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REVIEW

Epidemiology of antenatal depression among women with high-risk pregnancies due to obstetric complications: a scoping review

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Abstract

Purpose Antenatal depression is a common mental health problem among pregnant women that negatively affects maternal and neonatal outcomes. Women with obstetric complications, defined as high-risk pregnancies, seem to be at particularly increased risk for developing depressive symptomatology. The purpose of this study was to review the prevalence of antenatal depression among pregnant women with obstetric complications and to identify possible associated factors.

Methods A literature search was performed in the PubMed database and a scoping review was conducted to identify studies with data on the prevalence of antenatal depression and associated factors among high-risk pregnancies due to obstetric complications. The included studies were written in English and published up to 31/12/2018.

Results The prevalence of antenatal depression among pregnant women with high-risk pregnancies ranges from 12.5 to 44.2% among the reviewed studies. The associated factors significantly associated with antenatal depression include maternal age, maternal education, dwelling place, relationship with the partner, previous psychiatric diagnosis, perceived stress, antenatal attachment, abortion thoughts, smoking, diabetes, parity, number of pregnancies, gestational age, threatened preterm labour, preeclampsia and oligohydramnios.

Conclusions Our findings indicate a high prevalence of depressive disorders in women with obstetric complications, suggesting the need for more rigorous screening among this population. The identification of associated factors also merits clinical attention. Further research is warranted to develop evidence-based effective screening strategies and relevant interventions.

Keywords Antenatal depression · High-risk pregnancy · Obstetric complications · Women · Epidemiology

Introduction

Perinatal mental health problems are a major public health concern according to the World Health Organization [1]. Several studies in Europe, Asia and America have demonstrated a high prevalence of depressive disorders, up to 44.2% in high-risk pregnancies [2]. Some women may experience their first depressive episode during pregnancy, while others are at risk of recurrence due to a previous history of depression. Moreover, untreated depression during pregnancy increases the risk for postpartum depression (PPD) [3]. Evidence suggests that PPD may, in fact, be part of the continuum of antenatal depression [4–6].

Several sociodemographic and medical factors have been associated with antenatal depression. Low socioeconomic and educational status, low level of social support, unplanned pregnancy, smoking, alcohol misuse, domestic violence, low self-esteem, poor relationship with the partner, forced sexual relations, previous traumatic abuse and previous history of a mood disorder have been associated with antenatal depression [7–12]. Furthermore, maternal antenatal depression has been highly correlated with adverse pregnancy outcomes such as preterm delivery, miscarriage, preeclampsia, intra-uterine growth restriction and low birth-weight neonates [13–16]. Additionally, as regards long-term outcomes, antenatal depression has been associated with neurodevelopmental problems of the offspring [17], while infants of depressed mothers are at greater risk

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for developing attentional, emotional and behavioural problems [17]. Although definitive evidence of benefit is limited, several medical societies recommend routine screening for depressive symptoms during the perinatal period [18–21].

The aim of this study was to investigate the prevalence of antenatal depression and identify possible associated factors among pregnant women that present with obstetric complications. A scoping review is generally used to determine the importance of a full systematic review, summarize and publish findings of the research and identify gaps in the current literature [22, 23]. For the objective of this study, a scoping review that maps the literature on a particular topic or research area and provides an opportunity to identify key concepts, gaps in the research and types and sources of evidence [24] was conducted.

Materials and methods

Search strategy

A systematic literature search was conducted in the PubMed database until 31/12/2018 using the following set of keywords: (antenatal depression OR antepartum depression OR prenatal depression OR depression OR psychiatric OR mood disorder) AND (high-risk pregnancy OR obstetric complications OR pregnancy complications OR obstetric risk OR preeclampsia OR IUGR OR intrauterine growth restriction OR PROM OR premature rupture of membranes OR preterm labour OR cervical insufficiency OR incompetent cervix OR pregnancy haemorrhage OR bleeding pregnancy OR placental abruption OR placenta praevia OR placenta accreta OR vasa praevia OR gestational diabetes OR oligohydramnios).

