for the Obstetrics and Gynecology. On the average, about sixty patients are seen per antenatal clinic.

Study Population

The study populations were patients attending the antenatal clinics between March and August 2023.

Study Design

The study employed a descriptive cross-sectional design and was conducted with the use of a validated questionnaire.

Ethical Clearance

Ethical approval was obtained from the Ethics and Research Review Committee of the University of Medical Sciences Teaching Hospital Ondo City, Ondo State (UNIMEDTH/REC/23/058).

Inclusion and Exclusion Criteria

Patients attending the Antenatal clinic and who gave informed consent of participation were included in the study. The patients that did not give consents were excluded.

Instruments

Hospital Anxiety and Depression Scale (HADS) was used to estimate the prevalence of anxiety and depression amongst the pregnant women. The HADS consists of fourteen items. The First 7 items cover questions on Anxiety while the remaining seven questions covers questions on Depression. Hospital anxiety and depression scale (HADS): the HADS is a self-report instrument efficiently used to assess depression and anxiety.[8] In a Nigerian study, the sensitivity for the anxiety sub-scale ranged from 85.0% to 92.9%, while sensitivity for the depression sub-scale ranged from

89.5% to 92.1%.[9] The HADS is considered to be unaffected by coexisting general medical conditions, unlike GHQ items where symptoms may refer to physical cause like insomnia and weight loss.[10] For GHQ 12, using 3 as cut-off point, ≥3 is "possible psychiatric morbidity [i.e. 'GHQ 12 cases'] and <3 as no morbidity [i.e. 'GHQ 12 non-cases']". The Hospital Anxiety and Depression Scale will be scored accordingly 0-7 = normal, 8-10 = borderline abnormal, 11-21 = abnormal. Respondents with borderline abnormal and abnormal cases were considered as having anxiety or depression.[11]

Rosenberg's Self-esteem Scale

Rosenberg's self-esteem scale developed by Dr. Morris Rosenberg, is a commonly used self-esteem measure in research. The Rosenberg Self-Esteem Scale is a 10-item self-report measure of global self-esteem.[12] It consists of 10 statements related to overall feelings of self-worth or self-acceptance. The items are answered on a 4-point scale ranging from 1 (strongly agree) to 4 (strongly disagree).[13] The scale generally has high reliability: test-retest correlations are typically in the range of 0.82 - 0.88, and Cronbach's alpha for various samples are in the range of 0.77–0.88.[14]

Sample Size

The sample size for this study was computed using the formula below.[15]

$$N = \frac{z^2pq}{d^2}$$

Where,

N= the minimum sample size if the population is > 10, 000.
Z =the standard normal deviation usually set at 1.96 corresponding to a 95% confidence interval
p = The prevalence of antepartum depression was 14.1% [16]. To the best of our knowledge there is no study on comorbid anxiety and depression among antenatal women
q = 1 – p (1-0.141= 0.859)
d = degree of accuracy desired set at 0.05
Z=1.96
P= 0.141
N= 186
However, the study population is below 10,000, the true sample size (nf) is estimated from the above, as follows:

$$n_f = \frac{N}{1 + (N)/(n)}$$

Where n_f =the desired sample size when population is less than 10,000.
N= the desired sample size when the population is more than 10,000= 186
n = the estimate of the population size, with the value of 1440 which is the population of antenatal women that attended the clinic between March and August 2023.

The minimum sample size for the study was 168 antenatal women attending the University of Medical Science Teaching Hospital Ondo between March and August, 2023. However, in order to increase the power of the study, 350 questionnaires were randomly distributed using balloting method.

