Antenatal Depression in a Rural District in Uganda: findings from a facility-based cross-sectional Study.

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Abstract

Background

Understanding the burden and risk factors for maternal mental disorders in sub-Saharan Africa is an urgent matter. However, the prevalence of perinatal mental disorders remains unknown in many areas, especially in rural communities. This study aimed to estimate the prevalence and intensity of antenatal depressive disorders as well as the risk factors among pregnant women in a rural district of Uganda.

Methods

All pregnant women in 2nd and 3rd trimester attending antenatal care services in five rural health facilities in Kamuli district were interviewed in a facility-based cross-sectional study. The pregnant women were administered a structured questionnaire, which included the 9-item patient health questionnaire (PHQ-9) to screen for depression as well as sections about demographic characteristics, domestic violence and maternal health.

Results

Among the 505 women enrolled in the study, slightly over one-in-every ten pregnant women (13%) had a depressive disorder. PHQ-9 scores were higher among women of advanced age and victims of domestic violence (P < 0.05). HIV negative was a protective factor for antenatal depression (OR=0.42).

Conclusions

Integration of mental health screening tools in maternal and child health services is essential to increase awareness and treatment uptake for common mental disorders in maternity.

INTRODUCTION

Maternal mental disorders are of significant public health concern worldwide (1–3). Depression during pregnancy is associated with increased infant and maternal mortality; indirectly through affecting physical health of both the mother and unborn child and directly through suicide and infanticide (4–7). A systematic review by Stein et.al., ascertained that depression in pregnancy is globally associated with negative effects on birth outcomes, physical growth (6) as well as child cognitive, emotional and behavioural development (6,8). Hamirani et al. reports the 2nd and 3rd trimester to be most vulnerable to the long-term effects of antenatal depression with different mechanisms operating at different stages (9).

Depressive disorders are projected to rank first in the overall global burden of disease by 2020, trumping the human immunodeficiency virus and acquired immune deficiency syndrome (HIV & AIDS), tuberculosis, diabetes, and transport injuries (3). Uganda has one of the highest antenatal depression morbidity rates in Africa currently estimated at 27.8% (10). To date, no study has examined the prevalence and risk factors for antenatal depression in eastern Uganda, specifically in Kamuli district. Previous studies in Uganda were mainly conducted in specialized sub-populations such as HIV patients (10,11) and adolescents (12). These findings may not be generalized to the antenatal care populations in Kamuli. Kamuli is however similar to many other parts of Uganda and the findings from this study will be more generalizable to other predominantly rural communities unlike those from previous studies. Given the paucity of research, the current study sought to estimate the prevalence and intensity of depressive disorders as well as the risk factors for depression among pregnant women in a rural district of Uganda.

METHODOLOGY

Study Setting

Kamuli district – located in eastern Uganda has a total population of 490,255 of whom 96 % reside in rural areas, 58% live in poverty and 52% are females (Uganda Bureau of Statisitcs, 2016). The majority of females in Kamuli district (89%) are agricultural farmers (Uganda Bureau of Statisitcs, 2016). The district has one government hospital, one non-profit hospital and 24 government health centers at various levels. Mental health services including counseling and medication are only available at the government hospital (14). A situational analysis conducted in the district revealed that the majority of people with mental health problems including depressive disorders prefer to seek care from the regional or national referral hospitals (15), which are located 64 and 155 km from the district center, respectively.

Study design

This study adopted a cross-sectional design based on a quantitative approach to data and methods. We recruited pregnant women attending antenatal care services at Kamuli general hospital, Namwendwa and Nankandulo health centres IV, as well as Namasagali and Balawoli health centres III in December 2015. The pregnant women were accessed from the exit points of the ANC units of these health centres.

Study population and sample

The population of interest comprised of pregnant in 2nd and 3rd trimester attending ANC in Kamuli district. All eligible women who attended ANC from 20th November to 20th December 2015 were interviewed. Approximately 535 new mothers in the 2nd and 3rd trimester seek ANC services from the selected health centres monthly; as such, this figure was adopted as the population estimate for the study. A total of 506 women were approached and 505 (99.9%) consented to participate in the study.

Inclusion and exclusion criteria

The eligibility criteria included being in 2nd or 3rd trimester of pregnancy, fluent in English or the local language (Luganda) and those willing/able to complete the full interview. The exclusion criteria included

mothers in labour and those with severe physical complications of pregnancy e.g. pre-eclampsia, diabetes, and spontaneous abortion.

