

## Depression in pregnancy: risk factors associated with its occurrence\*


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Objective: to identify risk factors associated with the occurrence of depression in pregnancy available in the scientific literature. Method: integrative review of articles published in electronic databases MEDLINE by means of Pubmed, SCOPUS, CINAHAL, PsycINFO and LILACS between 2012 and 2016. Results: 37 studies were analyzed. They identified several risk factors associated with the occurrence of depression in pregnancy. The most relevant risk factors were: sociodemographic and economic factors; obstetric/maternal; psychic and psychosocial. Conclusion: the etiology of depression in pregnancy is multifactorial and complex. Risk factors associated with the occurrence of depression in pregnancy are heterogeneous and their identification is crucial for the promotion of maternal-fetal health.

Descriptors: Nursing; Obstetric Nursing; Pregnancy; Depression; Risk Factors.

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## **Depressão na gravidez: fatores de risco associados à sua ocorrência**

Objetivo: identificar fatores de risco associados à ocorrência da depressão na gravidez disponíveis na literatura científica. Método: trata-se de uma revisão integrativa de artigos publicados nas bases de dados eletrônicas MEDLINE via Pubmed, SCOPUS, CINAHAL, PsycINFO e LILACS, entre 2012 e 2016. Resultados: foram analisados 37 estudos. Os mesmos identificaram fatores de risco diversos associados à ocorrência da depressão na gravidez. Os fatores de risco mais relevantes foram os fatores socioeconômicos, obstétricos e/ou maternos, psíquicos e psicossociais. Conclusão: a etiologia da depressão na gravidez é multifatorial e complexa. Os fatores de risco associados à ocorrência da depressão na gravidez são heterogêneos e sua identificação é crucial para a promoção da saúde materno-fetal.

Descritores: Enfermagem; Enfermagem Obstétrica; Gravidez; Depressão; Fatores de Risco.

## **Depresión en el embarazo: factores de riesgo asociados a su ocurrencia**

Objetivo: identificar los factores de riesgo asociados a la aparición de la depresión en el embarazo disponibles en la literatura científica. Método: revisión integrativa de artículos publicados en las bases de datos electrónicas MEDLINE vía Pubmed, SCOPUS, CINAHAL, PsycINFO y LILACS, entre 2012 y 2016. Resultados: se analizaron 37 estudios. Los mismos identificaron factores de riesgo diversos asociados a la ocurrencia de la depresión en el embarazo. Los factores de riesgo más relevantes fueron: factores sociodemográficos y económicos; obstétrica/materna; psíquicos y psicossociales. Conclusión: la etiología de la depresión en el embarazo es multifactorial y compleja. Los factores de riesgo asociados a la depresión en el embarazo son heterogêneos y su identificación es crucial para la promoción de la salud materno-fetal.

Descriptorios: Enfermería; Enfermería Obstétrica; Embarazo; Depresión; Factores de Riesgo.

## Introduction

The worldwide and Brazilian panorama of depression has been challenging for public health considering its alarming growth in recent years.

Special attention has been given to the occurrence of this disorder in women, since they are twice as likely to develop the disorder as men, with highlight for a special moment of their lives, pregnancy<sup>(1)</sup>.

When depression occurs during pregnancy, it has alarming consequences with negative repercussions not only to maternal but also to fetal health<sup>(2-8)</sup>, which emphasizes the need and the relevance of the screening of this disorder in pregnancy<sup>(9)</sup>, as well as the early identification of pregnant women at risk of developing it<sup>(10)</sup>.

For the identification of pregnant women at risk of developing depression during pregnancy, it is crucial to track the potential risk factors associated with its occurrence at this time in a woman's life. Risk factors include the "aspect of individual behavior or lifestyle, environmental exposure, or hereditary or congenital characteristics that, according to epidemiological evidence, are known to be associated with a health-related condition considered important to be prevented"<sup>(11)</sup>.

Therefore, this study aimed to identify risk factors associated with the occurrence of depression in pregnancy as available in the scientific literature.

## Method

This is an integrative review of the literature conducted in the following steps: elaboration of the research question, definition of the descriptors for the literature search, establishment of inclusion and exclusion criteria, extraction of the data, evaluation of the included studies, analysis and synthesis of the results, submission of the review<sup>(12)</sup>.

