

Prevalence and factors associated with stress in pregnant women: a literature review

Prevalência e fatores associados ao estresse em gestantes: revisão de literatura

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ABSTRACT

Introduction: Pregnancy is a condition marked by specific changes that are not considered a disease but are also not a normal state of health. During pregnancy, the pregnant woman's body undergoes anatomical, physiological and biochemical changes. This entire context exposes women to a state of greater vulnerability, both physically and mentally, which can generate stress. Gestational stress can negatively affect the physical and psychological health of the pregnant woman and the fetus, predisposing them to more gestational complications. **Objective:** To identify the available scientific evidence regarding the prevalence of gestational stress, as well as the factors associated with this outcome. **Methods:** Integrative review, according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses protocol, with searches carried out on the Pubmed platform in 2021, including primary research articles available in full in English and published between 2018-2021. The analysis of the studies and the extraction and grouping of data was carried out by three independent researchers. **Results:** Of the 3,575 publications available, 37 articles met the inclusion criteria. There was a varied prevalence of gestational stress, from 11.6% to 91.86%, and association with sociodemographic, socioeconomic, work factors, conditions inherent to pregnancy, gestational complications, lifestyle habits, chronic and mental illnesses, in addition to social risk, relationship conflicts, violence and the context of the COVID-19 pandemic. **Conclusion:** Pregnancy stress is highly prevalent among pregnant women and is associated with multiple factors experienced by them.

Keywords: Stress; Pregnancy; Primary health care; Prenatal care.

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RESUMO

Introdução: A gravidez é uma condição marcada por alterações específicas que não são consideradas uma doença, mas também não são um estado normal de saúde. Na gestação, o corpo da gestante sofre alterações anatômicas, fisiológicas e bioquímicas. Todo esse contexto expõe a mulher a um estado de maior vulnerabilidade, tanto física quanto mental, que pode gerar o estresse. O estresse gestacional pode afetar negativamente a saúde física e psicológica da gestante e do feto, predispondo-os a mais intercorrências gestacionais. **Objetivo:** Identificar as evidências científicas disponíveis acerca da prevalência de estresse gestacional, bem como os fatores associados a esse desfecho. **Métodos:** Revisão integrativa, segundo o protocolo Preferred Reporting Items for Systematic Reviews and Meta-Analyses, com buscas realizadas na plataforma Pubmed no ano de 2021, incluindo artigos de pesquisas primárias disponíveis na íntegra em inglês e publicados entre 2018-2021. A análise dos estudos e a extração e agrupamento dos dados foi realizada por três pesquisadores independentes. **Resultados:** Das 3.575 publicações disponíveis, 37 artigos atenderam aos critérios de inclusão. Houve prevalência variada de estresse gestacional, de 11,6% a 91,86%, e associação com fatores sociodemográficos, socioeconômicos, laborais, condições inerentes à gravidez, intercorrências gestacionais, hábitos de vida, doenças crônicas e mentais, além de risco social, conflitos de relacionamento, violência e o contexto da pandemia de COVID-19. **Conclusão:** O estresse gestacional é altamente prevalente entre as gestantes e está associado a múltiplos fatores vivenciados por elas.

Palavras-chave: Estresse; Gravidez; Atenção primária à saúde; Cuidado pré-natal.

INTRODUCTION

Pregnancy is a condition marked by specific changes that are not considered a disease but are also not a normal state of health. During pregnancy, a woman's body undergoes anatomical, physiological and biochemical changes. In addition to the physical dimension, psychic, emotional and social changes occur that affect the pregnant woman's quality of life and that vary during different gestational ages. Common conditions during pregnancy such as excessive weight gain, lower back pain, pain in the pelvic girdle and hyperemesis gravidarum lead to a worsening in the quality of life of pregnant women and can act as factor stressors during this period. Conversely, a favorable economic condition, social support, quality of sleep and physical exercise were associated with improvements in the quality of life of pregnant women. In this context, a pregnant woman is exposed to a state of greater vulnerability, both physical and mental, which can culminate in gestational stress.

Furthermore, increased hormonal levels can affect a woman's emotions and mood, leading to psychological disorders such as anxiety, depression and stress^{1,2}.

Stress concerns an organism's reactions to threats to its homeostasis. These bodily responses involve hormonal action, mainly from the hypothalamic-pituitary-adrenal cortex axis, responsible for the release of corticotropin, adrenocorticotropin and cortisol. These responses are triggered by stress, defeat, fear, anguish, insecurity, illness and death³. In addition to these neuroendocrine changes, changes occur in the cardiovascular and immunological function; hence, pregnancy is perceived, in essence, as a "psychological stress test"⁴.

