Frequency of Psychiatric Symptoms and Associated Factors During Pregnancy

Ece Büyüksandalyacı Tunç,[1] Hasan Çılgın[2]

[1]Department of Psychiatry, Kars Harakani State Hospital, Kars, Turkey
[2]Department of Obstetrics and Gynecology, Kafkas University Faculty of Medicine, Kars, Turkey

ABSTRACT

Objectives: Psychiatric disorders are a significant health concern during the perinatal period. Therefore, this study determined the prevalence of psychiatric symptoms and their associated factors during pregnancy.

Methods: All pregnant women who presented to Kafkas University gynecology and obstetrics outpatient clinic for examination between February 4 and May 4, 2019, and consented to participate in this study were included. This study employed the General Health Questionnaire, sociodemographic characteristics of the pregnant women, and perceived health status.

Results: Notably, 190 (45.6%) of pregnant women had psychiatric symptoms. Regarding the risk factors, they were 1.920 times more in pregnant women living in the villages or towns than those living in cities or city centers (95% CI: 1.224–3.014); 1.986 times more in unemployed pregnant women than those with a steady income (95% CI: 1.139–3.461); 0.469 times more in those who desired the pregnancy than those with undesired pregnancy (95% CI: 0.261–0.844); 1.650 times more in first pregnancies than those with more than two pregnancies (95% CI: 1.069–2.548).

Conclusion: Pregnant women living in rural areas like villages or towns, those unemployed and pregnant for the first time, were determined to be at high risk for psychiatric symptoms. Therefore, physicians at primary healthcare institutions should be periodically trained regarding perinatal psychiatric disorders.

Keywords: Psychiatric disorders, pregnant women, unwanted pregnancies, Turkey

INTRODUCTION

Pregnancy can be considered a crisis period that requires a woman to adapt to various new roles. It is a physiological and psychosocial process that involves new internal and interpersonal aspects of a woman and entails acceptance of motherhood.[1]

Notably, psychiatric disorders during the perinatal period are a significant health concern, especially in developing countries. Psychiatric disorders during this period are common, based on the disease spectrum (major depression, anxiety disorders, obsessive-compulsive disorder, and other disorders like social phobia) and prevalence (studies specifically showing depression ranged from 8.0% to 41.0%).[2–5] Besides affecting the mother during the perinatal period, the psychiatric disorders cause complications, such as preterm delivery, low birth weight, and insufficient growth, in the postnatal period.[6–10] In addition to the biological factors, the biodemographic, sociodemographic, socioeconomic, and sociocultural factors are among the reasons for perinatal psychiatric disorders.[11–16]

This study aimed to determine the frequency and factors affecting the emergence of psychiatric symptoms during pregnancy in the primary healthcare setting.

Moreover, this study endeavors to increase the family doctors' awareness regarding psychiatric symptoms that could be observed in pregnant women because family physicians are the primary contacts the pregnant women present to and are follow-up by for general health monitoring.

METHOD

This study included all pregnant women who presented to the obstetrics outpatient clinic between February 4 and May 4, 2019, and agreed to participate in the study, giving their verbal consent. However, of the 453 pregnant women invited to the study initially, 16 (3.5%) refused to participate, and 20 (4.4%) did not complete the forms. Therefore, finally, the research included 417 (92.1%) pregnant women who agreed to participate.

The data for the research was collected using the General Health Questionnaire-12 (GHQ-12) questions developed by Goldberg with its sociodemographic characteristics, bio-demographic features, and primary healthcare use status.[17]

Likert-type scoring was used to evaluate GHQ-12, with the scores ranging from 0 to 36. Notably, with 10/11 considered the cut-off point of GHQ-12, its sensitivity was 0.85, specificity was 0.77, and test-retest reliability was 0.99.[18-19] It was accepted that pregnant women with the GHQ-12 score of 2 and above had psychiatric symptoms, and those with a score of less than 2 had no psychiatric symptoms.

The dependent variable of the study was the presence of psychiatric symptoms. The independent variables were the socio-demographic and bio-demographic features of the pregnant women related to their availing of primary healthcare services.

The data were collected using the face-to-face interview technique after obtaining approval from Kafkas University ethics committee (Approval date: 30.01.2019/Approval number: 45).