Procedure

Having retrieved the list of the patients attending each clinic from the Department of Health Information Management to know the number of patients expected at the clinic, the objective of the study was discussed with the patients individually while waiting to see the doctor. Assertion of confidentiality was given and the benefits of the study were explained. An informed consent for participation was obtained from patients who met the inclusion criteria. An average of fourteen women were recruited per clinic for a duration of six months. The consenting respondents were given the self-administered questionnaires and collected back by the researchers and research assistants. The questionnaires were written in English and patients who requested for translation or interpretation into indigenous language were assisted by the researchers and the research assistants. Each questionnaire was checked during submission for adequate completion and the patients who do not properly fill out the questionnaire were persuaded to do so. The research assistants have been trained in data collection. The patient's weight and height of the patient were measured using a stadiometer and weighing scale respectively. Clinical details of each patient were obtained from their respective case notes.

Data Analysis

The Statistical Package for Social Sciences (SPSS version 26) was used for Data analysis. The socio-demographic details of respondents were reported using descriptive statistics such as frequency and percentage. Chi-square and multivariate statistical techniques such as binary logistic regression was employed to identify the factors that were significantly associated with comorbid anxiety and depression. The confidence interval was set at 95%. Statistical significance was considered at a p-value less than 0.05.

RESULTS

Socio-Demographic Variable Among the Respondents.

Out of the 350 distributed questionnaires, 334 respondents completed the survey, yielding a commendable response rate of 95.4. The socio-demographic composition of the respondents revealed several key findings: the majority were married (97.3%). Religious affiliation indicated a predominant Christian representation (80.5%), while educational attainment varied, with a notable portion having tertiary education (66.5%). Employment status showcased diversity, including respondents who were not employed (17.4%), self-employed (57.5%), civil servants (16.8%), and full-time housewives (8.4%), in addition, 72.5 of the respondents had poor social support. Regarding ethnicity, the majority identified as Yoruba (83.2%). The respondents had a mean age of 31.75 years (±4.883) and reported an average monthly income of #451, 49.70 (± 28597.996) (Table 1)

Table 1. Socio-demographic Variable of the Respondents

N	Variable	Frequency	%
1	**Marital status:**		
	Single	7	2.1
	Married	325	97.3
	Separated/Widowed	2	0.6
2	**Tribe:**		
	Yoruba	278	83.2
	Igbo	50	15.0
	Hausa	6	1.8
4	**Religion:**		
	Christianity	269	80.5
	Islam	63	18.9
	Traditional Worshipper	2	0.6
5	**Employment Status:**		
	Not Employed	58	17.4
	Self-Employed	192	57.5
	Civil Servant	56	16.8
	Full House Wife	28	8.4
6	**Highest Level of Education**:		
	Primary or less	21	6.3
	Secondary	91	27.2
	Tertiary	222	66.5
8	**Positive Family history of Mental illness:**		
	No	296	88.6
	Yes	38	11.4
9	**Previous History of Mental illness:**		
	No	318	95.2
	Yes	16	4.8
10	**Social Support Grouping:**		
	Spouse	283	84.7
	Family	45	13.5
	Social Organizations	6	1.8
11	**Are You Living with Your Husband:**		
	No	24	7.2
	Yes	310	92.8
12	**Age**	31.75 (±1--4.8) --years Range 20-45 years	
13	**Average Monthly Income (in Naira):**	45149.70 (± 28597.996) Range 10000 – 200000	
15	**Any Chronic Illness among the Children**		
	No	321	96.1
	Yes	13	3.9

Obstetrics Variable Among the Respondents

The study found that a majority of women (72.5%) experienced poor social support during pregnancy, with 87.4% of pregnancies planned and 94.9% wanted. The gender of the baby preference varied, with 42.2% no preference, 32.3% preferring females, and 25.4% preferring males. Participants experienced 1.42 deliveries, 0.47 miscarriages or terminations, and 1.38 living children.