Cardiovascular, neuroendocrine, and immunological reactivities to acute stress are important predictors of health outcomes in non-pregnant populations, being linked to an increased risk of hypertension and elevated blood glucose levels, immunosuppression, and greater susceptibility to infectious diseases, as well as the risk of developing

depressive and anxiety disorders. During the gestational period, stress reactivity has unique implications for maternal health as well as fetal development⁴. Prospective studies have demonstrated that children of women exposed to stressors during pregnancy were more likely to experience a range of adverse neurodevelopmental outcomes, including an increased risk of emotional, behavioral and cognitive problems⁵.

Perinatal stress can negatively affect the physical and psychological health of women and their children. Understanding the factors associated with gestational stress is essential to better support pregnant women, avoiding negative outcomes related to exposure to stressors. Therefore, this study aims to identify the available scientific evidence regarding the prevalence of gestational stress, as well as the factors associated with this outcome.

METHODS

This is an integrative review of the literature carried out in accordance with the methodological recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol⁶. The process of preparing this review began with the formulation of guiding research questions that were relevant for public health: What is the prevalence of stress among pregnant women internationally? What is the level of perceived stress (mild, moderate, grave or severe)? What were the protective factors and what were the aggravating factors related to stress?

The searches took place between September 8 and 16, 2021 and were carried out by three independent researchers so that the information was checked at all stages. The searches were carried out online on PubMed, a platform that covers works published in different countries and in reputable journals in the health area. As descriptors, "stress" and "pregnancy" were used, both listed in the Medical Subject Headings (MeSH). "AND" was used as a Boolean operator.

Works that were original articles, published between 2018 and 2021, in English and that were available in full electronically were included. Duplicity of articles was also assessed, with only one version being considered. Technical reports, systematic reviews, literature reviews, theses and dissertations, as well as different studies conducted on the same population, were excluded. Once the search strategies were defined, the searches were carried out. The articles were initially submitted to the inclusion criteria, and 3575 works were identified.

After this stage, the selection of articles was carried out by exploratory reading of the title and summary of each reference. In some articles, it was decided a preliminary analysis should be carried out, reading them in full, to better define their relevance to the guiding questions. Thus, 3535 were excluded due to duplication and/or for not strictly meeting the study theme/design. Of the

remaining 40, all were read in full. At this stage, three were excluded. Thus, the final sample of this review comprised 37 articles (Figure 1). The article selection stage was carried out independently by three researchers, and disagreements between them were resolved through discussion and consensus.

Data from the studies were extracted using an instrument structured by the researchers, which included the name of the article, the journal, the year, the name of the authors, location of the study, objective, population, methodological characteristics, the instrument used for evaluation of stress during pregnancy, and the notes and discussions about the thematic focus of this review.

RESULTS

3,575 articles were found available on the PubMed platform, of which 40 were selected after analyzing the title and abstract. After fully reading the works, another three articles were excluded due to not fitting the topic, leaving 37 articles. All published between 2018 and 2021 in the English language.

These are studies with cross-sectional designs (48.64%), cohort (27.02%), randomized clinical trials (5%) and longitudinal studies (5%). Productions were found on all continents, with the exception of the South American region, with the most prevalent research scenarios being Iran (24.32%), the United States (21.62%) and China (13.51%).

Of the 37 articles analyzed, 13 presented the stress prevalence rate in the analyzed group, with the stress rate being very different, ranging from 11.6% to 91.86% in general analysis⁷⁻¹⁸. The prevalence of stress was higher in the 2nd trimester (95%) compared to the 3rd trimester (82.2%)¹⁰. Studies also demonstrated that moderate to severe stress was more prevalent (39.7% and 69.67%) than mild (17.1% and 30.33%)^{11,17}. These prevalences were related to several socioeconomic, obstetric factors, comorbidities and lifestyle habits, summarized in Table 1.

DISCUSSION

The results of this review showed a positive relationship between stress and several obstetric, socioeconomic factors, and factors related to social risks, comorbidities and lifestyle habits. The majority were associated within the context of the COVID-19 pandemic, conflicting personal relationships and low family income, in addition to the conditions of the current or previous pregnancy.