In order to guide the integrative review, the research question was based on the scope of the scientific evidence that is the focus of research, that is, the risk factors for depression in pregnancy. For this purpose, the PICO strategy was used, which uses the acronym for P = Patient, I = Intervention, C = Comparison and O = Outcomes or expected results. Thus, the research question was defined as: What evidence is available in the literature on the risk factors associated with depression in pregnancy? The first element of the strategy (patient) was composed by pregnant women; the second element (intervention) was represented by risk factors, and the fourth element (outcome, expected

results) was evidenced by depression in pregnancy. Depending on the review method, not all elements of the PICO strategy are used. In this integrative review, the third element, that is, comparison, was not used.

For the selection of the studies, the electronic databases used were MEDLINE via Pubmed, SCOPUS, CINAHAL, PsycINFO and LILACS. This selection of databases was used to cover the literature published in the countries of Latin America and the Caribbean with the LILACS database and the international literature with the other databases. In addition, we highlight the reference database in behavioral and mental health sciences, PsycINFO, and the one that encompasses the main nursing researches, CINAHAL, which allows drawing an expanded view of the scientific literature on the subject under study.

Primary articles, published in their entirety, related to the risk factors associated with the occurrence of depression in pregnancy or pregnant women, published in the English, Portuguese or Spanish languages, and published in national and international journals in the period 2012 to 2016 were considered eligible. No abstracts of conferences, annals, editorials, comments and reviews, letters to the editor, chapters of books, technical reports, monographs, theses, dissertations, literature reviews, and duplicate texts in databases were included in the study.

The search in the databases was performed in January 2017, using the controlled descriptors pregnancy (*gravidez*), pregnant women (*gestantes*), risk factors (*fatores de risco*), depression (*depressão*), prenatal depression (*depressão pré-natal*), and the uncontrolled descriptors (keywords), pregnancy, pregnant woman, depression, risk factors with the Boolean operators AND and OR, according to the criteria and manuals of each database. The descriptors were defined with the help of the DeCs (Health Sciences Descriptors) and Mesh (Medical Subject Headings). Thus, the search strategy was defined for each database, as described in Figure 1:

Database	Search strategy
PUBMED	pregnancy[MeSH Terms] OR "pregnant woman"[MeSH Terms] AND "risk factors"[MeSH Terms] AND "depression"[MeSH Terms]
SCOPUS	(pregnancy OR "pregnant woman") AND "risk factors" AND (depression OR "antenatal depression")
CINAHL	TX (pregnancy OR "pregnant woman") AND TX "risk factors" AND TX (depression OR "antenatal depression")
PSYCINFO	(pregnancy OR "pregnant woman" ) AND "risk factors" AND depression
LILACS	1 <sup>st</sup> crossing: gravidez AND "fatores de risco" AND depressão 2 <sup>nd</sup> crossing: gestantes AND "fatores de risco" AND depressão

Figure 1 - Search strategy used to guide the integrative review according to the consulted database. Ribeirão Preto, SP, Brazil, 2018

From the association between all the controlled and uncontrolled descriptors, the process of search and selection of the studies was carried out, which was conducted by two reviewers, in an independent and blind manner, being performed in two phases. First, the titles, abstracts and descriptors were read. Then, the full texts were read.

Figure 2 illustrates the general picture of selection of studies.

The flowchart below illustrates the process of identification, selection, and inclusion of the studies for the integrative review according to the consulted database (Figure 3).

For the extraction of data from the sample composed of 37 of the selected primary studies, a

validated instrument specially designed for this purpose was adapted, developed by nursing researchers<sup>(13)</sup>. Such instrument included items related to the identification of the article, methodological characteristics, and evaluation of methodological rigor, including identification of the article, basis on which the study was found, title, authors, design, year of publication, place of origin of the research, level of evidence, study objective and main results.

The evaluation of the types of studies selected was based on the classification of studies as observational or clinical trial, the former being divided into analytical and descriptive. Analytical studies, in turn, are classified as cohort, cross-sectional and case-control studies<sup>(14)</sup>.