Data collection method and tools

Primary data were obtained from the women using translated interviewer administered questionnaires encompassing five major themes namely demographic factors, socio-economic factors, depression, domestic violence and maternal health.

To assess for depression, the 9-item Patient's Health Questionnaire (PHQ-9) was used with a cut-off of (<10)(16,17). The PHQ-9 has been validated for use in perinatal research and primary health care settings in Uganda (18). The nine items of the PHQ-9 are based directly on the nine diagnostic criteria for major depressive disorder in the DSM-IV(16,17). Each item is scored on a Likert scale with symptoms rated as 0 (not at all), 1 (several days), 2 (more than half the days) and 3 (nearly every day). The sum of the scores indicates whether the respondent has mild depression (score 5–9), moderate depression (score 10–14) or severe depression (score ≥ 15). The Cronbach's alpha for the PHQ-9 was 0.80.

To assess for domestic violence, the 10-item Abuse Assessment Screening (AAS) tool was used (19). Each item concerns the occurrence and frequency of the various forms of physical and emotional abuse over the past 12 months. The responses are scored on a Likert scale from 0 to 4. The total sum of the scores indicate whether the respondent is a positive victim of violence (≥10) or negative (<10). The cut off score for the AAS (≥10) has been validated for use in primary health care and quantitative research in previous studies conducted in LMICS (19–21). In our study, the Cronbach's alpha for the AAS was 0.86.

The research assistants provided on-spot counseling for mothers with mild depression. Mothers identified with moderate and severe depression (≥10) were referred to the midwives and psychiatric clinical officer (PCO) for further management. The victims of domestic violence (≥10) were referred to the midwives as well as the child & family protection unit of the nearest police station respectively for

routine counselling, legal advice, and gender-based violence shelter among other services. The toll-free gender-based violence and child abuse help lines "0800722444 and 116" were also availed to the respondents by the research assistants.

Teenage pregnancy was determined based on the respondent's maternal age at the time of interview while the HIV status was attained from the respondent's most recent HIV test results indicated in the mother's ANC booklet.

Before enrolment into the study, the eligible participants were informed about the aims of the study, the reason for their selection, potential length of the interview, the collaborating partners involved in the research and their discretion to participate or withdraw at any time during the interviews. Participants were assured that all information obtained from them would be kept confidential. Written informed consent in the form of a signature or thumbprint was obtained from all participants.

Data analysis

The analysis was undertaken using STATA 13.0 at three levels: First, a descriptive summary of demographic and socio-economic factors, depression, domestic violence and maternal health was made using frequency distributions and summary statistics where applicable. Second, differentials in status of antenatal depression by afore mentioned factors were assessed using the Kruskal Wallis test. Third, the determinants of antenatal depression were assessed using an ordered logistic regression. The ordered logistic regression was chosen because the outcome variable - status of antenatal depression - is an ordered event. In other words, the levels of status of antenatal depression have a natural ordering ranging from 1 to 4; where the codes denote none, mild, moderate and severe depression, respectively. The appropriateness of using the fitted model was assessed using the Link specification test.

RESULTS

Socio-demographic and socio-economic characteristics

The socio-demographic and socio-economic characteristics of pregnant women are presented in Table 1.

Table 1: Distribution of women by socio-demographic and socio-economic characteristics

Characteristics	Frequency (n=505)	Percentage (%)
Age		
≤ 19	105	20.8
20-29	281	55.6
≥30	119	23.6
Marital Status		
Not married	26	5.2
Married	479	94.8
Sex of last child		
Boy	157	31.1
Girl	202	40.0
Prime gravida	146	28.9
Duration of pregnancy		
1st trimester	31	6.1
2nd trimester	223	44.2
3rd trimester	251	49.7
Gravida		
Prime gravida	146	28.9
2nd-4th	251	49.7
≥5th	108	21.4
Age of youngest child		
Prime Gravida	146	28.9
≤2 years	199	39.4
3+ years	160	31.7
Exposure to mental health information		
No	436	86.3
Yes	55	10.9
Can't disclose	14	2.8
Source of treatment for depression		
Traditional healer		
Health worker	45	8.9
None	24	4.8
	436	86.3
History of depression		
No	384	76.1
Yes	121	23.9
Household head		
Husband	460	91.1
Parent or sibling	45	8.9
Partner's occupation		
Skilled labor	109	21.6
Unskilled labor	376	74.5
Unemployed	20	3.9
Woman's employment		
Paid employment	109	21.6
Unemployed	396	78.4