Stress is commonly associated with physiological and psychological changes experienced by the mother during pregnancy¹⁹. In the literature, other factors such as previous illnesses, environmental and work factors are also described as triggers. High and persistent levels of stress lead to increased maternal cortisol levels, which are related to negative behavioral, cognitive and physiological

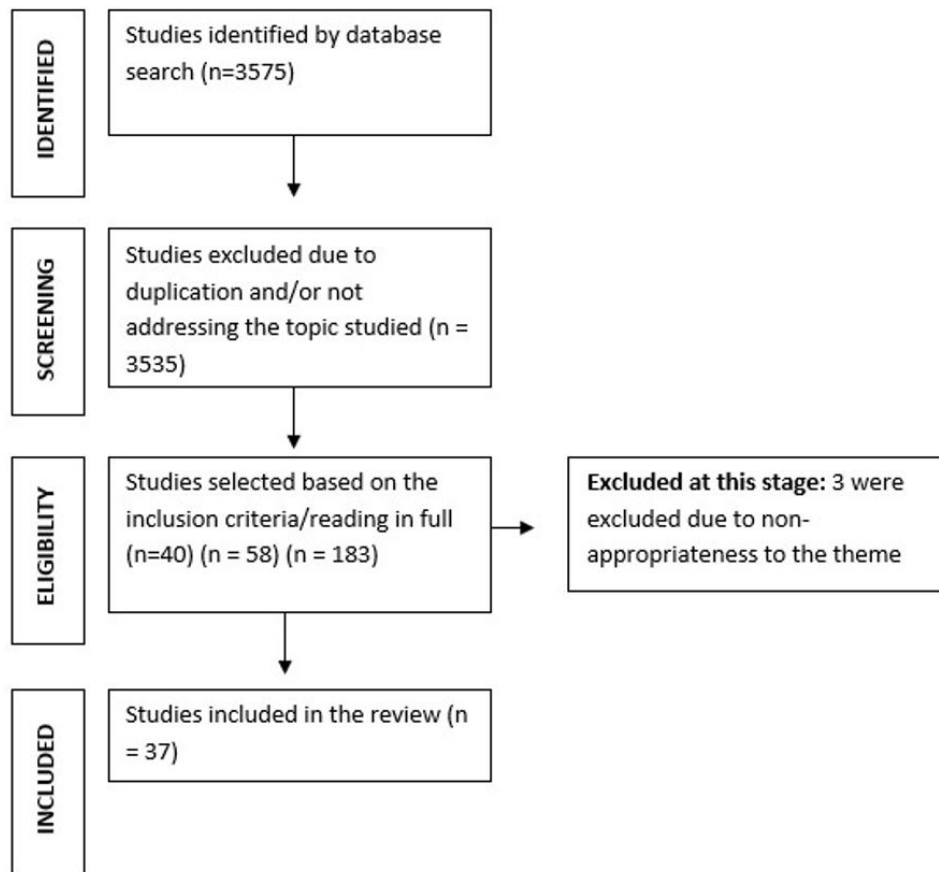


Figure 1. Schematic representation of the stages of identification, screening, eligibility and inclusion of works in the review, 2018-2021.

outcomes for pregnant women and fetuses²⁰. In the studies evaluated, severe stress levels were reported with prevalence rates reaching 15.8%¹⁵ in general analysis and 41% in a potentially stressful pandemic scenario¹⁸. Its harms, such as increased risk of fetal distress, premature birth and low birth weight in the short term and attention deficit, irritability, hyperactivity, affective disorders in the long term^{20,21}, make it necessary to use protocols to identify not only pregnant women with stress, but also the associated risk factors¹⁶.

The values related to the prevalence of gestational stress were different depending on the study analyzed. A greater prevalence of stress was observed in Chinese pregnant women in the first trimester of pregnancy⁷ and a lower prevalence in a study that evaluated pregnant women in Ethiopia who mostly had a planned pregnancy and who lived with their husband¹⁴. This shows that the divergence observed may be related to the differences in clinical, cultural and socioeconomic aspects of the population used. In studies, these results were compared with other evidence, however, similarities between the samples used are not described in some studies, compromising the degree of validity of the comparison. The lack of studies that consider a diverse and

robust population hinders the achievement of values that can be generically applicable to pregnant women.

In the analysis of associated factors, several sociodemographic variables were observed that were related to the stress level of pregnant women. Advanced age was described as a protective factor in some studies^{8,15,22} and as a triggering factor in others,^{23,24} indicating divergences in the literature that may be related to the different contexts explored in the studies analyzed. Aging is associated with a greater risk of gestational complications, which can generate greater stress in older pregnant women²³. Ruling out or confirming these complications facilitates the establishment of adequate prenatal management and care, which can alleviate maternal concerns²⁵.