Table 2: Obstetrics Variable of the Respondents

1	Rate your Social Support during Pregnancy:		
	Good	32	9.6
	Average	60	18.0
	Poor	242	72.5
2	Was the Pregnancy Planned:		
	No	42	12.6
	Yes	292	87.4
3	Was the Pregnancy Wanted:		
	No	17	5.1
	Yes	317	94.9
4	Age	31.75 (±1--4.8) --years Range 20-45 years	
5	Any hospital admission during the pregnancy:		
	No	285	85.3
	Yes	49	14.7
6	what is the preferred gender of the Baby:		
	Male	85	25.4
	Female	108	32.3
	Any Gender	141	42.2
7	Average Monthly Income (in Naira):	45149.70 (± 28597.996) Range 10000 – 200000	
8	Average number of deliveries	2.00 Range 0 – 6	
9	Average number of miscarriages/termination of pregnancy:	1.00 Range 0 – 6	
10	Average number of children are alive:	2.00 Range 0 – 5	

Prevalence of Anxiety, Depression, Comorbid Anxiety and Depression among the Respondents

The study reported that the prevalence of anxiety and depression and the respondents were 31.1% and 47.9%,

respectively while 14.7% are likely to have comorbid anxiety and depression. (Fig 1)

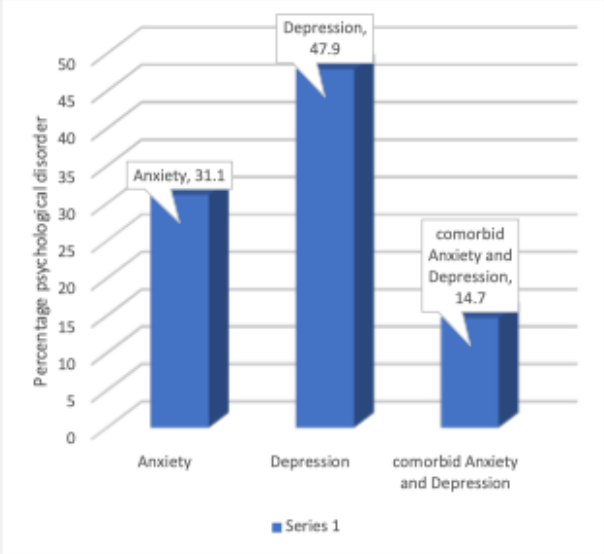

Figure 1. Prevalence of Anxiety, Depression, Co morbid Anxiety and Depression among the Respondents

Distribution of Mental Health Conditions Across Trimesters

Examining the prevalence of anxiety, depression, and comorbid conditions across trimesters yielded insightful findings. In the first trimester, anxiety was observed in 40.0% of respondents, followed by a decrease to 28.7% in the second trimester, and a subsequent increase to 35.2% in the third trimester. Similarly, the prevalence of depression exhibited variations across trimesters, with rates of 50.3%, 46.5%, and 47.0% in the first, second, and third trimesters, respectively. The prevalence of comorbid anxiety and depression demonstrated a similar trend, with rates of 18.6%, 13.3%, and 15.5% in the first, second, and third trimesters, respectively (Figure 2)

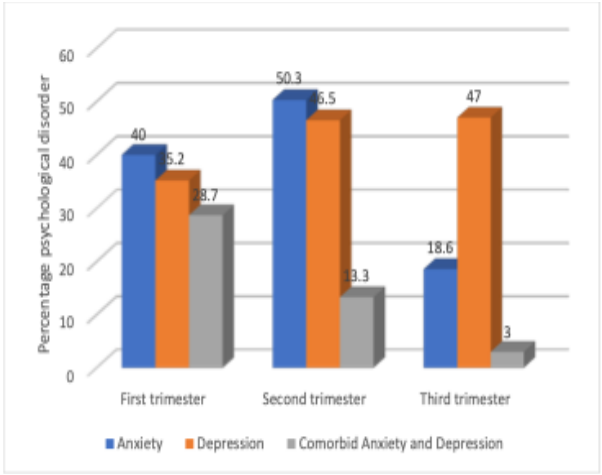

Figure 2 Prevalence of Anxiety, Depression, Comorbid Anxiety and Depression in the First, Second and Third Trimesters

Factors Associated with Comorbid Anxiety and Depression among Respondents:

Factors associated to comorbid anxiety and depression among the respondents were as follows. Significant respondents with primary education or lower (38.1%) had more comorbid anxiety and depression in contrast to their counterparts with higher educational degrees (X^2 = 9.967, p = 0.007). Furthermore, respondents, desiring a female child after expressing a gender preference (22.2%), had a greater proportion of comorbid anxiety and depression than respondents without any preferences their counterparts (X^2= 18.405, p < 0.001).

