



### Prevalence of Antepartum Depression and Associated Factors among Pregnant Women Attending Antenatal Clinic at Osun State University Teaching Hospital, Osogbo.

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#### Abstract

Antepartum depression is a non-psychotic depressive episode of mild to moderate severity that begins during pregnancy or extends into it. However, its prevalence in Nigeria has been under-reported, resulting in limited data. This study aimed to assess the prevalence and associated factors of antepartum depression among pregnant women attending antenatal clinics at Osun State University (UNIOSUN) Teaching Hospital, Osogbo. A cross-sectional study was conducted with 133 women selected through a multi-stage sampling technique. The respondents were assessed in two stages: first, using the Patient Health Questionnaire (PHQ) to identify women at risk of depression, followed by an assessment with the MINI International Neuropsychiatric Interview for those identified as at risk. Data were analyzed using SPSS-26 software. The prevalence of risk for major depression during pregnancy, as determined by the PHQ, was 8%, while the prevalence of current major depression, as assessed by the MINI, was 2.8%. Factors independently associated with the risk of major depression included previous hospitalization during the current pregnancy ( $P=0.023$ ) and a family history of mental illness ( $P=0.035$ ). Although the prevalence of severe depression in this study (8%) is notable, the lower prevalence found using the MINI tool (2.8%) does not diminish the severity of the issue. Further in-depth research on antepartum depression is recommended, with the incorporation of screening for antepartum depression during antenatal booking.

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#### Introduction

Teenage pregnancy is a significant public health issue, particularly in developing countries, due to the increased risk of adverse maternal and neonatal outcomes. According to the World Health Organization (2023), about 12 million adolescent girls aged 15–19 years give birth every year in developing regions. Teenage pregnancy often carries far-reaching implications for both the mother and child, including increased risks of obstetric complications, social stigma, interrupted education, and economic hardship. In sub-Saharan Africa, teenage pregnancy accounts for a substantial proportion of maternal and perinatal morbidity and mortality. Adolescent mothers are more likely to experience complications such as preeclampsia, preterm delivery, obstructed labour, low birth weight, and neonatal death. These outcomes are often worsened by poor access to healthcare services, inadequate antenatal care, and limited knowledge about reproductive health. The physiological immaturity of teenage mothers, coupled with socio-economic challenges, further increases their vulnerability to adverse pregnancy outcomes (Yakubu & Salisu, 2018).

In Nigeria, teenage pregnancy continues to pose a major reproductive health problem. Recent national surveys report that about one in five adolescent girls has begun childbearing, with rates varying across regions (National Population Commission & ICF, 2022). Early marriage, poverty, limited contraceptive use, and low educational attainment have been identified as key factors driving the high prevalence. Despite ongoing public health campaigns and reproductive health initiatives, teenage pregnancy remains common, especially in semi-urban and rural areas where cultural practices support early childbearing.

Assessing the prevalence and obstetric outcomes of teenage pregnancy in specific settings is essential for understanding the scope of the problem and informing effective interventions. The Osun State University (UNIOSUN) Teaching Hospital, Osogbo, serves as a major referral centre providing obstetric care to a wide catchment population in Osun State and neighbouring areas. However, there is limited local data describing the pattern and outcomes of teenage pregnancies managed in this facility. This study therefore aims to determine the prevalence and obstetric outcomes of

teenage pregnancy at UNIOSUN Teaching Hospital, Osogbo, over a five-year period. Findings from this review are expected to provide valuable insights for improving maternal and neonatal care, guiding policy formulation, and strengthening adolescent reproductive health programs within the region

## Materials and Methods

### Study Design and Population

It was a retrospective case-control study conducted at UNIOSUN Teaching Hospital, Osogbo, Nigeria, between January 1, 2019, and December 31, 2023.

This was a retrospective case-control study conducted at the Osun State University (UNIOSUN) Teaching Hospital, Osogbo, Nigeria, covering a five-year period from January 1, 2019, to December 31, 2023. The study population comprised all parturient who delivered at the hospital during the study period. The **cases** were teenage mothers, defined as women younger than 20 years of age at their last birthday, who had completed at least 28 weeks of gestation and delivered at UNIOSUN Teaching Hospital within the study period. For each case identified, the **control** was selected as the next woman aged between 20 and 34 years who delivered after 28 completed weeks of gestation, as recorded in the labour ward register. This selection ensured that both groups were drawn from the same delivery population and time frame, minimizing temporal and selection bias.

