

Antepartum depression and associated factors among pregnant teenagers attending antenatal care at a tertiary referral hospital in southwestern Uganda

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Abstract

Background

Antepartum depression can adversely affect maternal well-being, engagement with antenatal care, and pregnancy outcomes. Pregnant teenagers may be especially vulnerable because of inadequate social support. However, data on the burden and associated factors of antepartum depression among teenagers receiving tertiary referral care in Uganda are limited. We determined the prevalence of antepartum depression and associated factors among pregnant teenagers attending antenatal care at Mbarara Regional Referral Hospital in southwestern Uganda.

Methods

We conducted a hospital-based cross-sectional study during January–March 2026 among pregnant teenagers aged 13–19 years attending antenatal care at Mbarara Regional Referral Hospital. Participants were enrolled consecutively and interviewed using a structured questionnaire. Antepartum depression was assessed using the nine-item Patient Health Questionnaire and operationally defined as a score of ≥ 10 . Modified Poisson regression with robust standard errors was used to estimate adjusted prevalence ratios (aPRs) and 95% confidence intervals (CIs).

Results

Among 281 pregnant teenagers, 35 had antepartum depression, giving a prevalence of 12.5% (95% CI, 8.8–16.8%). Antepartum depression was more prevalent among teenagers who lacked partner support (aPR, 4.40; 95% CI, 1.09–7.60), reported an unplanned pregnancy (aPR, 3.26; 95% CI, 1.72–6.18), or experienced intimate partner violence (aPR, 4.51; 95% CI, 2.43–8.36).

Conclusion

Antepartum depression affected approximately one in eight pregnant teenagers. Its higher prevalence among teenagers lacking partner support, reporting an unplanned pregnancy, or experiencing intimate partner violence highlights the importance of psychosocial and relationship circumstances. Integrating depression screening with assessment of pregnancy intention, partner support, and intimate partner violence into adolescent-responsive antenatal care may facilitate timely psychosocial support and referral.

Clinical Trial Registration

Not applicable

Introduction

Antepartum depression is a common but under-recognized condition that may affect maternal well-being and pregnancy outcomes. In Africa, approximately one in four pregnant women experience antenatal depression, although prevalence estimates differ across populations, healthcare settings, and screening instruments (1). Depression during pregnancy has been associated with adverse outcomes, including preterm birth and low birth weight (2). Pregnant teenagers may face greater vulnerability because pregnancy frequently coincides with limited social support, financial dependence, interrupted education, and intimate partner violence (3). African studies suggest a high burden of depression among pregnant and parenting adolescents, with a pooled prevalence of about 40% and facility-based estimates of 38.6% in Ghana and 43.1% in Kenya (3, 4). These findings underscore the need for early identification and appropriate psychosocial support within teenager-responsive antenatal care.

Adolescent pregnancy remains common in Uganda, where approximately 24% of girls aged 15–19 years had begun childbearing according to the 2022 Uganda Demographic and Health Survey (5). However, evidence on antepartum depression among pregnant teenagers remains limited and setting-specific. A recent study conducted in four primary healthcare facilities in Mbarara City, southwestern Uganda, identified depression in 35.9% of pregnant teenagers using the Edinburgh Postnatal Depression Scale (6), but comparable data from tertiary referral care are lacking. This estimate may not be directly generalizable to teenagers attending a tertiary referral hospital, where referral pathways and case mix may result in differences in obstetric complications, medical comorbidities, timing of antenatal presentation, psychosocial needs, and access to specialist services. At Mbarara Regional Referral Hospital (MRRH), an earlier study found that 42.8% of adolescent mothers experienced at least one adverse perinatal outcome, but it did not assess depression during pregnancy (7). Evidence from a tertiary maternal mental health clinic in South Africa further illustrates the potentially distinct needs of referred adolescents: 97.9% had unplanned pregnancies and 50% met criteria for major depressive disorder(8). Consequently, the burden and correlates of antepartum depression in this tertiary-care population in Uganda remain insufficiently studied.