Furthermore, the mean self-esteem score of respondents with comorbid anxiety and depression (22.8561 ± 4.1321) is lower than that of respondents with only anxiety and depression (24.5714 ± 4.74781) (T = -2.62, *p = 0.009*). However, the mean monthly income of respondents with comorbid anxiety and depression (#54,285.71 ± 23,913.91) with dollar correspondence ($32.47 ± 14.30) is higher than that of respondents with only anxiety and depression (#43,578.95 ± 29,076.12) with dollar correspondence ($26.06 ± 17.39) (T = -2.439, *p = 0.015*). Table 3

Predictors of Comorbid Anxiety and Depression among Respondents

The study revealed that notably, individuals with a primary education or less exhibited 3.522 times higher odds of experiencing comorbid anxiety and depression compared to those with tertiary education, a finding of statistical significance (OR=3.52, p=0.018). Furthermore, a noteworthy correlation was identified between comorbid anxiety and depression and average monthly income, with a 1-unit increase in income associated with higher odds of these conditions (OR=1.00, p<0.009).

Additionally, respondents expressing a preference for the sex of their baby demonstrated distinct odds. Those with a preference for a male child had 3.819 times higher odds, while those with a preference for a female child exhibited 4.201 times higher odds of experiencing comorbid anxiety and depression, both statistically significant compared to respondents indifferent to the gender (OR=3.819, p=0.018, OR= 4.201, p=0.009).

DISCUSSION

The study determined the sociodemographic pattern of women attending antenatal care in UNIMEDTH Ondo, it ascertained the prevalence and pattern of anxiety,

Table 2: Association between the Socio-demographic. Variable, Clinical Variable and Comorbid Anxiety and Depression Behavior using Chi-square

	Variable	Negative n (%)	Positive n (%)	X^2	df	*P value*
1	**Marital status**			0.347	2	0.841
	Single	6(85.7)	1(14.3)			
	Married	277(85.2)	48(14.8)			
	Separated/Widowed	2(100.0)	0(0.0)			
2	**Religion**			2.702	2	0.259
	Christianity	228(84.8)	41(15.2)			
	Islam	56(88.9)	7(11.1)			
	Traditional Worshipper	1(50.0)	1(50.0)			
3	**Educational Status**			9.967	2	**0.007**
	Primary or less	13(61.9)	8(38.1)			
	Secondary	78(85.7)	13(14.3)			
	Tertiary	194(87.4)	28(12.6)			
4	**Employment Status**			2.927	3	0.403
	Not Employed	50(86.2)	8(13.8)			
	Self-employed	167(87.0)	25(13.0)			
	Civil Servant	47(83.9)	9(16.1)			
	Full House Wife	21(75.0)	7(25.0)			
5	**Tribe**			0.346	2	0.841
	Yoruba	236(84.9)	42(15.1)			
	Igbo	44(88.0)	6(12.0)			
	Hausa	5(83.3)	1(16.7)			
6	**Positive Family history of Mental illness**			0.043	1	0.836
	No	253(85.5)	43(14.5)			
	Yes	32(84.2)	6(15.8)			
7	**Previous history of mental illness**			0.063	1	0.801
	No	271(85.2)	47(14.8)			
	Yes	14(87.5)	2(12.5)			
8	**Previous history of substance use**			6.249	3	0.100
	None	281(85.9)	46(14.1)			
	Alcohol	2(50.0)	2(50.0)			
	Cannabis	1(50.0)	1(50.0)			
	Codeine	1(100.0)	0(0.0)			
9	**Rate your Social Support during pregnancy**			1.545	2	0.462
	Good	26(81.3)	6(18.8)			
	Average	54(90.0)	6(10.0)			
	Poor	205(84.7)	37(15.3)			
10	**Social support grouping**			4.029	2	0.133
	Spouse	246(86.9)	37(13.1)			
	Family	34(75.6)	11(24.4)			
	Social Organizations	5(83.3)	1(16.7)			
11	**Are you living with your husband**			0.097	1	0.755
	No	21(87.5)	3(12.5)			
	Yes	264(85.2)	46(14.8)			
12	**Was the pregnancy planned?**			0.735	1	0.391
	No	34(81.0)	8(19.0)			
	Yes	251(86.0)	41(14.0)			
13	**Was the pregnancy wanted?**			1.123	1	0.289
	No	13(76.5)	4(23.5)			
	Yes	272(85.8)	45(14.2)			

