

# Prevalence and Risk Factors of Pregnancy-Related Anxiety: A Systematic Review

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## Abstract

**Background:** Pregnancy is a unique period of life that can overwhelm an expectant mother with experiences of psychological ambivalence, concretized by emotional disturbances, sudden transitions from exhaustion to exaltation, or even mixed anxiety.

**Objective:** To determine the prevalence of pregnancy-related anxiety and its associated factors among pregnant women.

**Methods:** We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A structured literature review was carried out using the component of the PICO framework. The literature search was conducted in Medline, Ovid, Embase, Google Scholar, and PubMed. A combination of relevant search terms was used. Electronic searches were supplemented by manual searches of references of included studies and review articles. The duplicate citations were identified and removed.

**Results:** A total of 69 articles were identified through the searches, while 13 articles met the inclusion criteria. The characteristics and results of included studies were discussed, regarding the study design, screening tools, prevalence, onset, and risk factors of pregnancy-related anxiety.

**Conclusions:** Anxiety disorders are common during pregnancy. There is wide variability in its measurement, with a subsequently wide range in reported prevalence rates. Several risk factors are associated with pregnancy-related anxiety, such as younger age, low income, past history of stillbirth, unwanted pregnancy, current comorbidity, or mental illness.

**Key words:** Pregnancy, anxiety, onset, prevalence, risk factors, systematic review, PRISMA.

## Introduction

Pregnancy constitutes a critical time for the development of psychological illnesses (1). Therefore, it is not unusual for women to have concerns during their pregnancy. However, some women become affected by their anxiety to the extent that it interferes with their daily lives, and a considerable proportion of them suffer from significant anxiety symptoms (2).

Dennis et al. (3) reported that during pregnancy, 15.2% of women may have anxiety disorders. Anxiety during pregnancy is associated with poor maternal health, adverse birth outcomes, and negative behavioral and biological development for children across their lifespan (4-5). However, measures of generalized anxiety during pregnancy tend to explain only a small proportion of variation in these fetal health and birth outcomes (6).

During pregnancy, there are components of anxiety that are better defined as “pregnancy-related anxiety”, which is different from generalized anxieties and depression (7). It relates to the fear, worry, or apprehension surrounding pregnancy, childbirth, the health of the baby, and other pregnancy-specific social and financial issues (6). It also involves the fears and concerns about the woman’s physical appearance during pregnancy and her ability to meet expectations of herself as a parent (1).

The prevalence of pregnancy-related anxiety has been reported to vary widely from 6% to 29% in developed countries, with South Asia accounting for 32% (8). Jha et al. (9) reported that its magnitude accounts for from 1% to 26% in low- and middle-income nations.

Therefore, the purpose of this study was to determine the prevalence of pregnancy-related anxiety and its associated factors that may overwhelm an expectant mother.

Pregnancy-related anxiety has a special impact on health during pregnancy, and on the course of childbirth, in addition to child and maternal outcomes after delivery (10). Moreover, it has been linked to increased maternal mortality (11), preterm labor (12), impaired cognitive function among children (13), low birth weight (14), poor maternal bonding (15), and poorer child health and development (16). These associations have contributed to the increased research on pregnancy-related anxiety. However, as a construct, pregnancy-related anxiety is multidimensional and its main aspects appear to differ by country and context (17).

The variation in domains of pregnancy-related anxiety suggests that the use of tools originally developed to measure pregnancy-related anxiety in high-income countries may not be a valid or reliable approach to identify pregnancy-related anxiety in low- or middle-income countries, as these tools may fail to capture locally relevant components of this anxiety. This hinders the accurate identification of predictors of pregnancy-related anxiety and the development, evaluation, and implementation of appropriate interventions (6).

## Methods

### Research questions

- Q1: What is the prevalence of pregnancy-related anxiety in different parts of the world?
- Q2: What are the factors associated with pregnancy-related anxiety?

