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Depressive State Assessment of Pregnant Women Attending the Antenatal Clinic of University of Ilorin Teaching Hospital (UITH), Ilorin, Kwara State, Nigeria

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ABSTRACT

Antenatal depression, with a global prevalence of between 15 and 65%, is a clinical condition characterised by persistent sadness, anxiety, and hopelessness during pregnancy. It is a strong predictor of postpartum depression, and it negatively impacts pregnancy outcomes, maternal-child bonding, and child development. Untreated antenatal depression could lead to an increased risk of obstetric complications, inadequate prenatal care, poor maternal nutrition, substance abuse, and in severe cases, maternal suicide. Despite being a significant global public health concern, antenatal depression is often overlooked in developing countries like Nigeria, both in terms of research and treatment. Consequently, only a few studies are focusing on antenatal depression, resulting in a poor understanding of the prevalence of depressive symptoms during pregnancy and their associated risk factors. This study aims to fill the gap in knowledge regarding antenatal depression in the Ilorin population. A cross-sectional study was conducted among over 200 pregnant women attending the antenatal clinic at the University of Ilorin Teaching Hospital, where participants were administered a battery of questionnaires (ANRQ, PHQ-9, and QIDSS-163) after obtaining informed consent. The results were analysed using. The results showed that the level of education (ANRQ, QIDSS-16), number of live births (QIDSS-16), age, and number of children (PHQ-9) have a positive impact on the risk and severity of antenatal depression in pregnant women attending the antenatal clinic at UITH. Age, level of education, number of live births, and number of children are strong predictors of the risk and severity of antenatal depression.

Keywords: Antenatal Depression; Antenatal Risk Questionnaire (ANRQ); Patient Health Questionnaire (PHQ-9); Quick Inventory of Depressive Symptomatology (QIDS-SR)

INTRODUCTION

Pregnancy, anticipated as a time of joy, can also introduce antenatal depression, a significant public health concern affecting millions of women globally. This condition, marked by persistent sadness, anxiety, and hopelessness, not only impairs maternal function but also jeopardises prenatal outcomes[1]. Moreover, antenatal depression is a strong predictor of postpartum depression, which can further compromise maternal-infant bonding and child development[2,3]. Pregnant women are particularly vulnerable to depression due to physiological, hormonal, and psychosocial changes. This condition can negatively impact pregnancy outcomes, including preterm birth, low birth weight, and impaired mother-infant bonding[4]. The aetiology of antenatal depression is multifaceted, involving a combination of genetic, hormonal, and psychosocial factors. Hormonal changes during pregnancy can trigger or exacerbate depressive symptoms in women[5]. Psychosocial stressors, including relationship conflicts, a lack of social support, and socioeconomic adversity, are also significant contributors[6]. A history of depression or anxiety, unintended pregnancy, and a family history of psychiatric disorders further increase the risk[7]. Globally, the prevalence of antenatal depression varies widely, with estimates ranging from 15% to 65% of pregnant women experiencing significant depressive symptoms[8]. Antenatal depression is higher in low-income countries compared to middle-income countries and is a risk factor for low birth weight and preterm birth. This increased prevalence can be attributed to additional stressors such as poverty, gender-based violence, and limited access to mental health services[9]. Research on renatal depression is limited in Nigeria. However, one study conducted in a local government area in Abeokuta, Ogun State, in South-West Nigeria, found the prevalence of antenatal depression to be 24.5%[10]. This finding aligns with the global estimate for less developed countries, such as Nigeria. The consequences of untreated antenatal depression are profound, including an increased risk of obstetric complications, inadequate prenatal care, poor maternal nutrition, and substance abuse. Labour issues such as prolonged labour and nonvaginal delivery are associated with undiagnosed depression and barriers like symptom ignorance, delayed help-seeking, medication noncompliance, financial hurdles, and health provider unawareness[10]. In severe cases, antenatal depression may lead to maternal suicide, underscoring its critical impact on maternal and child health. Despite being a significant global public health concern, antenatal depression is often overlooked in developing countries like Nigeria, both in terms of research and treatment. Consequently, only a few studies are focusing on antenatal depression, resulting in a poor understanding of the prevalence of depressive symptoms during pregnancy and their associated risk factors. Furthermore, limited research has been conducted in Ilorin specifically. This study aimed to fill the gap in knowledge regarding antenatal depression both in the Ilorin population and on a national level. The objectives of this study were to determine the prevalence and severity of depressive symptoms among pregnant women at University of Ilorin Teaching Hospital (UITH), to identify key contributing factors and to evaluate the correlation between these factors and depression severity. Based on the findings, the study provides recommendations for improved screening, support, treatment strategies and policymaking endeavors.