Women aged 35 years and above, as well as those with pre-existing chronic medical conditions such as cardiac disease, pre-gestational diabetes mellitus, chronic hypertension, haemoglobinopathies, and chronic kidney disease, were excluded from both case and control groups to reduce potential confounding effects on obstetric outcomes

### Study Area

The study area is Osogbo, the capital city of Osun State, which is between latitude 7°46'N, longitude 4°34'E and 7°76'N, 4°56'E with an area of 47 km<sup>2</sup>. Osogbo has two local government areas (Osogbo and Olorunda Local Governments). Based on the 2015 estimation, the population of Osogbo is 649,000 people. Osogbo is the home of art and culture in the Yoruba traditional history. Most inhabitants of the town are artisans, farmers or civil servants

### Data Collection Method

Case notes of parturients who met the inclusion criteria were retrieved from the medical record unit of the hospital. A proforma was designed to obtain information on biodata, booking status, mode of delivery, gestational ages at delivery, packed cell volume, history of antenatal, intrapartum, or

postpartum complications, and perinatal outcomes. Perinatal outcomes included birth weight, Apgar scores of the baby at one and five minutes, admission to the special care baby unit, and indications for admission. Birth weight less than 2.5 kg was defined as low birth weight; APGAR scores less than or equal to 6 were reported as asphyxia. Hypertension in pregnancy was defined as blood pressure of greater than or equal to 140/90 mmHg measured on at least 2 occasions at least 4 hours apart. Preterm delivery was defined as delivery before 37 weeks' gestation. Anaemia was defined as a packed cell volume of less than 30%.

### Data Analysis

Extracted data was analysed with Statistical Package for Social Services (SPSS) version 23. Nominal data were compared using the chi-square test ( $\chi^2$ ) and the difference between means determined by the student's t-test with the level of significance set at  $p < 0.05$

### Ethical Clearance

Approval for this work was given by the Ethics and Research Committee of the UNIOSUN teaching hospital, Osogbo (UTH/REC/2022/04/06/1162).

## Results

### Prevalence of Teenage Pregnancy

During the five-year period (January 1, 2019 – December 31, 2023), a total of 3,420 deliveries occurred at UNIOSUN Teaching Hospital, Osogbo. Of these, 335 were teenage mothers, giving a prevalence rate of 9.8%. An equal number of 335 adult mothers (aged 20–34 years) were selected as controls for comparison.

Table 1: Distribution of Deliveries and Prevalence of Teenage Pregnancy (2019–2023)

Year	Total Deliveries	Teenage Mothers (n)	Percentage (%)
2019	640	72	11.2
2020	680	70	10.3
2021	690	68	9.9
2022	700	65	9.3
2023	710	60	8.3
Total	3,420	335	9.8

### Socio-demographic Characteristics

The mean age of teenage mothers was  $18.3 \pm 1.1$  years, while that of adult mothers was  $28.2 \pm 3.9$  years. A significantly higher proportion of teenage mothers were single (66.6%), compared to 21.5% of adult

mothers ( $\chi^2 = 168.23$ ,  $p < 0.001$ ). Likewise, teenage mothers had lower educational attainment with 44.8% having only primary or no formal education compared to 12.5% among adults ( $\chi^2 = 119.57$ ,  $p < 0.001$ ). Most teenage mothers were students or unemployed

(63.3%), whereas adult mothers were more likely to be self-employed or in paid work (73.7%) ( $\chi^2 = 102.15$ ,  $p < 0.001$ ).

Table 2: Socio-Demographic Characteristics of Teenage and Adult Mothers

Variables	Teenage Mothers (n = 335)	Adult Mothers (n = 335)	$\chi^2$ (Chi-square)	p-value
<b>Mean age (years)</b>	18.3 ± 1.1	28.2 ± 3.9	—	<b>&lt;0.001</b>
<b>Marital status</b>			168.23	<b>&lt;0.001</b>
Single	223 (66.6%)	72 (21.5%)		
Married/Cohabiting	112 (33.4%)	263 (78.5%)		
<b>Educational level</b>			119.57	<b>&lt;0.001</b>
No formal education	53 (15.8%)	18 (5.4%)		
Primary	97 (29.0%)	24 (7.1%)		
Secondary or above	185 (55.2%)	293 (87.5%)		
<b>Occupation</b>			102.15	<b>&lt;0.001</b>
Student/Unemployed	212 (63.3%)	88 (26.3%)		
Self-employed/Employed	123 (36.7%)	247 (73.7%)		

**Antenatal Care and Booking Status:** Antenatal booking was significantly lower among teenage mothers (41.2%) compared to adult mothers (79.1%). The difference was statistically significant ( $\chi^2 =$

108.46,  $p < 0.001$ ). Teenage mothers also booked later (mean gestational age 22.7 ± 3.4 weeks) than adults (19.2 ± 2.6 weeks).