The PICO framework was followed to develop the review questions, as follows:

- **P** (Population): Pregnant women
- **I** (Intervention): Screening for pregnancy-related anxiety.
- **C** (Comparator): None
- **O** (Outcome): Positive results of anxiety during pregnancy.

### Literature Search

We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. A structured literature review was carried out using the component of the PICO framework. The literature search was conducted in Medline, Ovid, Embase, Google Scholar, and PubMed.

Combinations of the following search terms were used: *pregnancy, perinatal, prenatal, anxiety disorders, onset, course, trajectory, and prevalence*. No search for grey literature or unpublished literature was performed.

Electronic searches were supplemented by manual searches of references of included studies and review articles. The duplicate citations were identified and removed.

Two reviewers (AFA and NAA) independently assessed the quality of studies using the Newcastle–Ottawa Scale quality assessment tool for observational studies. To reach a consensus, all different opinions about quality assessment were discussed with a third reviewer (ASA).

### Inclusion and exclusion criteria

We included studies that met the following criteria:

- Free full-text articles recently published in the English language during the last three years (2020-2023).
- Articles reporting on the prevalence, onset, and/or course of any anxiety disorders during pregnancy.

The exclusion criteria were:

- Single case reports or case series, abstracts, review articles, and commentaries to articles.
- Articles reporting exclusively on the postpartum period.

### Data extraction

The following data were extracted from retrieved articles: publication year, study characteristics, sample size, research design, assessment points, measures used, number of assessments during pregnancy, onset, course, and prevalence rates.

## Results and Discussion

### Study characteristics

Figure (1) presents the PRISMA flow chart, showing that of 69 articles identified through the searches, 13 articles met the inclusion criteria of reporting prevalence, onset, and/or course of any anxiety disorder during pregnancy. The characteristics and results of included studies are summarized in Table (1).

### Study design

A total of five studies followed a prospective research design (5; 18-21), while seven studies followed a cross-sectional design (8; 22-27); and only one study was retrospective (28).

### Prevalence of pregnancy-related anxiety

Our study indicated that anxiety disorders are common during pregnancy and that prevalence rates of anxiety disorders during pregnancy vary considerably between various studies. Prevalence rates of anxiety during pregnancy were reported in six studies (22-27) and ranged from 10.4% in Qatar (22) to as high as 70.3% in Lebanon (26). This wide variation in prevalence of anxiety during pregnancy may reflect the impact of other additional factors beside pregnancy. One study in China reported the prevalence rates of pregnancy-related anxiety for each trimester separately (27), being 20.8%, 20.8%, and 23.0% in the 1st, 2nd, and 3rd trimesters, respectively.

Bjelica et al. (29) stated that pregnancy is a unique period of life that overwhelms each expectant mother with experiences of psychological ambivalence, concretized by emotional disturbances, sudden transitions from exhaustion to exaltation, or even mixed anxiety and depressive disorders. Moreover, pregnancy might generate certain apprehensions regarding its progress and delivery outcomes, hence making the pregnant woman susceptible to mental health challenges, according to the extent of her adaptive or coping abilities.

Viswasam et al. (30) added that, if the woman is particularly sensitive to such changes, perhaps as a result of heightened anxiety sensitivity, they can be instrumental in precipitating panic attacks. Elevated levels of progesterone, estradiol, and cortisol during pregnancy have also been implicated in the etiology of panic attacks. In addition, there are psychological vulnerabilities specific to pregnancy, which include body and health-centered concerns.

These findings indicate that pregnancy may be a specific risk factor for the occurrence and/or exacerbation of anxiety disorders. A possible reason for the occurrence of anxiety during pregnancy could be traced back to experienced sudden changes during pregnancy, such as increased heart and respiratory rates, chest tightness, and shortness of breath (31).