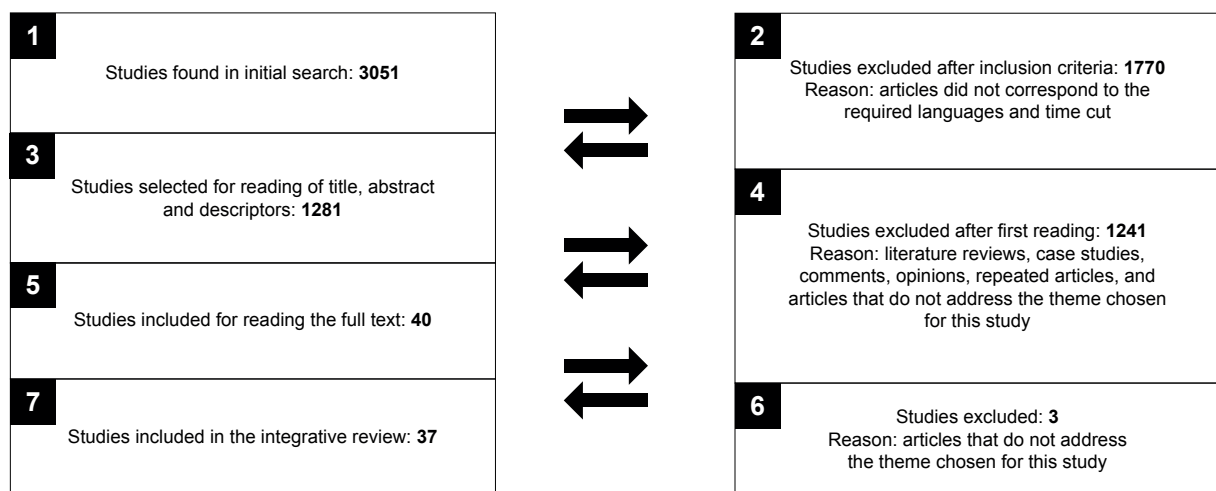


Figure 2 - Synthesis of the selection of articles for the integrative review. Ribeirão Preto, SP, Brazil, 2018

Databases	PUBMED	SCOPUS	CINAHL	PsycINFO	LILACS
Initial research	589	988	1055	344	75
After inclusion criteria	329	489	251	185	27
After reading title, abstract, and descriptors	17	13	4	4	2
After reading the entire text	15	12	4	4	2
Final selection	37				

Figure 3 - Flowchart of identification, selection, and inclusion of the studies in the integrative review. Ribeirão Preto, SP, Brazil, 2018

Regarding the level of evidence, the studies were classified according to the clinical issue, which can be categorized into: 1) Intervention/treatment or diagnosis/testing; 2) Prognosis/prediction or etiology; 3) Meaning. For studies covering the first clinical issue, there is a hierarchy of seven levels of evidence; for the second clinical issue, five levels of evidence may be considered; and in the third clinical question, the hierarchy is composed of six levels<sup>(15)</sup>.

Subsequently, the data identified in the analysis instrument were organized into a Microsoft Excel spreadsheet. After reading the selected studies in their

entirety, the analysis was carried out in order to describe and classify the results, evidencing the knowledge produced on the subject.

Data analysis was performed emphasizing the risk factors for depression in pregnancy found in each study, as well as comparisons between them, highlighting differences and similarities.

## Results

The final sample consisted of 37 studies arranged in alphanumeric sequence for better identification, starting from E1 to E37 (Figure 4).