The data were analyzed using the SPSS (Statistical Package for Social Sciences) for Windows 20.0 (SPSS Inc, Chicago, IL). Percentage, prevalence, Chi-square, and logistic regression analysis were used to analyze the data. Chi-square analysis was used to evaluate the independent variables affecting the dependent variable. The factors that were statistically significant in the chi-square analysis were included in the backward logistic regression. A p value of 0.05 was considered statistically significant.

RESULTS

This study included 417 pregnant women who presented to the gynecology and obstetrics outpatient clinic for examination and agreed to participate in the study. Psychiatric symptoms were observed in 45.6% (n=190) of pregnant women. The effects of socio-demographic and socio-economic features on the psychiatric symptoms in pregnant women are summarized in Table 1. One of the health features of pregnant women and the variable that is statistically significant with the psychiatric symptoms is smoking status (p=0.022). The effects of healthcare use and health features on the psychiatric symptoms in pregnant women are shown in Table 2. The variables that were determined to be statistically significant on binary analysis were the place where the women lived (p=0.004), family type (p=0.035), the employment status of the pregnant woman (p=0.018), the spouse's employment status (p=0.048), total household income (p=0.014), pregnancy age (p=0.016), desired pregnancy (p=0.001), and number of pregnancies (p=0.032). These statistically significant variables were included in the logistic regression analysis and the results are summarized in Table 3.

Logistic regression analysis revealed that the frequency of psychiatric symptoms was 1.920 times (confidence interval [CI]: 1.224–3.014) more in pregnant women living in the villages or town than those living in the cities or city centers; 1.986 times (CI: 1.139–3.461) more in unemployed pregnant women than those with a steady income; 0.469 times (CI: 0.261–0.844) more in those who desired the pregnancy than those who did not; and 1.650 times (CI: 1.069–2.548) more women pregnant with their first child than those who had more than two pregnancies (Table 3).

DISCUSSION

This research is a cross-sectional study conducted at the obstetrics outpatient clinic to identify the psychiatric symptoms during pregnancy using the GHQ-12 questionnaire. Our study determined rural residence, unemployment, and first pregnancy to be risk factors for psychiatric disorders in pregnant women. Furthermore, an unwanted pregnancy was noted to be a protective factor for psychiatric disorders.

Our study observed 45.6% of pregnant women to have psychiatric symptoms, indicating that approximately half of them had psychiatric symptoms. Therefore, along with physiological, psychosocial, and physical changes, pregnancy seems to cause psychiatric symptoms. Studies conducted earlier noted that the frequency of psychiatric symptoms during pregnancy was between 6.1% and 59.5%, especially for depression and anxiety disorders.[2-

Table 1. The effects of socio-demographic and socio-economic features on the psychiatric symptoms in pregnant women

		Psychiatric symptoms total score		X²	p
	n (%)	≤10 points	≥11 points		
Where the pregnant lives					
Village/town	143 (34.3)	64 (28.2)	79 (41.6)	8.224	0.004
City/ district city center	274 (65.7)	163 (71.8)	111 (58.4)		
Number of people living at home					
≤4 people	238 (57.1)	131 (57.7)	107 (56.3)	0.82	0.775
≥5 people	179 (42.9)	96 (42.3)	83 (43.7)		
Family type					
Extended family	183 (43.9)	89 (39.2)	94 (49.5)	4.427	0.035
Nuclear family	234 (56.1)	138 (60.8)	96 (50.5)		
Consanguineous marriage					
Yes	76 (18.2)	48 (21.1)	28 (14.7)	2.850	0.091
No	341 (81.8)	179 (78.9)	162 (85.3)		
Civil marriage					
Yes	405 (97.1)	217 (95.6)	188 (98.9)	3.047	0.081
No	12 (2.9)	10 (4.4)	2 (1.1)		
Type of marriage					
Arranged	206 (49.4)	105 (46.3)	101 (53.2)	1.971	0.160
Autonomous	211 (50.6)	122 (53.7)	89 (46.8)		
Social security					
No	32 (7.7)	19 (8.4)	13 (6.8)		
SSI	275 (65.9)	142 (62.6)	133 (70.0)	2.557	0.278
Green card*	110 (26.4)	66 (29.0)	44 (23.2)		
Education level of pregnant					
≤8 years	245 (58.8)	134 (59.0)	111 (58.4)	0.016	0.900
≥9 years	172 (41.2)	93 (41.0)	79 (41.6)		
Education level of husband					
≤8 years	228 (54.7)	121 (53.3)	107 (56.3)	0.379	0.583
≥9 years	189 (45.3)	106 (46.7)	83 (43.7)		
Working status of pregnant					
Unemployed	337 (80.8)	174 (76.7)	163 (85.8)	5.570	0.018
Employed	80 (19.2)	53 (23.3)	27 (14.2)		
Working status of spouse					
Unemployed	93 (22.3)	59 (26.0)	34 (17.9)	3.913	0.048
Employed	324 (77.7)	168 (74.0)	156 (82.1)		
Total household income					
Insufficient	299 (71.7)	174 (76.7)	125 (65.8)	6.015	0.014
Sufficient	118 (28.3)	53 (23.3)	65 (34.2)		
Pregnant's age					
≤19 years	30 (7.2)	10 (4.4)	20 (10.5)	5.804	0.016
≥20 years	387 (92.8)	217 (95.6)	170 (89.5)		
Unwanted pregnancy					
Yes	72 (17.3)	52 (22.9)	20 (10.5)	11.099	0.001
No	345 (82.7)	175 (77.1)	170 (89.5)		

