Prevalence and determinants of Common Mental Disorder among pregnant women In Debre Berhan town: Highland in Central Ethiopia

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Research

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Abstract

Introduction: The high prevalence of antenatal mental disorders in Sub-Saharan African countries is poorly understood. Pregnancy and childbirth are gaining recognition as significant risk factors for the development and exacerbation of mental health problems. In low- and lower-middle income countries about one in six pregnant women are experiencing antenatal common mental disorders (CMD).

Objective: To assess prevalence and associated factors of common mental disorders (CMD) among pregnant women in Debre Berhan town, North Showa Zone, Amhara region, Ethiopia, 2016.

Methods: Community based cross-sectional study was employed among 569 participants. Data was collected using face-to-face interviews with Amharic version of Self Reporting Questionnaire (SRQ-20) from seven selected kebeles. Kebeles were selected by simple random sampling and individuals were selected using cluster sampling. Crude and adjusted OR was analyzed using bivariate and multivariable logistic regression analysis and the level of significance for association was determined with 95% CI and at P- value < 0.05.

Result: A total 557 study participants were completed the interview and the prevalence of antenatal common mental disorder was found to be 45.2%. Loss of loved one (AOR = 1.97; 95% CI: 1.19–3.27), history of chronic medical illness (AOR = 6.57; 95% CI: 2.17–19.94), unwanted pregnancy (AOR = 2.13; 95% CI: 1.15–3.95), nulliparity (AOR = 8.71; 95% CI: 1.58–47.94), one or less ANC consultations (AOR = 0.22; 95% CI: 0.08–0.64), two-three ANC consultations (AOR = 0.30; 95% CI: 0.11–0.83) and current obstetric complications (AOR = 4.45; 95% CI: 2.21–8.99) were important factors significantly associated with antenatal common mental disorder.

Conclusion: The prevalence of antenatal common mental disorder (CMD) was high in this study that shows antenatal CMD is significant public health issue that requires a great emphasis. So, early screening and intervention for antenatal CMD should be integrated in primary health care and antenatal care service settings.

Plain English Summary

Common mental disorder (CMD) was first used by Goldberg and Huxley in 1992 to describe a distress condition characterized by diffuse somatic symptoms, anxiety, and depressive states. In this survey, pregnant women living in the community were approached for face to face interview about their common mental health complaints in the period of their pregnancy.

Participants were asked about their mental health using a standard self-reporting questionnaire which includes 20 yes or no questions mainly focusing on anxiety and depression and there is predefined criteria to classify for cases or non-cases of CMD.

A total 557 pregnant women completed the interview, and 252 participants reported the presence of antenatal common mental disorder (CMD). Experiencing loss of loved one, history of chronic medical

illness, unwanted pregnancy, being nulliparous, having three or less antenatal care (ANC) consultations, and presence of problems (or obstetric complications) during pregnancy were important factors significantly associated with the occurrence of common mental disorder for a pregnant woman.

In conclusion, the existence of of common mental disorder (CMD) was high in this community survey among pregnant women that shows mental distress during pregnancy is an important public health concern that requires attention and appropriate intervention.

Introduction

Antenatal mental disorders in sub-Saharan African countries poorly understood as compared to high-income countries (1).The term common mental disorder (CMD) was first used by Goldberg and Huxley to describe a distress condition characterized by diffuse somatic symptoms, anxiety, and depressive states (2). Pregnancy and childbirth are gaining recognition as significant risk factors for the development and exacerbation of mental health problems. In LMICs, about one in six pregnant women experiences CMD (3, 4).

Maternal mental illness affects child health and may increase infant mortality as depression may adversely affect bonding between mother and child, and may result in a child's failure to thrive (5). Perinatal mental illness is a significant complication of pregnancy during the postpartum period and disorders include depression, anxiety disorders, and postpartum psychosis (6). Non-psychotic common perinatal mental disorders (CPMD) are more prevalent in low- and lower-middle-income countries (LMICs) particularly among poorer women with gender-based risks or a psychiatric history (7).

Antenatal mental disorders are among the commonest health problems associated with pregnancy and the postpartum period (8). Specifically, maternal mental illness is likely to have a profound impact in less developed parts of the world (9). A woman experiencing mental distress in a low income settings is at risk of providing sub-optimal care for her offspring which can have grave consequences in an environment where poverty, overcrowding, poor sanitation, malnutrition, tropical diseases and a lack of appropriate medical services may be pronounced (10). In addition, antenatal mental disorders are associated with adverse effects on the fetus including low birth weight, pre-term delivery, perinatal and infant the last associated with subsequent behavioral/emotional problems in the child and adolescent (11).

A review on focusing on CMDs in mothers versus infant and obstetric outcomes in 2012 reported CMD varying from 12 to 43% during pregnancy both in LMICs and in high-income countries though economic conditions increase women's vulnerability in LMICs (12).

A total of 25 articles published between 1975 and 2010 were reviewed on CMD in mothers versus infant and obstetric outcomes in Brazil and most studies reported a prevalence of 20% for CMD during pregnancy, similar to that found generally in women (13). A review about prevalence and determinants of non-psychotic antenatal CMDs in LMICs found weighted mean prevalence of 15.6% (3)and reported risk factors were: socioeconomic disadvantage (14); unintended pregnancy (15–17); being younger; being

unmarried; lacking intimate partner empathy and support (15); experiencing intimate partner violence (18); having insufficient emotional and practical support (18–21), and history of mental health problems (16, 22).