No.	Author	Title	Year/Country
E1 <sup>(16)</sup>	Castro e Couto T, Cardoso MN, Brancaglioni MY, Faria GC, Garcia FD, Nicolato R, et al.	Antenatal depression: prevalence and risk factors patterns across the gestational period.	2016/Brazil
E2 <sup>(17)</sup>	Jallo N, Elswick Jr., Kinser P, Masho S, Price SK, Svikis DS.	Prevalence and Predictors of Depressive Symptoms in Pregnant African American Women.	2015/USA
E3 <sup>(18)</sup>	Biratu A, Haile D.	Prevalence of antenatal depression and associated factors among pregnant women in Addis Ababa: a cross-sectional study.	2015/Ethiopia
E4 <sup>(19)</sup>	Park J, Karmaus W.	Prevalence of and risk factors for depressive symptoms in Korean woman throughout pregnancy and in postpartum period.	2015/Korea
E5 <sup>(20)</sup>	Brittain K, Myer L, Koen N, Koopowitz S, Donald KA, Barnett W, et al.	Risk Factors for Antenatal Depression and Associations with Infant Birth Outcomes: Results From a South African Birth Cohort Study.	2015/South Africa
E6 <sup>(21)</sup>	Waldie KE, Peterson ER, D'Souza R, Underwood L, Pryor JE, Carr PA, et al.	Depression symptoms during pregnancy and Pregnancy: Evidence from Growing Up in New Zealand.	2015/New Zealand
E7 <sup>(22)</sup>	Zeng Y, Cui Y, Li J.	Prevalence and predictors of antenatal depressive symptoms among Chinese women in their third trimester: a cross-sectional survey.	2015/China
E8 <sup>(23)</sup>	Shakeel N, Eberhard-Gran M, Sletner L, Slinning K, Martinsen EW, Home I, et al.	A prospective cohort study of depression in pregnancy, prevalence and risk factors in a multi-ethnic population.	2015/Norway
E9 <sup>(24)</sup>	Verreault N, Da Costa D, Marchand A, Ireland K, Dritsa M, Khalifé S.	Rates and risk factors associated with depressive symptoms during pregnancy and with postpartum onset.	2014/Canada
E10 <sup>(25)</sup>	Fellenzer JL, Cibula DA.	Intendedness of Pregnancy and Other Predictive Factors for Symptoms of Prenatal Depression in a Population-Based Study.	2014/USA
E11 <sup>(26)</sup>	Stewart RC, Umar E, Tomenson B, Creed F.	A cross-sectional study of antenatal depression and associated factors in Malawi.	2014/Malawi
E12 <sup>(27)</sup>	Sidebottom AC, Hellerstedt WL, Harrison PA, Henrikus D.	An examination of prenatal and postpartum depressive symptoms among women served by urban community health centers.	2014/USA
E13 <sup>(28)</sup>	Yanikkerem E, Ay S, Mutlu S, Goker A.	Antenatal depression: prevalence and risk factors in a hospital based Turkish sample.	2013/Turkey
E14 <sup>(29)</sup>	Husain N, Kennedy Cruickshank, Meher Husain, Sarah Khan, Barbara Tomenson, Atif Rahmanf.	Social stress and depression during pregnancy and in the postnatal period in British Pakistani mothers: A cohort study.	2012/England
E15 <sup>(30)</sup>	Dudas RB, Csator dai S, Devosa I, Töreki A, Andó B, Barabás K, et al.	Obstetric and psychosocial risk factors for depressive symptoms during pregnancy.	2012/Hungary
E16 <sup>(31)</sup>	Agostini F, Neri E, Salvatori P, Dellabartola S, Bozicevic L, Monti F.	Antenatal Depressive Symptoms Associated with Specific Life Events and Sources of Social Support Among Italian Women.	2015/Italy
E17 <sup>(32)</sup>	Yusuff ASM, Tang L, Binns CW, Lee AH.	Prevalence of antenatal depressive symptoms among women in Sabah, Malaysia.	2016/Malaysia
E18 <sup>(33)</sup>	Ratcliff BG, Sharapova A, Suardi F, Borel F.	Factors associated with antenatal depression and obstetric complications in immigrant women in Geneva.	2015/Switzerland
E19 <sup>(34)</sup>	Fonseca-Machado MO, Alves LC, Monteiro JCS, Stefanello J, Nakano AMS, Haas VJ, et al.	Depressive disorder in pregnant Latin women: does intimate partner violence matter?	2015/Brazil
E20 <sup>(35)</sup>	Räisänen S, Lehto SM, Nielsen HS, Gissler M, Kramer MR, Heinonen S.	Risk factors for and perinatal outcomes of major depression during pregnancy: a population-based analysis during 2002–2010 in Finland.	2014/Finland
E21 <sup>(36)</sup>	Aslan PA, Aydın N, Yazıcı 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.	2014/Turkey
E22 <sup>(37)</sup>	Jeong HG, Lim JS, Lee MS, Kim SH, Jung IK, Joe SH.	The association of psychosocial factors and obstetric history with depression in pregnant women: focus on the role of emotional support.	2013/Korea
E23 <sup>(38)</sup>	Dibaba T, Fantahun M, Hindin MJ.	The association of unwanted pregnancy and social support with depressive symptoms in pregnancy: evidence from rural Southwestern Ethiopia.	2013/Ethiopia
E24 <sup>(39)</sup>	Redshaw M, Henderson J.	From antenatal to postnatal depression: associated factors and mitigating influences.	2013/England
E25 <sup>(40)</sup>	Gong X, Hao J, Tao F, Zhang J, Wang H, Xu R.	Pregnancy loss and anxiety and depression during subsequent pregnancies: data from the C-ABC study.	2013/China
E26 <sup>(41)</sup>	Giardinelli L, Innocenti A, Benni L, Stefanini MC, Lino G, Lunardi C, et al.	Depression and anxiety in perinatal period: prevalence and risk factors in an Italian sample.	2012/Italy