Although the World Health Organization recommends integrating perinatal mental health care into maternal and child health services(9), implementation depends on locally relevant evidence to guide whom to screen, when to intervene, and how to organize referral and support. Such evidence is particularly important in tertiary antenatal care, where teenagers may present with complex medical, obstetric, and psychosocial needs. This study determined the prevalence of antepartum depression and associated factors among pregnant teenagers attending a tertiary regional referral hospital in southwestern Uganda.

Methods

Study design and setting

We conducted a hospital-based cross-sectional study from January to March 2026 at MRRH in southwestern Uganda. The hospital is a public tertiary referral and teaching hospital for Mbarara University of Science and Technology. The hospital serves a population of more than 3.5 million people in southwestern Uganda and receives referrals from surrounding districts and neighbouring countries. Its antenatal clinic operates from Monday to Friday and provides routine and referral antenatal services, including health education, counselling, immunization, management of pregnancy-related conditions, and referral for specialist obstetric, medical, and mental health care. The hospital has specialist obstetrics and psychiatry departments, although systematic depression screening was not part of routine antenatal care during the study period.

Study population and eligibility

The study population comprised pregnant teenagers aged 13–19 years attending the antenatal clinic during the study period. Teenagers were eligible if they were pregnant, aged 13–19 years, attending antenatal care at the hospital, and able to provide written informed consent or assent. Participants aged 18–19 years provided written informed consent, whereas those aged 13–17 years provided written assent in addition to consent from a parent or legal guardian.

Sample-size estimation

The sample size for estimating the prevalence of antepartum depression was calculated using the single-population proportion formula described by Kish(10). We assumed a prevalence of 20.98%, based on a study of depression among pregnant teenagers attending antenatal care in Tanzania(11), a 95% confidence level, and a 5% absolute precision. This yielded a minimum sample of 255 participants. The estimate was increased by 10% to account for potential non-response, giving a final target minimum sample of 281 participants. Eligible teenagers were enrolled consecutively until the target sample size was attained.

Participant recruitment and data collection

Eligible pregnant teenagers were identified from the antenatal clinic register after routine antenatal assessment, screened for eligibility, and enrolled consecutively until the target sample size was reached. Recruitment and data collection were conducted by two trained midwives who served as research assistants and were not involved in participants' clinical care. They received standardized training in research ethics, adolescent-sensitive interviewing, confidentiality, consent and assent procedures, administration of sensitive questions, and use of the study questionnaire and PHQ-9.

All procedures were conducted in a private room in English or the local language (Runyankore/Rukiga), according to participant preference. Participants aged 18–19 years provided written informed consent, while those aged 13–17 years provided written assent together with parental or guardian consent. Data

were collected using a structured interviewer-administered questionnaire covering sociodemographic, psychosocial, lifestyle, obstetric, and medical characteristics. The questionnaire was developed in English, translated into Runyankore/Rukiga, back-translated into English, and pretested to improve clarity and cultural appropriateness.

Outcome variable

The primary outcome was antepartum depression, assessed using the nine-item Patient Health Questionnaire. The PHQ-9 measures the frequency of nine depressive symptom domains during the preceding two weeks, with each item scored from 0 to 3 and total scores ranging from 0 to 27(12). It is widely used to assess depression severity and has demonstrated acceptable performance in perinatal populations(13). For this study, antepartum depression was operationally defined as a PHQ-9 score of ≥ 10 , while scores of 0–9 were classified as no depression.

Exposure variables

Potential associated factors were selected from previous literature. Sociodemographic variables included age in completed years, residence classified as rural or urban, marital status classified as single or married, highest education level classified as none, primary, or secondary, and employment status classified as employed or unemployed.

Psychosocial and lifestyle variables included alcohol use, cohabitation with a partner, partner support, and intimate partner violence. Partner support was assessed by asking whether the participant consistently received emotional, financial, or practical support from her partner during pregnancy. Participants reporting at least one of these forms of consistent support were classified as having partner support; those reporting none were classified as lacking partner support.