### Screening tools for anxiety

This wide variation in reported prevalence rates of pregnancy-related anxiety may be attributed to differences in study populations, with cultural multiplicity and sociodemographic diversity. Moreover, some studies recruited pregnant women during all trimesters, while others recruited them during their second or third trimesters.

In addition, different tools were used to screen for anxiety during pregnancy by each study. The general health questionnaire (GHQ) was used by Insan et al. (28), while the Patient Health Questionnaire-9 was used by Gerges et al. (26) in Lebanon. Various versions of the Pregnancy-Related Anxiety Questionnaire were used by Naja et al. (22) in Qatar, Abegaz et al. (24) in Ethiopia, in addition to Huang et al. (25), and Zhou et al. (27) in China. EPDS anxiety subscale was used by Li et al. (5) in Canada, as well as Frigerio & Molteni (21) in Italy. Other screening tools for anxiety included the Hopkins Symptom Checklist in Norway by Thiel et al. (18), the Perinatal Anxiety Screening Scale in Nigeria by Akinsulore et al. (23), the State-Trait Anxiety Inventory in the UK by Slade et al. (19), and the Perinatal Anxiety Screening scale in India by Dwivedi et al. (20).

### Onset of anxiety during pregnancy

Most included studies reported that pregnancy-related anxiety was most frequently manifested during the second trimester (8; 22) or third trimester (20;23).

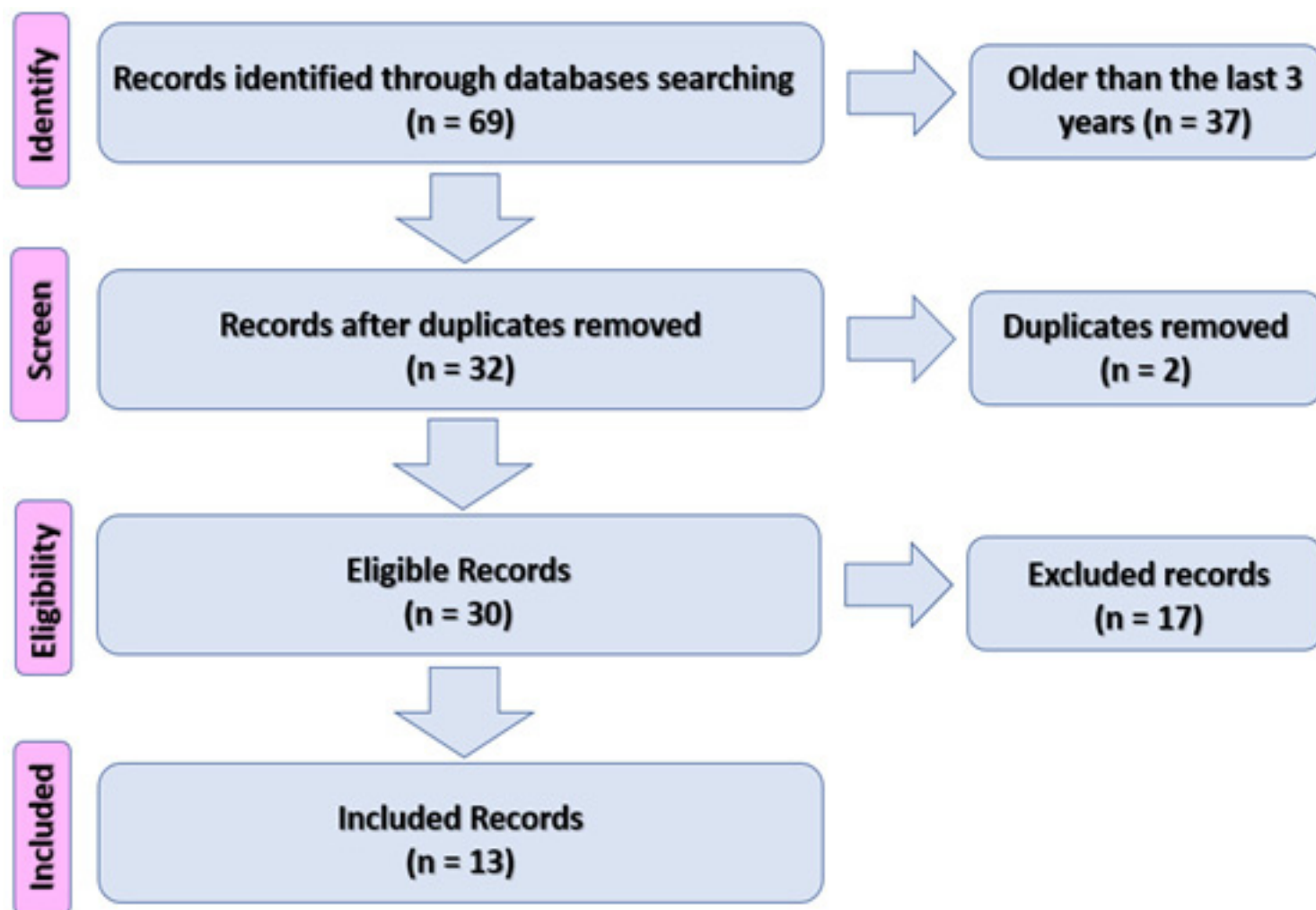
### Risk factors for pregnancy-related anxiety