(the Figure 4 continue in the next page...)

No.	Author	Title	Year/Country
E27 <sup>(42)</sup>	Melo EF Jr, Cecatti JG, Pacagnella RC, Leite DF, Vulcani DE, Makuch MY.	The prevalence of perinatal depression and its associated factors in two different settings in Brazil.	2012/Brazil
E28 <sup>(43)</sup>	Gourounti K, Martiron A.	Psychosocial Risk Factors of depression in pregnancy: a survey study	2015/Greece
E29 <sup>(44)</sup>	Zhao Y, Kane I, Mao L, Shi S, Wang J, Lin Q, et al.	The Prevalence of Antenatal Depression and its Related Factors in Chinese Pregnant Women who Present with Obstetrical Complications.	2016/China
E30 <sup>(45)</sup>	Silva MMJ, Leite EPRC, Nogueira DA, Clapis MJ.	Depression in pregnancy. Prevalence and associated factors.	2016/Brazil
E31 <sup>(46)</sup>	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.	2016/New Zealand
E32 <sup>(47)</sup>	Heyningen Tv, Myer L, Onah M, Tomlinson M, Field S, Honikman S.	Antenatal depression and adversity in urban South Africa.	2016/South Africa
E33 <sup>(48)</sup>	Dagklis T, Papazisis G, Tsakiridis J, Chouliara F, Mamopoulos A, Rousso D.	Prevalence of antenatal depression and associated factors among pregnant women hospitalized in a high-risk pregnancy unit in Greece.	2016/Greece
E34 <sup>(49)</sup>	Thompson O, Ajayi I.	Prevalence of Antenatal Depression and Associated Risk Factors among Pregnant Women Attending Antenatal Clinics in Abeokuta North Local Government Area, Nigeria.	2016/Nigeria
E35 <sup>(50)</sup>	Weobong B, Soremekun S, Ten Asbroek AH, Amenga-Etego S, Danso S, Owusu-Agyei S, et al.	Prevalence and determinants of antenatal depression among pregnant women in a predominantly rural population in Ghana: The DON population-based study.	2014/Ghana
E36 <sup>(51)</sup>	Thiengo DM, Santos JFC, FonsecaDL, Abelha L, Lovisi GM.	Depression during pregnancy: a study on the association between risk factors and social support among pregnant women.	2012/Brazil
E37 <sup>(52)</sup>	Murata M, Lima MOP, Bonadio IC, Tsunehiro MA.	Depressive symptoms in pregnant women housed in a social maternity ward.	2012/Brazil

Figure 4 - Characterization of articles selected for review according to author, title, year, and country of publication. Ribeirão Preto, SP, Brazil, 2018

The selected studies were summarized and classified according to the year and period, country of study, study design, level of evidence, thematic approach, and purpose of the study.

Regarding the year of publication, the selected articles were published from 2012 to 2016. The year of greatest prominence was 2015, with 11 selected studies. Subsequently, in the year 2016, eight studies were identified, followed by the year 2014, with seven studies. Finally, the years 2012 and 2013 had six and five studies, respectively.

