

Stress, Anxiety, and Depression among Pregnant Women during COVID-19: Systematic review-based study

Asha A. C.

Research Scholar, Department of Psychology
Manonmaniam Sundaranar University, Tirunelveli

ashavenkat2004@gmail.com

8838037227

&

Yuvaraj T., Ph. D.,

Assistant Professor of Psychology,
Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu, India

yuvaraj@msuniv.ac.in

9840281992

Abstract

The aim of this review-based study was to investigate the relevant reviews of literature on stress, anxiety and depression among pregnant women during COVID-19. This study did not perform meta-analysis. Pregnancy is a huge transition for many women, and it may contribute to increased stress, depression, and anxiety symptoms in the pandemic time. The coronavirus disease 2019 (COVID-19) pandemic is anticipated to expect this vulnerability and increase the rates of depression and anxiety among pregnant women. This looks at the available literature on the psychological impact of the COVID-19 an epidemic affecting pregnant women. The following library databases are used to conduct the literature search using the key terms relating to pregnancy, viz, stress, anxiety and depression: Springer, Taylor and Francis, PubMed, and Biomedical central pregnancy and childbirth (BMC). A total of 124 articles were found in the initial search. Irrelevant papers without full texts available were removed. Finally, 36 full texts of possibly pertinent studies were assessed for eligibility and were independently screened by both authors to reduce the selection bias. According to the evidence, it is critical to provide proper psychological assistance to pregnant women during an emergency in order to maintain their

mental health and reduce the hazards of long-term impacts on child development (Ahmad & Vismara, 2021). Pregnant women experienced prenatal anxiety during COVID-19 which is highly than the prevalence before the pandemic.

Keywords: Stress, Anxiety, Depression, Pregnant women, COVID-19

Introduction

The coronavirus illness 2019 (COVID-19), began in Wuhan in December 2019. Governments throughout the world have placed several restrictions to minimize the spread of this Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). These restrictions include national lockdowns and social distance. According to a recent review (Brooks et al., 2020), restrictive measures like quarantine and isolation are frequently connected with negative psychological repercussions that can be discovered months or years later. Pregnancy is a significant life experience that might induce psychological swings in pregnant people (Gumussoy, et al., 2020; Hong, 2020; Steinig, 2017 & Zhong, 2018). Psychological distress and mood disorders appear to be more common in pregnant women (Lopez-Morales et al., 2020; Spinola et al., 2020 & Kajdy et al., 2020).

Pregnancy and the postpartum period, particularly for first-time mothers, have been identified as delicate periods in a woman's life that are accompanied by significant social, psychological, and physiological changes (Darvill, et al., 2010 & George, et al., 2013). Several studies have found that the perinatal period is associated with an increased risk of emotional disorders such as depression, anxiety, and trauma-related diseases, particularly in the presence of stress (George et al., 2013; Bener et al., 2012 & Dennis, 2017). Pregnant women having mental illnesses may be unable to receive the good service as other pregnant women (Easte, et al., 2020). The impacts of the global pandemic on pregnant women are found to cause considerable concern in obstetrics and gynecology (Abdollahpour & Khadivzadeh, 2020; Yang, et al., 2020; Juan, et al., 2020). The prevalence of depression and anxiety symptoms among pregnant women increased significantly after the declaration of human-to-human transmission and the increasingly rapid spread of COVID-19 (Demirican & Bor, 2021). The author, therefore, decided to explore, collate & document empirical works carried out among pregnant women. Primarily for the sake of knowing how COVID-19 stood as a threat to their mental health & wellbeing.

Methods and Materials

This review-based study is to investigate the relevant literature on stress, anxiety, and depression among pregnant women during COVID-19. The following library databases are used to conduct the literature search using keywords related to mental health during pregnancy, viz, stress, anxiety, and depression: Springer, Taylor and Francis, PubMed, and BMC from January 2020 to January 2022. This looks at the available literature on the psychological impact of COVID-19 an epidemic affecting pregnant women. In reviews, all the authors collected primary information from women who were pregnant during the first and second waves of the COVID-19 pandemic in three trimesters. This empirical research published only in English where the author could get authentic access to the full articles are considered for review.

The inclusion criteria were being published in English, reporting primary data, and being original articles. A total of 36 articles are selected with full-text of these articles, 25 studies have been carried out cross-sectional, seven survey-based studies, two of the seven being cohort studies, one mixed-method design, one Qualitative study, one case-control design-based study and referring exclusively to its psychological distress (stress, anxiety, and depression) for women who were pregnant during the pandemic of the first and second wave. The excluded articles did not consider physiological aspects during pregnancy and abstracts without the full text available. A total of 124 articles were found in the initial search. Irrelevant papers without full texts available were removed. Finally, 36 full texts of possibly pertinent studies were assessed for eligibility and were independently screened by both authors to reduce the selection bias.