Living in urbanized regions^{11,26} and being exposed or thinking that one is exposed to pollutants were also factors related to stress, highlighting the importance of exposure to the outdoors during pregnancy and reassuring, but not negligent, guidelines that reduce the psychological burden of exposure²⁷. Women of African descent were associated with higher levels of stress in just one job, which was attributed to racial discrimination⁸, responsible for several negative

Table 1. Factors associated with stress in pregnant women identified in the international and national literature.

Authors (Year) / Study Type	Study Type	Population / Number / Setting	Instrument for assessing stress during pregnancy	Key associated factors
Olajubu AO et al. (2021)	Analytical cross-sectional study	Pregnant Adolescents / 241/ Ile-Ife, Nigeria	Perceived Stress Scale (PSS-14) (Cohen, 1983)	Age 14-16 years ($p=0.03$), marital status ($p<0.001$), low schooling ($p=0.01$), low income ($p=0.01$), living with parents ($p<0.001$), feeling of shame ($p<0.001$), male partner's rejection of pregnancy ($p<0.05$), lack of parental involvement in care ($p<0.05$).
Andhavarapu M et al. (2021)	Secondary analysis	Pregnant women/150/ Kenya	PSS-14 (Cohen, 1983)	Low family income ($p=0.016$), adolescent age group ($p=0.031$), cohabitation ($p=0.009$).
Asselmann E et al. (2020)	Prospective longitudinal study	Pregnant women/306/ Dresden, Germany	DASS-21: Depression Anxiety and Stress Scale (Lovinbond, S., 1995)	Beginning of pregnancy and postpartum period ($p<0.001$), conscientiousness, extroversion, emotional stability and greater social support as protective factors ($p<0.001$).
Budnik-Przybylska D et al. (2020)		Pregnant and non-pregnant women/29+21/ Poland	Perceived Stress Scale (PSS)-10 (PSS)-10 (Cohen, 1994)	Negative relationship with frequency of exercise sessions ($p<0.005$).
Ceulemans M et al. (2021).	Cross-sectional study	Pregnant and Breastfeeding Women/3907+5134/ Ireland, Norway, Switzerland, Netherlands and United Kingdom	PSS-14 (Cohen, 1983)	Chronic mental illness, chronic somatic illness, smoking during pregnancy, unplanned pregnancy ($p<0.05$), negative relationship with increasing age ($p<0.05$).
Chasan-Taber L et al. (2020)	Prospective cohort study	Pregnant Women/1426/ USA	PSS-14 (Cohen, 1983)	Negative relationship with bicultural acculturation ($p<0.005$).
Chehrazi M et al. (2021)	Cross-sectional study.	Pregnant women/200/ Iran	Revised Prenatal Distress Questionnaire (NuPDQ) (Yali & Lobel, 1999)	Spirituality as a protective factor ($p<0.001$).
Colli C et al. (2021)	Cross-sectional study	Pregnant women/258/ Italy	Pandemic Related Pregnancy Stress Scale (PREPS)	Gestational period: 3rd trimester ($p=0.008$).
Cooke DC et al. (2019)	Coorte	Families/394/ Western Australia	Stress Self-Assessment	Partners working out long periods of time ($p<0.05$).
Effati-Daryani F et al. (2020)	Descriptive-analytical cross-sectional	Pregnant women/205/ Tabriz, Iran	DASS-21 (Lovinbond S. 1995)	Spouse's level of education ($p<0.05$), sufficiency of family income ($p<0.05$), spouse's support ($p<0.05$), satisfaction with married life ($p<0.05$).