Among the 37 selected studies, two were published in national journals and 35 in international journals. Most international publications were in specific journals of psychiatry or mental health, with 18 publications, and obstetrics or women's health/reproductive health, with 15 publications. Among all journals, six are specifically nursing journals. It is also emphasized that one journal is exclusive about depression and another is exclusively dedicated to women's mental health, in which three articles have been published. In total, the studies were published in 32 different journals, four of which were in the Journal of Affective Disorders and three in the Archives Women's Mental Health.

Regarding the country where the studies were performed, most of the studies have Brazilian origin, with six publications, followed by the American and Chinese origins, with three studies each. Among the six Brazilian studies, only two were published in national journals.

Of the 37 articles evaluated, 36 are observational studies and one is an experimental study of the clinical trial type. Among the observational studies, 35 are

analytical studies and one study is descriptive with a quantitative approach. The selected analytical studies are divided into 21 cross-sectional studies and 14 longitudinal studies, of which seven are described only as longitudinal and the other seven as cohort studies. Therefore, the level of evidence in the studies ranged from 2, 4 and 6, since a study presented as a clinical issue associated with Intervention/treatment, being classified as level two of evidence because it was the pilot study of a clinical trial. In the remaining 36 articles, we identified the clinical issue associated with prognosis/prediction or etiology. Among these, seven studies were classified as level two of evidence because they were classified as cohort studies and 29 studies presented level four because they were descriptive studies.

Regarding the theme, 35 articles referred to the evaluation of depression and only two also evaluated anxiety, besides depression.

Regarding the objectives, 29 studies were specifically aimed at identifying, assessing or investigating the risk factors for depression in pregnancy, also called prenatal or antenatal depression. The other eight studies presented objectives related to the evaluation of risk factors for perinatal depression, which includes both depression in pregnancy and postpartum depression.

Throughout the reading, a separation between the articles was observed regarding the risk factors for the occurrence of depression in pregnancy. Although not all the studies organized the risk factors identified in categories, it was chosen, in this study, to categorize them for better understanding.

So, 34 risk factors or factors associated with the development of depression in pregnancy were identified in the studies and grouped into four categories: 1. Socioeconomic risk factors; 2. Psychiatric risk factors; 3. Obstetric and/or maternal risk factors; and 4.

Psychosocial risk factors. These categories, in turn, were subdivided into subcategories. It should be highlighted that in more than one factor was identified a same study.

The risk factors are shown below (Figure 5).

Category	Subcategory	Risk factor
Socioeconomic Risk Factors	Socioeconomic	Low education level Young or advanced maternal age Unemployment Low income
	Social vulnerability	Unfavorable housing condition Unfavorable living conditions Food insecurity
Psychiatric Risk Factors	Mental disorder	History of depression or other mental disorder History of family depression Maternal anxiety or other comorbid mental disorder during pregnancy
	Emotions and feelings in pregnancy	Preoccupation during pregnancy Maternal stress Unhappiness/sadness with pregnancy
	Resilience	Adapting to new life situations
Obstetric/Maternal Risk Factors	Current pregnancy	Obstetric complications Unplanned pregnancy
	Obstetric history	History of unfavorable obstetric outcome (miscarriage, stillbirth)
	Maternal health conditions	Diseases or symptoms related to maternal physical health
Psychosocial Risk Factors	Use of psychoactive substances	Use of illicit drugs in pregnancy Use of alcohol in pregnancy Smoking in pregnancy
	Psychosocial stressors	Significant/stressful/important/adverse/threatening recent event in life Pressure in pregnancy Unwanted pregnancy Unplanned pregnancy
	Social support	Poor social support Poor family support Poor marital support
	Violence	Violence by an intimate partner in pregnancy Physical violence in pregnancy History of violence by an intimate partner History of physical violence
	Personal relationships	Marital conflicts Conflicting family relationship Absence of a partner/being single

Figure 5 - Risk factors identified in literature review by category and subcategory. Ribeirão Preto, SP, Brazil, 2018

#### *Socioeconomic risk factors*

This category covers studies that have identified, assessed, or investigated social and economic risk factors. Of the 37 articles selected, 17 (45.95%) identified risk factors that belong to this category.

