

Depressive symptoms in pregnancy and associated factors: longitudinal study

Sintomas depressivos na gestação e fatores associados: estudo longitudinal

Marlise de Oliveira Pimentel Lima¹

Maria Alice Tsunechiro²

Isabel Cristina Bonadio²

Marcella Murata³

Keywords

Depression; Pregnancy; Prenatal care; Pregnancy complications; Obstetric nursing

Descritores

Depressão; Gravidez; Cuidado pré-natal; Complicações na gravidez; Enfermagem obstétrica

Submitted

October 3, 2016

Accepted

February 10, 2017

Corresponding author

Marlise de Oliveira Pimentel Lima
Arlindo Bétio street, 1000,
03828-000, Ermelino Matarazzo,
São Paulo, SP, Brasil.
moplma@usp.br

DOI: <http://dx.doi.org/10.1590/1982-0194201700007>



Abstract

Objective: To identify the frequency of depressive symptoms during pregnancy and verify their association with sociodemographic, obstetric and health variables.

Methods: A longitudinal study conducted with 272 pregnant women in 12 health units in the city of São Paulo. Data were obtained using a form for the independent variables, and the Edinburgh Postpartum Depression Scale applied at the 20th, 28th and 36th gestational weeks. A model of generalized estimating equations was used to evaluate the associated factors and odds ratio.

Results: The frequency of depressive symptoms was 27.2%, 21.7% and 25.4%. Higher educational level, planned pregnancy and continuity of gestation were protective factors. Suffering or having suffered psychological violence was an independent risk factor of the gestational period.

Conclusion: The frequency of depressive symptoms during pregnancy was high. The associated factors were higher educational level, planned pregnancy, continuity of pregnancy, and suffering or having suffered psychological violence.

Resumo

Objetivo: Identificar a frequência de sintomas depressivos no decorrer da gestação e verificar sua associação com variáveis sociodemográficas, obstétricas e de saúde.

Métodos: Estudo longitudinal realizado com 272 gestantes de 12 unidades de saúde do Município de São Paulo. Os dados foram obtidos por meio de um formulário para as variáveis independentes e da Escala de depressão pós-parto de *Edimburgo* aplicada nas 20^a, 28^a e 36^a semanas gestacionais. Utilizou-se modelo de equações de estimação generalizadas para avaliar os fatores associados e chances de risco.

Resultados: A frequência de sintomas depressivos foi de 27,2%, 21,7% e 25,4%. Maior escolaridade, gestação planejada e continuidade da gestação foram fatores de proteção. Sofrer ou ter sofrido violência psicológica foi fator de risco independente do período gestacional.

Conclusão: A frequência de sintomas depressivos na gestação foi elevada. Os fatores associados foram maior escolaridade, gestação planejada, continuidade da gestação e sofrer ou ter sofrido violência psicológica.

¹Escola de Artes, Ciência e Humanidades, Universidade de São Paulo, São Paulo, SP, Brazil.

²Escola de Enfermagem, Universidade de São Paulo, São Paulo, SP, Brazil.

³Hospital do Rim e Hipertensão, Fundação Oswaldo Ramos, São Paulo, SP, Brazil.

Conflict of interest: no conflicts of interest to declare.

Introduction

The pregnancy-puerperal cycle is a phase in women's lives that requires special evaluation because it includes innumerable physical, hormonal, psychic and social insertion modifications that can reflect directly on mental health.

Over the years, the interest in evaluating pregnant women's mental health in a systematized way has deserved little attention, probably for the belief that pregnancy is a period of well-being, and also for the greater attention given by professionals to psychotic disorders that can occur after birth because they require hospitalization.⁽¹⁾

During pregnancy, 10% to 15% of all women experience mild to moderate anxiety and depression symptoms. In general, they are similar to symptoms in depression at any other time in women's lives, such as lack of appetite and energy and feelings of guilt. In addition to the own woman's suffering, these manifestations may interfere with the proper process of fetal development, increase the risk of adverse events in pregnancy for mother and fetus such as preeclampsia, and be associated with unfavorable obstetric outcomes such as preterm birth and low birth weight. Depression may persist in the postpartum period and compromise parental behavior, the relationship with the partner and family, the process of mother-child bonding, and the child's cognitive, motor and psychosocial development.⁽²⁻⁵⁾

Studies on depression and its effects in the prenatal period are recent, dating back two decades, with an increase thereafter.