CMD during pregnancy was studied in different settings globally using psychometric instruments including Self-reporting Questionnaires-20 items (SRQ-20), Chinese Health Questionnaire-12 items (CHQ-12), General Health Questionnaire-30 items (GHQ-30), Edinburgh Postnatal Depression Scale (EPDS), Present State Examination Schedule (PSE),Comprehensive Psychopathological Rating Scale (CPRS), or psychiatrist-administered structured clinical interviews. And prevalence of CMD was reported as: 41.4–43.1% in Brazil (23–25); 17.4–37.4% in Viet Nam (26–29); 7% in Nigeria (10); 16.7% in Uganda (30). Estimations of CMD ranged from 9.2%-33% in Ethiopia (16, 29, 31–35).

A measure of CMD (SRQ-20) has been shown to have criterion validity in Ethiopia (35), Nigeria, Malawi, China, and Mongolia, as well as in high-income settings and a cut-off score of ≥ 6 was shown to have convergent validity as an indicator of CMD probable case (15, 36–39).

The rationale for investigating CMD in pregnant women is that, because pregnancy is a period of physiological mal-adjustment, psychological and social factors may impose vulnerability to develop mental distress (12). Little is known about the prevalence and risk factors of CMDS in pregnant women in LMICs including Ethiopia. Even within the available studies, Ethiopia is a country with diverse socio-cultural characteristics and determinants of CMD may vary from culture to culture.

It is therefore anticipated that the study findings will contribute to the development of local knowledge about antenatal CMD and be used to scale up the assessment of risks in pregnant mothers involving a careful exploration of CMD vulnerabilities. The findings of this study might also help in influencing the development of appropriate policies, plans and intervention programs for the screening and treatment of antenatal CMD.

Methods And Materials

Objective

The aim of this study was to assess the prevalence and determinants of common mental disorders (CMD) among pregnant women in Debre Berhan town, North Showa Zone, Amhara region, Ethiopia, 2016.

Study Design and Period

A Community based cross-sectional study design was employed from 20 April to 20 May, 2016.

Study Area

This study was conducted at Debre Berhan town (central Ethiopian highland), which is located 130 km North from Addis Ababa. Debre Berhan town has 09 kebeles or wards (the lowest administrative unit) and a total population of 84,920. There is one governmental referral hospital which has a psychiatric clinic, one private general hospital, three health centers, nine health posts, 14 private clinics and nine private pharmacies during the study period.

Source population: All pregnant mothers who were residing in Debre Berhan town.

Study population: Comprised of pregnant women who were residing in seven Kebeles (k1, K2, k3, k4, k6, k7 and k9) at Debre Berhan town and who were present at the time of data collection and who fulfilled inclusion criteria.

Inclusion and exclusion Criteria

Inclusion criteria

Pregnant women between the ages of 15 and 49 years, able to speak Amharic (the official language of Ethiopia), living in Debre Berhan town in the previous six months and women with gestational ages of between 16th and 42th weeks of pregnancy.

Exclusion criteria

Pregnant mothers with severe illness, unable to hear or speak during the data collection period.

Sample size determination and sampling procedures

Ethiopian studies reported CMD during pregnancy from 9.2–33% (16, 29, 32, 40).The maximum number of sample required for this study was determined by using single population proportion formula considering assumptions as population proportion of antenatal CMD (P = 33%), $Z\alpha/_2$ = 1.96 corresponding to 95% confidence level, margin of error (d = 0.05), and using design effect (D = 1.5); sample size was found to be 510. For possible none response during the study, the final sample size was increased by 10% and determined to be 561.

Cluster sampling technique was used for the selection of sampling units. It was assumed that all pregnant mothers in Debre Berhan town are homogenous. The town has nine kebeles (wards). Seven kebeles were selected by simple random sampling method and then all pregnant women in each kebele were taken as study participants and all eligible pregnant women who were available in each household of the cluster were approached and interviewed till the required sample size was accomplished (Fig. 2). Participants was identified by obtaining documented lists of the pregnant women from urban health extension workers (HEWs).

Study Variables

Dependent variable: Common mental Disorder (CMD) was measured by using SQR-20 (20 Yes/No questions), and validated in Ethiopia.

Independent variables:

Socio-demographic factors

Age, ethnicity, marital status, duration of relationship, religion, marital status, educational status, occupational status, socioeconomic status, number of household members

Psychosocial factors

Stressful life evens, and social support

Substance use

Ever use and current use of psychoactive substance

Clinical factors

History of mental illness, past history of mental illness, family history of mental illness, history of chronic medical illness

Obstetric factors

Unwanted pregnancy, number of live children, gravidity, parity, stages of trimester, past history of still birth, history of abortion, previous neonatal deaths, current and previous pregnancy complications, and antenatal care (ANC) consultations

Operational definitions

Common mental disorder (CMD)

A probable case of CMD was defined as a cut-off point greater than or equal to 6 (≥ 6) during SRQ-20 screening.

History of mental illness

when subjects have at least one or more known self-reported mental illness before the study period.

Chronic medical illness

When subjects have at least one or more known self-reported chronic disease before the study period.

Stressful life events

The presence of specific life events explained by experienced of one or more adverse life events in the previous six months, assessed using 12-item List of Threatening Experiences (LTE).

Intimate partner violence

A “yes” response on any question of Abuse Assessment Screen (AAS) for use in pregnancy is considered positive for partner violence.

Social Support

Assessed using Oslo-3 Social Support Scale (OSS-3); and scored as “poor support” 3–8, “moderate support” 9–11 and “strong support” 12–14.

Substance use

Ever use defined as use of alcohol even once in life time, and current use was defined as use of alcohol in the past three months.