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Authors (Year) / Study Type	Study Type		DASS-21 (Lovinbond S. 1995)	Key associated factors
Eichler J et al. (2019)	Cross-sectional cohort	Pregnant Women/463/ Leipzig, Germany	German version of the Patient Health Questionnaire (Gräfe K,2004)	Gestational period (2nd and 3rd trimester) ($p<0.001$), pre-pregnancy BMI ($p=0.035$), snack intake ($p=0.002$), sleep problems ($p<0.001$), planned pregnancy ($p=0.010$).
Engidaw NA et al. (2019)	Cross-sectional study	Pregnant Women/396/ Bale, Ethiopia	PSS-10 (Cohen, 1994)	Having 2-5 previous pregnancies ($p<0.05$), gestational age less than 12 weeks ($p<0.05$).
Gao M et al. (2019)	Prospective cohort	Pregnant women/1152/ China	<i>PregnancyPressureScale (PPS) (Pan Y.2004)</i>	Poor sleep quality (PSQI scores ≥ 5) ($p<0.005$).
Gokoel AR et al. (2021)	Prospective cohort	Pregnant women/1143/ Suriname	PSS-14 (Cohen, 1983)	Women aged 16-19 years ($p=0.036$), people of African descent ($p=0.001$), lower family income ($p=0.012$), low schooling ($p=0.001$), living in urban areas ($p=0.074$).
Golshani F et al. (2021)	Randomized controlled clinical trial	Pregnant women/56/ Tabriz, Iran	PSS-14 (Cohen, 1983)	Cognitive behavioral therapy as a protective factor ($p<0.001$).
Hou Q et al. (2018)	Pregnant women withdrawn from a cohort study	Pregnant women/1491/ China	Pregnancy Stress Rating Scale (PSRS) (Li, Y.2016)	Cooking frequently ($p=0.007$), not having pets ($p=0.005$), not having a baby at home ($p<0.001$), many hours of cell phone use per day ($p<0.001$), self-reported impaired sleep ($p=0.012$).
Keramat A et al. (2021)	Descriptive, correlational and cross-sectional study	Pregnant women/295/ Iran	DASS-21 (Lovinbond S. 1995)	Sexual distress ($p<0.001$), advanced age ($p=0.028$), complication in previous pregnancy ($p=0.002$), gestational age (0.016), unplanned pregnancy ($p<0.001$).
Lee KW et al. (2019)	Cross-sectional study	Women with Gestational Diabetes Mellitus/526/ Malaysia	DASS-21 (Lovinbond S. 1995)	Being non-Muslim ($p=0.002$), being non-Malaysian ($p=0.003$), history of allergy ($p=0.030$).
Li J et al. (2021)	Case-control study	Pregnant Women/457/ Nanjing, China	Self-rating Anxiety Scale (SAS) (Kawachi, 1994)	Exposure to the air pollutant PM 2.5 ($p<0.001$).
Mehdizadehkashi A et al. (2021)		Pregnant women/300/ Iran	Persian version of the perceived stress scale (PSS) (Cohen, 1983)	Use of PPE by health professionals; referral to medical centers; fear of COVID-19 infection in themselves and their children ($p<0.05$).
Sarmasti N et al. (2019)	Descriptive Analytical Study	Pregnant women/100/ Iran	PSS-14 (Cohen, 1983)	Presence of preeclampsia during pregnancy ($p<0.01$).

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Authors (Year) / Study Type	Study Type	Population / Number / Setting	Instrument for assessing stress during pregnancy	Key associated factors
Nwafor JI et al. (2021)	Cross-sectional study	Pregnant Women/456 / Abakaliki, Nigeria	DASS-21 (Lovinbond S. 1995)	Greater parity (≥ 5) ($p < 0.001$), urban residence ($p < 0.001$), third trimester of pregnancy ($p = 0.034$).
Omowale SS et al. (2021)	Longitudinal Study	Women during pregnancy and postpartum/85/ USA	A single item of the perceived stress scale (PSS) was used (Cohen, 1983)	Race ($p < 0.05$), pandemic period ($p < 0.05$).
Pakzad M et al. (2020)	Cross-sectional and correlational study	Pregnant women/300/ Iran	Islamic lifestyle questionnaire and DASS-21 (Lovinbond S. 1995)	Islamic lifestyle as a protective factor ($p < 0.01$).
Pasha H et al. (2021)	Cross-sectional study	Pregnant women/200/ Iran	PSS-14 (Cohen, 1983)	Social capital ($p < 0.05$), self-efficacy during pregnancy ($p < 0.05$), gestational period ($p < 0.05$).
Patten CA et al. (2020)	Cross-sectional study	Pregnant Women/352/ Alaska	PSS-14 (Cohen, 1983)	Tobacco use as a protective factor ($p = 0.02$).
Widowati R et al. (2021)	Cross-sectional study	Pregnant Women/92/ Banten, Indonesia	A valid and reliable test instrument to measure work stress in pregnant women was developed and conducted in this study.	Gestational age ≤ 31 weeks ($p < 0.01$), longer workload (> 40 h) ($p < 0.05$).
Nodoushan RJ et al. (2020)	Descriptive study	Pregnant women/560 / Isfahan, Iran	DASS-21 (Lovinbond S. 1995)	Schooling ($p < 0.05$), employment ($p < 0.05$).
Shannon MM et al. (2020)	Cohort	Pregnant women/1309/ Philadelphia, USA	PSS-14 (Cohen, 1983)	Violent crime in the neighborhood ($p < 0.0001$).
Smith RB et al. (2021)	Randomized clinical trial	Obstetric & Gynecological Patients /101/ Arizona, USA	Self-report of perceived stress	Mindfulness practice as a protective factor ($p \geq 0.005$).
Stepowicz A et al. (2020)	Cross-sectional study	Pregnant and postpartum women/210/ Poland	PSS-14 (Cohen, 1983)	History of treatment for mental illness ($p = 0.0062$).
Tang X et al. (2019)	Cohort	Pregnant women at 15 weeks gestation/1220/ Chongqing, China	Pregnancy Pressure Scale (Zhanghui, 2005)	Not working ($p = 0.0128$), prenatal anxiety ($p = 0.0212$), suggestions from family and friends about delivery modality ($p < 0.05$), low social support ($p < 0.0036$), smoking (0.0026) and exercising (0.042) as protective factors.