In pregnancy, the prevalence of depression appears to vary depending on the country's degree of development. Studies show prevalence rates are lower, around 10% and 15% in developed countries such as the United States, England, Canada, and Sweden. In developing countries such as Brazil, Bangladesh, Pakistan and South Africa, the average rate is around 25%.⁽⁶⁻⁸⁾

In Malawi, a less developed country, rates at pregnancy were 10.7% for major depression and 21.1% for minor depression. In Turkey, the prevalence in the first trimester of gestation was 16.8%.^(9,10)

The prevalence also varies according to gestational age or trimester, on average 7.4% in the first trimester until 12.0% in the last trimester.⁽⁷⁾

Depressive symptoms such as altered sleep patterns, sadness with no apparent reason, decreased performance and feelings of guilt, among others, are common in gestation, ranging from 11.9% to 33.8%, and indicate a risk for depression.^(7,11,12)

Thus, pregnant women should be evaluated to ensure specialized referral of suspected cases of depression for diagnosis and treatment.

In this sense, we highlight the recent position of American national health services recommending the screening of depressive symptoms in pregnancy and postpartum periods.⁽¹³⁾

Even though this is a relevant public health problem, given its frequency, few recent studies have been found on depressive symptoms in gestation in emerging countries.⁽⁸⁾ Therefore, there is need for new studies that analyze women's mental health throughout the gestational period.

The objectives of this study were to identify the frequency of depressive symptoms during pregnancy and verify their association with sociodemographic, obstetric and health variables.

Methods

A longitudinal study was conducted in three steps (20th, 28th and 36th gestation weeks, with variation of \pm 2 weeks) in 12 prenatal care services that assist pregnant women through the Brazilian Unified Health System (SUS), located in the southern area of the city of São Paulo, Brazil. This is a subproject of a broader research called 'Quality of life of women with depressive symptoms during the gestational period'.

The study included pregnant women at usual risk, who received prenatal care in the aforementioned services. Inclusion criteria were minimum age of 18 years, gestational age \leq 22 weeks, and ability to read and understand the data collection forms. Exclusion criteria were diagnosis of twin pregnancy or clinical or obstetric comorbidity during pregnancy, and pharmacological treatment for mental disorders.

It should be mentioned that the start of the first stage of collection at the 20th gestational week, ensured the inclusion of pregnant women without prior clinical, obstetrical and mental pathology, with normal results of clinical exams, and negative results for serological tests (all checked in medical records and/or the pregnant woman's card).

For the selection of participants, the National System of Registration of Pregnant Women (SIS-Pré-Natal) was used to find out eligible pregnant women. Women who met the inclusion criteria and attended the prenatal care visit at the determined gestational age for the first step of collection were invited to participate after clarification on the objectives and procedures of the study.

The minimum sample size for this study was calculated based on the formula: $n = z^2 \cdot p \cdot q / e^2$, considering n =minimum sample size; z =coefficient of confidence, adopting the value of 1.96 for an alpha of 0.05; p =prevalence of the studied phenomenon; q =additional measure of prevalence (1- p); e = maximum error in absolute value. Based on the national study that indicates a prevalence of 20.7% of depressive symptomatology during the gestational period, was adopted a value of 0.22, which equates to a higher relation between p and q and a desired precision of 5%.⁽¹²⁾ Thus, was obtained $n=264$.

Considering 40% of loss to follow-up, 443 pregnant women were included in the initial step. There was a loss of 171 pregnant women; 99 in the second step, and 72 in the third. The main reasons were disengagement from service due to change of address and referral to high-risk prenatal care due to clinic-obstetric complications such as pre-eclampsia, gestational diabetes, twin pregnancy, and preterm delivery. During the study, there was no exclusion of pregnant women by pharmacological treatment for mental disorders. The final sample consisted of 272 pregnant women (61.4%) who completed the study steps.

The study variables of the final sample and the dropped out group were compared, with no differences between groups, except for psychological violence ($p = 0.013$), which was present in a higher proportion in the final sample.

The study participants were recruited from July 2008 to September 2009. The follow-up of pregnant women lasted until January 2010.