Intimate partner violence was assessed using questions adapted from the World Health Organization violence-assessment instrument(14). Participants were asked about physical, emotional, and sexual violence by a current partner during the current pregnancy. Reporting at least one act in any of these domains was classified as experience of intimate partner violence.

Obstetric variables included gravidity, gestational age, trimester, previous abortion, previous stillbirth, previous caesarean delivery, and pregnancy intention. Gestational age was obtained from the last normal menstrual period or an available early-pregnancy ultrasound. Pregnancy intention was assessed by asking whether the pregnancy had been planned or wanted at the time of conception. Pregnancies reported as unplanned or unwanted at conception were classified as unplanned. Medical variables included HIV status, syphilis infection, and diabetes mellitus. These were determined using routine antenatal records and participant self-report.

Data management and statistical analysis

Completed questionnaires were coded and checked for completeness and consistency. Data were entered into Research Electronic Data Capture software and exported to Stata version 17.0 (StataCorp LLC, College Station, TX, USA) for cleaning and analysis.

Continuous variables were summarized using means and standard deviations, while categorical variables were summarized using frequencies and percentages. The prevalence of antepartum depression was calculated as the number of participants with a PHQ-9 score of ≥ 10 divided by the total number analysed and was presented with a 95% confidence interval.

We used modified Poisson regression with a log link and robust variance estimation to estimate prevalence ratios because prevalence ratios are more directly interpretable than odds ratios in cross-sectional studies with non-rare binary outcomes(15). Separate bivariable models were fitted to estimate crude prevalence ratios and corresponding 95% confidence intervals. Variables with a bivariable p value < 0.20 and variables considered epidemiologically plausible (e.g., age), were considered for inclusion in the multivariable model. Adjusted prevalence ratios with 95% confidence intervals were reported. Statistical significance was assessed at p value < 0.05 .

Results

Between January and March 2026, 1,751 pregnant women attended antenatal care at MRRH. Of these, 281 (16.0%) were pregnant teenagers aged 13–19 years and were enrolled and included in the analysis.

Participant characteristics

Sociodemographic characteristics

The mean participant age was 18.2 years (SD, 0.91), and 219 (77.9%) were aged 18–19 years. Overall, 151 (53.7%) participants were married, and 143 (50.9%) lived in urban areas. Most participants were primigravida (86.5%), and 147 (52.3%) were in the second trimester. Partner support was not reported by 176 (62.6%), 152 (54.1%) were not living with a partner, and 59 (21.0%) reported intimate partner violence during the current pregnancy (Table 1).

Compared with teenagers without antepartum depression, those with depression more frequently lived in rural areas (65.7% vs 46.8%; $p = 0.036$), were single (74.3% vs 42.3%; $p < 0.001$), lacked partner support (91.4% vs 58.5%; $p < 0.001$), reported alcohol use (28.6% vs 8.5%; $p < 0.001$), reported intimate partner violence (60.0% vs 15.5%; $p < 0.001$), and were not living with a partner (82.9% vs 50.0%; $p < 0.001$) (Table 1).

Table 1
Sociodemographic, psychosocial, and lifestyle characteristics of participants
according to antepartum depression status (N = 281)

Variable	Total	Antepartum Depression		p-value
	(N = 281)	Yes (n = 35)	No (n = 246)	
	n (%)	n (%)	n (%)	
Age in years, Mean (SD)	18.2 (0.91)	18.0 (0.92)	18.2 (0.91)	0.323
Age category				0.062
16–17	62 (22.1)	12 (34.3)	50 (23.3)	
18–19	219 (77.9)	23 (65.7)	196 (79.7)	
Residence				0.036*
Rural area	138 (49.1)	23 (65.7)	115 (46.8)	
Urban area	143 (50.9)	12 (34.3)	131 (53.3)	
Marital Status				<0.001*
Single	130 (46.3)	26 (74.3)	104 (42.3)	
Married	151 (53.7)	9 (25.7)	142 (57.7)	
Highest level of education				0.264
No Formal education	57 (20.3)	5 (14.2)	52 (21.1)	
Primary	136 (48.4)	15 (42.9)	121 (49.2)	
Secondary	88 (31.3)	15 (42.9)	73 (29.7)	
Occupation				0.199
Employment	45 (16.0)	3 (8.6)	42 (17.1)	
Unemployment	236 (84.0)	32 (91.4)	204 (82.9)	
Partner support				< 0.001*
No	176 (62.6)	32 (91.4)	144 (58.5)	
Yes	105 (37.4)	3 (8.6)	102 (41.5)	
Alcohol				< 0.001*
No	250 (89.0)	25 (71.4)	225 (91.5)	
Yes	31 (11.0)	10 (28.6)	21 (8.5)	
SD: standard deviation; *p < 0.05				