The mean age of the respondent was 31.75 years this is higher than 27.3 ± 5.1 years in another Study in South west Nigeria[17] while the age range is similar to previous study in the region.[18] (The locations of the other studies and the authors should be mentioned.) Nigeria's increasing maternal age might be influenced by socio-cultural, economic factors and the purist for tertiary Education. Awareness of family planning methods and cultural norms may also influence reproductive choices.[18] Most respondents were self-employed similar to other studies in Nigeria. In Nigeria, many pregnant women work in informal jobs, such as market trading, domestic services, and agriculture, with self-employment being common due to its flexibility, driven by limited formal job opportunities, allowing women to manage their schedules and income independently while navigating pregnancy-related need.[19] Most of the respondents were literate, this may imply the acceptability of western education in the southwestern part of the country, and the awareness campaigns on the quality and accessibility of education among women.

Table 3 Association between Socio-demographic variable, clinical variable and Comorbid Anxiety and Depression using T Test

	Valuable	Comorbid Anxiety and depression Absent (±SD)	Present(±SD)	T	*df*	*P value*
1	Age	31.62(+5.037)	32.49(+3.830)	-1.146	332	0.253
2	Average Monthly Income in Naira	#43,57(8.95) (29.076.119)	#54,28(5.71) (23,913.908)	-2.439	332	***0.015***
3	How many deliveries have you had	1.00(1.214)	2.00(1.329)	-1.565	332	0.119
4	How many miscarriages/Terminations of pregnancy	0.45(0.897)	0.59(0.956)	-1.044	332	0.297
5	How many children are alive	1.00(1.180)	2.00(1.302)	-1.596	332	0.112
6	Self Esteem	24.5714(4.74781)	22.8561(4.1321)	-2.624	332	***0.009***

Table 4 Association between Socio-demographic and clinical Variables and Comorbid Anxiety and Depression using Logistic Regression

S/N		Odd Ratio	P Value	Confidence Interval	
				Low	High
1	Educational Status				
	Tertiary(ref)	1			
	Primary	3.507	***0.018***	1.238	9.932
	Secondary	1.464	0.330	0.680	3.156
2	Average Monthly Income	1.000	***0.007***	1.000	1.000
3	Self Esteem	1.073	0.085	0.990	1.161
4	If yes, what is the preferred				
	Any Gender (ref)	1			
	Male	4.974	***0.001***	1.901	13.013
	Female	5.389	***0.001***	2.118	13.712

pregnant women, and identified the predictors of comorbid anxiety and depression in this population.

Socio-demographic Variable of the Respondents

The perceived social support among the respondent is low among the respondents. Low social support among pregnant women in Nigeria is a significant concern, as it negatively affects their mental health and overall well-being. Research shows that inadequate social support is associated with a higher risk of mental health issues, such as depression and anxiety during pregnancy. Similarly, systematic review found that low social support is linked to an increased likelihood of antenatal depression and anxiety.[20] Perceived social support has a profound impact on mood, as women who are less satisfied with their support systems tend to use avoidant coping strategies, which elevates their depression levels.[21]

