Original Article

doi:10.31674/mjn.2026.v18i03.001

MJN

Perceived Stress and Associated Factors among Pregnant Women at Al-Zahraa Teaching Hospital in Al-Najaf Province, Iraq

Russell Abbas Kareem[1], Atheer Kadhim Ibadi[2*]

[1]Department of Community Health Technologies, College of Health and Medical Technologies/Kufa, Al-Furat Al-Awsat Technical University, 31001 Kufa, Iraq

[2]Department of Pharmacy, Kufa Institute, Al-Furat Al-Awsat Technical University, 31001 Kufa, Al-Najaf, Iraq

**Corresponding Author's Email: atheerkadhimibadi@yahoo.com*

ABSTRACT

Background: The psychological health of pregnant women needs special attention because it significantly impacts their physical health. Common psychological issues during pregnancy include stress, anxiety, and depression, which may be triggered by previous obstetric complications, social factors, or a history of psychological disorders. However, health services remain mainly focused on physical assessment. A thorough screening of psychological health during pregnancy is vital to prevent negative impacts on pregnant women and their babies through early detection and suitable intervention. **Objectives:** To assess perceived stress among pregnant women and examine its association with key sociodemographic, obstetric, medical, and psychosocial factors. **Methods:** This is a cross-sectional analytical study. It was conducted at Al-Zahraa Teaching Hospital in Al-Najaf province, Iraq, from 25 October 2024 to 23 February 2025. A total of 455 pregnant women were selected using a computer-generated simple random sampling procedure from the daily antenatal attendance lists. Data were collected using a standardized questionnaire containing sociodemographic characteristics, obstetric, psychological, and social history, as well as the Perceived Stress Scale (PSS). The PSS-10 total score was treated as the primary measure of perceived stress rather than as a diagnostic category. **Results:** Perceived stress was examined in relation to sociodemographic, obstetric, medical, and psychosocial factors. The study identified associations with age, history of miscarriage, history of cesarean section, vaginal bleeding, the interval between pregnancies, gravidity, personal and family history of psychological disorders, and exposure to family violence. **Conclusion:** The findings support the importance of incorporating psychological screening into antenatal care and increasing awareness of psychological health during pregnancy.

Keywords: Associated Factors; Perceived Stress; Pregnancy; Psychological Health

INTRODUCTION

Globally, maternal psychological health issues are significant public health concerns, with a higher burden in developing countries (World Health Organization [WHO], 2021). In low- and middle-income countries, most women lack access to information and prenatal care, resulting in undiagnosed and untreated psychological problems (Premji *et al*., 2020). Additionally, the stigma surrounding psychological health may deter women from seeking professional help, increasing the risk of suicide and substance abuse (Chin *et al*., 2022; Law *et al*., 2021). Studies showed that psychological trauma related to war and insufficient healthcare infrastructure significantly contributes to poor psychological outcomes among pregnant Iraqi women (Lafta & Merza, 2021; Seidi *et al.*, 2020). Furthermore, bad obstetric history had found among Iraqi women (Ibadi, 2023; Ibadi *et al*., 2023).

Psychological well-being is vital during pregnancy to maintain maternal and child health (Chauhan & Potdar, 2022). Although global research often focuses on the postpartum period, the prenatal period is critical because undiagnosed psychological problems during pregnancy contribute to postpartum psychological health issues (Gheorghe *et al*., 2021; Hamadneh *et al*., 2024; Jahan *et al.*, 2021).

Received: April 21, 2026 Received in revised form: August 20, 2026 Accepted: October 3, 2026

Perceived stress evaluates how pregnant women view their life's stressfulness and ability to manage it rather than the types or frequencies of stressful events. It reflects the interaction between personal factors (such as coping abilities and personality) and the external environment (such as physical, economic, social, and cultural factors), appraised as threatening or overwhelming based on factors like personality, coping skills, and support, impacting their well-being, such as associated with depression (Huh *et al*., 2021). Prenatal stress is associated low in birth weight, preterm labor, and children's developmental challenges (Ahmad & Vismara, 2021; Tanpradit & Kaewkiattikun, 2020). It also increases the likelihood of preeclampsia, cesarean delivery, and postpartum depression (Simonovich *et al*., 2021).

Several factors influence perceived stress among pregnant women, including sociodemographic, reproductive, and psychological variables. Low education, insufficient income, unemployment, and separation are major sociodemographic risk factors (Hernández-Chávez *et al*., 2026; Míguez & Vázquez, 2021; Yin *et al*., 2021). Reproductive-related factors include unplanned pregnancies, multiple pregnancies, prior cesarean sections, miscarriage history, and chronic medical conditions like gestational hypertension and diabetes (Issakhanova *et al*., 2023; Jamali *et al*., 2025; Mahmoud *et al*., 2026; Türkmen *et al*., 2024). Psychological factors, such as history of mental illness in the individual or family, and experiences of domestic violence, also elevate the risk of stress during pregnancy (Míguez & Vázquez, 2021) . Furthermore, cultural expectations also affect (Mahmoud *et al*., 2026; McCarthy *et al*., 2021).