Variable	Total	Antepartum Depression		p-value
	(N = 281)	Yes (n = 35)	No (n = 246)	
	n (%)	n (%)	n (%)	
Intimate Partner Violence				< 0.001*
No	222 (79.0)	14 (40.0)	208 (84.5)	
Yes	59 (21.0)	21 (60.0)	38 (15.5)	
Staying with a partner				< 0.001*
No	152 (54.1)	29 (82.9)	123 (50.0)	
Yes	129 (45.9)	6 (17.1)	123 (50.0)	
SD: standard deviation; *p < 0.05				

Obstetric and medical characteristics

Of the 281 participants, 243 (86.5%) were primigravida, 268 (95.4%) had a gestational age below 37 weeks, and 147 (52.3%) were in the second trimester. Ninety-six participants (34.2%) reported that the current pregnancy was unplanned. Unplanned pregnancy was more frequently reported among participants with antepartum depression than among those without depression (62.9% vs 30.0%; $p = 0.001$) (Table 2).

Table 2
Obstetric and medical characteristics of participants according to antepartum depression status (N = 281)

Variable	Total	Antepartum Depression		p-value
	(N = 281)	Yes (n = 35)	(N = 246)	
	n (%)	n (%)	n (%)	
Gravidity				0.503
Primigravida	243 (86.5)	29 (82.9)	214 (87.0)	
Multigravida	38 (13.5)	6 (17.1)	32 (13.0)	
Gestational age (weeks)				0.743
<37	268 (95.4)	33 (94.3)	235 (95.5)	
≥37	13 (4.6)	2 (5.7)	11 (4.5)	
Pregnancy trimester				0.816
First trimester	66 (23.5)	9 (25.7)	57 (23.2)	
Second trimester	147 (52.3)	19 (54.3)	128 (52.0)	
Third trimester	68 (24.2)	7 (20.0)	61 (24.8)	
History of Abortion				0.105
No	248 (88.3)	28 (80.0)	220 (89.4)	
Yes	33 (11.7)	7 (20.0)	26 (10.6)	
Previous Cesarean section				0.132
No	268 (96.1)	32 (91.4)	236 (96.7)	
Yes	11 (3.9)	3 (8.6)	8 (3.3)	
Stillbirth				0.620
No	276 (98.2)	34 (97.1)	242 (98.4)	
Yes	5 (1.8)	1 (2.9)	4 (1.6)	
HIV				0.297
No	267 (95.0)	32 (91.4)	235 (95.5)	
Yes	14 (5.0)	3 (8.6)	11 (4.5)	
Syphilis				0.485
ANC: Antenatal care; HIV: Human Immunodeficiency Virus; *p < 0.05				

Variable	Total	Antepartum Depression		p-value
	(N = 281)	Yes (n = 35)	(N = 246)	
	n (%)	n (%)	n (%)	
No	266 (94.7)	34 (97.1)	232 (94.3)	
Yes	15 (5.3)	1 (2.9)	14 (5.7)	
Diabetes				0.250
No	278 (98.9)	34 (97.1)	244 (99.2)	
Yes	3 (1.1)	1 (2.9)	2 (0.8)	
Pregnancy intention				0.001*
Planned Pregnancy	185 (65.8)	13 (37.1)	172 (70.0)	
Unplanned Pregnancy	96 (34.2)	22 (62.9)	74 (30.0)	
ANC: Antenatal care; HIV: Human Immunodeficiency Virus; *p < 0.05				

Prevalence of antepartum depression

Among 281 pregnant teenagers attending antenatal care at MRRH, 35 met the operational definition of antepartum depression, giving a prevalence of 12.5% (95% CI: 8.8–16.8%).