MATERIALS AND METHODS

Study Design

This study used a cross-sectional design to assess the prevalence and severity of depressive symptoms among pregnant women attending the antenatal clinic at the University of Ilorin Teaching Hospital (UITH). The cross-sectional design was suitable for this study, as it enabled the collection of data at a single point in time, and provided a snapshot of the participants' mental health status.

Location

Data was collected from the antenatal clinic at the University of Ilorin Teaching Hospital (UITH), located in Ilorin, Kwara State, Nigeria. UITH serves as a major referral center for surrounding regions and provides comprehensive antenatal care services.

Ethical Approval

Before the commencement of the study, ethical approval was obtained from the University of Ilorin Teaching Hospital (UITH) Ethics Review Committee.

Duration

The data collection period spanned a month. This timeframe allows for the recruitment of the targeted number of participants and ensures that seasonal variations in depressive symptoms are taken into account.

Participants

The study population consisted of pregnant women attending the antenatal clinic at UITH during the data collection period. A sample size of 214 pregnant women was targeted to ensure adequate power for statistical analysis. Participants were selected using a systematic random sampling method, where every pregnant woman attending the antenatal clinic during the study period was invited to participate.

Selection criteria

Inclusion Criteria

The following subjects were included in the study:

i. Participants who volunteered to participate in the study, having given prior informed consent.
ii. Pregnant women attending the antenatal clinic at the University of Ilorin Teaching Hospital (UITH), Ilorin, Kwara State, Nigeria, at any stage of pregnancy.
iii. Women aged 18 years or older and able to provide informed consent.

Exclusion Criteria

i. Women with known current or past diagnosis of a severe mental illness (e.g., schizophrenia, bipolar disorder).
ii. Women with any cognitive impairment that would significantly affect their ability to understand and complete the study questionnaires.
iii. Women who are currently experiencing an acute physical health crisis requiring immediate medical attention.

Informed Consent

Participants were briefed on the study's purpose, confidentiality of information collected, and benefits of the study.

Data collection

A semi-structured questionnaire was developed to assess depressive symptoms in pregnant women attending the antenatal clinic of the University of Ilorin Teaching Hospital. Data collection was conducted using physical questionnaires. The questionnaires which had three (3) sections: i) Antenatal Risk Questionnaire (ANQR); (ii) Patient Health Questionnaire (PHQ-9); and (iii) Quick Inventory of Depressive Symptomatology (QIDS-SR16), were administered physically at the antenatal clinic of the University of Ilorin Teaching Hospital (UITH). Two research assistants were trained to administer the questionnaire to participants in a private room at the Antenatal Clinic of UITH. Two research assistants were available to clarify questions and provide support to those who had questions that were not immediately understandable or those with a limited educational background. Completed questionnaires were reviewed for completeness and accuracy. Participants were fully informed about the study's purpose and benefits. Personal information and responses were kept confidential and stored securely. Participants' names were not recorded, which ensured anonymity. Participation was voluntary, and participants could withdraw at any

time without penalty. Participants' decisions and choices were respected throughout the study. The study did not cause harm or discomfort to participants; it aimed to contribute to the improvement of mental health services for pregnant women. By addressing these ethical considerations, the study ensured the protection of participants' rights, dignity, and well-being, maintaining the highest ethical standards in research.

RESULTS

Approximately 38% of the participants were aged 26-30 years, less than 1% were above 40 years, and 3% were under 20 years. Over 86% were married, and the rest were single, divorced, or separated. More than half of the respondents were undergraduates, about 31% were postgraduates, and less than 2% had no formal education. Approximately 40% of the women were multiparous, and about 36% were primigravida (Table 1). About 78% had no history of miscarriage, mode of last delivery was about spontaneous vaginal delivery in about 70%. < 8% had complications in the previous delivery, with hypertension being the most common complication, accounting for about 43% of all complications. Approximately 39% of the women were in their second trimester, 35% in their third trimester, and 25% in their first trimester (Table 2). On ANRQ, approximately 73% had no psychosocial risk (Figure 1), and a significant correlation was also observed between level of education and psychosocial risk ($p < 0.018$), as shown in Table 3. The PHQ-9 demonstrated a significant correlation between age ($p < 0.019$) and the number of children ($p < 0.038$), as well as psychometric properties, as shown in Table 4 (Figure 2). QIDSS-16 showed a significant correlation between level of education ($p < 0.001$), number of live births ($p < 0.034$), and severity of depression symptoms, as shown in Table 5 (Figure 3).