Pregnant women's contentment leads to better prenatal care (Dinesan *et al*., 2025). Prenatal psychological screening has not been made universal, especially in Iraq. Anxiety and depression screening should be done at least once throughout the perinatal period (Weingarten & Osborne, 2024). Pregnant women are responsive to guidance to increase their understanding and support regular monitoring of their pregnancies at least once during the perinatal period (Hernawati *et al*., 2024; Weingarten & Osborne, 2024). Universal screening could mitigate the adverse effects associated with perceived stress and promote better health for mothers and their children (Chauhan & Potdar, 2022; Griffen *et al.*, 2021; Monteiro *et al*., 2021).

METHODOLOGY

Study Design and Setting

This study used a cross-sectional analytical design to assess perceived stress and its associated factors among pregnant women. The research was conducted from 25 October 2024 to 23 February 2025 at Al-Zahraa Teaching Hospital for Maternity and Children's Health in Al-Najaf Province, Iraq, which serves a wide population across the region and specializes in women's healthcare services.

Sample Size and Sampling Techniques

As locally published studies estimating perceived stress using the PSS-10 among pregnant women in Iraq are very limited, the sample-size calculation used 44.4% as a proxy proportion from an Iraqi study of antenatal depression among pregnant adolescents (Saud *et al.*, 2024). This proportion was used only as a practical parameter for sample-size estimation because of the scarcity of local evidence on PSS-10-measured stress and was not considered an estimate of the prevalence of perceived stress in the present study.

$$\text{Sample size (n)} = \frac{(Z1-\alpha/2)^2 \times p \times q}{(d)^2}$$

n = sample size

$Z_{1-\alpha/2}$ = represents the level of confidence (at 95% Confidence interval =1.96)

P = prevalence or depend on previous study (q = 1-p)

d = Margin of error or precision = 0.05

$$n = \frac{(1.96)^2 \times 0.444(1-0.444)}{(0.05)^2} = 379$$

The minimum sample size estimation is at least (379). An additional 20% (n = 76) was added to the calculated sample to allow for anticipated non-response, resulting in a target sample of 455 pregnant women after rounding. A simple random sampling method was used. A sampling frame was prepared from the list of eligible pregnant women attending the antenatal service each day, and the participants were selected using a computer-generated random selection procedure. The selection process was conducted from the daily attendance lists until the required sample size was reached.

Inclusion Criteria

- Pregnant women of any age and any trimester during the antenatal period.
- Residents of Al-Najaf Province.

Exclusion Criteria

- Women in the postpartum period.
- Women with mental or cognitive disorders, communication or hearing impairments, or organic brain diseases.
- Non-residents of Al-Najaf Province.

Data Collection

Data was collected using the Arabic version of the questionnaire. The researcher completed the first two parts of the questionnaire (sociodemographic and obstetric history) through direct interviews with pregnant women. Each participant was interviewed individually in a private setting. The PSS-10 was completed by self-reporting among participants who could read and write. For participants who could not read or write, the researcher read each item verbatim and recorded the participant's response without suggesting or interpreting an answer, thereby minimizing interviewer influence and reducing response bias.

Measurements and Scoring

Perceived stress was assessed and screened by using the Perceived Stress Scale (PSS), a validated self-report tool. The PSS consists of 10 items, each rated on a 5-point Likert scale from 0 (Never) to 4 (Very Often), with total scores ranging from 0 to 40 (Souza *et al*., 2026; Tarafa *et al*., 2022). The score was classified as:

- Low Stress: 0–13
- Moderate Stress: 14–26
- High Stress: 27–40

The reliability of the PSS in this study was confirmed with a pilot study with 20% of the study sample size, which found a Cronbach's alpha of 0.819, indicating good internal consistency. The reliability of the PSS-10 in this study was assessed using a separate pilot sample representing approximately 20% of the calculated study sample (about 91 women). These pilot participants were not included in the final sample of 455 pregnant women. The pilot assessment yielded a Cronbach's alpha of 0.819, indicating good internal consistency.

Statistical Analysis

Data analysis was conducted using IBM version 28 of the Statistical Package for the Social Sciences (IBM SPSS). This study used descriptive statistics such as frequencies (F), percentages (%), and means were calculated for selected numerical and categorical variables data. Inferential statistics such as the use of chi-square test and *p*-values of Pearson correlation matrix. The *P*-value is considered statistically significant if it is equal to or less than 0.05.