Table 1. CONT.

| | n (%) | Psychiatric symptoms total score | | X² | p |
		≤10 points	≥11 points		
Gestational week					
≥15 weeks	330 (79.1)	174 (76.7)	156 (82.1)	1.863	0.172
≤14 weeks	87 (20.9)	53 (23.3)	34 (17.9)		
Number of pregnancy					
1 pregnancy	144 (34.5)	68 (30.0)	76 (40.0)	4.615	0.032
≥2 pregnancies	273 (65.5)	159 (70.0)	114 (60.0)		

SSI: Social Security Institution.

Data are presented as n (%).

Chi- Squared test.

*Only health security.

Table 2. The effects of health care use and health features on the psychiatric symptoms in pregnant women

| | n (%) | Psychiatric symptoms total score | | X² | p |
		≤10 points	≥11 points		
Examination to the family medicine					
Yes	243 (58.3)	140 (61.7)	103 (54.2)	2.369	0.124
No	174 (41.7)	87 (38.3)	87 (45.8)		
Family physician's getting information by phone					
Yes	161 (38.6)	90 (39.6)	71 (37.4)	0.227	0.634
No	256 (61.4)	137 (60.4)	119 (62.6)		
Information for pregnancy					
Informed	174 (41.7)	88 (38.8)	86 (45.3)	1.795	0.180
Not informed	243 (58.3)	139 (61.2)	104 (54.7)		
Information for emergencies					
Informed	145 (34.8)	72 (31.7)	73 (38.4)	2.049	0.152
Not informed	272 (65.2)	155 (68.3)	117 (61.6)		
Smoking status of pregnant					
Smoking	39 (9.4)	28 (12.3)	11 (5.8)	5.227	0.022
Not smoking	378 (90.6)	199 (87.7)	179 (94.2)		
Total	417(100.0)	227 (54.4)	190 (45.6)		

Chi-Squared test.

[5,20,21] The findings of our study are concordant with that of the literature. Nevertheless, psychiatric symptoms during pregnancy are a significant public health concern. Therefore, early diagnosis and treatment of these symptoms could positively enhance a pregnant woman's well-being and quality of life.

Furthermore, the frequency of psychiatric symptoms is 1.920 times higher in pregnant women residing in rural ar-eas like villages or towns than those living in urban areas like cities or city centers. The probable reason for this situation might be the intellectual women living in urban areas being aware of the significance of regular follow-up. An increase in the level of education in women can increase their self-esteem, self-efficacy, and the ability to cope with difficulties, thereby increasing their awareness and pre-venting psychiatric symptoms. Therefore, an increase in

Table 3. Predicting factors affecting the frequency of psychiatric symptoms in pregnant women

	B	S.E.	Wald	p	OR	95% CI
Where the woman lives						
City/district city center[(Ref)]					1	
Village/town	0.653	0.230	8.069	0.013	1.921	1.224-3.014
Working status of pregnant woman						
Employed[(Ref)]					1	
Unemployed	0.686	0.283	5.854	0.023	1.986	1.139-3.461
Working status of spouse						
Employed[(Ref)]					1	
Unemployed	0.514	0.268	3.665	0.073	0.598	0.354-1.012
Total household income						
Sufficient[(Ref)]					1	
Insufficient	0.465	0.239	3.781	0.093	0.628	0.393-1.004
Unplanned pregnancy						
Yes[(Ref)]					1	
No	0.757	0.300	6.374	0.008	0.469	0.261-0.844
Number of pregnancy						
≥2 pregnancies[(Ref)]					1	
1 pregnancy	0.501	0.221	5.117	0.041	1.650	1.069-2.548

CI: Confidence interval; OR: Odds ratio; Ref: Reference.