Pregnant women with comorbid hypertension past history of miscarriage, complicated pregnancy, or maternal worries. Moreover, extroversion, and social support from partners were reported as significant influential factors associated with pregnancy-related anxiety (23).

A past history of stillbirth, unwanted pregnancy, current comorbidity, and mental illness predicts pregnancy-related anxiety. However, unplanned pregnancy and current illness failed to show a significant association with pregnancy-related anxiety. The moderating effect of perceived social support and resilience level on pregnancy-related anxiety was statistically significant. Previous history of mental illness and unwanted pregnancy was shown to be statistically associated with anxiety. However, parity failed to show any significant association with antenatal anxiety (22).

Tarafa et al. (8) reported that being pregnant at a young age is a risk factor for pregnancy-related anxiety. They explained this finding by the high fears of birth. At an early age, the pregnant mother might feel worried about the viability of her developing fetus.

Figure 1: PRISMA flow chart



Trafata et al. (8) added that low income was significantly associated with pregnant-related anxiety. They explained that low-income pregnant women may be obsessed with issues associated with parenting, such as higher financial expenses, and the lack of antenatal healthcare services. The anticipated financial costs of maintaining a baby and other concomitant life stressors may induce extra pressure during the antenatal time, provoking anxiety.

Kim et al. (32) argued that pregnant mothers with lower socioeconomic status usually receive limited prenatal service at higher rates than their middle and high-socioeconomic-status counterparts, and lower socioeconomic status has been linked with a high risk of hypertension, diabetes, and other complications related to pregnancy.

Tarafa et al. (8) added that pregnant mothers who have poor social support had a higher chance of pregnancy-related anxiety compared to pregnant mothers who had strong social support. They explained this finding by that pregnant mothers who have poor social support might not be happy with their families and have no good interactions with their social environment. Therefore, they may develop social withdrawal, become depressed with lower coping ability and eventually develop more anxiety.

### Limitations

This study included free full-text articles published in English language only and the focus was on the last 3 years. There were only 13 studies investigating the prevalence, onset, and course of anxiety disorders during pregnancy. The design of one study was retrospective, with the associated risk of recall bias.

Moreover, some studies reported prevalence rates at a particular trimester, while others did so at “any time during pregnancy”, thereby limiting the ability to combine data from the available studies. Similarly, the reported high variability in study tools provided high heterogeneity between studies.

In addition, the included studies did not provide sufficient data on the factors that may influence the prevalence, and onset of anxiety disorders during pregnancy, such as levels of stress and social support, the occurrence of any traumatic events, etc.