Selection process: data extraction

Two investigators (IT and VB)—a biostatistician and a doctor—independently screened all titles and abstracts of records retrieved from database searches. The reference lists of the relevant retrieved articles were also hand-searched. Studies were eligible for inclusion if (a) the study population consisted of or included women with high-risk pregnancies due to obstetric complications, whether hospitalised or not (the most common obstetric complications were examined: preeclampsia, intrauterine growth restriction, premature rupture of membranes, preterm labour, threatened preterm labour, placental abruption, placenta praevia, placenta accreta, vasa praevia, gestational diabetes and oligohydramnios.); (b) the women studied were assessed for antenatal depression using a validated diagnostic or self-reported instrument; (c) the studies reported data to estimate the prevalence of antenatal depression among women with obstetric complications; (d) they were peer-reviewed and published as full-text articles and (e) they were written in English. Studies were excluded if they reported only mean values and did not use a cut-off value for depression screening or report a clinical diagnosis based on a psychiatric interview. Articles published as editorials, letters, conferences or meeting abstracts were also excluded. Discrepancies between the authors during data collection were resolved by discussion with a third author (GP).

Data from the included studies were extracted to describe the study population (sample size—characteristics), the year of publication, the country that the study took place in and the screening tools that were used for the assessment of the antenatal population.

Results

Eligible studies

A total of 17,782 potentially relevant reports from the databases were identified for review (Fig. 1). After the elimination of duplicates, 17,750 records were screened. Via eligibility screening, 17,710 citations were excluded; 47 studies were not published in English (most in Chinese) and 17,643 were of irrelevant subject matter (mainly regarding low-risk pregnancies). Consequently, a total of 40 full-text articles were assessed for eligibility, of which 19 were excluded either for not indicating cut-off scores for the diagnosis of depression (indicating only mean scores) or because they reported medical complications, for example, thyroid disease, and not specific obstetric complications. Finally, 21 studies were selected to provide data on antenatal depression among women with obstetric complications (Table 1).

Characteristics of the included studies

The 21 selected studies were conducted in 10 different countries spanning 4 continents and included a total of 3497 high-risk pregnant women [although, there might be an overlap between the study populations of the two studies that were conducted by Dagklis et al. [7, 25]. The largest of the studies was conducted by Dame et al. [26] in Brazil and included 820 women with gestational diabetes mellitus (GDM).

Furthermore, in 6 of the 21 studies the study population included women with different obstetric complications. Dagklis et al. [25] included only women with threatened preterm labour, Kharaghani et al. and Qiu et al. studied antenatal depression in preeclamptic women [27, 28], Uguz et al. [29] and Tsakiridis et al. [30] investigated a study population consisting of pregnant women with foetal intrauterine growth restriction (IUGR) and the study