About one tenth had family history of mental illness while small proportion had previous history ofmental illness. A positive family and previous history of mental illness heighten the risk of pregnant women developing conditions like depression and anxiety,

necessitating close monitoring and early intervention.[22] In Nigeria, the stigma surrounding mental illness, coupled with limited awareness and cultural beliefs attributing symptoms to supernatural causes, often leads to underreporting and inadequate access to mental health services.[23] This stigma, alongside the societal pressure to appear strong and self-reliant, hinders the recognition and discussion of inherited mental health issues, resulting in under diagnosis and nondisclosure within families.[24]

In Nigeria, cohabiting with a husband during pregnancy is a prevalent practice that provides significant emotional and practical advantages as evident in this study. Husbands typically play an active role by attending prenatal appointments and participating in healthcare decisions, which enhances the overall pregnancy experience.[25] This practice aligns with cultural norms emphasizing family cohesion and the supportive role of spouses, thereby strengthening marital bonds and improving maternal well-being. Evolving gender roles and modern relationship dynamics are influencing this trend, with more couples choosing to live together during pregnancy.[26]

Pregnant women's preferences for their baby's sex are shaped by a mix of cultural, societal, and personal factor. In this study, among respondents who preferred a gender, female child was more preferred as compared to male as previously document in Nigerian study. In some regions, particularly among educated families or those with progressive views, daughters are increasingly seen as assets who can contribute economically and socially to their families.[27] This shift is reflective of changing gender roles where women are gaining access to education and employment opportunities. Moreover, the role of women in nurturing familial relationships cannot be underestimated. Female children are often viewed as caregivers who maintain family bonds and support elderly relatives.[28] As societal norms evolve; many families recognize that daughters can also provide financial assistance through their careers while simultaneously upholding family traditions. This recognition may lead to a gradual reduction in the stigma attached to having female children.[29]

Prevalence of Anxiety, Depression and Comorbid Anxiety and Depression

The prevalence of anxiety disorders among the respondents was notably high (31.0%) reflecting a significant public health concern. Compared to a study in Enugu which reported that 10.1% of pregnant women exhibited anxiety symptoms, with an additional 15.7% showing borderline anxiety symptoms while in Port Harcourt, 26.6% of pregnant women experienced at least moderate anxiety.[30] This prevalence underscores the necessity for routine screening and comprehensive mental health support within obstetric care settings. Identifying and addressing anxiety disorders early can mitigate adverse effects on both the mother and developing fetus, thus highlighting the importance of integrating mental health services into prenatal care.[31] Specific studies conducted in various contexts further elucidate the prevalence of anxiety disorders among pregnant women. For example, a study from Uganda found that anxiety disorders were prevalent among pregnant women, with rates ranging from 9% to 21% Moreover, a systematic review encompassing over 212,000 women revealed that generalized anxiety disorder affects about 20% of pregnant individuals in low- and middle-income countries.[32]

The prevalence of depression among the respondents (49.7%) higher than some Nigerian studies[33]. A study in Rivers State (South southern part of Nigeria) reported a prevalence of 44.8% for major depression among pregnant women while Kano state (North western part of the country) indicated a 23.7% prevalence of antenatal depression, with intimate partner violence being a significant predictor.[33] The implications of maternal depression extend beyond the individual; they can adversely affect both maternal and child health outcomes. A broader evaluation indicates that antepartum depression rates in Nigeria range from 8.3% to 26.6%, emphasizing the necessity for prompt evaluation and intervention.[34] Addressing these mental health challenges through targeted interventions such as screening, counseling, and emotional support is essential for improving overall maternal well-being and ensuring healthier perinatal outcomes.[35]

Anxiety and depression are more common among antenatal women, particularly during the first trimester, due to a combination of physical, hormonal, and psychological factors. Hormonal fluctuations in early pregnancy, especially the increase in progesterone and estrogen, can impact neurotransmitters in the brain, leading to mood instability and heightened emotional sensitivity, which makes women more vulnerable to anxiety and depression.[36] Additionally, physical changes such as nausea, fatigue, and sleep disturbances are common in the first trimester, contributing to stress, discomfort, and a sense of helplessness. These symptoms can exacerbate mental health challenges.[37]