Two forms were used for data collection. A form to gather sociodemographic, obstetrical and health data was used in the first step. The Edinburgh Postnatal Depression Scale-EPDS (translated and validated version for Brazilian Portuguese) was used in the three steps.⁽¹⁴⁾ The EPDS is a simple response instrument designed to be applied by a non-specialized mental health professional. It can be used at any stage of pregnancy and up to 12 months after birth.^(12,15) It is a self-administered instrument composed of ten statements and covering the following symptoms: depressed or dysphoric mood, sleep disorder, lack of pleasure, idea of death and suicide, decreased performance, and guilt. Each statement has four options of answers scored from 0 to 3 according to the absence, presence and intensity of symptoms. The final score ranges from 0 to 30, by simple sum of the points of each item, showing that the higher the score, the higher the presence of depressive symptoms.

As the intention of this study was to evaluate the presence of depressive symptoms throughout gestation, was chosen a longitudinal approach, starting from an early gestational age (20th gestational week), with an interval of eight weeks between steps, and considering the evolution of gestational changes occurring in the maternal organism.

The collection forms were applied by nurses, researchers of the present study, before or after the prenatal care visit, in a private room, after reading, clarifying and signing the Informed Consent Form. In the period corresponding to the gestational ages determined for follow-up, the collection took place at the health service or at home, depending on the pregnant woman's preference.

The dependent variable of the study was the presence of depressive symptoms and the cut-off point adopted was the score ≥ 13 , as suggested in a study conducted in Brazil (specificity of 88.4% and sensitivity of 59.5%).⁽¹²⁾

In each step of collection, the referral to a philanthropic service with mental health professionals for evaluation and treatment, if necessary, was offered to pregnant women with depressive symptoms.

The independent variables were: age (completed years), years of study, self-defined ethnicity (white, black/mixed race, Asian), marital status (with and without partner), religion (catholic, evangelical, other, no religion), paid work (yes/no), family income in minimum wage of 2009 (\leq R\$465.00; R\$466.00 – R\$931.00; R\$932.00 – R\$1,397.00; \geq R\$1,398.00), number of pregnancies including the present one (one, two, three or more), number of births (none, one, two, three or more), number of alive children (none, one, two, three or more), number of children living with the pregnant woman (none, one, two, three or more), number of cited gestational complaints such as nausea, vomiting, burning sensation, low back pain (none, one, two, three or more), suffering or having suffered physical violence such as slaps or pushes, or psychological violence such as threats of abandonment, shouting, before or during pregnancy (no, yes), and who was the aggressor (partner, family, others), pregnancy planning (no, yes), pregnancy acceptance (no, yes, in process of acceptance), use of tobacco (no, yes), use of alcohol (no, yes), use of other drugs (no, yes), previous or current mental problem (no, yes), and mental problem in the family (no, yes).

The Cronbach's alpha coefficient was used to check the EPDS reliability. To compare the results of the EPDS throughout the three steps was used the Friedman test.

The model of generalized estimating equations (GEE) for binomial distribution was used to evaluate all possible predictors for depressive symptoms and chances of risk, encompassing the three steps of the study. In the multiple model were included all variables in which the associative tests (chi-square and Student's t) had p -value <0.20 . The selection of variables was performed using the backwards stepwise method. The level of significance was set at 5%. The analyzes were done with the Statistical Program for Social Science (SPSS)[®], version 17.0.

The project was approved by the Research Ethics Committee of the Municipal Health Secretariat of the City of São Paulo (CAAE: 0060.0.162.000-08 number 154/08 - CEP/SMS).

Results

The 272 pregnant women in the study had the following characteristics: age ($n = 271$) 25.3 (5.4) years; white ($n = 269$) 52.1%; educational level ($n = 270$) 9.5 (2.5) years of study; with partner ($n = 268$) 91%; catholic ($n = 263$) 60.5%; family income ($n = 269$) of 50.6% of up to R\$ 931.00; first pregnancy in 37.5%; one or more births 65.9%, one or more alive children 66.7%; one or more cited gestational complaints 90.1%; smokers 19.8%; alcohol users 28.7%; illicit drug users ($n = 271$) 4.8%; suffering physical ($n = 271$) and psychological violence before or during pregnancy were, respectively, 11.8% and 29.8%, with partner and relatives as the main aggressor (87.1% and 78.6%); unplanned pregnancy ($n = 270$) was 71.9%, and had accepted it ($n = 271$) 90.8%.

The frequency of depressive symptoms in the three steps and the Cronbach's alpha coefficient are presented in table 1.