Almost half of the respondents (49.7%) were in their third trimester of pregnancy. Majority of the women (94.9%) were married, (86.3%) had never been exposed to mental health information; and

(23.9%) had a self-reported history of depression. A considerable (8.9%) of the respondents had previously sought mental health care from a traditional healer. Regarding the socio-economic factors, 78.4% of women in the study were unemployed.

Predisposing Factors

The predisposing factors for antenatal depression are presented in Table 2.

Table 2: Distribution of women by predisposing factors

Characteristics	Frequency (n=505)	Percentage (%)
Maternal age		
≤19	105	20.8
20-29	281	55.6
30+	119	23.6
Domestic Violence Index		
Negative	458	90.7
Positive	47	9.3
HIV & AIDS status		
Negative	480	95.1
Positive	25	4.9

The results in Table 2 show that 1 in every 5 respondents (20.8) were teenage mothers and (9.1%) were victims of domestic violence. Overall, 4.9% of the respondents were HIV positive.

Status of Antenatal Depression

The distribution of the women by status of antenatal depression is provided in Table 3.

Table 3: Distribution by status of antenatal depression

Status of depression	Frequency (n=505)	Percentage (%)
None	290	57.4
Mild	151	29.9
Moderate	50	9.9
Severe	14	2.8

Results in Table 3 show that almost 13% were identified with moderate-severe depressive disorder. Specifically, (9.9%) had moderate depression while (2.8%) had severe depression.

Differentials in status of antenatal depression

The differentials in status of antenatal depression are described in Table 4. These were assessed by the selected socio-economic, socio-demographic and predisposing factors.

Table 4: Differentials in status of antenatal depression by selected characteristics

Characteristics	N	Rank sum	Av. rank sum (X̄RS)	x^2	p-value
Education level					
Less than Primary	207	55427.0	267.8	4.9	0.177
Primary	164	40553.0	247.3		
Secondary	112	25945.0	231.7		
College	22	5840.0	265.5		
Age					
Below 19	105	23937.0	227.9	9.5	0.009
20-34	281	69790.5	248.4		
≥35	119	34037.5	286.0		
Marital Status					
Not married	26	7064.0	271.7	0.5	0.503
married	479	120701.0	251.9		
Source of support					
Child's father	445	114352.5	256.9	0.6	0.740
Parents	43	11144.5	259.2		
None	5	1763.0	352.6		
Sex of last child					
Boy	157	39774.5	253.3	10.7	0.005
Girl	202	55461.5	274.6		
Prime gravida	146	32529.0	222.8		
Bereavement in past 3 months					
Yes	95	25902.5	272.7	2.1	0.145
No	410	101862.5	248.4		
Household head					
Husband	460	116066.5	252.3	0.1	0.737
Parent	45	11698.5	259.9		
Duration of pregnancy					
1st trimester	31	6488.0	209.3	5.1	0.077
2nd trimester	223	54726.5	245.4		
3rd trimester	251	66550.5	265.1		
Gravida					
Prime	146	34575.0	224.5	8.6	0.013
1-4	251	66099.5	263.3		
5+	108	27090.5	270.9		
Age of youngest child					
Prime gravida	146	34866.0	223.5	9.5	0.009
1-2	199	53638.0	269.5		
3+	160	39261.0	261.7		
History of Depression					
No	384	93061.0	242.3	8.5	0.004
Yes	121	34704.0	286.8		
HIV & AIDS status					
Positive	25	7693.0	307.7	3.7	0.055
Negative	480	120072.0	250.2		
Exposure to mental health Information					
No	436	106789.5	244.9	0.2	0.638
Yes	55	13996.5	254.5		
Source of treatment for depression					
Traditional healer	28	6501.5	232.2	2.3	0.510
Health worker	21	5581.0	265.8		
Self-medication	3	423.0	141		
None	436	106810.5	244.9		
Domestic violence					
Negative	458	109597.5	239.3	43.4	0.000
Positive	47	18167.5	386.5		