Factors associated with antepartum depression

In bivariable analysis, the prevalence of antepartum depression was higher among participants living in rural areas, those who were single, those without partner support, those reporting alcohol use, those reporting intimate partner violence, those not living with a partner, and those with an unplanned pregnancy (Table 3).

After adjustment, participants without partner support had 4.40 times the prevalence of antepartum depression compared with those reporting partner support (adjusted prevalence ratio [aPR], 4.40; 95% CI, 1.09–7.60; $p = 0.037$). The prevalence was also higher among participants with an unplanned pregnancy than among those with a planned pregnancy (aPR, 3.26; 95% CI, 1.72–6.18; $p < 0.001$) and among those reporting intimate partner violence compared with those not reporting violence (aPR, 4.51; 95% CI, 2.43–8.36; $p < 0.001$) (Table 3).

Table 3
Factors associated with antepartum depression among pregnant adolescents attending
Mbarara Regional Referral Hospital, Uganda (N = 281)

Characteristic	cPR (95% CI)	p-value	aPR (95% CI)	p-value
Age group, years				
16–17	1.41 (0.72–2.78)	0.318	0.92 (0.50–1.71)	0.799
18–19	Reference		Reference	
Residence				
Rural	1.99 (1.03–3.84)	0.041	0.86 (0.50–1.46)	0.573
Urban	Reference		Reference	
Marital status				
Single	2.90 (1.45–5.83)	0.003	1.50 (0.42–5.31)	0.533
Married	Reference		Reference	
Highest education				
No formal education	0.51 (0.20–1.34)	0.174	—	—
Primary	0.65 (0.33–1.26)	0.199	—	—
Secondary	Reference		—	—
Employment status				
Employed	Reference		—	—
Unemployed	2.03 (0.65–6.37)	0.223	—	—
Partner support				
No	6.36 (1.99–20.32)	0.002	4.40 (1.09–7.60)	0.037
Yes	Reference		Reference	
Alcohol use				
No	Reference		Reference	
Yes	3.23 (1.71–6.07)	< 0.001	0.82 (0.45–1.49)	0.512
Intimate partner violence				
No	Reference		Reference	
Yes	5.65 (3.06–10.42)	< 0.001	4.51 (2.43–8.36)	< 0.001
Living with a partner				

Characteristic	cPR (95% CI)	p-value	aPR (95% CI)	p-value
Age group, years				
No	2.86 (1.35–6.09)	0.003	0.86 (0.25–2.98)	0.817
Yes	Reference		Reference	
Gravidity				
Primigravida	Reference		—	—
Multigravida	1.32 (0.59–2.98)	0.499	—	—
Gestational age, weeks				
< 37	Reference		—	—
≥ 37	1.25 (0.34–4.66)	0.740	—	—
Trimester				
First	1.06 (0.50–2.21)	0.887	—	—
Second	Reference		—	—
Third	0.80 (0.35–1.81)	0.586	—	—
History of abortion				
No	Reference		Reference	
Yes	1.88 (0.89–3.96)	0.097	0.95 (0.36–2.47)	0.916
Previous caesarean delivery				
No	Reference		—	—
Yes	2.29 (0.64–8.19)	0.210	—	—
Previous stillbirth				
No	Reference		—	—
Yes	1.62 (0.27–9.60)	0.560	—	—
HIV status				
Negative	Reference		—	—
Positive	1.79 (0.62–5.14)	0.281	—	—
Syphilis status				
Negative	Reference		—	—
Positive	0.52 (0.08–3.57)	0.507	—	—

Characteristic	cPR (95% CI)	p-value	aPR (95% CI)	p-value
Age group, years				
Diabetes mellitus				
No	Reference		—	—
Yes	2.73 (0.54–13.90)	0.280	—	—
Pregnancy intention				
Planned	Reference		Reference	
Unplanned	3.26 (1.72–6.18)	< 0.001	3.26 (1.72–6.18)	< 0.001

cPR, crude prevalence ratio; aPR, adjusted prevalence ratio; CI, confidence interval; HIV, human immunodeficiency virus.