Depressive symptoms occurred throughout the gestational period in 7% of pregnant women, at some step in 38.5%, and no occurred for 54.5%, showing little variation between steps according to the Friedman test during pregnancy ($p = 0.23$), and between scores ≥ 13 ($p=0.12$).

The frequency of pregnant women who scored one to three points in each statement throughout the steps is shown in table 2.

Feeling anxious or worried for no good reason (Statement 4) was the most frequent item among pregnant women in the sample, maintaining percentages above 80% during pregnancy. Blaming oneself unnecessarily when things went wrong (Statement 3) was also frequent, but it decreased during pregnancy, while not being able to face up to problems (Statement 6) increased throughout the evolution of pregnancy. These three statements refer to symptoms of decrease of performance and guilt. Statement 10, the thought of injuring oneself was present in the smallest proportion.

The associative analysis of depressive symptoms with independent variables was significant with

Table 1. Depressive symptoms in pregnant women according to results of the Edinburgh Postnatal Depression Scale in the three steps

STEPS (gestational weeks)			EPDS score			Cronbach's alpha
	≤12 n(%)	≥13 n(%)	Minimum	Maximum	Mean (SD)	
20 th	198(72.8)	74(27.2)	0	27	9.1(5.9)	0.83
28 th	213(78.3)	59(21.7)	0	29	8.6(5.7)	0.84
36 th	203(74.6)	69(25.4)	0	24	8.6(5.6)	0.84

Table 2. Pregnant women who scored one to three points in each statement of the Edinburgh Postnatal Depression Scale in the three steps

EPDS statement	1 st Step n(%)	2 nd Step n(%)	3 rd Step n(%)
1. I have laughed and been able to look on the bright side of life.	99(36.3)	91(33.5)	99(36.4)
2. I have looked forward to the future.	134(49.2)	123(45.2)	131(48.1)
3. I have blamed myself unjustifiably when things have gone wrong.	210(77.2)	203(74.7)	184(67.7)
4. I have become anxious or worried for no good reason.	228(83.8)	233(85.6)	217(80.1)
5. I have felt frightened or panicky for no good reason.	123(45.2)	119(43.8)	127(46.6)
6. I have not been able to face up to problems.	197(72.4)	218(80.1)	226(83.1)
7. I have felt so bad that I have had difficulty in sleeping.	96(35.3)	98(36.0)	114(42.2)
8. I have felt sad or unwell.	141(51.8)	143(52.6)	141(52.2)
9. I have felt so sad that I have cried.	138(50.8)	130(47.8)	134(49.6)
10. I have thought about injuring myself.	61(22.4)	43(15.7)	39(14.5)

education ($p < 0.001$), number of pregnancies ($p < 0.001$), number of births ($p < 0.001$), number of children ($p < 0.001$), number of children living with the pregnant woman ($p = 0.006$), number of complaints during pregnancy ($p = 0.039$), pregnancy planning ($p < 0.001$), smoking ($p < 0.001$), physical violence ($p = 0.007$), psychological violence ($p = 0.001$), and mental problems reported by the pregnant woman ($p = 0.024$).

The evaluation of possible predictors for the presence of depressive symptoms during pregnancy (GEE model) showed there were differences between the steps, as presented in the data of table 3.

The chance of presenting depressive symptoms decreased by 21.6% and 21.5%, respectively, in the second and third steps. Planned pregnancy decreased the chance of presenting depressive symptoms during pregnancy (first step - 75.4%; second step - 91.4%; third stage - 56.1%). Having higher educational level decreased the chance in 14.3% per year of study, regardless of gestational age. Therefore, higher educational level, planned pregnancy and the evolution of pregnancy were protective factors.

Suffering or having suffered psychological violence has increased twice the chance of presenting depressive symptoms throughout pregnancy, hence is a risk factor.

Table 3. Odds ratio (OR), confidence interval and level of significance for depressive symptoms in pregnant women

Variables	OR	CI 95%	p-value
Gestational age			0.007
20 th week	1		
28 th week	0.784	0.565 - 1.088	
36 th week	0.785	0.539 - 1.143	
Educational level (years)	0.857	0.780 - 0.941	0.001
Planned pregnancy			< 0.001
No	1		
Yes	0.246	0.108 - 0.559	
Psychological violence			0.003
No	1		
Yes	2.184	1.355 - 3.521	

Discussion

When interpreting the results of this study, the limitation imposed by the sample of pregnant women attended in the public health system must be taken into account because it prevents the generalization of results to the universe of pregnant women.