Table 1: Socio-demographic characteristics of respondents

Variables	Frequency	Percentage
Age groups		
≤ 20	7	3.3
21 – 25	48	22.9
26 – 30	80	38.1
31 – 35	51	24.3
36 – 40	22	10.5
> 40	2	1.0
Mean ± SD	29 ± 5.17	
Range	19 – 43	
Marital status		
Single	20	9.5
Married	182	86.7
Divorced/Separated	8	3.8
Level of education		
None	4	1.9
High school	32	15.2
Undergraduates	108	51.4
Post graduates	66	31.4
Number of children		
0	72	32.3
1	48	22.9
2 – 4	84	39.9
> 4	6	2.9
Mean ± SD	1.44 ± 1.41	
Range	0 – 6	
Number of pregnancies		
1	75	35.7
2 – 4	110	52.3
> 4	25	
Mean ± SD	2.42 ± 1.51	
Range	0 – 8	
Number of live births		
0	61	29.0
1	63	30.0
2	44	21.0
3	24	11.4
4	14	6.7
> 4	4	1.9
Mean ± SD	1.43 ± 1.31	
Range	0 – 6	

Table 2: Maternal history

Variables	Frequency	Percentage (%)
History of miscarriages	**n=210**	
Yes	46	21.9
No	164	78.1
Modes of last delivery	**n= 115**	
Vaginal	80	69.6
CS	27	23.5
CS/Vaginal	8	7.0
Complications	**n=210**	
Yes	16	7.6
No	194	92.4
Types of complications	**n=16**	
Hypertension	7	43.8
Bleeding	4	25.0
Low pelvic pain	2	12.5
Others	3	18.7
Gestational age	**n=210**	
1st trimester	53	25.2
2nd trimester	83	39.4
3rd trimester	74	35.4