Data collection instruments and procedures

Information was collected by face to face interviews using a structured questionnaire consisting questions on socio-demographic, substance use, clinical, psychosocial and obstetric characteristics. The presence of CMD was assessed using the 20-item version of the Self-Reporting Questionnaire (SRQ-20), designed by WHO for developing countries, has been translated into Amharic language, tested and validated in Ethiopia (35, 41). Stressful life events was assessed using List of Threatening Experiences questionnaire (LTE-Q) which has 12-items (42). Social support was assessed using Oslo-3 Social Support Scale (OSS-3) with three questions (43). The pre-coded structured questionnaire included family/husband support of the woman; self-report based clinical and psychiatric history and previous and current obstetric history after extensive literature review. Presence of victimization, interpersonal violence or intimate partner violence was assessed using AAS for use in Pregnancy (44). Substance use specifically alcohol was assessed using standard questions from ASSIST (45).

Data collectors and data quality control

The principal investigator (PI) recruited seven diploma holder Nurses and trained and oriented them on how to use and administer the questionnaire; the ethical principles of confidentiality and data management; how to identify participants and referral process that could be followed in the case of adverse events occurring during the data collection process. Two-degree holder Midwives were recruited and trained for supervision who moved in each site to assist and supervise the data collection. The questionnaire was designed and modified appropriately and it was translated to local language (Amharic) and translated back to English. Pre-test was done before the start of actual data collection on 5% of the sample size at outside study area and based on the finding from the pre-test, the questioner was revised and adapted. Completeness, accuracy and consistency of data were also confirmed by double entry of data on the day of collection using Epi-Info Version 7.

Data processing and analysis

Data was entered into Epi-Info version 7 and then exported SPSS window version 20) for analysis. Descriptive statistics using frequencies, tables, graphs, mean, standard deviations and median was performed to present the information. Bivariate and multivariable logistic regression analysis was carried out to identify factors associated with antenatal CMD. Only factors with p-value of ≤ 0.05 on bivarate analyses was kept for multivariable logistic regression analyses and 95% CI at P-value < 0.05 was considered as statistically significant.

Result

A total of 569 pregnant women were included in the study, off which 557 completed the interview with a response rate of 97.89%.

Socio-demographic characteristics

From all participants, 458 (82.2%) were between the ages of 20–34 years followed by 35 years old and above, 84 (15.1%). The median age was 28 years (inter-quartile range 7) and ranged from 17 to 48 years. Orthodox Christians account 464 (83.3%) followed by Muslims, 59 (10.6%) (Table 1).

Table 1
Distribution of pregnant women by socio-demographic factors at Debre Berhan town; North Shoa Zone, Amhara Region, Ethiopia, 2016 (n = 557).

Variables	Frequency	Percentage (%)
Age (in years)		
≤ 19	15	2.7
20–34	458	82.2
≥ 35	84	15.1
Mean age (± SD)	28.41 ± 5.395	
Ethnicity		
Amhara	531	95.3
Others	26	4.7
Marital Status		
Married and living together	426	76.5
Divorced/widowed	41	7.4
Separated	50	9.0
Never married	40	7.2
Duration of relationship		
< 1 year	69	12.4
1–2 years	82	14.7
2–5 years	201	36.1
> 5 years	205	36.8
Religion		
Orthodox	464	83.3
Muslim	59	10.6
Others	34	6.1
Educational status		
No formal education	120	21.5
Primary school	120	21.5

Note: Other ethnicities: *Oromo (3.1%), Tigre & Gurage;* Other religions: *Protestant (5.6%) and Catholic; Other occupations: day laborers (7.7%) and unemployed*

Variables	Frequency	Percentage (%)
Secondary school	114	20.5
More than secondary	203	36.4
Job		
Civil servant	153	27.5
Private employed	40	7.2
House wife	163	29.3
Student	44	7.9
Private business/Merchant	99	17.8
Others	58	10.4
Socioeconomic status		
Hunger in last month (lack of money)		
Yes	21	3.8
No	536	96.2
Indebted		
Yes	28	5.0
No	529	95.0
Self-reported wealth relative to others		
Low	106	19.0
Medium	426	76.5
High	25	4.5
Number of household members		
0–2	140	25.1
3–4	221	39.7
≥ 5	196	35.2

Note: Other ethnicities: *Oromo (3.1%), Tigre & Gurage;* Other religions: *Protestant (5.6%) and Catholic; Other occupations: day laborers (7.7%) and unemployed*

Psychosocial factors and social support

A total of 156 (28%) participants reported loss of loved one and 100 (18%) had relationship problem with partners, family or friend in the last six months. Fifty-seven (10.2%) of pregnant women were abused at least once in their life time emotionally or physically; off which 29 (50.9%) abused during pregnancy (Table 2).

Table 2
Distribution of pregnant women by psychosocial factors and social support at Debre Berhan town, North Shoa Zone, Amhara Region, Ethiopia, 2016.

Variables	Frequency	Percentage (%)
Health Risk		
Yes	60	10.8
No	497	89.2
Loss of loved one		
Yes	156	28.0
No	401	72.0
Financial stress/income instability		
yes	94	16.9
No	463	83.1
Relationship problems		
Yes	100	18.0
No	457	82.0
Legal Issues		
yes	53	9.5
No	504	90.5
Ever abused emotionally/physically		
Yes	57	10.2
No	500	89.8
Abused during pregnancy (n = 57)		
Yes	29	50.9
No	28	49.1
Perpetrator of violence during pregnancy		
Partner/boyfriend	23	79.3
Family member	3	10.3
Stranger	3	10.3
Forced sexual activities in last one year (n = 57)		

Variables	Frequency	Percentage (%)
Yes	18	31.6
No	39	68.4
Perpetrator of forced sex		
Partner/boyfriend	7	38.9
Family member	1	5.6
Stranger	10	55.6
Husband's support during pregnancy		
poor	87	15.6
Moderate	185	33.2
Strong	285	51.2
Family's practical Support during pregnancy		
Yes	471	84.6
No	86	15.4
Social support		
Poor	177	31.8
Moderate	309	55.5
Strong	71	12.7

Substance use and clinical factors

Almost 72% of women used alcoholic beverages like traditional alcoholic drinks like local spirit or “areke’, “tella”, “tej” (honey wine), or industrial beverages like wine, bear and spirit at least once in their life time. Almost 5% (26) of pregnant women and 11% of their families reported history of mental illness respectively. And 36 (6.5%) of participants had history of medical illness.