The results show the need for attention focused on mental health since the beginning of pregnancy. They also offered subsidies to formulate strategies of specialized care to women with use of the EPDS as a tool for screening of depressive symptoms in prenatal care.

In this study, there was an expressive proportion of women with depressive symptoms during pregnancy, especially those with early gestational age. Studies using the EPDS and the same cutoff point (≥ 13) showed frequency variation. In Brazil, 20.7% with a mean gestational age of 27.7 weeks.⁽¹²⁾ In Ethiopia 24.9%, with predominance of women in the last trimester.⁽⁸⁾ In Tanzania the result was higher, with 33.8% of depressive symptoms during pregnancy.⁽⁷⁾

The relatively high frequency observed at the beginning of pregnancy in this study may be a result of changes occurring in women's bodies, and the acceptance of their pregnancy condition. It can also be related to the support and acceptance received from their partners and family members. In the last trimester, around the 36th week, the frequency also increased. At this time, characterized as antepartum period, it is not uncommon to observe more preoccupations because of the proximity of labor and birth.

Using the cutoff point ≥ 12 , lower frequencies were found in some European studies. In Holland, the frequency was 6.0% at the 12th and 36th weeks of pregnancy, and in Norway it was 8.0% at the 28th week of pregnancy.^(5,16)

In Brazil, a longitudinal study with cut-off point ≥ 11 presented higher frequencies, with 33.3% in the second gestational trimester and 27.9% in the third.⁽¹⁷⁾

These variations may result from different ways of using the EPDS for gestational age and cut-off points. Thus, the analysis of the results obtained in studies should consider these methodological aspects.

In addition to economic differences between countries, there are cultural, ethnic and life history differences among women who participated in these various studies, which interferes in prevalence results.^(5,18)

Depressive symptoms are undervalued by women because they assume these are part of the pregnancy process hence, accepted as something normal and adjustable over time, and by a presumed negative social valuation that still persists on mental health care.⁽¹⁹⁾

In this study, the most frequent type of depressive symptom was decreased performance and guilt, as suggested by statements 3, 4 and 6 of the scale used. It was observed that factorial analysis studies with the EPDS showed an anxiety factor (subscale 3A) related to statements 3, 4 and 5. However, in the EPDS there is no distinction if the anxiety score of these three items is a characteristic of depression in the perinatal period or a distinct morbidity.^(20,21)

Although these symptoms are relatively common in pregnancy, professionals involved in this process should be alert to women's behavioral manifestations that demonstrate exacerbated emotional reactions, and act in order to alleviate negative feelings, if possible, turning them into positive feelings. The presence of these symptoms at high levels can lead to unfavorable maternal and perinatal outcomes.⁽²⁻⁵⁾

The least frequent was the thought about injuring oneself. However, its presence at all stages shows the importance of a specific screening tool to identify pregnant women at risk. In a study conducted in Tanzania, only two (0.5%) women reported suicidal ideation, which is lower than in the present study. In Brazil, the prevalence of suicidal ideation found in pregnant women was 6.3%.^(7,22)

Higher educational level, planned pregnancy and the course of gestation were protective factors in this study. On the other hand, suffering or having suffered psychological violence was a risk factor for the presence of depressive symptoms throughout pregnancy.

A systematic review has indicated the following as major risk factors for the presence of depressive symptoms: prior history of depression or mental illness, unplanned or unaccepted pregnancy, absence of partner or social support, high perceived stress level and having suffered adverse events in life, history of abuse or domestic violence, past or present history of gestational complications, and fetal loss. Besides these factors, financial difficulties, low educational level, unemployment and dependence on psychoactive substances were also mentioned.^(7,23)

Planned pregnancy was a protective factor, varying as the gestation progressed. In this context, failure to plan pregnancy was a risk factor for perinatal depression according to a systematic review with meta-analysis.⁽²⁴⁾

Psychological violence was a risk factor for the presence of depressive symptoms throughout gestation, considering the main perpetrators were partners and family members. In longitudinal studies conducted in Brazil and Turkey and in a review study, one of the factors associated with gestational depression was exposure to domestic violence.^(17,25,26)

Currently, violence against women is a highly valued social problem that has received recognition from governmental agencies. According to the Low Risk Prenatal Care Handbook, a mistreated pregnant woman develops a condition of constant emotional stress associated with low self-esteem, isolation and suicide, excessive or abusive use of cigarettes, alcohol and drugs. It also states that the pregnancy-puerperal cycle does not give protection to women and points prenatal care as a privileged time to identify women who suffer violence, and is often the only opportunity to stop this situation.⁽²⁷⁾

The early identification of depressive symptoms during pregnancy is important because it provides subsidies for risk assessment and necessity of referrals, providing timely interventions and more favorable maternal and child outcomes.