Psychological stress is also a significant factor during this period. Many women experience fears related to miscarriage, the health of the baby, and uncertainty about the future, especially if they are first-time mothers.[38] This uncertainty, coupled with the responsibility of impending motherhood, can increase anxiety. Women with a history of mental health issues like depression or anxiety are particularly susceptible, as pregnancy may trigger a recurrence or worsening of symptoms.[39]

Social and environmental factors further contribute to mental health challenges. Many women struggle with balancing life roles, adding to the stress. Concerns about body image due to the rapid physical changes in early pregnancy can also affect self-esteem and lead to increased anxiety or depression. These factors, when combined, can interact and intensify mental health issues during the early stages of pregnancy.[40]

Predictors of Comorbid Anxiety and Depression among the Respondents

In this study respondents had primary school education predisposed to comorbid anxiety and depression than respondents who had tertiary education, this relationship has been supported by other studies.[41] Women with lower educational levels exhibit increased rates of anxiety and depression. For instance, a study found that lower education was a significant risk factor for both prenatal anxiety (27.95%) and depression (34.01%) during the COVID-19 pandemic.[5] Another study indicated that unemployed women and those with lower education levels were more likely to experience antenatal depression, with a prevalence of 36.3% among participants.[42]

Women with more education often experience reduced anxiety and depression, due to better access to healthcare resources, improved coping mechanisms, and reduced financial stress linked to higher socioeconomic status. These factors collectively contribute to enhanced overall well-being. However, while educational status plays a critical role, it is important to consider other variables like socioeconomic conditions and available support systems when evaluating mental health during pregnancy. Low educational status can predispose pregnant women to anxiety and depression through several interconnected factors.[43] First, women with lower education may have limited access to accurate and comprehensive health information, leading to misunderstandings about pregnancy, fear of complications, or feelings of inadequacy in managing their health, which contributes to anxiety and depression.

Additionally, lower educational status is often associated with economic strain, as it correlates with lower income or unstable employment.[44] This financial stress, particularly the worry about providing for the child, can heighten anxiety and depression. Moreover, education often provides access to broader social networks, including professional and support groups. Pregnant women with lower education may have fewer social connections, leading to feelings of isolation, which can increase their risk of developing depression and anxiety. These women may also experience reduced autonomy in decision-making, as they might feel less empowered in making healthcare decisions, overwhelmed by medical procedures or advice, which fosters feelings of helplessness and mental health issues.[45]

Furthermore, lower educational attainment may be linked to higher exposure to stressors such as poor living conditions, discrimination, or lack of access to quality healthcare, with chronic stress exacerbating anxiety and depression during pregnancy. Lastly, cultural and societal pressures may stigmatize low educational status, affecting self-esteem and emotional well-being during pregnancy.[46] These factors, combined, create a vulnerable environment where pregnant women with low education experience higher levels of stress, worry, and emotional instability, increasing the likelihood of developing anxiety or depression.[47]

The direct relationship between average monthly income and comorbid anxiety and depression may be linked to the increased proportion of respondents with poor support. Increased income without emotional support can lead to anxiety and depression among pregnant women despite financial stability due to several psychological and social factors.[48] While financial security might reduce material stress, the absence of emotional support during pregnancy can create a deep sense of isolation and vulnerability. Pregnancy is an emotionally complex time, often filled with physical changes, worries about the future, and shifting family dynamics. Without a strong emotional support system—whether from a partner, family, or friends—pregnant women may feel overwhelmed, lonely, and unable to express or process their emotions.[49] This lack of connection can lead to feelings of isolation, which can trigger or exacerbate symptoms of anxiety and depression.