Logistic Regression (Backward LR) analysis.

the education level in pregnant women would decrease the risk of psychiatric disorders.[22] Moreover, studies have reported that the use of health services is lower in people living in rural areas. Hence, the intellectual accumulation of people living in urban areas positively improves their usage of healthcare resources.[23,24] Based on our research, it can be implied that pregnant women living in rural areas are at risk for psychiatric disorders, as well as challenges during their pregnancy follow-up because of poor access to perinatal care. Notably, a similar study that examined the differences in the health-related quality of life between pregnant women in rural and urban areas observed that women living in cities had more resources and opportunities than their rural contemporaries. Moreover, the level of health and living standards of pregnant women living in rural areas have been reported to be low.[25]

In addition, the frequency of psychiatric symptoms is 1.986 times higher in unemployed pregnant women than employed pregnant women. The high level of interaction with people at work and in public areas, as well as a steady income, can increase a woman's self-confidence and prevent psychiatric symptoms. Notably, a study similar to the current study, albeit with a different research methodology, revealed that several pregnant women in the low-income regions could not fulfill their basic daily needs directly related to their prenatal health. Unfulfilled daily needs were

reported to be significantly associated with prenatal depression and anxiety.[26] Similarly, the literature has evidenced a high incidence of depression symptoms among pregnant women with low income.[27-30]

The frequency of psychiatric symptoms is 1.650 times more in women pregnant with their first child than those who have had two or more pregnancies. The probable reason for this finding could be related to the fact that maternity experience and the ability to care for a baby increases with subsequent pregnancies, allaying their fears related to childbirth. Therefore, fear stemming from inexperience during the first pregnancy would increase the frequency of psychiatric disorders. Moreover, studies have revealed that fear of childbirth has a direct and positive relationship with depression during pregnancy.[31,32] However, the literature review revealed that the prevalence of depression and anxiety was higher in multiparous women who had previously had miscarry or stillbirths. The most important reason for the high frequency of psychiatric symptoms within the first pregnancy cases in our study was the bad obstetric stories of pregnant women were taken on the second plan. [33] Furthermore, a recent study reported results similar to our study, indicating that psychiatric symptoms were more common in patients living in rural areas and during the first pregnancy.[24]

The frequency of psychiatric symptoms was 0.469 times higher in women who desired the pregnancy than those who did not. Unlike previous studies that reported unwanted or unplanned pregnancy to be a risk factor for prenatal depression, our study revealed that these conditions do not affect the frequency of psychiatric symptoms during pregnancy.[34,35] However, another study reported that depression tends to occur during the early stages of unwanted pregnancy, but as the gestation progresses, the bond between the fetus and the mother strengthens, facilitating the acceptance of pregnancy and decreasing the risk of depression.[21] The possible reason for our study's result could be related to the cultural and religious factors in Turkey. Therefore, it can be assumed that because of the belief that the baby will bring luck and plentifulness, Turkish pregnant women quickly adapt to pregnancy and are protected from psychiatric symptoms.

Our study's limitations were primarily because of its cross-sectional design. Moreover, the stressful experiences and psychological health of mothers over time could not be assessed. In addition, the outcomes of their previous pregnancies were not evaluated, and the period between pregnancies was not considered in the study. Another limitation was that the study was geographically based rather than population-specific. Nonetheless, despite these limitations, the findings contribute to our understanding of the correlation between social support, stressful experiences, and psychological health in pregnant women.

CONCLUSION

Pregnant women residing in rural areas, those unemployed, and pregnant with their first child constitue the risk group. Therefore, we suggest that specific socio-demographic parameters be used to explore the psychiatric disorders in pregnant women routinely. This strategy would facilitate timely diagnosis and treatment of any psychiatric disorders. Nevertheless, long-term biopsychosocial studies are warranted to identify the factors that might affect the quality of psychological health during pregnancy.

Disclosures

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

Ethics Committee Approval: The approval for the research was obtained from Kafkas University ethics committee (Approval date: Jan 30, 2019 and Approval number: 45).