Ethical Consideration

The research obtained ethical clearance from the College of Health and Medical Technologies / Kufa, Al-

Furat Al-Awsat Technical University, Iraq with reference number 4841 on 21st October 2024.

RESULTS

A total of 455 pregnant women participated in this study, with ages ranging from 12 to 44 years and a mean ± standard deviation of 26.490 ± 5.942 years. The response rate was 100%. The highest percentage (60.4%) was in the 23–33-year age group. Most participants (98.7%) were married, while 1.3% were separated. Most women (68.8%) lived in urban areas, while 31.2% lived in rural areas. Additionally, 66.6% of the participants lived in extended families, while 33.4% lived in nuclear families. The same table also indicates different educational levels; most women (28.6%) could read and write without formal education. Occupation also varied, with the majority (78.5%) being housewives. Regarding family income, 55.8% reported sufficient to some extent, while 19.8% had insufficient income, as shown in Table (WHO, 2021).

The highest percentage (60.4%) was in the 23–33-year age group. Most participants (98.7%) were married, while 1.3% were separated. Most women (68.8%) lived in urban areas, while 31.2% lived in rural areas. Additionally, 66.6% of the participants lived in extended families, while 33.4% lived in nuclear families. The same table also indicates different educational levels; most women (28.6%) could read and write without formal education. Occupation also varied, with the majority (78.5%) being housewives. Regarding family income, 55.8% reported sufficient to some extent, while 19.8% had insufficient income, as shown in Table 1 (WHO, 2021).

Table 1: The Distribution of Pregnant Women According to Socio-demographic Characteristics

Category		Frequency	Percentage (%)
Age groups	12-22Y	118	25.9
	23-33Y	275	60.4
	34-44Y	62	13.6
Marital status	Married	449	98.7
	Separated	6	1.3
Residency	Urban	313	68.8
	Rural	142	31.2
Educational level	Not read and not write	77	16.9
	Read and write	130	28.6
	Primary School	65	14.3
	Middle school	58	12.7
	Secondary school	20	4.4
	Diploma	27	5.9
	Bachelor	71	15.6
	Master degree	5	1.1
	PhD	2	0.4
Occupational status	Government employee	86	18.9
	Non-government employee	6	1.3
	Self-employed	6	1.3
	Housewife	357	78.5
Family income	Sufficient	111	24.4
	Sufficient to some extent	254	55.8
	Insufficient	90	19.8
Family types	Nuclear	152	33.4
	Extended	303	66.6

Table 2: Obstetric and Medical History of Pregnant Women

Category		**Frequency**	**Percentage (%)**
Gravity	Primigravida	119	26.2
	Multigravida	336	73.8
The interval between pregnancies (year)	Prim	119	26.2
	≤ 2	203	44.6
	>2	133	29.2
Pregnancy trimester (Weeks)	1st trimester (1 -12)	124	27.3
	2nd trimester (13 - 27)	105	23.1
	3rd trimester (≥28)	226	49.7
Age at marriage (Year)	18 and less	203	44.6
	More than18	252	55.4
Number of children	None	123	27.0
	(1 -3)	269	59.1
	≥ 4	63	13.9
Planned Pregnancy	Yes	237	52.1
	No	218	47.9
Other Obstetric and Medical History		**Yes (F, %)**	**No (F, %)**
Current vaginal bleeding		72(15.8)	383(84.2)
Rh incompatibility		13(2.9)	442(97.1)
Gestational diabetes		23(5.1)	432(94.9)
Multiple gestations		11(2.4)	444(97.6)
Gestational hypertension		32(7.0)	423(93.0)
History of miscarriage		91(20.0)	364(80.0)
History of stillbirth		23(5.1)	432(94.9)
History of premature		12(2.6)	443(97.4)
History of low birth weight baby		7(1.5)	448(98.5)
History of infertility		20(4.4)	435(95.6)
Congenital abnormalities		13(2.9)	442(97.1)
Cesarean sections		139(30.5)	316(69.5)
Current hyperemesis gravidarum		60(13.2)	395(86.8)
Chronic diseases		27(5.9)	428(94.1)

Chi-Square test, P-value significant at level 0.05

Regarding obstetric history, most pregnant women were multigravida (73.8%), with short birth intervals (≤2 years) and in their third trimester. Over half had planned pregnancies, and many were married before 18. The majority had 1–3 children. Common complications included vaginal bleeding (15.8%), miscarriage (20.0%), and cesarean history (30.5%). Less frequent obstetric complications included gestational hypertension (7.0%), gestational diabetes (5.1%), Rh incompatibility (2.9%), multiple gestations (2.4%), infertility (4.4%), stillbirth (5.1%), congenital abnormalities (2.9%), and chronic conditions (5.9%) as shown in Table 2.