#### *Psychiatric risk factors*

This category includes studies in which the psychiatric, psychological, or emotional risk factors were investigated, identified or evaluated. Of the total of 37 articles selected, 14 (37.8%) belong to this category.

#### *Obstetrical/maternal risk factors*

Among the studies, 12 (32.4%) were included in this category, which included factors associated

with current and previous obstetric history, as well as health conditions.

#### *Psychosocial risk factors*

Psychosocial factors were identified in 31 (83.7%) studies and grouped into use of psychoactive substances, psychosocial stressors, social support, violence, and personal relationships.

## **Discussion**

The findings of the integrative review revealed that there is a great diversity of risk factors that may be associated with the development of depression during pregnancy, evidencing the complex and multifactorial etiology of depression.

The data revealed that the publications in the line of research "depression in pregnancy" constitute an extensive field. There was also an increase in the number of publications on the theme in countries of all continents, reinforcing the importance of this discussion for maternal health.

The analysis of the studies evidenced four distinct categories of risk factors that corroborate the occurrence of depression in pregnancy. The review included risk factors related to the pregnant woman, such as those related to her mental and obstetric health, already ratified as preponderant for depression in pregnancy, and factors related to the social environment in which she is inserted, as well as her living conditions. Factors resulting from the social and cultural interaction provided by this environment were also contemplated, which reiterates the importance of holistic care involving all aspects of women's life during prenatal care.

Among the socioeconomic risk factors, restricted socioeconomic conditions predominated, with reference to low family income and financial difficulties<sup>(19,29,31,42-43)</sup>.

Social vulnerability was identified as an impact factor for the occurrence of depression in pregnancy with inference for pregnant women living in socially unprotected conditions. Some studies have highlighted food insecurity as a risk factor and other articles highlight the serious and persistent social difficulties ratified by unfavorable housing conditions with housing difficulties<sup>(27,31,33,38-39,47)</sup>, as well as unfavorable living conditions<sup>(29)</sup>.

Low maternal schooling or lack of formal education and unemployment, either from the pregnant woman herself, from the spouse, or from another family member, were identified as risk factors for depression in pregnancy in four studies each<sup>(19,25,31,36-37,43,48-49)</sup>.

The role of maternal age in increasing the risk of depression during pregnancy is not clear. Women of young age are at increased risk of developing pregnancy depression according to some studies<sup>(25,27,49,52)</sup>, while other studies consider that women of advanced age are at greater risk of having depression in pregnancy than young women<sup>(35,50)</sup>.

Regarding psychiatric risk factors, many studies have shown that the previous occurrence of depression impacts on its recurrence during prenatal period. Also, the history of depression is a major risk factor for the development of depression in pregnancy<sup>(16,18,23-24,30,37,47)</sup>, as well as the psychiatric history involving the occurrence of another mental disorder at any stage of the pregnant woman's past life<sup>(24,36,41,45,47)</sup>. Also, another study also highlights the history of family depression as a risk factor for depression in pregnancy<sup>(37)</sup>.

The development of concurrent mental disorders in pregnancy contributes to the onset of depression along with the disorder at this important stage of a woman's life<sup>(22,39)</sup>. Thus, some studies have reported that the development of maternal anxiety in pregnancy is a risk factor for the development of depression in this period<sup>(17,21,24,32,43,46)</sup>.

We also detected risk factors related to the emotions and feelings of the pregnant woman such as unhappiness/sadness with pregnancy<sup>(32)</sup>, maternal stress<sup>(17,21,46)</sup>, besides preoccupation in the gestation<sup>(22)</sup>. There is also the risk factor "adaptation to new life situations", which points to the difficulty of adaptation as a predictor of depression in pregnancy and integrates the subcategory resilience<sup>(33)</sup>.

Regarding obstetric/maternal risk factors, risk factors for current and previous gestation were identified. Regarding current gestation, many studies have shown that women facing pregnancy with obstetric complications are at increased risk for depression during prenatal period<sup>(35,44)</sup>.

The history of unfavorable obstetric outcomes in previous pregnancies has a prominent position among the risk factors. Thus, women who have experienced losses from previous pregnancies and have a history of miscarriage or stillbirth are at higher risk of developing depression in the current pregnancy<sup>(22,30,35,40,43)</sup>.