Authorship Contributions: Concept – E.B.T., H.C.; Design – E.B.T., H.C.; Supervision – E.B.T.; Materials – E.B.T., H.C.; Data collection &/or processing – E.B.T., H.C.; Analysis and/or interpretation – E.B.T.; Literature search – E.B.T.; Writing – E.B.T.; Critical review – E.B.T.

REFERENCES

1. Dülgerler Ş, Engin E, Ertem G. Investigation of pregnants' psychiatric symptoms. EGEHFD 2005;21(1):115–26.
2. Howard LM, Piot P, Stein A. No health without perinatal mental health. Lancet 2014;384(9956):1723–4. [CrossRef]
3. Nakku JE, Okello ES, Kizza D, Honikman S, Ssebunnya J, Ndyanabangi S, et al. Perinatal mental health care in a rural African district, Uganda: a qualitative study of barriers, facilitators and needs. BMC Health Serv Res 2016;16:295. [CrossRef]
4. Rochat TJ, Richter LM, Doll HA, Buthelezi NP, Tomkins A, Stein A. Depression among pregnant rural South African women undergoing HIV testing. JAMA 2006;295(12):1376–8. [CrossRef]
5. Adewuya AO, Ola BA, Aloba OO, Dada AO, Fasoto OO. Prevalence and correlates of depression in late pregnancy among Nigerian women. Depress Anxiety 2007;24(1):15–21. [CrossRef]
6. Rich-Edwards JW, Kleinman K, Abrams A, Harlow BL, McLaughlin TJ, Joffe H, et al. Sociodemographic predictors of antenatal and postpartum depressive symptoms among women in a medical group practice. J Epidemiol Community Health 2006;60(3):221–7. [CrossRef]
7. Patel V, Prince M. Maternal psychological morbidity and low birth weight in India. Br J Psychiatry 2006;188:284–5. [CrossRef]
8. Kalra H, Tran TD, Romero L, Chandra P, Fisher J. Prevalence and determinants of antenatal common mental disorders among women in India: a systematic review and meta-analysis. Arch Womens Ment Health 2021;24(1):29–53. [CrossRef]
9. Szegda K, Bertone-Johnson ER, Pekow P, Powers S, Markenson G, Dole N, et al. Depression during pregnancy and adverse birth outcomes among predominantly Puerto Rican women. Matern Child Health J 2017;21(4):942–52. [CrossRef]
10. Woolhouse H, Gartland D, Mensah F, Brown SJ. Maternal depression from early pregnancy to 4 years postpartum in a prospective pregnancy cohort study: implications for primary health care. BJOG 2015;122(3):312–21. [CrossRef]
11. Roomruangwong C, Epperson CN. Perinatal depression in Asian women: prevalence, associated factors, and cultural aspects. Asian Biomed 2011;5(2):179–93. [CrossRef]
12. Underwood L, Waldie K, D'Souza S, Peterson ER, Morton S. A review of longitudinal studies on antenatal and postnatal depression. Arch Womens Ment Health 2016;19(5):711–20. [CrossRef]
13. Underwood L, Waldie KE, D'Souza S, Peterson ER, Morton SMB. A longitudinal study of pre–pregnancy and pregnancy risk factors associated with antenatal and postnatal symptoms of depression: evidence from growing up in New Zealand. Matern Child Health J 2017;21(4):915–31. [CrossRef]
14. Dadi AF, Miller ER, Woodman R, Bisetegn TA, Mwanri L. Antenatal depression and its potential causal mechanisms among pregnant mothers in Gondar town: application of structural equation model. BMC Pregnancy Childbirth 2020;20(1):168.
15. Biratu A, Haile D. Prevalence of antenatal depression and associated factors among pregnant women in Addis Ababa, Ethiopia:

a cross-sectional study. Reprod Health 2015;12:99. [CrossRef]

16. Dibaba Y, Fantahun M, Hindin MJ. The association of unwanted pregnancy and social support with depressive symptoms in pregnancy: evidence from rural Southwestern Ethiopia. BMC Pregnancy Childbirth 2013;13:135. [CrossRef]

17. Kılıç C. Türkiye ruh sağlığı profili: erişkin nüfusta ruhsal hastalıkların yaygınlığı, ilişkili faktörler, yetiyitimi ve ruh sağlığı hizmeti kullanımı sonuçları. Ankara: TC Sağlık Bakanlığı; 1998. p. 77–98.

18. Akbıyık D, Önder M, Gökkurt E, Sümbüloğlu K. Genel sağlık anketi: üç ayrı puanlama yöntemine göre geçerlik ve test-tekrar test güvenirlik. Psikiyatr Psikol Psikofarmakol Derg 1996;4(2):91–9.