Table (1): Summary of the main results

Authors	Year	Country	Study design	No. of participants	Gestational age	Study tools	Prevalence
Insan et al. (28)	2020	UK	Retrospective	7824	26-28 <sup>th</sup> weeks	GHQ	--
Naja et al. (22)	2020	Qatar	Cross-sectional	800	1 <sup>st</sup> -3 <sup>rd</sup> trimesters	PRAQ	10.4%
Thiel et al. (28)	2020	Norway	Prospective	2206	17-32 <sup>nd</sup> weeks	SCL-A, MINI	--
Akinsulore et al. (23)	2021	Nigeria	Cross-sectional	230	24 weeks	PASS, CWS, BFI- 10, MSSS	43.5%
Li et al. (5)	2021	Canada	Prospective	555	16-32 weeks	EPDS anxiety scale	--
Slade et al. (19)	2021	UK	Prospective	1286	20 weeks	STAI, PSS	--
Abegaz et al. (24)	2022	Ethiopia	Cross-sectional	423	1 <sup>st</sup> -3 <sup>rd</sup> trimesters	PRAQ	43.9%
Frigerio & Molteni (21)	2022	Italy	Prospective	110	3 <sup>rd</sup> trimester	STAI-S, EPDS	--
Huang et al. (25)	2022	China	Cross-sectional	579	≥ 11 weeks	C-PRA	41.4%
Tarafa et al. (8)	2022	Ethiopia	Cross-sectional	406	3 <sup>rd</sup> trimester	PRAQ	32.7%
Dwivedi et al. (20)	2023	India	Prospective	200	3 <sup>rd</sup> trimester	PASS	--
Gerges et al. (26)	2023	Lebanon	Cross-sectional	433	1 <sup>st</sup> -3 <sup>rd</sup> trimesters	PHQ-9	70.3%
Zhou et al. (27)	2023	China	Cross-sectional	3154	1 <sup>st</sup> -3 <sup>rd</sup> trimesters	PRAQ	20.8%, 20.8% and 23.0% in the 1 <sup>st</sup> , 2 <sup>nd</sup> , and 3 <sup>rd</sup> trimesters, respectively

BFI-10: Big Five Personality Inventory  
 EPDS: Edinburgh Postnatal Depression Scale  
 MINI: Mini-International Neuropsychiatric Interview  
 PHQ-9: Patient Health Questionnaire-9  
 SCL-A: The Hopkins Symptom Checklist  
 CWS: Cambridge Worry Scale  
 GHQ: General Health Questionnaire  
 PRAQ: Pregnancy-related anxiety questionnaire  
 STAI: State-Trait Anxiety Inventory  
 C-PRA: Chinese pregnancy-related anxiety scale  
 MSSS: Maternal Social Support Scale  
 PASS: Perinatal Anxiety Screening scale  
 PSS: Pregnancy-stress scale  
 STAI-S State-Trait Anxiety Questionnaire

## Conclusions

This systematic review indicates that anxiety disorders are common during pregnancy. However, assessed studies revealed wide variability in the measurement of pregnancy-related anxiety, with a subsequently wide range in reported prevalence rates.

Several risk factors are associated with pregnancy-related anxiety, such as younger age, low income, past history of stillbirth, unwanted pregnancy, current comorbidity, or mental illness. Moreover, perceived social support is associated with a lower prevalence of pregnancy-related anxiety.

The findings of the present study have important clinical implications, related to pregnancy-related anxiety, including a need for prevention, early diagnosis, and its management. However, it is necessary to identify pregnancy-related anxiety, which may necessitate treatment, and anxiety due to real-life matters and considerations, such as societal/financial issues concomitant with pregnancy. Therefore, obstetricians, psychiatrists and family physicians should be aware of pregnancy-related anxiety and their effect on the mother and fetus. Nevertheless, there is a pressing need to further study this important topic and to focus on the quality of the used screening tools, to validate their measurements.

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