Obstetric & reproductive factors

Nearly 18% (102) of pregnancies were unwanted. Majority of women (62.1%) were in their third trimester of pregnancy and gestational age ranged from 16 to 40 weeks. More than half (51%) of women had 2–3 ANC consultations and 16.7% had complications in current pregnancy like nausea and vomiting, hypertensive disorders and headache (Table 3).

Table 3
Frequency distribution of pregnant women by obstetric/reproductive related factors at Debre Berhan town, North Shoa Zone, Amhara Region, Ethiopia, 2016.

Variables	Frequency	Percentage (%)
Wanted pregnancy		
Yes	455	81.7
No	102	18.3
Number of live children		
0	230	41.3
≤ 2	222	39.9
≥ 3	105	18.9
Total pregnancies(gravidity)		
One	195	35.0
Two	140	25.1
Three	102	18.3
≥four	120	21.5
Parity		
nullipara	204	36.6
1–4 births	330	59.2
5 or more births	23	4.1
Stages of Trimester		
second	211	37.9
Third	346	62.1
Past history of still birth (n = 353)		
Yes	26	7.4
No	327	92.6
History of abortion (n = 363)		
Yes	36	9.9
No	327	90.1
Pattern of previous abortion (n = 36)		

Variables	Frequency	Percentage (%)
Spontaneous	23	63.9
Induced	13	36.1
Previous neonatal deaths (n = 353)		
Yes	25	7.1
No	328	92.9
History of Complicated pregnancy/delivery (n = 354)		
Yes	85	24.0
No	269	76.0
Current obstetric complications		
Yes	93	16.7
No	464	83.3
Number of ANC follow ups		
≤ 1 consultation	238	42.7
2–3 consultations	284	51.0
≥ 4 consultations	35	6.3

Prevalence of Common Mental Disorders and Distribution of Symptoms

High symptom levels, defined as a probable case of CMD (SRQ scores ≥ 6) in 252 (45.2%), low symptom levels (SRQ scores 1–5) in 202 (36.3%) and no symptoms (SRQ = 0) in 103 (18.5%) were present among all pregnant women (557) (Fig. 3).

The distribution of SRQ-20 scores were positively skewed with a median of 5 (Inter-quartile range of 7). Out of the total twenty symptoms in SRQ-20 scale, majority had encountered easily tired (55.3%), poor appetite (51.7%) and uncomfortable feelings in stomach (44.9%) during the last 30 days whereas, hands shake was least observed symptom (5%) (Fig. 4).

Factors associated with antenatal Common Mental Disorders

Bivariate logistic regression analysis was done to examine associations between CMD and each of the determinant factors: socio-demographic, psychosocial and social support, alcohol use, clinical and obstetric factors.

After adjusting for confounding factors having p-value ≤ 0.05 on bivariate analysis, multivariable logistic regression analysis was done. Women who had loss of loved one due to death in the last six months had 1.97 times more likely to have CMD as compared to who hadn't (AOR = 1.97;95% CI: 1.19–3.27). Pregnant women who reported history of chronic medical illness have higher odds of experiencing CMD than who didn't report (AOR = 6.57; 95% CI: 2.17–19.94). Women with unwanted pregnancy and nulliparous had higher odds of CMD compared to wanted pregnancy and multiparous, ≥ 5 births (AOR = 2.13; 95% CI: 1.15–3.95) and (AOR = 8.71; 95% CI: 1.58–47.94) respectively. Women who have ≤ 1 and 2–3 ANC consultations are less likely to have CMD compared to women having ≥ 4 ANC consultations (AOR = 0.22; 95% CI: 0.08–0.64) and (AOR = 0.30; 95% CI: 0.11, 0.83) respectively. Occurrence of current obstetric complications was independently associated with the emergence of CMD (AOR = 4.45; 95% CI: (2.21–8.99) (Table 4).

Table 4
Bivariate and multivariable logistic regression analysis of determinants for CMDs among pregnant women; Debre Berhan town, North Showa, Ethiopia, 2016.

Variables	**CMD**		**COR (95% CI)**	**AOR (95% CI)**
	Yes	No		
Socio-demographic Factors				
Ethnicity				
Amhara	*246*	*285*	1.00	*1.00*
Others	*6*	*20*	0.35 (0.14,0.88)	0.25 (0.06, 1.02)
Occupational status				
Civil servant	*77*	*76*	1.00	*1.00*
Private Employed	*22*	*18*	1.21 (0.60, 2.43)	0.88 (0.33, 2.36)
House wife	*52*	*111*	0.46 (0.29, 0.73)	0.57 (0.21, 1.55)
Student	*26*	*18*	1.43 (0.72, 2.81)	0.52 (0.05, 5.92)
Own business/Merchant	*43*	*56*	0.76 (0.46, 1.26)	1.00 (0.42, 2.42)
Others	*32*	*26*	1.22 (0.66, 2.23)	1.12 (0.35, 3.60)
Educational level				
No formal education	*43*	*77*	*0.52 (0.33, 0.83)*	0.55 (0.21, 1.50)
Primary school	*54*	*66*	*0.76 (0.49, 1.20)*	0.83 (0.33, 2.06)
Secondary school	*50*	*64*	*0.73 (0.46, 1.16)*	0.59 (0.24, 1.43)
More than secondary	*105*	*98*	1.00	*1.00*
Psychosocial and social support				
Stressful life events				
Lose of loved one				
Yes	*85*	*71*	1.68 (1.16, 2.44)	**1.97 (1.19, 3.27)****
No	*167*	*234*	1.00	*1.00*
Financial stress/Instability				
Yes	*52*	*42*	1.63 (1.04, 2.54)	1.37 (0.71, 2.66)
No	*200*	*263*	1.00	*1.00*
Relationship problem				