Pregnant women's spontaneous search for help may be difficult because of some factors such as inability to verbalize their need for specialized care, and it is compromised by the presence of depressive symptoms. There is also the fact of not feeling confident to expose their complaints to professionals, since it is not uncommon to hear that these symptoms are common in pregnancy. A study conducted in an ultra-orthodox Israeli community showed that most pregnant women only seek help after exacerbation of symptoms.⁽¹¹⁾

Professionals also faces barriers to detect pregnant women with depressive symptoms because of the lack of knowledge of systematized forms in mental health, and lack of preparation for the management and assistance of these women in primary

care. The limitation of focus to physiological aspects of the development of pregnancy and the postpartum period prevents an integral care during antenatal and postpartum periods.^(28,29)

Thus, health professionals should understand the state of higher psychic vulnerability of pregnant women, without trivializing their complaints and, when necessary, request referring support from mental health professionals to pregnant women in mental suffering.⁽²⁹⁾

Conclusion

The frequency of depressive symptoms in the first, second and third steps was 27.2%, 21.7% and 25.4%. The associated protective factors were higher educational level, planned pregnancy and continuity of pregnancy. Suffering or having suffered psychological violence was a risk factor throughout pregnancy.

Acknowledgements

Thanks to the Conselho Nacional do Desenvolvimento Científico e Tecnológico – CNPq (process number 479.016/2007-0 for Maria Alice Tsunehiro).

Collaborations

Lima MOP, Tsunehiro MA, Bonadio IC and Murata M declare they contributed to the project design, analysis and interpretation of data, article writing, critical review of the intellectual content and final approval of the version to be published.

References

1. Almeida MS, Nunes MA, Camey S, Pinheiro AP, Schmidt MA. [Mental disorders in a sample of pregnant women receiving primary health care in Southern Brazil]. *Cad. Saúde Pública* 2012; 28(2):385-93. Portuguese.
2. Jarde A, Morais M, Kingston D, Giallo R, MacQueen GM, Giglia L et al. Neonatal Outcomes in Women With Untreated Antenatal Depression Compared With Women Without Depression: A Systematic Review and Meta-analysis. *JAMA Psychiatry*. 2016; 73(8):826-37.
3. McDonald S, Kehler H, Bayrampou H, Frase_Lee N, Tough S. Risk and protective factors in early development: results from the all our babies (AOB) pregnancy cohort. *Res Dev Disabil*. 2016; 58:20-30.