Note: n is 505, average rank sum is rank sum/n and the level of significance is 0.05

Among the socio-demographic factors, age (X̄RS =286.0), sex of last child (X̄RS =274.6), gravida (X̄RS=270.9), age of youngest child (X̄RS 269.5), history of depression (X̄RS =286.8), and domestic abuse

($\bar{X}$RS =386.5) were significantly associated with maternal depression (p<0.05). Pregnant women of advanced age (≥35 years) and those that had had a girl child for their lastborn had higher likelihood of belonging to a higher category of depression (p<0.05). Regarding gravida, women with ≥5th gravida had the highest likelihood of belonging to a higher category of depression while the prime gravida had the least likelihood of belonging to a higher category of depression. In addition, having a history of depression and a lastborn baby of less than 2 years also increased one's likelihood of belonging to a higher category of depression (p<0.05).

Predictors of maternal depression

The ordered logistic regression was performed to determine the factors associated with antenatal depression. Only factors that were significantly related to antenatal depression (p<0.05) and the factors that had a relatively small p-value (p<0.5) at bivariate analysis were taken for further analysis.

Table 5: Determinants of antenatal depression

Characteristics	Odds Ratio	Coef.	Std. Err	P-value
Age	1.0507	0.0495	0.2296	**0.023**
Highest level of education				
Less than Primary		1.0000		
Primary	0.8869	-0.1199	0.1898	0.575
Secondary	0.6293	-0.4631	0.1643	0.076
College/University	1.2339	0.2102	0.5726	0.651
Marital Status				
Not married		1.0000		
Married	0.8226	-0.1953	0.3531	0.649
Prominent source of social support				
Child's father				
Parents		1.0000		
None	1.2686	0.2379	0.2699	0.264
	0.7505	-0.2870	0.3157	0.495
Bereavement within last 3 months				
Yes †				
No		1.0000		
	0.8248	-0.1926	0.1932	0.411
Duration of Pregnancy	1.0509	0.0497	0.5740	0.363
Number of children ever born				
None †				
1-4		1.0000		
5+	0.9424	-0.0594	0.3796	0.883
	0.6847	-0.3787	0.3477	0.456
History of depression				
No †		1.0000		
Yes	1.0643	0.0623	0.2477	0.789
HIV status				
Positive †		1.0000		
Negative	0.4228	-0.8608	0.1775	**0.040**
Domestic violence				
Negative†		1.0000		
Positive	12.1109	2.4941	4.0832	**0.000**

Note: n is 505; LR x^2(14) is 93.92; p-value is 0.0000 and † is the reference category adopted in the investigations

Summary of the results

The factors that were significantly associated with depression were age, domestic violence and HIV-Status (p < 0.05). The odds of a severer form of depression increased with age (OR = 1.05) and having experienced domestic violence (OR = 12.11). HIV negative was a protective factor for antenatal depression (OR = 0.42).

DISCUSION

We investigated antenatal depression and associated risk factors among rural women in Uganda. In the findings, slightly over one-in-every ten pregnant women (12.7%) had a depressive disorder. This figure is in line with the global and sub-Saharan prevalence rates for antenatal depression currently estimated at 13% (22,23) and 12.1% (24), respectively. However, the figure is significantly lower than the maternal depression morbidity rates reported in other studies with in Uganda. A study by Nantamba et al. reported a maternal depression morbidity rate of 27.8% (10) while a study by Bolton et al. reported a higher estimate of 21% (25). The lower prevalence of antenatal depression in comparison to other studies in Uganda may be because previous studies used different measuring scales for depression. In addition, the study by Natamba et al was conducted among HIV positive pregnant mothers. HIV increases susceptibility to depression, as such studies on depression among HIV positive women are more likely to have higher prevalence of depression.

The study identifies the risk factors associated with antenatal depression among the rural women as age, HIV&AIDS and domestic violence. The odds of severe depression increased with maternal age. These findings corroborate studies that associate severe depression with pregnancy at advanced age (26–28). The increased odds of severe depression in pregnancy at advanced age is attributed to anxiety caused by fear of obstructed labor, fear of loss of pregnancy among others. However, the findings are contrary to studies that have associated depression with teenage pregnancy in Europe (29–31) and Africa at large (24,32–34). This could be attributed to several socio-cultural factors including rural residence and, tradition, among others. Unlike in urban areas, the setups of most rural communities in Eastern Uganda consider early pregnancy as a display of fertility. As such, the reduced odds of severe depression for teenage mothers in a rural setting – like the study area – should not be surprising. Further research on the association between age and depression during pregnancy is required. This will

enhance development of age appropriate screening and prevention strategies targeted towards individuals within the highest risk age group.