Variables	CMD		COR (95% CI)	AOR (95% CI)
Yes	*59*	*41*	1.97 (1.27, 3.06)	1.30 (0.65, 2.61)
No	*193*	*264*	1.00 1.00	
Ever abused emotionally/physically				
Yes	*39*	*18*	2.92 (1.63, 5.25)	1.24 (0.50, 3.10)
No	*213*	*287*	1.00	*1.00*
Husband support				
Poor	*48*	*39*	1.87 (1.15, 3.04)	1.29 (0.55, 3.01)
Moderate	*91*	*94*	1.47 (1.01, 2.14)	1.68 (0.96, 2.92)
Strong	*113*	*172*	1.00	
Practical support from family				
Yes	*206*	*265*	1.00	*1.00*
No	*46*	*40*	1.48 (0.93, 2.35)	1.10 (0.51, 2.41)
Clinical factors				
Chronic medical illness				
Yes	*27*	*09*	3.95 (1.82, 8.56)	**6.57 (2.17,19.94)****
No	*225*	*296*	1.00	*1.00*
Obstetric factors				
Wanted pregnancy				
Yes	*191*	*264*	1.00	*1.00*
No	*61*	*41*	2.06 (1.33, 3.19)	**2.13 (1.15, 3.95)***
Parity				
Nullipara	*107*	*97*	2.07 (0.84, 5.09)	**8.71 (1.58,47.94)***
1−4 births	*137*	*193*	1.33 (0.55, 3.23)	2.00 (0.75, 5.36)
≥ 5 births	*8*	*15*	1.00	
Antenatal consultations				
≤ 1 consultation	*99*	*139*	0.33 (0.15, 0.69)	**0.22 (0.08, 0.64)****
2−3 consultations	*129*	*155*	0.38 (0.18, 0.81)	**0.30 (0.11, 0.83)***
≥ 4 consultations	*24*	*11*	1.00	*1.00*

Variables	CMD		COR (95% CI)	AOR (95% CI)
Number of live children				
0	*119*	*111*	1.00	
≤ 2	*91*	*131*	0.65 (0.45, 0.94)	0.89 (0.33, 2.44)
≥ 3	*42*	*63*	0.62 (0.39, 0.99)	0.89 (0.30, 2.64)
History of abortion				
Yes	*21*	*15*	2.09 (1.04, 4.21)	1.24 (0.46, 3.36)
No	*131*	*196*	*1.00*	*1.00*
Current pregnancy complications				
Yes	*70*	*23*	4.72 (2.84, 7.83)	**4.45 (2.21, 8.99)*** **
No	*182*	*282*	1.00	*1.00*

NOTE: *P value is significant at P<0.05; **P value is significant at P<0.01;
*** P value is significant at P<0.001; 1.00=Reference for category
Adjusted: ethnicity, educational status, occupational status, loss of loved one, financial stress, relationship problem, ever abused, husband Support, family's Practical Support, chronic medcal Illness, wanted pregnancy, parity, ANC consultations, number of live children, abortion, complications in current pregnancy.

Discussion

5.1 Prevalence of antenatal Common Mental Disorders

The overall prevalence of CMD in this study was found to be 45.2%. The prevalence of CMD in this study was higher than those studies conducted in other parts of Ethiopia. Previous cohort studies in Ethiopia reported CMD as 12% (16) and 9.2% (31). Antenatal CMD in our finding was also higher than other population based cohort studies in Ethiopia which was between 7.3–33% (29, 32–35); Vietnam, between 17.4–37.4% (26–29); Nigeria, 7% (10); semi-rural Uganda, 16.7% (30); Taiwan, 29.2% (46); Brazil, 20.2–33.6% (47–49). The high prevalence of CMD in this study might be due to cohort design applied in other Ethiopian studies; and the difference may be also due to variation in sample size, the duration of pregnancy, socio-demographic variations, place of residence or study setting variation, and tools & cut off points used to identify CMD probable cases.

Prevalence of CMD during pregnancy in this survey was consistent with findings in Brazil, which was reported between 41.4–43.1% (23–25).

But, prevalence of CMD in this study was lower than a study in Northeast Brazil (63.6%) among women who attempted an abortion (23). This variation may be due to different population characteristics that participants in Brazil was women who attempted abortion and it is known that abortion is stressing event

and attempting to abort may be due to unwanted pregnancy, social and economic problem and these all enhances for the emergence of symptoms of CMD.

Factors associated with antenatal Common Mental Disorders

All of the socio-demographic factors in this study were not significantly associated with CMD unlike other previous studies such as: increasing age, hunger and debt in Ethiopia (16); younger age (< 24 years), less than a year since married in Nigeria (15); older age in Viet Nam (26); unemployment, separation from spouse, having two or more children (24), living in a crowded household, lower occupational status in Brazil (47); being younger and unmarried in LMICs (15); occupational status and socioeconomic level in both LMICs and high-income countries (12) were all significantly associated with antenatal CMD.

Experiencing loss of loved one due to death (a stressful life event) in the previous six months increased the risk of antenatal CMD by two-fold. This finding was consistent with previous studies in Ethiopia (16), Viet Nam (26, 27), LMICs and in high-income countries (12).

Pregnant women who experienced chronic medical illness were about 6.6 times more likely to have CMD which was consistent with previous study in Ethiopia (16).

In this study, pregnant women who had unwanted pregnancy were two times more likely to have CMD than those who planned and wanted their pregnancies. This finding was similar with previous surveys that showed significant association between unwanted pregnancy and antenatal CMD in rural Butajjira, Ethiopia (16) and consistent with a systematic reviews in LMICs (15, 17).