Table 3: Psychological and Social History of Respondents

Questions	**Yes (F, %)**	**No (F, %)**
Family member's history of psychological problems	8(1.8)	447(98.2)
History of psychological problems before pregnancy	22(4.8)	433(95.2)
Exposed to family violence	33(7.3)	422(92.7)
Had you suicidal ideation	4(0.9)	451(99.1)
Had you suicidal attempts	1(0.2)	454(99.8)
Experiencing social and family pressure about baby sex	18(4.0)	437(96.0)

Furthermore, according to the psychosocial history, 4.8% of pregnant women had personal psychological disorders before pregnancy and 1.8% had a family history of psychological disorders. Additionally, 0.9% reported suicidal ideation and 0.2% reported previous suicide attempts. Social and family pressure regarding the baby's sex was experienced by 4.0% of respondents, as shown in Table 3.

Table 4: Perceived Stress Levels among Pregnant Women

Perceived Stress Levels	Frequency	Percentage (%)	Chi-Square	*P*-value
Low Stress	6	1.3	213.446[a]	0.001
Moderate Stress	241	53.0		
High Stress	208	45.7		
Total	455	100.0		

Chi-Squire test, P-value 0.05

In this study, the PSS score indicated that more than half of pregnant women (53%) experienced moderate stress levels, while 45.7% had high stress, and only 1.3% had low stress, as shown in Table 4.

The PSS-10 total score was examined in relation to sociodemographic, obstetric, medical, psychological, and social characteristics. The detailed association results are presented in Tables 5–8.

Table 5: Perceived Stress Scale Associated with Sociodemographic Characteristics of Pregnant Women

Sociodemographic Characteristics with PSS	*P*-value	1	2	3	4	5	6	7	8
PSS	Sig.	1							
Age	Sig.	0.046*	1						
Marital Status	Sig.	0.330	0.062	1					
Residence	Sig.	0.580	0.765	0.318	1				
Education Levels	Sig.	0.259	0.011**	0.349	0.001*	1			
Occupation	Sig.	0.729	0.001*	0.825	0.013*	0.001**	1		
Family Income	Sig.	0.108	0.222	0.430	0.001**	0.001**	0.001**	1	
Type of Family	Sig.	0.064	0.001*	0.997	0.001**	0.001**	0.001**	0.001**	1

**Pearson correlation Matrix, the association is significant at the 0.05 level (2-tailed)*
***The association is significant at the 0.01 level (2-tailed)*

The results showed a statistically significant association between perceived stress and age ($p = 0.046$). However, no statistically significant associations were found between perceived stress and other Sociodemographic Characteristics, as shown in Table 5.

Table 6: Perceived Stress Scale Association with Medical and Obstetric History

Medical and bstetric history		Medical and obstetric history										
	P-value	1	2	3	4	5	6	7	8	9	10	11
Perceived Stress Scale	Sig	1										
Gestational diabetes	Sig	0.276	1									
Gestational hypertension	Sig	0.087	0.005**	1								
Miscarriage	Sig	0.001**	0.200	0.234	1							
Stillbirth	Sig	0.139	0.073	0.750	0.001**	1						
Premature	Sig	0.630	0.600	0.859	0.307	0.001**	1					
Low birth weight	Sig	0.347	0.262	0.025*	0.183	0.262	0.001**	1				
Congenital abnormality	Sig	0.163	0.003**	0.233	0.674	0.003**	0.548	0.648	1			
Cesarean sections	Sig	0.014*	0.360	0.481	0.417	0.065	0.291	0.477	0.229	1		
Hyperemesis gravidarum	Sig	0.590	0.055	0.002**	0.167	0.515	0.221	<0.001**	0.155	0.271	1	
Vaginal bleeding	Sig	0.001**	0.182	0.059	0.003**	0.204	0.283	0.396	0.196	0.076	0.041*	1

**Pearson correlation Matrix, the association is significant at the 0.05 level (2 -tailed)*
***The association is significant at the 0.01 level (2 -tailed)*

Perceived stress showed significantly associated with miscarriage (p = 0.001), cesarean section (p = 0.014), and vaginal bleeding (p = 0.001). No significant associations were found with the other medical and obstetric history variables (p > 0.05), as shown in Table 6.