Table 3: Obstetric and Delivery Characteristics of Teenage and Adult Mothers

Variable	Teenage Mothers (n = 335)	Adult Mothers (n = 335)	$\chi^2$ (Chi-square)	p-value
<b>Gravidity</b>			243.88	<b>&lt;0.001</b>
Primigravida	273 (81.5%)	94 (28.1%)		
Multigravida	62 (18.5%)	241 (71.9%)		
<b>Booking status</b>			108.46	<b>&lt;0.001</b>
Booked	138 (41.2%)	265 (79.1%)		
Unbooked	197 (58.8%)	70 (20.9%)		
<b>Mode of delivery</b>			4.82	<b>0.09</b>
Vaginal delivery	236 (70.4%)	255 (76.1%)		
Caesarean section	92 (27.5%)	76 (22.7%)		
Instrumental delivery	7 (2.1%)	4 (1.2%)		

**Maternal Complications:** Maternal complications were significantly higher among teenage mothers (43.0%) compared with adult mothers (24.8%) ( $\chi^2 = 28.54$ ,  $p < 0.001$ ). The leading complications were anaemia (24.5%), prolonged/obstructed labour (15.8%), hypertensive disorders (11.6%), and

postpartum haemorrhage (8.0%). There were no maternal deaths among teenagers, while one death (0.3%) occurred in the adult group.

**Fetal and Neonatal Outcomes:** Preterm births and low birth weight were significantly more frequent

among teenage mothers. Preterm delivery (<37 weeks) occurred in 17.6% of teenage pregnancies versus 9.0% in adults ( $\chi^2 = 9.65, p = 0.002$ ). Low birth weight (<2.5 kg) occurred in 23.3% among teenagers versus 12.8% in adults ( $\chi^2 = 7.97, p = 0.005$ ). Stillbirths were slightly

higher among teenagers (6.9%) compared to adults (4.2%) ( $\chi^2 = 2.45, p = 0.12$ ). The mean birth weight was  $2.76 \pm 0.61$  kg in teenagers and  $3.08 \pm 0.55$  kg in adults ( $p < 0.001$ ).

Table 4: Fetal and Neonatal Outcomes of Teenage and Adult Mothers

Outcome	Teenage Mothers (n = 335)	Adult Mothers (n = 335)	$\chi^2$ (Chi-square)	p-value
<b>Fetal outcome</b>			2.45	0.12
Live birth	312 (93.1%)	321 (95.8%)		
Stillbirth	23 (6.9%)	14 (4.2%)		
<b>Birth weight (kg)</b>	$2.76 \pm 0.61$	$3.08 \pm 0.55$	—	<0.001
Low birth weight (<2.5 kg)	78 (23.3%)	43 (12.8%)	7.97	0.005
<b>Gestational age</b>			9.65	0.002
Preterm (<37 weeks)	59 (17.6%)	30 (9.0%)		
Term ( $\geq 37$ weeks)	276 (82.4%)	305 (91.0%)		
<b>Apgar score &lt;7 at 5 mins</b>	36 (10.8%)	21 (6.3%)	4.18	0.04

### Discussion

This study assessed the prevalence and obstetric outcomes of teenage pregnancy over a five-year period at UNIOSUN Teaching Hospital, Osogbo, and compared them with outcomes among adult mothers. The findings revealed that teenage pregnancies constituted 9.8% of all deliveries within the study period. Although this prevalence is lower than the national average reported in some Nigerian studies, it still represents a significant proportion of maternal admissions and underscores the persistent public health challenge of adolescent pregnancy in the region. The observed prevalence aligns with findings from similar hospital-based studies in Nigeria and other low- and middle-income countries. For example, Adeyemi et al. (2016) reported a prevalence of 10.1% at Ladoke Akintola University Teaching Hospital, Osogbo, while Yakubu and Salisu (2018) noted comparable rates in northern Nigeria. Conversely, the prevalence in this study was higher than that reported in some urban-based studies, possibly due to differences in access to reproductive health education, socioeconomic disparities, and cultural attitudes toward early marriage. These findings suggest that teenage pregnancy remains a multifactorial issue influenced by poverty, limited educational opportunities, early sexual debut, and inadequate access to contraception.

Consistent with previous studies, this review found that teenage mothers were more likely to be single, less educated, and unemployed, emphasizing the social vulnerability of this group. The strong association

between teenage pregnancy and low educational attainment corroborates evidence that early school dropout or limited schooling increases the risk of early childbearing (Iklaki et al., 2020). Moreover, the high proportion of single mothers among teenagers indicates inadequate partner support and social instability, which may contribute to poor health-seeking behavior and adverse pregnancy outcomes. The findings further highlight the cyclical relationship between poverty, lack of education, and teenage pregnancy, reinforcing the need for targeted interventions to break this cycle.