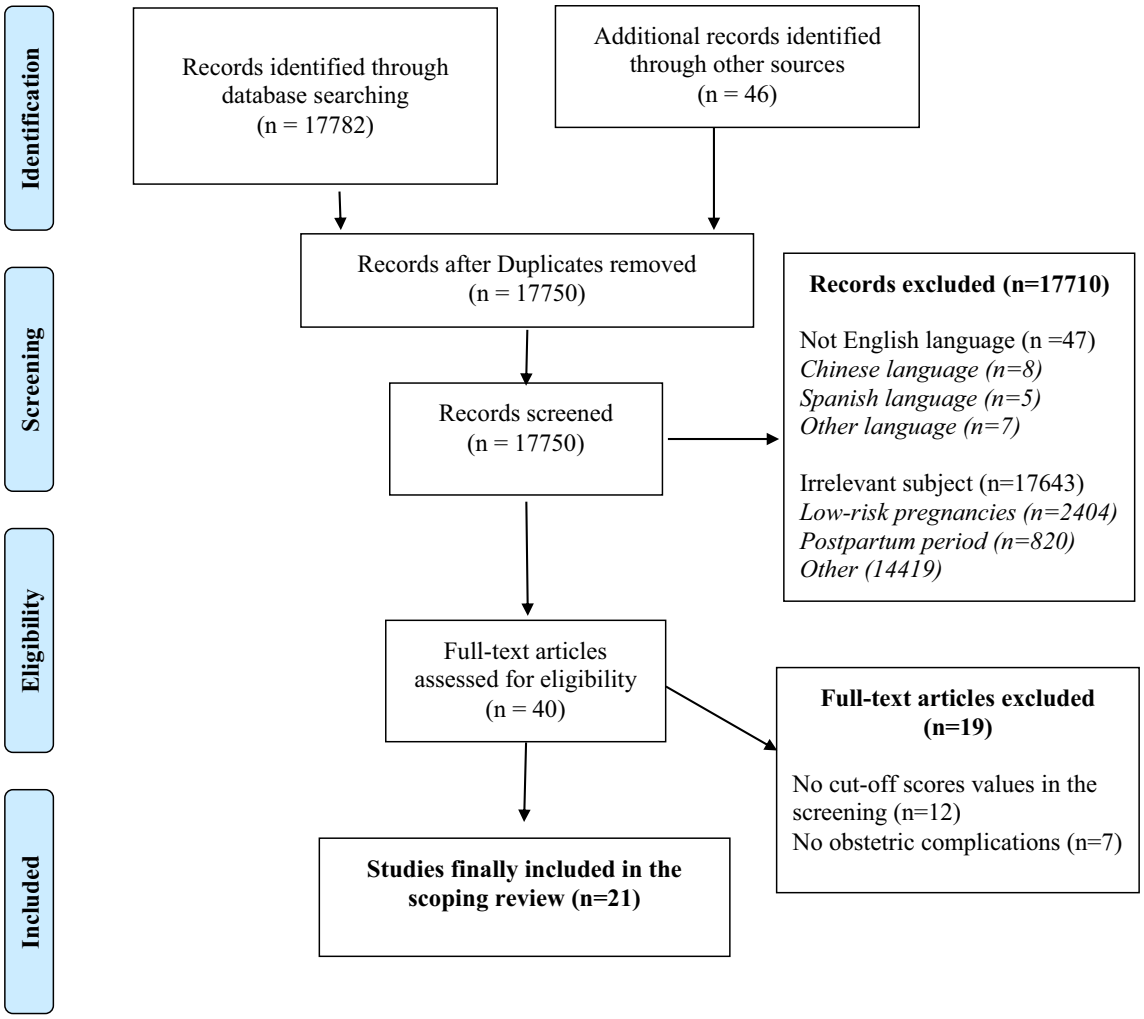

Fig. 1 Flow Diagram

population of Uguz et al. [31] consisted of pregnant women with oligohydramnios. In addition, 10 of the studies included in this review focused on pregnant women with gestational diabetes mellitus or relevant glucose disorders [26, 32–40].

In the studies by Qiu et al. [28], Uguz et al. [29,31], Bisson et al. [32], Byrn et al. [37], Keskin et al. [39] and Natasha et al. [40], a control group of pregnant women without any medical complications was also investigated as a comparator. Furthermore, it should be mentioned that in the studies conducted by Huang et al. [38], Katon et al. [34], Ertel et al. [33] and Varela et al. [36], women with GDM were only a subgroup of the population that was researched. Additionally, in the studies conducted by Dagklis et al. [7, 25], Brandon et al. [2], Dame et al. [26], Kharaghani et al. [27], Ragland et al. [35], Uguz et al. [31], Tsakiridis et al. [30] and Byatt et al. [41], apart from the prevalence of depressive symptomatology, associated risk factors were also investigated.

Screening tools

The majority of the studies used the Edinburgh Postnatal Depression Scale (EPDS) to assess depressive symptoms. Other diagnostic tools used in the studies included the Beck Depression Inventory (BDI), Montgomery-Asberg Depression Rating Scale (MADRS), Mini International Neuropsychiatric Interview (M.I.N.I.) and Patient Health Questionnaire (PHQ-9) (Table 1).

The EPDS is a commonly used tool for the detection of antenatal depression and was used in thirteen of the included studies in this review. The EPDS is a self-administered 10-item screening questionnaire that has been validated for the antenatal period [42]. Respondents are asked to rate the intensity of depressive symptoms during the preceding 7 days, with higher scores indicating more severe depressive symptoms. Elevated EPDS scores may not be specific for depression, but rather detect a whole range of psychiatric disorders, including anxiety disorders