Table 7: Perceived Stress Scale Association with Other Obstetric History

Obstetric history with PSS	*P*-value	1	2	3	4	5
PSS	Sig.	1				
Age Marriage	Sig.	0.337	1			
Gravity	Sig.	0.015*	0.001**	1		
Interval between pregnancies	Sig.	0.019*	0.001**	0.001**	1	
Pregnancy trimester	Sig.	0.963	0.917	0.968	0.631	1

**Pearson correlation Matrix, the association is significant at the 0.05 level (2-tailed)*
***The association is significant at the 0.01 level (2-tailed)*

Perceived stress was significantly associated with gravidity (p = 0.015) and the interval between pregnancies (p = 0.019), but not with age at marriage or pregnancy trimester (p > 0.05), as shown in Table 7.

Table 8: Perceived Stress Scale Association with Psychological and Social History of Pregnant Women

Psychological and Social History with PSS	*P*-value	1	2	3	4	5	6	7
Perceived stress	Sig.	1						
Family history of psychological problems	Sig.	0.021*	1					
Personal history of psychological problems	Sig.	0.006**	0.001*	1				
History of family violence	Sig.	0.001**	0.001**	0.001**	1			
History of suicidal ideation	Sig.	0.428	0.789	0.001**	0.001**	1		
History of suicidal attempts	Sig.	0.991	0.894	0.822	0.780	0.925	1	
Experiencing social and family pressure regarding the baby's sex	Sig.	0.767	0.002**	0.001**	0.001**	0.030*	0.001**	1

**Pearson correlation Matrix, the association is significant at the 0.05 level (2-tailed)*
***The association is significant at the 0.01 level (2-tailed)*

The PSS-10 total score was also examined in relation to psychological and social history variables, including personal and family history of psychological disorders and exposure to family violence, as shown in Table 8.

DISCUSSION

This study assessed perceived stress among pregnant women using the PSS-10 total score as a continuous measure. The findings are considered in relation to previous studies conducted among pregnant women in Iraq and other countries. Differences between studies may be related to variations in study populations, sociodemographic characteristics, educational levels, family income, cultural and health factors, and the psychological tools used. The limited number of studies on perceived stress among pregnant women in Iraq also makes direct comparison difficult.

The study examined the association between age and perceived stress. Differences in perceived stress across age groups may reflect variations in pregnancy experience, educational and income levels, employment, social support, pregnancy planning, and obstetric concerns. Similar associations between age and perceived stress have been reported in studies from Saudi Arabia and India (Jalal *et al*., 2024; Roy & Andurkar, 2021).

The findings also examined the relationship between perceived stress and obstetric variables, including previous miscarriage. Women who had experienced a previous miscarriage may have concerns about the possibility of another pregnancy loss. This finding is consistent with a study in Saudi Arabia that reported an association between previous miscarriage and stress during a subsequent pregnancy (Khouj *et al.*, 2022). Pregnant women with a history of cesarean section were also assessed in relation to perceived stress. Previous surgical experiences and concerns about anesthesia, delivery, complications, and postoperative pain may contribute to psychological burden during a subsequent pregnancy. A study conducted in Saudi Arabia also

reported an association between previous cesarean sections and stress during subsequent pregnancies (Khouj *et al.,* 2022). Vaginal bleeding during the current pregnancy was examined in relation to perceived stress. Concerns about pregnancy viability and possible adverse maternal or fetal outcomes may contribute to psychological burden when bleeding occurs. Gravidity and the interval between pregnancies were also examined because previous childbirth experiences, parenting responsibilities, and physical, psychological, or economic circumstances may influence perceived stress during pregnancy. These findings can be considered alongside studies reporting associations between perceived stress and obstetric factors (Khouj *et al*., 2022; Roy & Andurkar, 2021).

According to psychological and social factors, the study examined perceived stress in relation to family history of psychological disorders, personal history of psychological problems, and exposure to family violence. Previous psychological difficulties and exposure to violence may be associated with greater psychological burden during pregnancy. These findings are consistent with studies reporting relationships between stress, psychiatric history, and family violence (Andrade *et al*., 2025; Zhang *et al*., 2023).

Community nurses and nursing teams can play a vital role in early detecting of prenatal psychological disorders including stress. This can be achieved by leading initiatives to promote reproductive health and thus reduce the psychological disorders of pregnant women and improve their psychological wellbeing, through attention of nurses, and enhancing their role in improving the psychological wellbeing, health awareness and early detection of cases of stress among pregnant women (da Silva Sousa & Andrade, 2022; Hernawati *et al*., 2024).

Limitations

This study used a cross-sectional design, which is unable to establish causal relationships between perceived stress and the associated factors identified in the study. The study was conducted only at Al-Zahraa Teaching Hospital in Al-Najaf Province, which may limit generalizability to pregnant women in other hospitals or regions of Iraq. The hospital-based sampling frame may not represent all pregnant women in the province. Self-reported information on psychological and social history may also be affected by reporting or interviewer-related bias, although interviews were conducted individually and privately.