Discussion

In this study, antepartum depression affected approximately one in eight pregnant teenagers attending antenatal care. Teenagers who lacked partner support, had an unplanned pregnancy, or experienced intimate partner violence consistently had a higher prevalence of depression than their counterparts. Together, these findings suggest that psychosocial and relationship adversity are central considerations in understanding and addressing depression during teenage pregnancy.

The prevalence of antepartum depression in this study was 12.5%, substantially lower than the 35.9% reported among pregnant teenagers attending primary healthcare facilities in Mbarara City, Uganda(6), 38.6% among pregnant teenagers in Ghana(16), and 43.1% in Nairobi, Kenya(4). It was also below the pooled African estimate of about 40% among pregnant and parenting teenagers (3). These differences should be interpreted cautiously because the studies varied in healthcare setting, participant characteristics, gestational stage, sampling approach, and depression assessment. The present study used the PHQ-9 with a threshold of ≥ 10 , whereas the comparison studies used the Edinburgh Postnatal Depression Scale, which may classify depression differently. However, direct comparison is limited by differences in populations, settings, thresholds, and screening tools. The PHQ-9 assesses Diagnostic and Statistical Manual of Mental Disorders–aligned depressive symptoms over two weeks, whereas the EPDS assesses symptoms over seven days and captures more anxiety-related distress(13, 17). In addition, the pooled estimate combined pregnant teenagers with adolescent mothers. The lower prevalence observed here therefore likely reflects methodological and population differences rather than a lower need for mental-health care among teenagers attending tertiary antenatal services.

Pregnant teenagers who lacked partner support had a higher prevalence of antepartum depression compared with those who reported receiving support. This finding is consistent with pooled African evidence linking poor social support with depression during teenage pregnancy and early motherhood

(3). Partner support may provide emotional reassurance, financial assistance, practical help, and shared responsibility during pregnancy(18), thereby strengthening adolescents' ability to cope with pregnancy-related stress. Its absence may leave teenagers more exposed to isolation, economic strain, relationship uncertainty, and reduced confidence in coping with the pregnancy(19, 20). These findings support incorporating assessment of partner and broader social support into teenager-responsive antenatal care, with appropriate counselling and referral for those with unmet psychosocial needs.

Additional evidence also links social support during pregnancy with better maternal mental health outcomes.(21)

Unplanned pregnancy was associated with more than three times the prevalence of antepartum depression. This finding is consistent with Ugandan evidence linking unplanned pregnancy with antenatal depression(22). Among adolescents, an unplanned pregnancy may occur alongside limited readiness for parenthood, interrupted education, financial uncertainty, relationship conflict, and fear of family or community reactions (23). Antenatal services could therefore assess pregnancy intention and provide appropriate counselling and psychosocial support.

Intimate partner violence was strongly associated with antepartum depression. This finding is consistent with previous studies linking intimate partner violence and adverse partner relationships with depression during adolescent pregnancy and early motherhood (3, 24). Violence may coexist with fear, coercion, social isolation, material dependence, and reduced access to supportive relationships (25). These findings reinforce the need to integrate violence identification, mental health support, and safeguarding responses within teenager-responsive antenatal care.

Overall, these findings support antenatal care as a critical platform for identifying and responding to the mental health and psychosocial needs of pregnant teenagers. Routine care should extend beyond obstetric assessment to include confidential evaluation of depression, pregnancy intention, partner support, and intimate partner violence, with timely access to counselling and referral where needed. Implementing this approach within teenager-friendly services, consistent with World Health Organization guidance, has the potential to strengthen maternal mental health care while ensuring that care remains respectful, confidential, and responsive to teenagers' preferences and safety(9).