Additionally, the societal expectation that wealth should automatically equate to happiness may cause guilt or confusion for a woman who feels emotionally unsupported. She might believe she "should" feel fulfilled because of her financial situation, yet the absence of emotional security can leave her struggling internally.[50] Furthermore, high-income women may face increased pressure to meet societal or professional expectations, adding another layer of stress. The combination of high external expectations and internal emotional neglect can significantly increase anxiety and the risk of depression during pregnancy, highlighting the critical importance of emotional support alongside financial stability.[51]

Gender preference during pregnancy can significantly predispose mothers to anxiety and depression. This phenomenon is influenced by societal expectations and personal desires regarding the sex of the child, which can create emotional distress. Similarly, Women preferring male children exhibited higher anxiety and stress levels, with significant correlations identified between gender preference and psychosocial

stressors.[3] In addition another study found a significant relationships gender preference and maternal anxiety. Gender preference in pregnancy can lead to anxiety and depression due to the emotional and societal pressures it often brings. When there is a strong desire for a specific gender—whether from the parents, extended family, or cultural expectations—a pregnant woman may experience significant stress if the baby's gender does not align with those preferences.[52] This can lead to feelings of disappointment, guilt, and failure, as she may internalize the belief that she has somehow "failed" to meet the expectations placed on her. In cultures where certain genders are valued more than others, the pressure to deliver a child of the preferred gender can be intense.[53] Fear of criticism, judgment, or rejection from family members or the community can heighten anxiety during the pregnancy. Additionally, if the woman herself has a preference for a particular gender and the baby turns out to be of the opposite gender, she might experience conflicting emotions, such as guilt for her disappointment, further intensifying her emotional distress.[54]

Moreover, gender preference can strain relationships, especially if partners or family members disagree on the desired gender or express disappointment openly. This can create tension within the family, further contributing to feelings of isolation, sadness, or helplessness for the mother.[55] In severe cases, these feelings may manifest as anxiety or depression, affecting both her mental health and overall well-being during and after the pregnancy. The emotional toll of dealing with these expectations, combined with the normal stresses of pregnancy, can significantly increase the risk of developing anxiety and depression.[6]

CONCLUSION

Nigeria's increasing maternal age is influenced by socio-cultural, economic, education, and family planning factors, with stigma and cultural beliefs hindering early diagnosis and shaping women's preferences. The study shown that pregnant women with lower educational levels are more predisposed to anxiety and depression compared to those with higher education. This is often linked to limited access to healthcare resources, economic strain, and reduced social support, all of which contribute to heightened stress and emotional instability. Similarly, high-income pregnant women without emotional support can also experience anxiety and depression due to isolation, unmet societal expectations, and lack of emotional connection.[56] Additionally, gender preference in pregnancy can lead to anxiety and depression, as societal or personal expectations for a specific gender create pressure and emotional distress if the baby's gender does not align with these desires. These interconnected factors collectively heighten the risk of mental health challenges for pregnant women.

Recommendations

To address mental health challenges among pregnant women, several recommendations include improving access to health education, especially for women with lower education levels, to reduce anxiety and depression. Strengthening emotional support networks, including counseling and family involvement, is essential for all pregnant women. Policymakers should also target economic and social vulnerabilities by providing financial support and job security to reduce stress. Public health campaigns should address gender preference pressures through culturally sensitive education. Finally, integrating mental health screenings into prenatal care can identify at-risk women early and provide timely intervention to improve outcomes.

Limitations

The study is cross-sectional and descriptive, which limits the ability to draw conclusions about cause and effect. Additionally, the use of questionnaires relies on the assumption that respondents will provide truthful answers, but this may not always be the case.

Declarations and ethics statements

Informed Consent from Participants

Participation was voluntary, and informed consent was obtained from participants.

Share Upon Reasonable Request Data Sharing Policy

The data is presently unavailable in the public domain because authors do not have permission to share data yet. So, data would be made available only on request.

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Author's Contribution

All the authors conceptualized the topic. MOG, KA, SOO, JF collected the data. MOG, OEA, JF wrote the first manuscript while others read and corrected it. The manuscript has been read and approved by all the authors. Each author believes that the manuscript represents honest work.

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