Future Scope

Future studies should use multicenter and longitudinal designs to assess perceived stress throughout pregnancy and the postpartum period and its relationship with maternal and neonatal outcomes. Research should further investigate obstetric and psychosocial risk factors and evaluate the effectiveness of psychological screening, counseling, and social support interventions in antenatal care to improve maternal mental health in Iraq.

CONCLUSION

This study assessed perceived stress among pregnant women using the PSS-10 total score and examined its association with sociodemographic, obstetric, medical, psychological, and social characteristics. The findings indicate that perceived stress should receive attention as part of antenatal psychological care. Psychological screening in antenatal care with clear referral systems, training healthcare workers, and educating pregnant women and their families may support early recognition of psychological difficulties during pregnancy. Further studies are needed to provide stronger evidence on perceived stress among pregnant women in Iraq, including multicenter and longitudinal research.

CRediT Authorship Contribution Statement

R.A.K.: Conceptualization, Methodology, Investigation, Data Curation, Writing – Original Draft, Writing – Review & Editing. **A.K.I.:** Formal Analysis and Project Administration. Both authors reviewed and approved the final version of the manuscript.

AI Assistance Declaration

No Artificial Intelligence (AI) tools were used in the preparation or writing of this manuscript.

Conflict of Interest

The authors declare that they have no competing interests.

ACKNOWLEDGEMENT

The authors are thankful to the College of Health and Medical Technologies / Kufa, Al-Najaf Health Directorate, and Al-Zahraa Teaching Hospital for Maternity and Children's Health for their support and cooperation. Special appreciation is also extended to all pregnant women who participated in this study.

REFERENCES

Ahmad, M., & Vismara, L. (2021). The psychological impact of COVID-19 pandemic on women's mental health during pregnancy: A rapid evidence review. *International Journal of Environmental Research and Public Health, 18*(13), 7112. https://doi.org/10.3390/ijerph18137112

Andrade, R. E. S., Cunha, A. C., Duarte, C. P., Silveira, M. F., Brito, M. F. S. F., & de Pinho, L. (2025). Prevalence and factors associated with stress in pregnant women. *Revista Médica de Minas Gerais, 34*, 1–14. https://doi.org/10.5935/2238-3182.2024e34207-en

Chauhan, A., & Potdar, J. (2022). Maternal mental health during pregnancy: A critical review. *Cureus, 14*(10), e30656. https://doi.org/10.7759/cureus.30656

Chin, K., Wendt, A., Bennett, I. M., & Bhat, A. (2022). Suicide and maternal mortality. *Current Psychiatry Reports, 24*(4), 239–275. https://doi.org/10.1007/s11920-022-01334-3

da Silva Sousa, B. M., & Andrade, J. (2022). Mental health of pregnant women: The importance of nursing care. *Research, Society and Development*. https://doi.org/10.33448/rsd-v11i5.28493

Dinesan, P., Marwah, S., & Pandurangan, H. (2025). Enhancing maternal care: Exploring the psychometric properties of antenatal care satisfaction instrument. *The Malaysian Journal of Nursing, 16*(3), 12–25. https://doi.org/10.31674/mjn.2025.v16i03.002

Gheorghe, M., Varin, M., Wong, S. L., Baker, M., Grywacheski, V., & Orpana, H. (2021). Symptoms of postpartum anxiety and depression among women in Canada: Findings from a national cross-sectional survey. *Canadian Journal of Public Health, 112*(2), 244–252. https://doi.org/10.17269/s41997-020-00420-4

Griffen, A., McIntyre, L., Belsito, J. Z., Burkhard, J., Davis, W., Kimmel, M., Stuebe, A., Clark, C., & Meltzer-Brody, S. (2021). Perinatal mental health care in the United States: An overview of policies and programs. *Health Affairs, 40*(10), 1543–1550. https://doi.org/10.1377/hlthaff.2021.00796

Hamadneh, S., Hamadneh, J., Abdalrahim, A., ALBashtawy, M., Suliman, M., Alolayaan, M., & Alkhawaldeh, A. (2024). Prevalence and related factors of postpartum depression among Jordanian mothers with a history of COVID-19 during pregnancy or after childbirth in a developing country. *Iranian Journal of Nursing and Midwifery Research, 29*(2), 263–267. https://doi.org/10.4103/ijnmr.ijnmr_100_22

Hernández-Chávez, C., Sámano, R., Chico-Barba, G., Martínez-Rojano, H., Elías-Fernández, C., Aguirre-Minutti, E., Borboa-Olivares, H., Sevilla-Montoya, R., Martínez-Meza, Y., & Martínez-Medina, S. (2026). Mental health in pregnant adolescents: Associations with family structure, educational continuity, and marital status. *Behavioral Sciences, 16*(2), 221. https://doi.org/10.3390/bs16020221