Strengths and limitations

This study focused specifically on pregnant teenagers receiving tertiary antenatal care, a population for whom Ugandan evidence remains limited. However, several limitations should be considered. First, the cross-sectional design precluded determination of temporal or causal relationships. Second, the PHQ-9 is a screening tool for depression, and positive screens were not confirmed using a diagnostic interview. Third, pregnancy intention, partner support, alcohol use, and intimate partner violence were self-reported and may have been affected by recall or social-desirability bias. Fourth, the single-hospital, consecutive sample may not represent adolescents who do not attend antenatal care, those receiving care at lower-level facilities, or pregnant teenagers elsewhere in Uganda. Fifth, potentially important factors—including

previous depression or other psychiatric disorders, childhood adversity, food insecurity, broader family support, pregnancy-related stigma, and anxiety—were not comprehensively assessed. Finally, only 35 participants met the definition of antepartum depression; the limited number of outcome events relative to the variables considered may have reduced the precision and stability of some adjusted estimates.

Conclusion

Antepartum depression affected approximately one in eight pregnant teenagers attending antenatal care at a tertiary referral hospital in southwestern Uganda. Higher prevalence was observed among teenagers who lacked partner support, reported an unplanned pregnancy, or experienced intimate partner violence, highlighting the importance of psychosocial and relationship factors during teenage pregnancy. Integrating confidential depression screening with assessment of pregnancy intention, partner support, and intimate partner violence into teenager-responsive antenatal care, supported by appropriate counselling and referral pathways, may facilitate earlier identification and management of vulnerable teenagers. Further prospective and implementation studies are needed to evaluate maternal and infant outcomes and the effectiveness of integrated mental health services within routine antenatal care.

Abbreviations

ANC

antenatal care

aPR

adjusted prevalence ratio

CI

confidence interval

cPR

crude prevalence ratio

EPDS

Edinburgh Postnatal Depression Scale

HIV

human immunodeficiency virus

MRRH

Mbarara Regional Referral Hospital

MUST

Mbarara University of Science and Technology

PHQ-9

nine-item Patient Health Questionnaire

SD

standard deviation

UNCST

Uganda National Council for Science and Technology

Declarations

Ethics Approval and Informed Consent

The study received scientific approval from the Faculty of Medicine Research Committee at Mbarara University of Science and Technology. Ethical approval was obtained from the Mbarara University of Science and Technology Research Ethics Committee (MUST-2025-578), and regulatory clearance was obtained from the Uganda National Council for Science and Technology (HS7576ES). Administrative permission to conduct the study was obtained from Mbarara Regional Referral Hospital. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Written informed consent was obtained from participants aged 18–19 years. Participants aged 13–17 years provided written assent together with written informed consent from a parent or legal guardian. Participation was voluntary, interviews were conducted privately, and participants could decline or withdraw without affecting their access to care. Participants identified with depression or other clinical concerns were referred to the hospital psychiatry team for further assessment and appropriate care.

Consent for publication

Not applicable.

Clinical Trial Registration

Not applicable

Data Availability

The de-identified data are available from the corresponding author upon reasonable request and subject to approval by the relevant institutional and ethical authorities.

Competing Interests

The authors declare that they have no competing interests.

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Authors' Contributions

AA conceived the study, contributed to its design and methodology, coordinated data collection, conducted the initial analysis, and drafted the manuscript. GRM, SA, and BA supervised the study and

contributed to the study design, methodology, interpretation of findings, and critical revision of the manuscript. RM and OB contributed to the statistical analysis, interpretation of findings, and substantial revision of the manuscript. HK, RK, DMK, HML, AG, LT, MK, PK, JK, and RAM contributed to interpretation of the findings and critical revision of the manuscript for important intellectual content. All authors read and approved the final manuscript and agreed to be accountable for the integrity of the work.

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