Table 1 Characteristics of the included studies

Author	Year of publication	Country	Sample size	Study population of interest	Diagnostic tool	Definition of antenatal depression/cut-off point for depression	Prevalence
Dagklis et al. [25]	2018	GREECE	103	Women hospitalized due to threatened preterm labor	EPDS	EPDS ≥ 13	Antenatal depression 24.3%
Tsakiridis et al. [30]	2018	GREECE	73	Pregnant women with IUGR	EPDS	EPDS ≥ 13	32.9%
Dame et al. [26]	2017	BRAZIL	820	Pregnant women with GDM	EPDS	EPDS ≥ 12: presence of depressive symptoms EPDS ≥ 18: severe depressive symptoms	Presence of depressive symptoms 31% Severe depressive symptoms 10% Reported self-harm intent 8.3%
Uguz et al. [31]	2017	TURKEY	53/80[a]	Pregnant women with oligohydramnios	Clinical interview for SCID-I, BDI, BAI	Based on clinical interview	Major depression 24.5%
Varela et al. [36]	2017	GREECE	17 women with GDM/100 women without GDM	Pregnant women with GDM	EPDS	EPDS ≥ 13	17.6%
Dagklis et al. [7]	2016	GREECE	157	Hospitalized women with high-risk pregnancies	EPDS	EPDS ≥ 13	antenatal depression 28%
Byrn et al. [37]	2015	USA	65/70[a]	Pregnant women with GDM	EPDS, STAI, PSS	EPDS ≥ 12	Significant symptoms of depression 20%
Huang et al. [38]	2015	USA	130 women with GDM/1982 women without GDM	Pregnant women with GDM	EPDS	EPDS ≥ 13	12.7%
Keskin et al. [39]	2015	TURKEY	44/45[a]	Pregnant women with GDM	BDI	BDI ≥ 17	20%
Natasha et al. [40]	2015	BANGLADESH	382/366[a]	Pregnant women with GDM	MADRS	MADRS ≥ 13	25.92%
Bisson et al. [32]	2014	CANADA	26/26[a]	Pregnant women with GDM	EPDS	EPDS ≥ 10	Significant depression 23%
Ertel et al. [33]	2014	USA	123 Pregnant women with AGT, 56 pregnant women with IGT, 867 pregnant women without blood glucose disorder	Hispanic pregnant women with AGT or IGT	EPDS	EPDS ≥ 13: at least probable minor depression EPDS ≥ 15: probable major depression	Women with AGT 29.3% at least probable minor depression 20.3% probable major depression Women with IGT 26.8% at least probable minor depression 19.6% probable major depression

Table 1 (continued)

Author	Year of publication	Country	Sample size	Study population of interest	Diagnostic tool	Definition of antenatal depression/cut-off point for depression	Prevalence
Byatt et al. [41]	2013	USA	62	Hospitalized women with high-risk pregnancies	EPDS, GAD-7, SF-12, assessment by mental health professional	EPDS ≥ 10	EPDS ≥ 10 27%
Thiagayson et al. [47]	2013	SINGAPORE	200	High-risk pregnant inpatients	EPDS, STAI, M.I.N.I	MINI-based diagnosis	Major depression 11% Minor depression 7%
Kharagani et al. [27]	2012	IRAN	156	Pregnant women with preeclampsia	PHQ-9	moderate to severe depression- PHQ-9 score: 15–19	Moderate to severe depression 31.2%
Katon et al. [34]	2011	USA	424 women GDM/ 226 pregnant women with preexisting diabetes / 1747 pregnant women without diabetes	Pregnant women with GDM	PHQ-9	Criteria for major depression on the PHQ-9-based Major Depression	Probable minor depression by PHQ-9 4%
						PHQ-9-based Minor Depression	Probable major depression by PHQ-9 4.5%
							Major depression by PHQ-9 or antenatal antidepressant use 8.7%
							Any depression by PHQ-9 or antenatal antidepressant use 12.5%
Uguz et al. [29]	2011	TURKEY	56/92[a]	Outpatient pregnant women with IUGR	DSM IV, BDI, BAI	Based on DSM IV criteria	Major depression 33.9%
Ragland et al. [35]	2010	USA	22 GDM/ 20 TYPE II/ 8 TYPE I	Pregnant women with gestational diabetes mellitus	BDI	BDI > 13	40.9%
Brandon et al. [2]	2008	USA	129	High-risk pregnant inpatients	EPDS, SCID	EPDS ≥ 11	EPDS ≥ 11 44.2%
						SCID-based diagnosis	Major depression disorder (according to DSM-IV criteria) 19%
Qiu et al. [28]	2007	PERU	339/337[a]	Hospitalized preeclamptic women	PHQ-9	Moderate depression- PHQ-9 score: 10–14	Moderate depression 11.5% severe depression 3.5%
						Severe depression- PHQ-9 score 15–19	Moderate or severe depression 15%
Adouard et al. [46]	2005	FRANCE	60	Non hospitalized high-risk pregnant women	EPDS, M.I.N.I., CGI, HAD	Based on DSM IV criteria	Major depression 25%