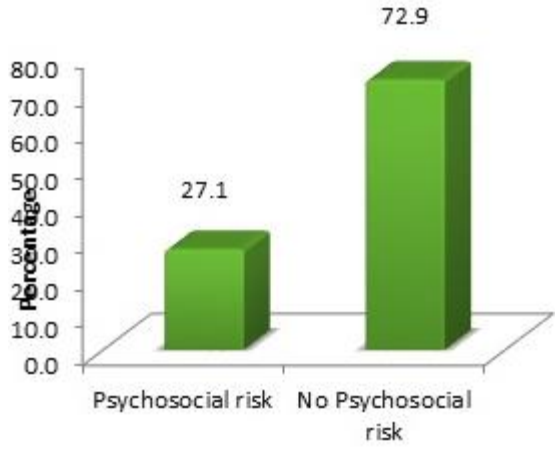

Figure 1: Presentation of respondents by ANRQ

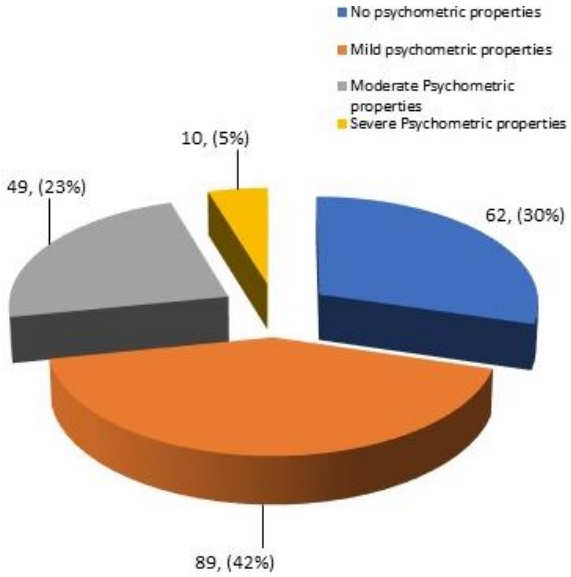

Figure 2: Presentation of respondents by PHQ-9 score

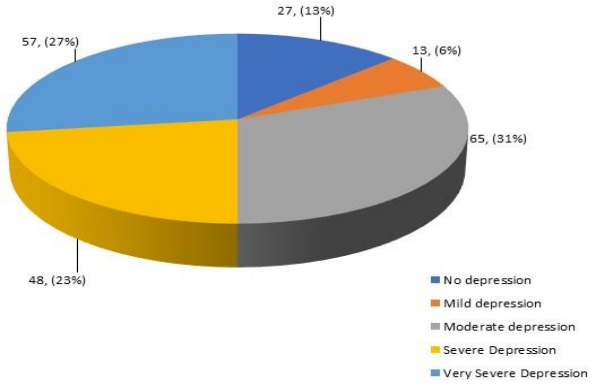

Figure 3: Overall score of QIDSS-SR 16 of respondents

Table 3: Association between ANRQ and socio-demographic characteristics

Variables	ANRQ		χ^2/t-test	p-value
	Psychological risk	No psychological risk		
Age groups			10.263	0.068
≤ 20	2 (28.6)	5 (71.4)		
21 – 25	18 (37.5)	30 (62.5)		
26 – 30	16 (20.0)	64 (80.0)		
31 – 35	14 (27.5)	37 (72.5)		
36 – 40	5 (22.7)	17 (77.3)		
> 40	2 (100.0)	0 (0.0)		
Mean ± SD	28 ± 5.96	29 ± 4.89	-0.702	0.484
Marital status				
Single	7 (35.0)	13 (65.0)		
Married	46 (25.3)	136 (74.7)		
Divorced/Separated	4 (50.0)	4 (50.0)		
Level of education			10.124	**0.018***
None	3 (75.0)	1 (25.0)		
High school	10 (31.3)	22 (68.8)		
Undergraduates	21 (19.4)	87 (80.6)		
Post graduates	23 (34.8)	43 (65.2)		
Number of children			6.882	0.076
0	23 (31.9)	49 (68.1)		
1	11 (22.9)	37 (77.1)		
2 – 4	19 (22.6)	65 (77.4)		
> 4	4 (66.7)	2 (33.3)		
Mean ± SD	1.58 ± 1.40	1.45 ± 1.34	-0.216	0.829
Number of pregnancies			4.620	0.202
0	0 (0.0)	1 (100.0)		
1	23 (31.1)	51 (68.9)		
2 – 4	24 (21.8)	86 (78.2)		
> 4	10 (40.0)	15 (60.0)		
Mean ± SD	2.51 ± 1.86	2.39 ± 1.37	0.495	0.621
Number of live births			5.523^{f}	0.340
0	19 (31.1)	42 (68.9)		
1	16 (25.4)	47 (74.6)		
2	10 (22.7)	34 (77.3)		
3	5 (20.8)	19 (79.2)		
4	4 (28.6)	10 (71.4)		
> 4	3 (75.0)	1 (25.0)		
Mean ± SD	1.52 ± 1.46	1.42 ± 1.23	0.185	0.853