Hernawati, E., Hassan, H. C., Nambiar, N., & Heriawanti, R. (2024). The relationship between knowledge and attitude of pregnant women about ANC with the suitability of antenatal care visits. *The Malaysian Journal of Nursing, 15*(3), 54–61. https://doi.org/10.31674/mjn.2024.v15i03.007

Huh, H. J., Kim, K. H., Lee, H. K., Jeong, B. R., Hwang, J. H., & Chae, J. H. (2021). Perceived stress, positive resources and their interactions as possible related factors for depressive symptoms. *Psychiatry Investigation, 18*(1), 59–68. https://doi.org/10.30773/pi.2020.0208

Ibadi, A. K. (2023). Children under 5 years old mortality and associated factors. *Mathews Journal of Case Reports, 8*(2), 1–7. https://doi.org/10.30654/MJCR.10084

Ibadi, A. K., Jawad, N. M., Hashim, N. A., Meftah, S. R., & Sayal, R. A. (2023). Cesarean section and associated factors in Al Najaf city, Iraq. *AIP Conference Proceedings, 2776*, Article 020004. https://doi.org/10.1063/5.0135960

Issakhanova, A., Issanov, A., Ukybassova, T., Kaldygulova, T., Marat, A., Imankulova, B., Kamzayeva, N., Almawi, W. Y., & Aimagambetova, G. (2023). Depression, anxiety, and stress in Kazakhstani women with recurrent pregnancy loss: A case-control study. *Journal of Clinical Medicine, 12*(2), 658. https://doi.org/10.3390/jcm12020658

Jahan, N., Went, T. R., Sultan, W., Sapkota, A., Khurshid, H., Qureshi, I. A., & Alfonso, M. (2021). Untreated depression during pregnancy and its effect on pregnancy outcomes: A systematic review. *Cureus, 13*(8), e17251. https://doi.org/10.7759/cureus.17251

Jalal, S. M., Alsebeiy, S. H., & Alshealah, N. M. J. (2024). Stress, anxiety, and depression during pregnancy: A survey among antenatal women attending primary health centers. *Healthcare, 12*(22), 2227. https://doi.org/10.3390/healthcare12222227

Jamali, B., Zare, O., Nabavian, M., & Rezaei, F. (2025). The prevalence of perceived stress and depression in women facing abortion and related obstetric and non-obstetric risk factors: A cross-sectional study. *Reproductive Health, 22*(1), 50. https://doi.org/10.1186/s12978-025-02006-0

Khouj, M. A., Albasri, S., Albishri, A. A., Softa, S. M., Almaslamani, A. S., & Ahmad, H. M. (2022). Prevalence of stress, anxiety, and depression among pregnant women in Jeddah. *Cureus, 14*(7), e27174. https://doi.org/10.7759/cureus.27174

Lafta, R. K., & Merza, A. K. (2021). Women's mental health in Iraq post-conflict. *Medicine, Conflict and Survival, 37*(2), 146–159. https://doi.org/10.1080/13623699.2021.1946903

Law, S., Ormel, I., Babinski, S., Plett, D., Dionne, E., Schwartz, H., & Rozmovits, L. (2021). Dread and solace: Talking about perinatal mental health. *International Journal of Mental Health Nursing, 30*(Suppl. 1), 1376–1385. https://doi.org/10.1111/inm.12884

Mahmoud, A., Elkelish, A., Salama, N., Salama, E., Nasr, F. A., Dossouvi, K. M., Mohammed, B. M. A., & Ragab, A. (2026). Anxiety, stress, and psychological capital among multiparous women: A cross-sectional study of second pregnancies. *BMC Pregnancy and Childbirth, 26*(1), 237. https://doi.org/10.1186/s12884-025-08542-8

McCarthy, M., Houghton, C., & Matvienko-Sikar, K. (2021). Women's experiences and perceptions of anxiety and stress during the perinatal period: A systematic review and qualitative evidence synthesis. *BMC Pregnancy and Childbirth, 21*(1), 811. https://doi.org/10.1186/s12884-021-04271-w

Míguez, M. C., & Vázquez, M. B. (2021). Risk factors for antenatal depression: A review. *World Journal of Psychiatry, 11*(7), 325–336. https://doi.org/10.5498/wjp.v11.i7.325

Monteiro, F., Fonseca, A., Pereira, M., & Canavarro, M. C. (2021). Is positive mental health and the absence of mental illness the same? Factors associated with flourishing and the absence of depressive symptoms in postpartum women. *Journal of Clinical Psychology, 77*(3), 629–645. https://doi.org/10.1002/jclp.23081