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Authors (Year) / Study Type	Study Type	Population / Number / Setting	Instrument for assessing stress during pregnancy	Key associated factors
Thongsomboon W et al. (2020)	Cross-sectional study	Pregnant Women/403/ Bangkok, Thailand	<i>Thai version of the PSS-10 (T-PSS-10)</i> (Wongpakaran, 2010)	Separation from spouse ($p=0.005$), physical or psychological trauma from the family ($p=0.005$), marital conflict ($p<0.001$) and family conflict ($p<0.001$).
Waqas A et al. (2020)	Cross-sectional study	Pregnant women/516/ Pakistan	PSS-14 (Cohen, 1983)	Low family income ($p=0.013$), unplanned pregnancy ($p=0.001$), increase in the number of children ($p=0.033$), less autonomy in decision-making and marital problems ($p<0.05$), harassment ($p<0.001$), desire to have a boy (0.011), history of complications during childbirth attended by midwives ($p=0.088$).
Wheeler, JM et al. (2021)	Prospective, longitudinal cohort	Pregnant Women/33/ USA	PSS-10 (Cohen, 1994)	Greater avoidance coping before the pandemic ($p<0.001$) and during ($p<0.01$) the pandemic.
Xu K et al. (2021)	Cross-sectional study	Pregnant women/274/ Wuhan, China	Chinese Perceived Stress Scale (CPSS) (Chu, 2005)	Concern about being infected ($p=0.01$) and the fetus being affected $p<0.001$.
Price H et al. (2020)		Pregnant Women/1451/ USA	PREPS	Preparation stress (related to feeling unprepared for childbirth or postpartum due to the pandemic): maternal age ($p<0.001$), prior abuse ($p<0.001$), primiparity ($p<0.001$), self-reported high-risk pregnancy status ($p<0.001$), chronic illness ($p<0.001$), healthy behaviors ($p<0.001$), perceived risk of having had COVID-19 ($p<0.001$), experiencing changes in prenatal care ($p<0.001$), access to outdoor spaces ($p<0.001$), COVID-related loss of income ($p<0.05$), unplanned pregnancy ($p<0.01$). Infection Stress (refers to infection-related concerns for oneself or the fetus/baby): maternal age ($p<0.05$), previous abuse ($p<0.05$), previous pregnancy loss ($p<0.05$), chronic illness ($p<0.01$), being a woman of color ($p<0.001$), lack of marital relationship or cohabitation ($p<0.05$), high-risk pregnancy ($p<0.001$), loss of previous pregnancy ($p<0.05$), self-reported high-risk pregnancy status ($p<0.001$), COVID-related loss of income ($p<0.01$), perceived risk of having had COVID-19 ($p<0.001$), experienced changes in antenatal care ($p<0.001$), access to outdoor spaces ($p<0.001$).

Source: Prepared by the authors.

repercussions for pregnant women of African descent, such as dehumanization and less social support, in addition to greater chances of suffering obstetric violence and restriction of reproductive rights²⁸. When managing these pregnant women, it is up to health professionals to provide welcoming care that aims, in addition to providing protection and guidance, to alleviate this lack of social support.