Regarding HIV/AIDS status, the study revealed increased odds of severe depression among HIV/AIDS positive pregnant women. Certainly, there is still a lot of internalized stigma associated with HIV & AIDS especially in the rural setting (11,35–40); this challenge increases the likelihood of depression among this special population. These findings concede with other studies that reported that HIV positive pregnant mothers were more likely to have depression (11,36,37,39). According to Kaida et al., HIV & AIDS is associated with a syndrome of opportunistic diseases such as tuberculosis, herpes zoster and fever among others (11). Such opportunistic infections affect the woman's health making them more susceptible to worry and depression. On the other hand, pregnant women living with HIV & AIDS in rural areas such as in the study area usually live in constant worry about the prospective HIV status of their babies (36). Public health programs should take proactive measures to prevent depressive disorders through addressing the modifiable risk factors among HIV positive expectant mothers. In addition, self-stigma must be directly addressed as part of any efforts to mitigate depression among HIV expectant mothers.

The increased odds of antenatal depression among women who screened positive for domestic violence is in agreement with previous studies conducted elsewhere in Uganda (41,42) and beyond (43–47). These studies reveal that women subjected to domestic violence not only suffer physical torture but also face tremendous emotional turmoil, putting them at increased risk of depression. According to Karamaji et al., victims of domestic violence in Eastern Uganda rarely seek professional psychosocial support. Not seeking help ensures that they are subjected to repetitive patterns of violence and depression. Given the need for and the low-level uptake of psychosocial support services, it may be useful to consider the role of primary health workers in the identification and implementation of brief intervention programs.

None of the socio-economic factors were significantly associated with antenatal depression. In other words, the likelihood of depression did not vary by woman's employment status, partner's occupation and household headship. These findings are not in line with literature that established significant associations between these social economic factors and mental illness (29,32,33,48). The lack of association between socio-economic factors and antenatal depression could also be attributed to the fact that data was collected in the harvesting season. Majority of women in Kamuli district (89%) are agricultural farmers (13) and the month of December is a harvesting season for maize, rice, groundnuts, coffee, and sugarcanes. This implies that a greater number of women had a wide supply of foods by the month of December. Therefore, it is no surprise that although majority of the women (78.4%) in the study were unemployed, they did not have a higher likelihood of antenatal depression as hypothesized because they had a sufficient food supply from their seasonal harvest to feed their families.

Conclusion

Domestic violence, HIV status and advanced age are important risk factors for depression during pregnancy. Therefore, pregnant mothers with HIV/AIDS, victims of domestic violence as well as pregnant women of advanced age are important high-risk groups for targeted mental health messaging and intervention. Further, Integration of mental health screening tools in HIV care as well as maternal and child health services is essential to increase awareness and treatment uptake for common mental disorders in maternity. This study reveals that the factors associated with antenatal depression are to some extent unique to women in LMICs. It is highly likely that these findings will apply to pregnant women in other rural settings in Uganda and elsewhere.

Declarations:

Ethics approval and consent to participate

The study was approved by institutional review boards at Makerere University College of Health Sciences (Kampala, Uganda), and the Uganda National Council for Science and Technology, (Kampala, Uganda). Further approval was sought from Kamuli District Health Office governing the maternal units in the selected health facilities.

Consent and Permission

Participation was on a voluntary basis. All respondents approved participation by signing of a consent form.

Consent for publication

Not Applicable

Availability of Data

The datasets generated and/or analyzed during the current study are publicly available, interested parties may notify the corresponding author of their interest in collaboration, including access to the data set analyzed here through the following email: olivianalwadda@gmail.com

Competing interest

None declared

Funding

No funding was obtained for this study.

Authors Contributions

ON conceptualized the study, drafted the manuscript and interpreted the study findings; RW analyzed the data and contributed to drafting the manuscript. JN contributed to conceptualization of the manuscript and provided intellectual content. All authors read and approved the final manuscript.

Acknowledgements

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