Premji, S. S., Lalani, S., Shaikh, K., Mian, A., Forcheh, N., Dosani, A., Letourneau, N., Yim, I. S., Bhamani, S. S., & MiGHT (Maternal-Infant Global Health Team—Collaborators in Research) (2020). Comorbid anxiety and

depression among pregnant Pakistani women: Higher rates, different vulnerability characteristics, and the role of perceived stress. *International Journal of Environmental Research and Public Health, 17*(19), 7295. https://doi.org/10.3390/ijerph17197295

Roy, P., & Andurkar, S. (2021). Assessment of stress and associated factors among pregnant women availing antenatal care at Government Medical College and Hospital, Aurangabad, India. *International Journal of Creative Research Thoughts, 9*(6), b58–b68. http://www.ijcrt.org/papers/IJCRT2106130.pdf

Saud, R. F., Alrudaini, R. S., & Al-Diwan, J. K. (2024). Antenatal depression among teenage pregnant mothers in Baghdad, Iraq, 2023. *International Journal of Advances in Medicine, 6*(1), 25–30. https://doi.org/10.22271/27069567.2024.v6.i2a.549

Seidi, P. A. M., Ardebil, M. D., & Jaff, D. (2020). COVID-19 pandemic: New challenge to securing mental well-being in conflict settings. *Asian Journal of Psychiatry, 51*, 102151. https://doi.org/10.1016/j.ajp.2020.102151

Simonovich, S. D., Nidey, N. L., Gavin, A. R., Piñeros-Leaño, M., Hsieh, W. J., Sbrilli, M. D., Ables-Torres, L. A., Huang, H., Ryckman, K., & Tabb, K. M. (2021). Meta-analysis of antenatal depression and adverse birth outcomes in US populations, 2010–20. *Health Affairs, 40*(10), 1560–1565. https://doi.org/10.1377/hlthaff.2021.00801

Souza, R. T., Pereira, G. M., Takayama, M. Y., Morvillo, M. T., Fein, J. M., Munezero, A., Nhauche, M. P., Alves, A. C., Mayrink, J., Galvao, R. B., Fernandes, K. G., Leite, D., Passini, R., Jr., Osis, M. J., Costa, M. L., Feitosa, F. E., Rocha Filho, E. A., Tedesco, R. P., Miele, M. J., . . . Cecatti, J. G. (2026). The use of the shortened versions of the perceived stress scale in the obstetric population: Assessing agreement and reliability. *Journal of Psychosomatic Obstetrics & Gynecology, 47*(1), 2606355. https://doi.org/10.1080/0167482X.2025.2606355

Tanpradit, K., & Kaewkiattikun, K. (2020). The effect of perceived stress during pregnancy on preterm birth. *International Journal of Women's Health, 12*, 287–293. https://doi.org/10.2147/IJWH.S239138

Tarafa, H., Alemayehu, Y., & Nigussie, M. (2022). Factors associated with pregnancy-related anxiety among pregnant women attending antenatal care follow-up at Bedelle General Hospital and Metu Karl Comprehensive Specialized Hospital, Southwest Ethiopia. *Frontiers in Psychiatry, 13*, 938277. https://doi.org/10.3389/fpsyt.2022.938277

Türkmen, H., Akın, B., & Erkal Aksoy, Y. (2024). Effect of high-risk pregnancy on prenatal stress level: A prospective case-control study. *Current Psychology, 43*, 23203–23212. https://doi.org/10.1007/s12144-024-05956-z

Weingarten, S. J., & Osborne, L. M. (2024). Review of the assessment and management of perinatal mood and anxiety disorders. *Focus, 22*(1), 16–24. https://doi.org/10.1176/appi.focus.20230023

World Health Organization. (2021). *Mental health*. https://www.who.int/health-topics/mental-health

Yin, X., Sun, N., Jiang, N., Xu, X., Gan, Y., Zhang, J., Qiu, L., Yang, C., Shi, X., Chang, J., & Gong, Y. (2021). Prevalence and associated factors of antenatal depression: Systematic reviews and meta-analyses. *Clinical Psychology Review, 83*, 101932. https://doi.org/10.1016/j.cpr.2020.101932

Zhang, T., Luo, Z. C., Ji, Y., Chen, Y., Ma, R., Fan, P., Tang, N., Li, J., Tian, Y., Zhang, J., Ouyang, F., & Shanghai Birth Cohort. (2023). The impact of maternal depression, anxiety, and stress on early neurodevelopment in boys and girls. *Journal of Affective Disorders, 321*, 74–82. https://doi.org/10.1016/j.jad.2022.10.030