Regarding socioeconomic characteristics, the lower level of education of the woman^{9,15,17} and her partner⁹ presented a stressful influence, justified by the low social position and consequent low purchasing power, comfort and leisure determined by this condition¹⁵. Low family income^{8,9,15,29-31} was described as a predisposing factor for stress, which was justified by the greater concerns related to the difficulties in maintaining the quality of life of parents and fetuses when they have low purchasing power⁸. Lack of adequate income makes it difficult to carry out diagnostic and therapeutic measures such as carrying out tests, purchasing medicines and supplements, especially in places where these are not provided free of charge³⁰. Low education reduces the ability of individuals to understand and follow the instructions given by health professionals³². These variables should be considered during the construction of prenatal therapeutic plans, ensuring, whenever possible, a conduct that adapts to the pregnant woman's financial reality and guidance in an easily understandable manner. This can be a way to avoid additional concerns in the pregnant woman's routine.

Regarding work characteristics, the work situation of women^{7,9,17,33} was significantly associated with a higher incidence of stress. Pregnant women without work were 1.82 times more likely to suffer stress, which is associated with a higher incidence, in this population, due to economic dependence, family conflicts and a longer period of time alone, contributing to the incidence of feelings of loneliness, all of which generates stress⁷. Integration strategies for pregnant women are important to reduce this feeling and can be carried out within the context of primary care, with conversation groups for pregnant women, home visits and activities in health units, generally mediated by nurses³⁴. Pregnant women with a greater workload than 40 hours a week were almost three times more likely to experience stress, since the high workload places greater cognitive, physical and emotional demands on them³³. In the Brazilian context, it is important that women be informed about their labor rights, which aim to adapt the workload and work situation to a pregnant woman's needs, thus maintaining her peace of mind and quality of life³⁵. This role can be carried out by health professionals during prenatal and postpartum care.

Factors related to current pregnancy and previous pregnancies were also reported. Gestational age proved to be relevant in several studies^{10,11,14,23,31,33}. Unplanned pregnancy^{8,10,22,23,29} was also reported as a stressor. Pregnant women in this condition must be closely monitored by

health professionals to avoid long-term complications for mother and child and alleviate their negative emotional burden¹⁰. The number of births a woman has had was also relevant, with both primiparity^{8,14} and multiparity^{11,29} being considered stressors. The association with primiparity was justified by the lack of experience and confidence related to pregnancy, childbirth, upbringing and care of the child^{8,14}; and the association with multiparity was justified by the increased financial and emotional demands of several children^{11,29}. To mitigate the stress caused by these situations, multidisciplinary monitoring can be useful in providing psychological support, instructions related to baby care, and bodily and emotional changes associated with pregnancy³⁶. Guidance on family planning and the use of contraceptive methods should also be provided, as they are useful for preventing future unwanted or unplanned pregnancies³⁷.

The presence of mental illnesses^{22,38,39} and chronic somatic illnesses^{8,22}, in addition to previous gestational complications or complications in the current pregnancy^{6,8,16,19}, such as pre-eclampsia²⁵, also positively interfered with stress in pregnant women, as these conditions bring negative interference to mother and fetus. Other stress-related pregnancy factors were prenatal anxiety, high-risk pregnancy and multiple pregnancy^{7,8}. The identification of pregnant women's risk factors for these various pathologies and risk conditions, associated with the provision of appropriate treatments and the inclusion of guidance and clarification conversations in the therapeutic approach, help reduce the symptoms of stress caused by the diseases²⁵. In Brazil, the risk stratification of pregnant women is mandatory in all consultations and addresses several aspects, such as a woman's clinical, economic, emotional, and social conditions as well as intrinsic factors, such as age⁴⁰.

In relation to social risk factors and violence present in the environment lived by pregnant women, other authors observed a relationship between marital conflict or divorce and stress^{9,15,16,29,41,42}, in addition to the relationship between sexual violence, including harassment, and a history of previous abuse, as a stressor^{8,29}. In this category, other stressful factors mentioned were: violence in the neighborhood²⁶, physical or psychological trauma in the family ($p=0.005$) and family conflict ($p<0.001$)¹⁶. The lack of social support was also positively related to stress^{7,15,43} and was more evident in situations such as a tense relationship with the partner or lack of availability^{9,16,41,42}, lack of marital relationship or cohabitation^{8,30}, and lack of autonomy during pregnancy^{7,29}.

In cultures where family relationships are strengthened or in women with bicultural acculturation, social support is favored, helping to reduce perceived stress^{16,44}. These results emphasize the need for health professionals to encourage families to provide social support to pregnant women^{7,16}, providing health education programs for different family members⁷. Psychotherapeutic support for pregnant women

is also effective in complementing social support¹⁶, with cognitive behavioral therapy being related to lower levels of gestational stress⁴⁵.