Nulliparous women were 8.7 times more likely to develop antenatal CMD compared to multiparous women (≥ 5 births) and this was in line with other studies in Nigeria (15) as well as rural Viet Nam (26). But, our finding was inconsistent with previous finding in rural Ethiopia in which multiparity was a risk for antenatal CMD than nulliparity (16). This variation may be probably due to socio-demographic variations and urban residency in current study that being primipara in an urban area may be more stressful as social interactions and experience sharing is restricted. On the other hand association of being multiparous and CMD in rural Ethiopia, Butajjira (16) might be due to repeated previous experiences of traumatic and complicated births since institutional delivery would be inaccessible like urban residents in our study.

Women who had three or less ANC consultations were less likely to have antenatal CMD compared to those who had four or more consultations. The possible explanation for this study seems that women consulting more than usual for their pregnancies may present with complaints of CMD symptoms like worrying for the possible negative outcome of their pregnancies as well as forthcoming delivery. At the same time, women with repeated ANC follow ups having CMD symptoms may not be well addressed for their symptoms other than their obstetric needs by their care providers or midwives.

Experiencing current pregnancy complication was strongly associated with the occurrence of antenatal CMD which was consistent with previous survey conducted in São Paulo, Brazil (47).

Limitations Of The Study

Tools used to assess some independent variables like clinical and obstetric factors were not standardized.

Pregnant women with persisting CMDs already acquired before pregnancy couldn't be excluded and this could further increased prevalence of CMD during pregnancy.

Conclusion And Recommendations

The prevalence of antenatal CMD was relatively high in this community based cross-sectional study. This shows that mental distress during pregnancy is a significant public health issue that requires great emphasis. This study reported that stressful life events like loss of loved one, chronic medical illness, unwanted pregnancy, nulliparity, antenatal consultations and complications in current pregnancy were significantly associated with antenatal CMD.

It is recommended that Ethiopian Ministry of Health is better to incorporate mental health assessment tools for screening of CMD with existing ANC guidelines. Basic mental health trainings should be designed for health care professionals and Health Extension Workers (HEWs) who have routine contact with pregnant women at antenatal care units or at health posts in the community which helps to address mental health need for those ANC visiting women. Integration and scale up of mental health with antenatal care services and primary health care (PHC) settings where HEWs are working is recommended for screening of CMD during pregnancy, and early referral and to mental health professionals. Health facilities should strengthen the family planning coverage with different available contraceptive methods to address and decrease unwanted pregnancy. Further longitudinal and robust study having larger sample size should be done to see the risk factors and causal pathways for the occurrence of antenatal CMD.

Abbreviations

ANC: Antenatal Care; CMD:Common Mental Disorder; CPRS:Comprehensive Psychopathological Rating Scale; EPDS:Edinburgh Postnatal Depression Scale; GHQ:General Health Questionnaire; LMICs:Low- and-Middle Income Countries; OSS-3:Oslo-3 Social Support Scale, SRQ:Self Reporting Questionnaire; UoG:University of Gondar; WHO:World Health Organization

Declarations

Availability of data and materials

All relevant materials, data, and documents supporting the findings of this study will be available from the corresponding author on reasonable request.

Ethical approval and consent

Ethical clearance was obtained from University of Gondar (UoG) Institutional Review Board (IRB) and Amanuel Mental Specialized Hospital (AMSH). Data collected for the purpose of this study never contained identifying information rather coded numbers to guarantee confidentiality of participants. Participants was fully informed about the aims and methods of the study prior to starting the interview and informed consent or ascent was obtained. Participants were informed to decline at any time if they felt uncomfortable, even after the interview was started. Women who scored high on SRQ-20 and had suicidal behaviour were referred to the psychiatric clinic for evaluation and assistance.

Consent for publication

Not applicable

Conflicts of Interest

The authors declare that they have no conflicts of interest.

NOTE

**P value is significant at P < 0.05; **P value is significant at P < 0.01;*

Adjusted

ethnicity, educational status, occupational status, loss of loved one, financial stress, relationship problem, ever abused, husband Support, family's Practical Support, chronic medcal Illness, wanted pregnancy, parity, ANC consultations, number of live children, abortion, complications in current pregnancy.

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Authors' Contributions:

KDG conceived the idea and selected the title and design, developed the proposal and measurement tools, coordinated for collection of the data, carried out the statistical analysis, and made write-up of the report and manuscript (Corresponding author). GAB commented and revised on methods and reviewed the manuscript. ADU participated in design of the study and data collection. All authors read and approved the final manuscript and agreed to be accountable for all aspects of the research report.