4. Lewis AJ, Austin M. Prenatal maternal mental health and fetal growth restriction: a systematic review. *J Dev Orig Health Dis.* 2016; 7(4):416-28.
5. 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.
6. 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):139G-149G.
7. Rwakarema M, Premji S, Nyanza EC, Riziki P, Palacios-Derflingher L. Antenatal depression is associated with pregnancy-related anxiety, partner relations, and wealth in women in Northern Tanzania: a cross-sectional study. *BMC Women's Health.* 2015; 15:68.
8. 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.
9. Stewart RC, Umar E, Tomenson B, Creed F. A cross-sectional study of antenatal depression and associated factors in Malawi. *Arch Womens Ment Health.* 2014; 17(2):145-54.
10. Aslan AP, Aydin N, Yazici E, Aksoy AN, Kirkan TS, Daloglu GA. Prevalence of depressive disorders and related factors in women in the first trimester of their pregnancies in Erzurum, Turkey. *Int J Soc Psychiatry.* 2014; 60(8):809-17.
11. Glasser S, Hadad L, Bina R, Boyko V, Magnezi R. Rate, risk factors and assessment of a counselling intervention for antenatal depression by public health nurses in an Israeli ultra-orthodox community. *J Adv Nurs.* 2016; 72(7):1602-15.
12. Silva R, Jansen K, Souza L, Quevedo L, Barbosa L, Moraes I, Horta B, Pinheiro R. Sociodemographic risk factors of perinatal depression: a cohort study in the public health care system. *Rev Bras Psiquiatr.* 2012; 4(2):143-8.
13. O'Connor E, Rossom RC, Henninger M, Groom HC, Burda BU. Primary care screening for and treatment of depression in pregnant and postpartum women Evidence Report and Systematic Review for the US Preventive Services Task Force. *JAMA.* 2016; 315(4):388-406.
14. Santos MF, Martins FC, Pasquali L. [Postpartum Depression Self-Assessment Scale: A Study in Brazil]. *Rev Psiquiatr Clin (São Paulo).* 1999; 26(2):90-5. Portuguese.
15. Cox J, Holden J, Henshaw C. Perinatal Mental Health. The Edinburgh Postnatal Depression Scale (EPDS) Manual. 2nd ed. London: RCPsych Publications. 2014. p.17-26.
16. Meijer JL, Bockting CL, Stolk RP, Kotov R, Ormel J, Burger H. Associations of life events during pregnancy with longitudinal change in symptoms of antenatal anxiety and depression. *Midwifery.* 2014; 30(5):526-31.
17. Castro e Couto T, Cardoso MN, Brancaglioni MY, Faria GC, Garcia FD, Nicolato R et al. Antenatal depression: Prevalence and risk factor patterns across the gestational period. *J Affect Disord.* 2016; 192:70-75.
18. Robinson AM, Benzeies KM, Cairns SL, Fung, Tough SC. Who is distressed? A comparison of psychosocial stress in pregnancy across seven ethnicities. *BMC Pregnancy Childbirth* 2016; 16(1):215.
19. Carrascón A, García S, Cena B, Fornés M, Fuentelsaz C. Detección de la depresión durante el embarazo y el posparto. *Matronas Prof.* 2006; 7(4): 5-11.
20. Matthey S, Fisher J, Rowe H. Using the Edinburgh Postnatal Depression Scale to screen for anxiety disorders: conceptual and methodological considerations. *J Affect Disord.* 2013; 146(2):224-30.
21. Fallon V, Halford JC, Bennett KM, Harrold JA. The Postpartum Specific Anxiety Scale: development and preliminary validation. *Arch Womens Ment Health.* 2016; 19(6):1079-90.
22. Huang H, Faisal-Cury A, Chan YF, Tabb K, Katon W, Menezes PR. Suicidal ideation during pregnancy: prevalence and associated factors among low-income women in São Paulo, Brazil. *Arch Womens Ment Health* 2012; 15(2):135-8.
23. Biaggi A, Conroy S, Pawlby S, Pariante CM. Identifying the women at risk of antenatal anxiety and depression: A systematic review. *J Affect Disord.* 2016; 191:62-77.
24. Abajobir AA, Maravilla J, Alati R, Najman JM. A systematic review and meta-analysis of the association between unintended pregnancy and perinatal depression. *J Affect Disord.* 2016; 192:56-63.
25. Kirkan TS, Aydin N, Yazici E, Aslan PA, Acemoglu H, Daloglu AG. The depression in women in pregnancy and postpartum period: A follow-up study. *Int J Soc Psychiatry.* 2015; 6(4):343-9.
26. Howard LM, Oram S, Galley H, Trevillion K, Feder G, 2013. Domestic violence and perinatal mental disorders: a systematic review and meta-analysis. *PLoS Med.* 2013; 10(5):e1001452.
27. Brasil. Ministério da Saúde. Departamento de Atenção Básica. Cuidado pré-natal de baixo risco. Series A. Normas Técnicas e Manuais - Cadernos de atenção básica, nº 32. Brasília: Publicado pelo Ministério da Saúde. 2012. Portuguese.
28. Meira BM, Pereira PA, Silveira MF, Gualda DM, Santos Jr HP. Challenges for primary healthcare professionals in caring for women with postpartum depression. *Texto Contexto Enferm.* 2015; 24(3):706-12.
29. Freed RD, Chan PT, Boger KD, Tompson MC. Enhancing maternal depression recognition in health care settings: a review of strategies to improve detection, reduce barriers and reach mothers in need. *Fam Syst Health.* 2012; 30(1):1-18.