^{f}***-Fishers Exact test***

Table 4: Association between PHQ-9 and socio-demographic characteristics

Variables	PHQ- 9				χ^2/t-test	p-value
	No psychometric properties	Mild psychometric properties	Moderate psychometric properties	Severe psychometric properties		
Age groups					28.430	**0.019***
≤ 20	1 (14.3)	4 (57.1)	0 (0.0)	2 (28.6)		
21 – 25	10 (20.8)	24 (50.0)	11 (22.9)	3 (6.3)		
26 – 30	24 (30.0)	31 (38.8)	22 (27.5)	3 (3.8)		
31 – 35	18 (35.3)	21 (341.2)	11 (21.6)	1 (2.0)		
36 – 40	9 (40.9)	9 (40.9)	4 (18.2)	0 (0.0)		
> 40	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)		
Marital status					11.369	0.078
Single	4 (20.0)	10 (50.0)	3 (15.0)	3 (15.0)		
Married	58 (31.9)	74 (40.7)	44 (24.2)	6 (3.3)		
Divorced/Separated	0 (0.0)	5 (62.5)	2 (25.0)	1 (12.5)		
Level of education					5.183	0.818
None	1 (25.0)	2 (50.0)	1 (25.0)	0 (0.0)		
High school	8 (25.0)	15 (46.9)	7 (21.9)	2 (6.3)		
Undergraduates	29 (26.9)	51 (47.2)	24 (22.2)	4 (3.7)		
Post graduates	24 (36.4)	21 (31.8)	17 (25.8)	4 (6.1)		
Number of children					16.464[f]	**0.038**
0	16 (23.6)	29 (40.3)	18 (25.0)	8 (11.1)		
1	19 (39.6)	18 (37.5)	10 (20.8)	1 (2.1)		
2 – 4	24 (28.6)	40 (47.6)	20 (23.8)	0 (0.0)		
> 4	2 (33.3)	2 (33.3)	1 (16.7)	1 (16.7)		
Number of pregnancies					3.369	0.303
0	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)		
1	17 (23.0)	35 (47.3)	15 (20.3)	7 (9.5)		
2 – 4	40 (36.4)	39 (35.5)	29 (26.4)	2 (1.8)		
> 4	5 (20.0)	15 (60.0)	4 (16.0)	1 (4.0)		
Number of live births					24.363	0.059
0	15 (24.6)	27 (44.3)	12 (19.7)	7 (11.5)		
1	21 (33.3)	23 (36.5)	17 (27.0)	2 (3.2)		
2	18 (40.9)	15 (34.1)	11 (25.0)	0 (0.0)		
3	5 (20.8)	13 (54.2)	6 (25.0)	0 (0.0)		
4	2 (14.3)	10 (71.4)	2 (14.3)	0 (0.0)		
> 4	1 (25.0)	1 (25.0)	1 (25.0)	1 (25.0)		

[f]-Fishers Exact test

Table 5: Association between socio-demographic characteristics and QIDS-SR 16

Variables	No depression	Mild depression	Moderate depression	Severe depression	χ^2/t-test	p-value
Age groups					15.911	0.722
≤ 20	1 (14.3)	0 (0.0)	2 (28.6)	4 (57.1)		
21 – 25	8 (16.7)	15 (31.3)	7 (14.6)	18 (37.5)		
26 – 30	16 (20.1)	26 (32.5)	19 (23.8)	119 (23.8)		
31 – 35	12 (23.5)	15 (29.4)	12 (23.5)	12 (23.5)		
36 – 40	3 (13.6)	8 (36.4)	7 (31.8)	4 (18.2)		
> 40	0 (0.0)	1 (50.0)	1 (50.0)	0 (0.0)		
Marital status					15.197	0.055
Single	4 (20.0)	5 (25.0)	1 (5.0)	10 (50.0)		
Married	36 (19.7)	59 (32.4)	45 (24.7)	42 (23.1)		
Divorced/Separated	0 (0.0)	1 (12.5)	2 (25.0)	5 (62.5)		
Level of education					35.545	**0.001***
None	2 (50.0)	0 (0.0)	2 (50.0)	0 (0.0)		
High school	4 (12.5)	8 (25.0)	7 (21.9)	13 (40.6)		
Undergraduates	14 (12.9)	36 (33.3)	28 (25.9)	30 (27.8)		
Post graduates	20 (30.3)	21 (31.8)	11 (16.7)	14 (21.2)		
Number of children					15.646	0.208
0	17 (23.6)	18 (25.00	11 (15.3)	26 (36.1)		
1	9 (18.8)	18 (37.5)	8 (16.7)	13 (27.1)		
2 – 4	14 (16.6)	27 (32.1)	26 (31.0)	17 (20.2)		
> 4	0 (0.0)	2 (33.3)	3 (50.0)	1 (16.7)		
Number of pregnancies					14.030[f]	0.283
0	0 (0.0)	1 (100.0)	0 (0.0)	0 (0.0)		
1	16 (11.6)	19 (25.7)	14 (18.9)	25 (33.8)		
2 – 4	20 (8.2)	39 (35.5)	23 (20.9)	28 (25.5)		
> 4	4 (16.0)	6 (24.0)	11 (44.0)	4 (16.0)		
Number of live births					32.623[f]	**0.034**
0	16 (26.2)	13 (21.3)	10 (16.4)	22 (36.1)		
1	9 (14.3)	26 (41.3)	11 (17.5)	17 (27.0)		
2	9 (20.4)	15 (34.1)	12 927.3)	8 (18.2)		
3	5 (20.8)	6 (25.0)	4 (16.7)	9 (37.5)		
4	1 (7.1)	4 (28.6)	8 (57.1)	1 (7.1)		
> 4	0 (0.0)	1 (25.0)	3 (75.0)	0 (0.0)		

[f]-*Fishers Exact test*

DISCUSSION

The research provides valuable insights into the demographic, obstetric, and psychosocial profiles of the participants, with implications for maternal and mental health care. The results indicate a heterogeneous sample of women with varying education levels, reproductive profiles, and psychosocial backgrounds, highlighting key factors that may impact maternal well-being and outcomes.