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Figures

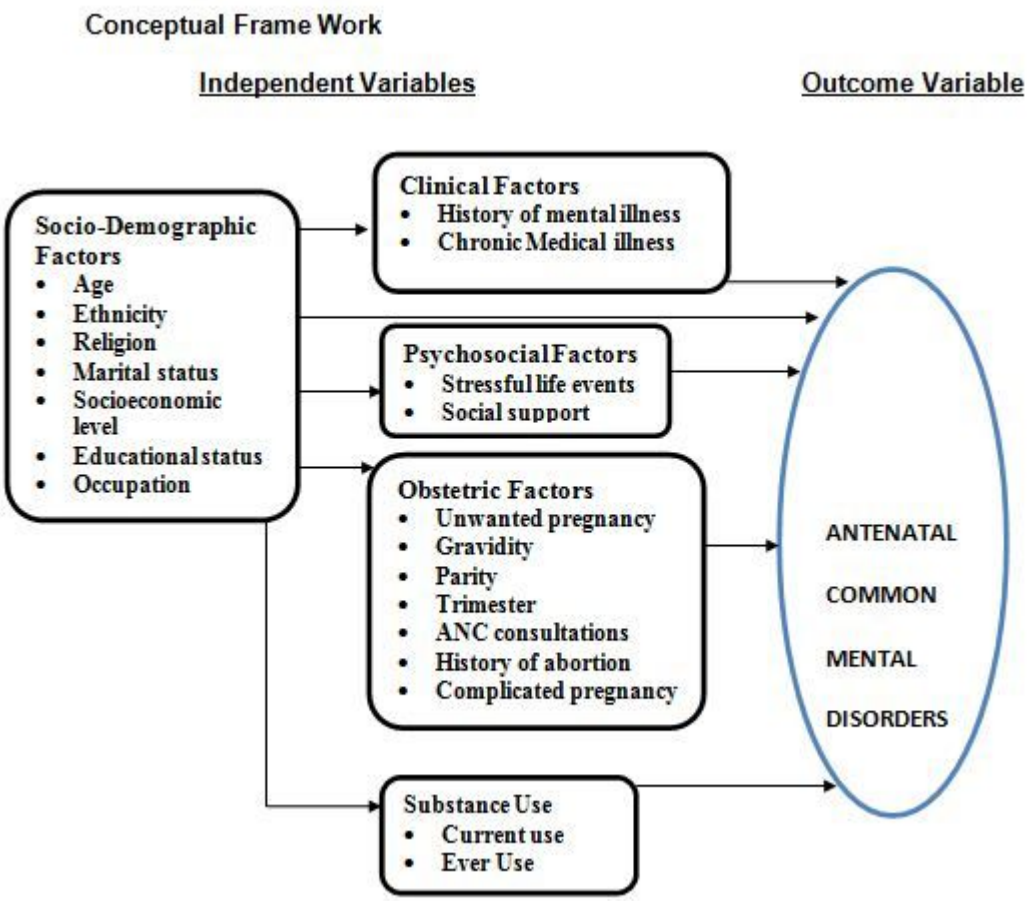

Figure 1

Schematic presentation of the conceptual framework developed from literature review for possible association of factors with CMD among pregnant mothers, 2016.

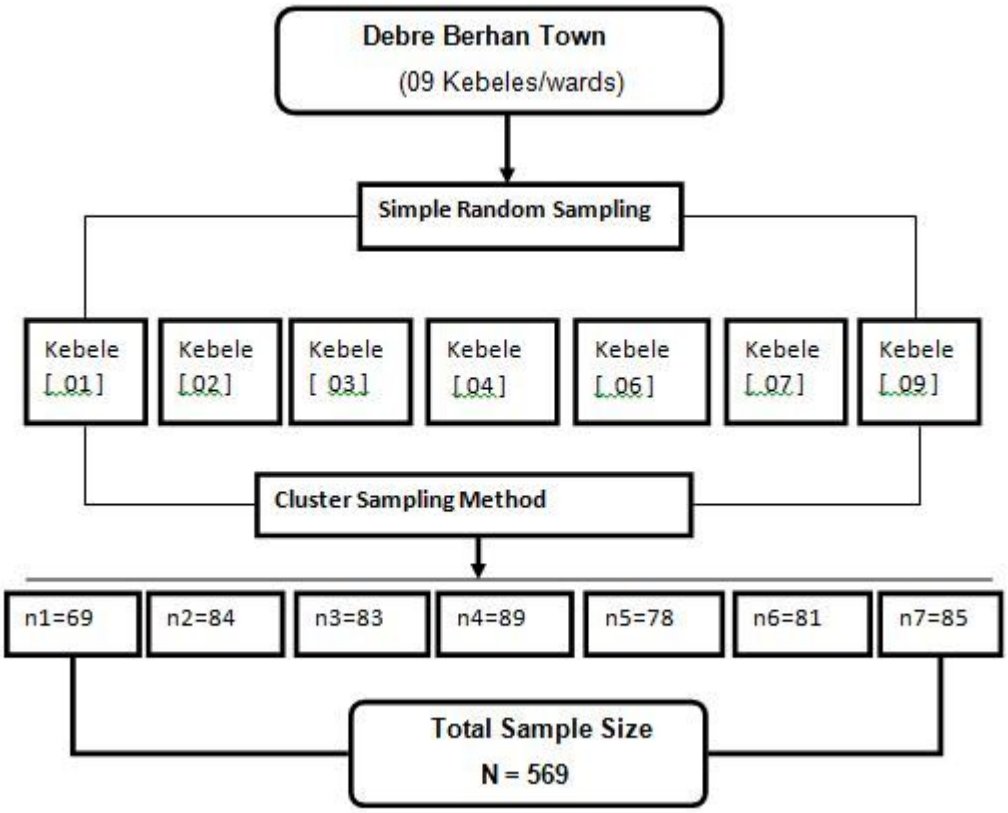

Figure 2

The schematic presentation of sampling procedures among pregnant women at Debre Berhan Town, North Shoa Zone, Amhara region, Ethiopia, 2016