Some studies have evidenced the health status of the pregnant woman as a predictor of depression in pregnancy. Four studies have identified the presence of diseases or symptoms related to physical health as a risk factor for the occurrence of gestational depression<sup>(23,28,35,39)</sup>.

Many studies have shown that psychosocial risk factors play an important role in the onset of depression in pregnancy. The use of psychoactive substances was reported in seven studies, which identified that the use of alcohol, tobacco, and illicit drugs in pregnancy puts women at greater risk of developing depression in this period<sup>(25,27,35,37,45,48-49,51)</sup>.

Risk factors categorized as psychosocial stressors include the presence of gestational pressures<sup>(22)</sup> and occurrence of major events in recent life, that is, in the last 12 months, such as the death of a family member, diagnosis of disease, and marital separation. These events were also referred to as adverse, stressful, important, or life-threatening events<sup>(20,23-24,30-31,45,47)</sup> and were present in seven publications. In this category, it was also evidenced that women who experience an unwanted pregnancy or an unplanned pregnancy have an increased risk for depression during prenatal period<sup>(18,20,25,28,30,32,36-39,47,49-50)</sup>.



A number of studies, more precisely eleven of them, have found risk factors for depression in pregnancy belonging to the social support dimension. This group includes both poor social support<sup>(26-29,38)</sup> and restricted support specifically from friends, spouse, or family in general<sup>(18,30-31,33,37,47)</sup>.

Among the risk factors that are psychosocial stressors, those related to violence, be it physical or sexual suffering during pregnancy or at any stage of life, have a considerable impact on women's mental health in the perinatal period. Of the total number of studies, 12 mentioned violence as a risk factor for depression in pregnancy. Among these, six studies identified as a risk factor the violence suffered during pregnancy<sup>(16,34,36,38,45,49)</sup> and six pointed to the history of violence suffered by the pregnant woman in the past<sup>(20,24,26-27,47,37)</sup>.

Women with a history of abuse frequently experience more than one traumatic event during their lives and are at increased risk of developing depression in pregnancy, as mentioned in some studies that describe the past experience of sexual violence as a risk factor<sup>(24,27)</sup>. Other publications mention women's experience of having suffered both physical and sexual violence prior to pregnancy as a factor associated with the development of depression during pregnancy<sup>(37,47)</sup>. There are also publications with reference to the aggressor, mentioning violence perpetrated by an intimate partner<sup>(20,26,37)</sup>.

Regarding violence perpetrated during pregnancy, a study mentions physical violence against pregnant women as a risk factor for depression<sup>(38)</sup>. Another Brazilian study mentions domestic violence suffered during the gestational period<sup>(45)</sup>, while a study conducted in Turkey describes it as violence during pregnancy in general<sup>(36)</sup>. There is also records on the aggressor, as a study conducted in Nigeria that points to gender violence as a risk factor for depression in pregnancy<sup>(49)</sup>, as well as other authors that describe the findings consistent with violence by an intimate partner experienced during this period<sup>(16,34,38)</sup>.

Finally, a study carried out in Italy highlighted women's personal relationships as predominant for depression in pregnancy, especially marital conflicts and conflicting family relationships<sup>(41)</sup>. The woman in a family circle permeated by conflicts and disagreements, as well as the one that faces fights and conflicts with her partner, is at greater risk of developing depression during pregnancy.

In addition, other studies mentioned the absence of a partner, referred to in some articles as a single marital status and in others as absence of a relationship with the child's father<sup>(20,27,35,37,47,49-51)</sup>.

## Conclusion

The results demonstrate the complex and multifactorial etiology of depression in pregnancy. The risk factors associated with the occurrence of this disorder are heterogeneous and include socioeconomic, obstetric/maternal, psychiatric, and psychosocial variables. However, although diverse, some factors tend not to vary according to the cultural context.

The identification of risk factors associated with the occurrence of depression in pregnancy is crucial for the promotion of maternal-fetal health. By identifying such risk factors, health professionals can focus on early risk management, minimizing complications, potentially reducing the chances of depression during pregnancy and consequent mental distress for women.

As a limitation, the present review does not include a meta-analysis, which could increase additional information on the differential impact of each risk factor.

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