Sociodemographic Characteristics

Thirty-eight percent of the participants were between 26 and 30 years old, with a very small percentage (<1%) above 40 years old or below 20 years old (3%). The age distribution is similar to that of the reproductive age group commonly found in most maternal health studies, where young women form the majority of the study population. Most married participants (86%) also reported observing cultural practices or social preferences related to the delivery of marriage, as noted in similar research[11]. Nonetheless, the low proportion of single, divorced, or separated participants is evidence for strategies in holistic maternal care to provide space for variable marital status since they may pose different psychosocial issues[12]. Education was quite high, with over half of the population holding undergraduate degrees and around 31% possessing postgraduate qualifications.

This suggests a correlation between education and healthcare access, whereby well-educated women are more likely to access antenatal care and engage in health-promoting behaviors[13]. On the other hand, fewer than 2% of the respondents indicated a lack of education, showing the necessity for focused interventions for women with poor education prospects to enhance equitable access to maternal care. Obstetric Characteristics A large number of the women were multiparous (40%) or primigravida (36%), suggesting an even split between first-time and veteran mothers. The majority of participants (78%) had not miscarried in the past, according to other studies that emphasise the relatively low miscarriage rate in healthy samples[14]. Interestingly, 70% of the women gave spontaneous vaginal delivery as their most recent delivery method, which may suggest preference for or availability of natural birth techniques among this sample.

Injuries during previous delivery were reported among fewer than 8% of the research participants, with hypertension being reported as the top one (43%). This supports earlier literature declaring hypertensive disorders among the top determinants of worldwide maternal morbidity[15]. Prevention against adverse maternal as well as fetal outcomes relies mainly on the early detection as well as the proper management of gestational hypertension.

Trimester Distribution

The distribution of participants by trimester—39% in the second trimester, 35% in the third trimester, and 25% in the first trimester—gives an overall picture of women at different stages of pregnancy. Equal distribution across the trimesters facilitates comparison among the different trimesters, which is particularly important in measuring psychosocial risks and mental health symptom development during pregnancy[16].

Psychosocial and Mental Health Findings

Approximately 73% of the participants had no psychosocial risk, as indicated by the ANRQ, reflecting the overall psychosocial well-being of the sample. The strong correlation between the level of education and psychosocial risk ($p < 0.018$), however, indicates that less educated women are more likely to be at risk because of psychosocial stressors. This finding is consistent with the literature on the buffer effect of education in improving coping and resource availability among pregnant women[17]. The PHQ-9 results also provided correlations with age ($p < 0.019$), number of children ($p < 0.038$), and depression symptoms. Increased age and parity can potentially lead to increased stress and emotional burden, as indicated

in previous studies[1]. Similarly, the QIDSS-16 results revealed that educational attainment ($p < 0.001$) and the number of live births ($p < 0.034$) were significant predictors of the severity of depressive symptoms. Those with lower education and higher numbers of children might be experiencing more socioeconomic stress, which might lead to worse mental health.

Implications and Recommendations

The results of this study underscore the necessity for some maternal mental health interventions among younger women, less educated women, and multiparous women. Specific psychosocial interventions should target the specific stressors of these women, such as socioeconomic conditions and restricted access to healthcare services. Healthcare providers also need to place a high value on early detection and control of hypertensive disorders and other pregnancy complications to enhance maternal and neonatal outcomes.

Limitations

The research has its limitations. A cross-sectional design precludes the inference of causality among the variables, and the use of self-reported measures can result in recall bias. The results also are not transportable to diverse sociodemographic populations or health systems. Longitudinal associations between psychosocial risk factors and maternal outcomes should be explored in future studies to generate more evidence for targeted interventions.

Conclusion

The findings of this research highlight the complex interplay between obstetric, sociodemographic, and psychosocial factors in predicting maternal health outcomes. Interventions to mitigate the risks under study are critical in promoting maternal well-being and minimizing undesirable outcomes.

Conflict of interest

There are no conflicts of interest.

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