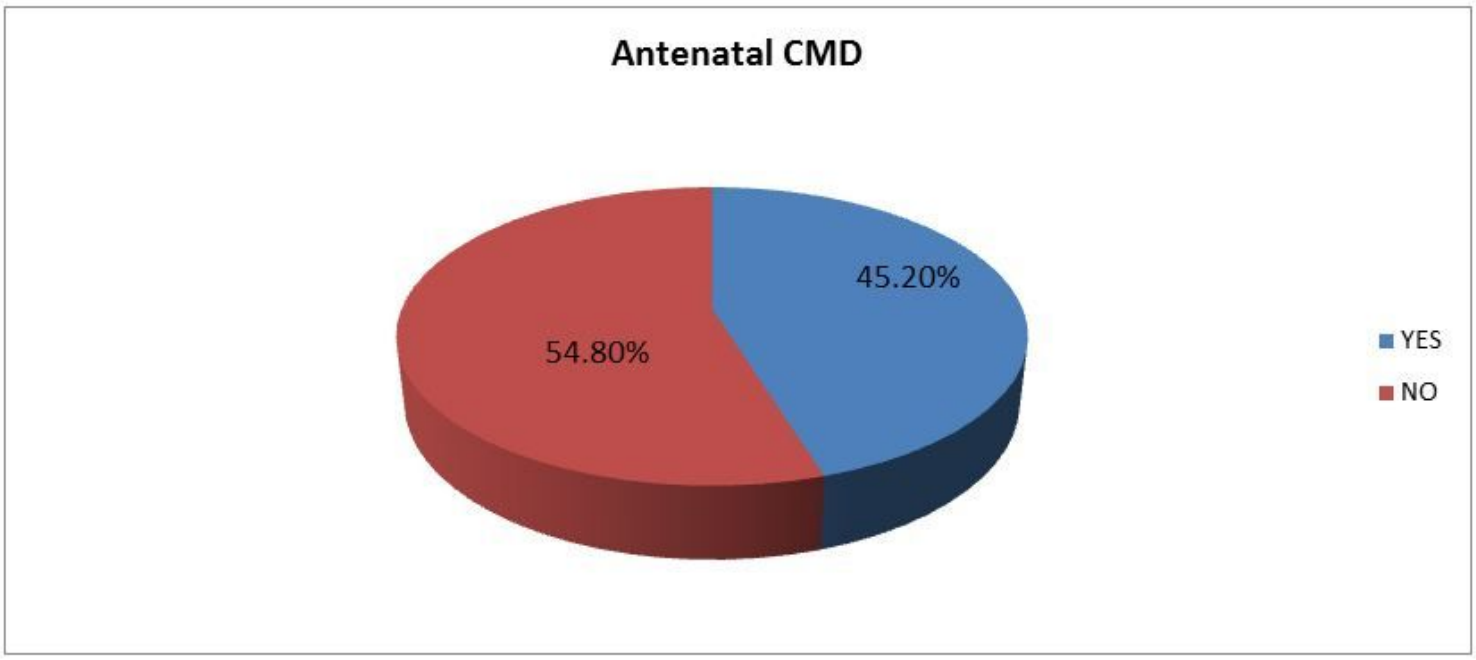

Figure 3

Prevalence of CMD among pregnant women at Debre Berhan town, North Shoa Zone, Amhara Region, Ethiopia, 2016

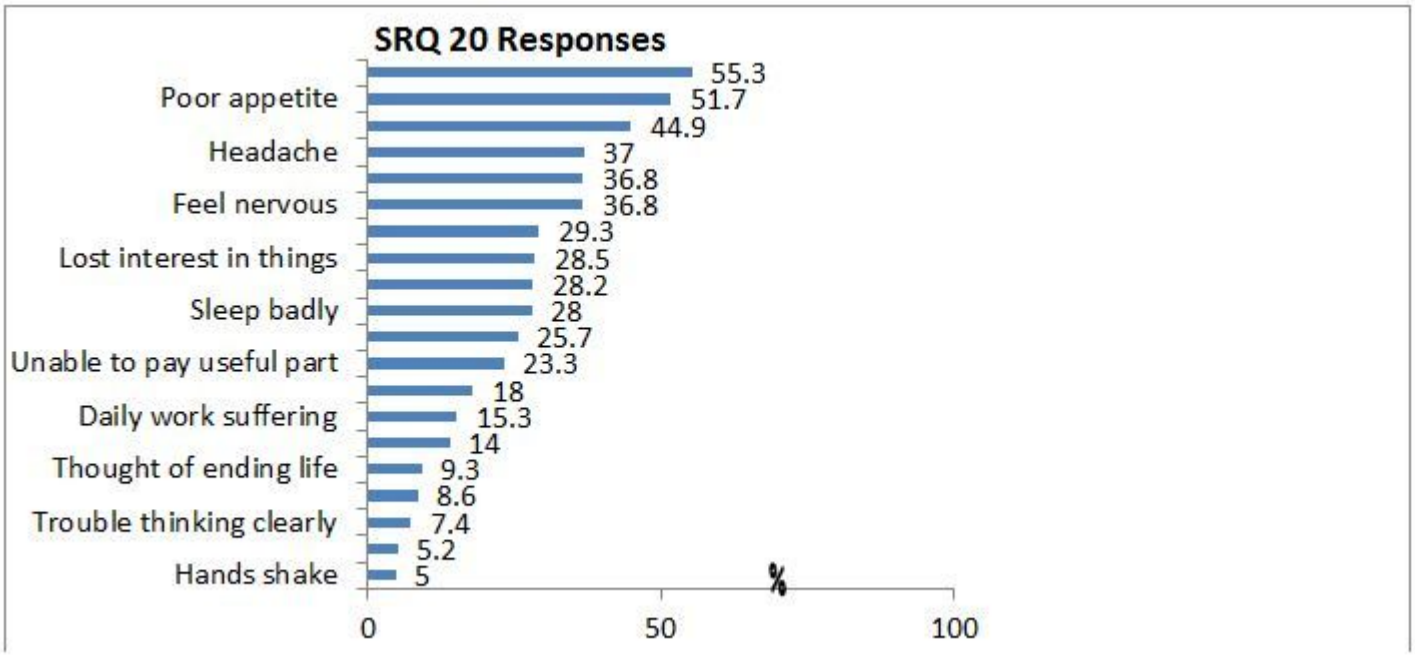

Figure 4

Responses of pregnant women to SRQ-20 at Debre Berhan town, North Shoa Zone, Amhara Region, Ethiopia, 2016