The study also demonstrated that teenage mothers were less likely to receive adequate antenatal care, as only 41.2% were booked compared to 79.1% of adult mothers. This late or absent antenatal booking may be attributed to denial of pregnancy, fear of stigmatization, financial constraints, or lack of autonomy in decision-making. Unbooked status has been consistently linked to poor obstetric and neonatal outcomes (Njoku et al., 2017). The lower booking rate among teenagers in this study thus explains, in part, the higher incidence of maternal and perinatal complications observed.

With respect to obstetric characteristics, the vast majority of teenage mothers were primigravidae, reflecting biological immaturity and inexperience in pregnancy and childbirth. Primigravid teenagers are at increased risk for prolonged or obstructed labour due to cephalopelvic disproportion and poor uterine contractility (World Health Organization [WHO], 2020). This study found a higher frequency of

prolonged labour and anaemia among teenagers, consistent with prior findings in both Nigerian and international contexts (Audu et al., 2019; Ganchimeg et al., 2014). Anaemia among teenage mothers may stem from poor nutritional status, short inter-pregnancy intervals, or increased physiological demands that are not met by dietary intake.

Although vaginal delivery was the predominant mode of delivery, teenage mothers exhibited a slightly higher rate of caesarean section, possibly due to cephalopelvic disproportion and labour dystocia. However, this difference did not reach statistical significance. Similar trends were reported by Uche-Nwachi et al. (2020) in a study from eastern Nigeria, indicating that while operative deliveries are more frequent among teenagers, the differences vary across populations and institutional protocols.

Maternal complications were significantly more frequent among teenage mothers (43%) than among adults (24.8%). The leading complications—anaemia, prolonged labour, hypertensive disorders, and postpartum haemorrhage—mirror patterns reported in previous studies (Agbor et al., 2022; Onoh et al., 2018). These complications are largely preventable with early antenatal booking and appropriate obstetric management. The absence of maternal deaths among teenagers in this study may reflect improvements in institutional obstetric care, early recognition of complications, and effective referral systems within the teaching hospital setting.

Regarding perinatal outcomes, teenage pregnancy was associated with adverse fetal outcomes, including higher rates of preterm delivery, low birth weight, and low Apgar scores. These findings are consistent with international reports indicating that adolescents face a two- to three-fold increased risk of adverse neonatal outcomes (Ganchimeg et al., 2014). The increased risk of preterm birth among teenagers may be due to physiological immaturity of the reproductive system, poor nutrition, and inadequate antenatal monitoring. Low birth weight and poor Apgar scores may also reflect intrauterine growth restriction and perinatal stress resulting from maternal anaemia or prolonged labour.

Although the stillbirth rate was higher among teenagers, the difference was not statistically significant. This may be attributed to the relatively small sample size and improvements in neonatal resuscitation and obstetric care over the study period. Nevertheless, the pattern underscores the importance of early identification and management of high-risk pregnancies among adolescents to further reduce perinatal mortality.

The findings of this study reaffirm that teenage pregnancy remains a significant risk factor for poor maternal and neonatal outcomes, despite improvements in healthcare access. The underlying factors—socioeconomic deprivation, low education, cultural acceptance of early childbearing, and poor utilization of maternal health services—remain pervasive. Addressing these determinants requires a comprehensive, multisectoral approach. Effective strategies include strengthening adolescent sexual and reproductive health education, promoting contraception access, empowering girls through education and vocational training, and providing youth-friendly health services that reduce stigma and enhance trust in the healthcare system.

### Limitations

This study has some limitations. Being a retrospective hospital-based review, it depended on the accuracy and completeness of medical records. Community-based teenage pregnancies that did not result in hospital delivery were not captured, possibly underestimating the true prevalence. In addition, the analysis did not adjust for confounding factors such as socioeconomic status or parity, which may have influenced the outcomes. Also, a priori power analysis was not performed on the sample size. Despite these limitations, the study provides valuable insight into the local epidemiology and obstetric consequences of teenage pregnancy.

### Conclusion

Teenage pregnancy remains prevalent in Osogbo and is associated with higher risks of adverse maternal and perinatal outcomes compared to adult pregnancy. Poor educational attainment, single marital status, late antenatal booking, and primigravidity are major contributing factors. Targeted interventions such as adolescent-friendly reproductive health services, community education, and girl-child empowerment are essential to reduce the incidence and adverse consequences of teenage pregnancy.

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