GDM gestational diabetes mellitus, *EPDS* Edinburgh postnatal depression scale, *BDI* beck depression inventory, *PHQ-9* patient health questionnaire, *MADRS* Montgomery–Asberg depression rating scale, *M.I.N.I.* mini international neuropsychiatric interview, *HAD* hospital anxiety and depression scale, *IUGR* intrauterine growth restriction, *AGT* abnormal glucose tolerance, *IGT* impaired glucose tolerance

[a] *x*/*y*: *x* equals the case group and *y* the control group

[43]. In the systematic review, a cut-off score of 9/10 was used for possible post-partum depression, 12/13 for probable postpartum depression and 14/15 for antenatal depression [44].

Another diagnostic tool used in some of the studies reviewed is the PHQ-9. It is a self-administered questionnaire that consists of 9 questions regarding depressive symptoms and functional ability. The degree of depression is classified according to the PHQ-9 score as minimal (0–4), mild (5–9), moderate (10–14), moderate to severe (15–19) and severe ($\geq$20) [45]. The PHQ-9 has also been validated for prenatal depression screening (44). An additional screening tool used in some of the studies is the BDI. The BDI is a widely used self-rating scale consisting of 21 items regarding depressive symptoms and functional ability. Each item has scores ranging from 0 to 3 on this scale. The higher the BDI score, the higher the level of depression [31]. Natasha et al. [40] preferred to use the MADRS as a diagnostic tool for antenatal depression. The MADRS is a quantitative tool for rating depression with 10 questions. The sum of each item is from 0 to 6; thus the total score of the questionnaire ranges from 0 to 60. Since its development, the MADRS has been widely used all over the world. MADRS scores are categorized into 4 groups: healthy (0–12), mild depression (13–19), moderate depression (20–34) and severe depression (35–60) [40]. In some of the included studies, the diagnosis of antenatal depression was clinical and the evaluation of depressive disorders was based upon interviews like the M.I.N.I or SCID (Structured Clinical Interview for DSM-IV Axis I Disorders). Sixteen of the studies used cut-off points in EPDS, BDI, PDSS and PHQ-9 questionnaires to assess the prevalence of antenatal depression, while in four other studies the diagnosis of depression was based on clinical interviews and assessments. Adouard et al. measured the prevalence of depressive symptomatology among high-risk pregnant women using both a cut-off point of EPDS and a clinical diagnosis [46]. The cut-off point of EPDS that was used to screen for depressive disorders differed among the studies and ranged from 10 to 13.

Prevalence of antenatal depression

The prevalence of antenatal depression in high-risk pregnancies differed among the studies and was reported to range from 12.5 to 44.2%. The lowest prevalence of antenatal depression was observed by Katon et al. [34] in the USA. The highest prevalence of depressive symptomatology was reported by Brandon et al. [2] in a study group in the USA. In the European studies the prevalence varied from 17.6 to 32.9% [7, 25, 30, 36] (Table 1).

Associated factors

A variety of obstetric, demographic and socioeconomic factors were investigated in several of the studies to identify any correlation with antenatal depression [2, 7, 25, 27, 30, 31, 35, 37, 40, 41]. A detailed list of the researched factors is provided in Table 2. Regarding maternal age, Natasha et al. [40] reported a higher prevalence of antenatal depression in both extremes of age, whereas Dagklis et al. [7,25], Dame et al. [26], Tsakiridis et al. [30] and Byrn et al. [37] found no association between antenatal depression and maternal age. Maternal education was negatively associated with antenatal depression in the study by Dame et al. [26], although in the studies conducted by Dagklis et al. [7, 25], Tsakiridis et al. [30] and Brandon et al. [2] no such correlation was found. Brandon et al. [2] reported a significant association between the relationship with the partner and depression during high-risk pregnancy, while in the studies by Dagklis et al. [7, 25] and Tsakiridis et al. [30], no association was found.