Regarding lifestyle habits, those negatively related to stress were: self-reported sleep quality⁴⁶, suggesting that participants with poor sleep quality are more likely to suffer from stress during pregnancy²⁴, spiritual well-being⁴⁷, the practice of physical exercise⁷ and the Islamic lifestyle⁴⁸. However, in another study, self-reported stress did not correlate with the frequency of exercise performed⁴⁹. In this context, during prenatal consultations, doctors and nurses must provide precise guidance on recommended hours of sleep and intensity of physical activity, in addition to questioning the pregnant woman's spiritual practices.

There were divergences regarding the use of tobacco and its relationship with gestational stress levels in the evaluated studies. Two articles attributed smoking to a reduction in perceived stress levels, linking the reduction to tobacco use as a way to cope with tensions, reduce negative emotions and stress, and increase social acceptability in some cultures, thereby favoring the formation of bonds^{7,50}. Another study found a statistical association between smoking and increased stress²². Despite the divergence, health professionals should always contraindicate the use of tobacco during pregnancy, as this substance is related to an increase in gestational complications, such as higher rates of meconium-stained amniotic fluid, non-reassuring fetal heart rate during labor, undiagnosed fetal growth restrictions, and admissions to the Neonatal Intensive Care Unit (NICU)⁵¹.

Regarding the SARS-CoV-2 pandemic, this context was the setting for 11 articles^{8,9,11,13,18,22,38,39,52-54}. The stressors related to this period were: the risk and fear of contamination^{8,18,39}, the stress regarding their child's contamination¹⁸, depression, anxiety, and sleep during this interval¹³, and greater avoidance of coping with stressors before the pandemic ($p < 0.001$)⁵³. According to the authors' discussion, sleep restriction could be linked to concerns about the health of the fetus, mainly due to the confinement that hampered the regularity of prenatal consultations¹³. In a scenario of high contamination, whether by SARS-CoV-2 or other infectious agents, it is essential to disseminate prevention practices, information about risks offered to the mother-fetus binomial and treatment to increase the level of information for pregnant women and reduce contamination and related stressors, based on the recommendations of Jenna M Wheeler, Dawn P Misra and Carmen Giurgescu⁵³.

As a limitation, most of the studies included have a cross-sectional design, which does not favor the definition of the causes of the analyzed event. Other studies presented limitations related to the choice of sample, including only pregnant women with comorbidities or from a certain vulnerable group^{12,15}. By including only mothers with pre-established or vulnerable illnesses, the causes of stress presented may be biased, as these conditions may, in reality, be the main stressors.

Although the analysis contains studies that cover regions on all continents, each research is restricted to samples from a single country, being susceptible to cultural and ethnic influences that do not necessarily apply to pregnant women in general. Furthermore, there are no studies that encompass the Brazilian public, highlighting the need to carry out more studies on the topic which take into account the different Brazilian regional cultures and socioeconomic dynamics, as well as studies that address interventions in the context of gestational stress.

Some studies state that, although stress assessment instruments are used to minimize erroneous classifications, they are not diagnostic tools, that is, there are no established cutoff points for high stress⁴⁴. Furthermore, they claim that there is the possibility of bias due to memory problems or attempts to provide socially desirable answers when answering questions³⁰. In addition, the use of already structured questionnaires limits respondents to choosing their answers among pre-defined options¹⁵.

This study allows for an increase in more satisfactory maternal-fetal outcomes and a reduction in unfavorable complications related to stress during pregnancy. This is because the data presented allows us to understand the most prevalent stressors in the gestational context, as well as their possible justifications, facilitating the development of more assertive prevention and health promotion strategies to reduce gestational and perinatal stress.

CONCLUSION

It was observed that the prevalence of stress among pregnant women is variable and depends on the conditions of the population analyzed. Among the stressors found, conditions inherent to pregnancy, socioeconomic factors, lifestyle habits and the context of the SARS-CoV-2 pandemic stood out. These results are essential to determine the targets of public policy interventions aimed at maternal-fetal health, enabling the identification of the origin of gestational stress and avoiding its damage to perinatal outcomes.

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Conceptualization, Investigation, Methodology, Visualization & Writing – review & editing: Ruth Emanuele Silva Andrade; Anne Caroline Cunha; Cecília Paiva Duarte; Lucineia de Pinho. *Project administration, Supervision & Writing – original draft:* Ruth Emanuele Silva Andrade; Anne

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