19. Çatak B, Öner C, Kılınç A, Sütlü S, Şenbayram S. Yaşlılara evde bakım verenlerde ruhsal hastalık belirtisi sıklığı ve etkileyen faktörler. Kafkas Tıp Bilim Derg 2012;2(3):105–8. [CrossRef]

20. Faisal-Cury A, Rossi Menezes P. Prevalence of anxiety and depression during pregnancy in a private setting sample. Arch Womens Ment Health 2007;10(1):25–32. [CrossRef]

21. Lee AM, Lam SK, Sze Mun Lau SM, Chong CS, Chui HW, Fong DY. Prevalence, course, and risk factors for antenatal anxiety and depression. Obstet Gynecol 2007;110(5):1102–12. [CrossRef]

22. Pampaka D, Papatheodorou SI, AlSeaidan M, Al Wotayan R, Wright RJ, Buring JE, et al. Depressive symptoms and comorbid problems in pregnancy - results from a population based study. J Psychosom Res 2018;112:53–8. [CrossRef]

23. Kılınç AS, Çatak B, Sütlü S, Akın A. Dünya'da ve Türkiye'de kadın sağlığının durumu. Sağlık ve Toplum 2012;22(2):3–10.

24. Khan MJ, Hamza MA, Sarwar I, Rashid MA. Major depressive disorder: an alarming stigma of pregnant women. J Ayub Med Coll Abbottabad 2020;32(2):244–9.

25. Naseem K, Khurshid S, Khan SF, Moeen A, Farooq MU, Sheikh S, et al. Health related quality of life in pregnant women: a comparison between urban and rural populations. J Pak Med Assoc 2011;61(3):308–12.

26. Katz J, Crean HF, Cerulli C, Poleshuck EL. Material hardship and mental health symptoms among a predominantly low income sample of pregnant women seeking prenatal care. Matern Child Health J 2018;22(9):1360–7. [CrossRef]

27. Fellenzer JL, Cibula DA. Intendedness of pregnancy and other predictive factors for symptoms of prenatal depression in a population-based study. Matern Child Health J 2014;18(10):2426–36. [CrossRef]

28. Fisher J, Tran T, Duc Tran T, Dwyer T, Nguyen T, Casey GJ, et al. Prevalence and risk factors for symptoms of common mental disorders in early and late pregnancy in Vietnamese women: a prospective population-based study. J Affect Disord 2013;146(2):213–9. [CrossRef]

29. Fisher J, Cabral de Mello M, Patel V, Rahman A, Tran T, Holton S, et al. Prevalence and determinants of common perinatal mental disorders in women in low- and lower-middle-income countries: a systematic review. Bull World Health Organ 2012;90(2):139–49. [CrossRef]

30. Shakeel N, Eberhard-Gran M, Sletner L, Slinning K, Martinsen EW, Holme I, et al. A prospective cohort study of depression in pregnancy, prevalence and risk factors in a multi-ethnic population. BMC Pregnancy Childbirth 2015;15:5. [CrossRef]

31. Izadirad H, Niknami S, Zareban I, Hidarnia A. Effects of social support and self-efficacy on maternal prenatal cares among the first-time pregnant women, Iranshahr, Iran. J Fam Reprod Heal 2017;11(2):67–73.

32. Habtamu Belete A, Alemayehu Assega M, Alemu Abajobir A, Abebe Belay Y, Kassahun Tariku M. Prevalence of antenatal depression and associated factors among pregnant women in Aneded woreda, North West Ethiopia: a community based cross-sectional study. BMC Res Notes 2019;12(1):713. [CrossRef]

33. Abajobir AA, Alati R, Kisely S, Najman JM. Are past adverse pregnancy outcomes associated with maternal anxiety and depressive symptoms in a sample of currently pregnant women? Ethiop J Health Sci 2017;27(4):351–62. [CrossRef]

34. Duko B, Ayano G, Bedaso A. Depression among pregnant women and associated factors in Hawassa city, Ethiopia: an institution-based cross-sectional study. Reprod Health 2019;16(1):25. [CrossRef]

35. Bisetegn TA, Mihretie G, Muche T. Prevalence and predictors of depression among pregnant women in Debretabor town, Northwest Ethiopia. PLoS One 2016;11(9):e0161108. [CrossRef]