As for parity, Dame et al. [26] highlighted a significant correlation between it and antenatal depression. In contrast, Natasha et al. [40], reported a negative association between antenatal depression and parity, whereas Ragland et al. [35], reported a positive association between antenatal depression and the number of pregnancies. Gestational age was significantly correlated with antenatal depression only in the study by Tsakiridis et al. [30] (pregnancies complicated with early IUGR were associated with higher rates of depression) whereas Dagklis et al. [7, 25] found no such correlation. Interestingly, no correlation was found between the development of depressive symptomatology and the BMI of the pregnant women before pregnancy, despite the fact that such a correlation was investigated by Dame et al. [26] , Dagklis et al. [7, 25], Byrn et al. [37] and Tsakiridis et al. [30].

As far as mental health is concerned, Brandon et al. [2] and Byatt et al. [41] investigated the presence of mental health history to determine if there was a correlation with the development of depressive symptomatology. Only Byatt et al. [41] found a significant association between antenatal depression and a previous psychiatric diagnosis. Additionally, Byrn et al. [37] managed to find a correlation between antenatal depression and trait anxiety as well as perceived stress . Dagklis et al. [7, 25] identified abortion thoughts as an independent risk factor for antenatal depression whereas Tsakiridis et al. [30] found no significant association between those parameters. Moreover, a positive association was found between smoking and antenatal depression both by Dagklis et al. [7] and Tsakiridis et al. [30]. Finally, Brandon et al. [2] pointed out a significant negative association between antenatal attachment and depression during pregnancy.

Table 2 Factors correlated with antenatal depression

Factor	Correlation		
	No correlation	Positive correlation	Negative correlation
Maternal Age	Dagklis (2016) Dagklis (2018) Dame Tsakiridis Byrn	Natasha (higher prevalence in both the extreme of age)[a]	Natasha (higher prevalence in both the extreme of age)[a]
Race	Byrn		
Dwelling place (urban, rural)			Natasha-lower prevalence in urban areas[a]
Maternal Education	Dagklis (2016) Dagklis (2018) Brandon Tsakiridis		Dame
Occupation/ employment status	Dagklis (2016) Dagklis (2018) Tsakiridis		
Income	Byrn Natasha[a]		
Family monthly income	Dagklis (2016) Dagklis (2018) Dame Tsakiridis		
Annual household income	Brandon		
Insurance coverage	Brandon		
Marital status	Dagklis (2016) Dagklis (2018) Tsakiridis Byrn		
Living with a partner	Dame		
Relationship with the partner	Dagklis (2016) Dagklis (2018) Tsakiridis		Brandon
Parity	Brandon	Dame	Natasha[a]
Number of pregnancies	Byrn[a]	Ragland	
Previous Abortions	Dame		
Gestational age	Dagklis (2016) Dagklis (2018)		Tsakiridis
Indications for admission-Obstetrical diagnosis- Obstetric risk	Dagklis (2016) Byatt	Brandon[a]only incompetent cervix was positively associated with level of depressive symptomatology	
Preeclampsia		Kharagani	
Oligohydramnios		Uguz (2016)	
Obstetrical factors	Natasha[a]		
Smoking	Dagklis (2018)	Dagklis (2016) Tsakiridis	
Physical exercise	Natasha[a]		
Sedentary lifestyle	Natasha[a]		

Table 2 (continued)

Factor	Correlation		
	No correlation	Positive correlation	Negative correlation
BMI before pregnancy	Dagklis (2016)		
	Dagklis (2018)		
	Dame		
	Tsakiridis		
	Byrn[a]		
Past history of GDM		Natasha[a]	
Insulin use for GDM	Dame		
Type of diabetes	Ragland		
HbA1c	Ragland		
State Anxiety	Byrn		
Trait Anxiety		Byrn	
Perceived Stress		Byrn	
Previous psychiatric diagnosis	Brandon	Byatt	
Previous history of depression	Natasha[a]		
History of mental health treatment	Byatt		
Family history of psychiatric illness	Brandon		
Antenatal attachment			Brandon
Planned pregnancy	Dagklis (2016)		
	Dagklis (2018)		
	Tsakiridis		
	Byrn[a]		
Abortion thoughts	Tsakiridis	Dagklis (2016)	
		Dagklis (2018)	

[a]The correlation was researched not only in the subgroup of women with obstetric complications but the whole study population

Discussion

This review highlights the prevalence of antenatal depression in pregnancies with obstetric complications and evaluates the screening methods and the associated factors. As for the prevalence of antenatal depression, differences in prevalence have been reported by different investigators, yet it is clear that the prevalence of antenatal depression is higher among pregnant women with obstetric complications than in the low-risk population of pregnant women. In this context, it is worthwhile to note the prevalence differences among different countries, in which the prevalence of antenatal depression ranges from 3.5 to 44.2%. Furthermore, the prevalence of antenatal depression in South America is reported to be 15% and 31% in Peru and Brazil, respectively [26, 28]. Moreover, prevalence rates in the four Greek studies range between 17.6 and 32.9% [7, 25, 30, 36]. Apart from these four Greek studies, the only other study conducted in Europe, more specifically France, reports a prevalence rate of 25% [46]. In addition, the studies conducted in Asia report prevalence rates between 7 and 33.9% [27, 29, 31, 39, 40, 47].

Furthermore, our review provides needed insight into clinically relevant, identifiable factors significantly associated with antenatal depressive disorders. Out of a variety of factors researched for a correlation with antenatal depression among pregnant women with high-risk pregnancies, only a few were found to have a statistically significant association to depressive symptomatology. These factors include maternal age, maternal education, dwelling place, relationship satisfaction, antenatal attachment, abortion thoughts, smoking, diabetes, previous psychiatric diagnosis, trait anxiety, perceived stress, parity, gestational age, threatened preterm labour, preeclampsia or oligohydramnios. Other factors such as race/ethnicity, domestic violence and social support which have been associated with antenatal depression among pregnant women in several studies [48, 49] have either been insignificantly associated with antenatal depression among high risk pregnant women or not investigated at all in the studies included in this review, which may be attributed to the small sample size of the studies.

Moreover, regarding risk factors for antenatal depression, assisted reproductive technology and a history of infertility have been proven to affect the mental status of pregnant

women. In fact, assisted reproductive technology may have a negative impact on the emotional and psychological well-being of both the individual and the couple; those techniques seem to carry an increased risk for depression in later life [50, 51]. Additionally, according to recent data, women with endometriosis are at risk of psychosocial disturbances including anxiety, depressive symptoms and other psychiatric disorders [52, 53]. Since endometriosis is related to pregnancy complications such as preterm delivery, this entity represents a potential confounding factor [54].

Our study has certain limitations. First, the literature search was restricted to the PubMed database. Second, the relatively small sample size of most of the studies included makes it difficult to generalize the results. Another limitation concerns the usage of screening tools such as the EPDS and the cut-off points used to screen for depression. Although these tools may be extremely useful as screening methods with excellent sensitivity and specificity values, they cannot under any circumstances be used as diagnostic tools or substitute clinical examination. An additional issue emerges from the heterogeneity of the study populations as far as hospitalization is concerned. Some of the studies included only hospitalized patients whereas others only outpatients. It is still unclear if obstetric inpatients experience a lower quality of life and more stress than those who receive care on an outpatient basis. As a result, the real prevalence of depression may be biased based on the study design of the included studies. Moreover, in some of the studies, women with previous mental health problems were excluded, therefore potentially underestimating the actual prevalence of antenatal depression. Furthermore, the varying prevalence between the included studies may be attributed to diverse settings and recruitment strategies. Different inclusion and exclusion criteria and data collection methods are other potential methodological issues. However, there might also be differences in prevalence rates because of socioeconomic and race/ethnicity differences in each study population, since the prevalence of antenatal depression has been associated with both socioeconomic parameters and demographic factors [48, 55].

In conclusion, pregnant women with obstetric complications are at a higher risk of developing antenatal depression, as expected, since antenatal depression has been associated with obstetric parameters in general population studies [49]. Moreover, the associated factors identified in this review could further help clinicians plan more targeted screening interventions.

Although universal screening for antenatal depression is an achievable goal, it is currently not possible in many obstetric settings. Therefore, clinicians need assistance in identifying which women are at a greater risk for antenatal depression. This review's results emphasise the high prevalence of antenatal depression among pregnant women with obstetric complications and therefore the necessity for more rigorous psychiatric evaluation of this specific population. Moreover, the identified associated factors may be further useful in improving the detection of antenatal depression in such populations and thereby promote the long-term well-being of mothers and their offspring.

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Compliance with ethical standards

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

Informed consent This is a review study; informed consent is not required.

Ethical approval This is a review study; ethical approval is not required.

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