Assessment tools

In terms of the instruments used, few studies used self-reports; two studies used the WHO-5 wellbeing questionnaire, one study used open-ended questions, one study used the health anxiety scale, and only one study used content analysis. Thirteen research works have been studied completely. Ten studies on depression and eight studies were explaining the stress of pregnant women.

Table 1: Description of authors, variables under review, research design, sample size, and digital library access.

Digital library referred	Sample size	Author & year	Variables	Research design	Assessment tool
Taylor & Francis	518	Luong et al., 2021	Anxiety and depression	Cross-sectional study	GAD-7, PHQ-9
	336	Ben-Ari et al., 2020	Anxiety	Cross-sectional study	MHI-5
	2336	Maleki et al., 2021	Anxiety	Cross-sectional study	GAD-7
	304	Demirican&Bor 2021	Anxiety	Prospective Cross-sectional study	HADS
	102	Zilver et al., 2021	Stress, anxiety & depression	Cohort study	HADS & PSS-10
	260	Durankus&Aksu, 2022	Anxiety and depression	Survey method	EPDS, BDI, BAI
	215	Masjoudi et al, 2020	Stress and anxiety	Cross-sectional study	CDAS, PSS
	440	Khazaeian&Fathnezhadkazemi,2021	Anxiety and stress	Cross-sectional study	Health Anxiety
	101	Tokgoz, Kaya a &Tekin, 2020	Anxiety	Cross-sectional study	STAI-T & STAI-S
	Springer	297	Akgor et al., 2021	Anxiety, Depression	Survey method
437		Effati- Daryani et al., 2021	Anxiety, stress & depression	Cross-sectional study	DASS-21
156		Dong et al., 2020	Anxiety & depression	Questionnaire survey	SAS & SDS
376		OzkanSat&Sozibir, 2021	Depression, anxiety & stress	Descriptive cross-sectional study	TPDS
484		Mortazavi, Mehrabadi&KiaeeTabar, 2021	Anxiety	Cross-sectional study	WHO wellbeing index
150		Filippetti, Clarke & Rigato, 2022	Depression, stress & anxiety	Cross-sectional study	STAI, BDI-II, IES-r
739		Stamping et al., 2021	Depression & anxiety	Survey questionnaire	PHQ-4
228		Leiker et al., 2021	Stress	Cross-sectional study	Open-ended questions
205		Effati-Daryani, et al., 2020	Depression, stress, anxiety	Mixed-methods study	DASS-21
560		Nodoushan, Nazari&Alimoradi, 2020	Stress	Descriptive-analytical cross-sectional study	DASS & Stress questionnaires
PubMed	737	Ravaldi et al., 2020		Cross-sectional web-based study	NSESSS, PTSD
	142	Jelicic, et al.,2021	Stress & anxiety	Prospective cohort study	
	318	Bender et al., 2020	Depression & anxiety	Cohort study	STAI
	203	Yassa et al., 2020	Maternal trait anxiety	Prospective case-control study	PHQ-2
	15	Sahin & Kabakci, 2021	Workplace anxiety	Qualitative study	STAI
	173	Colak et al., 2021	Anxiety	Cross-sectional study	Content analysis
	374	Kajdy et al., 2021	Anxiety & depression	Web-based cross-sectional survey	BDI, BAI
	2740	Moyer et al.,2020	Anxiety & depression	Survey study	NA
	63	Ayaz et al., 2021	Anxiety	Cross-sectional study	PRAS
	308	Yue et al., 2021	Anxiety & depression	Online survey	BAI-II, IDAS-II
446	Sinnaci et al., 2020	Anxiety	Cross-sectional study	SAS NA	

BMC pregnancy and childbirth	484 384 304 665 290 318	Mortazav, Mehrabad & KiaeeTabar, 2021 Hashim, et al.,2021 Cui et al.,2021 Ma et al.,2020 Yu, Qiu, Liu & wu, 2020 Hamzehgardeshi et al., 2021	Anxiety & depression Prenatal anxiety Anxiety Anxiety, Depression Anxiety	Descriptive Cross-sectional study Online survey Face to face Cross-sectional study Cross-sectional study Cross-sectional study Descriptive Cross-sectional study	WHO-5 Well-Being Index NA GAD-7 GAD-7 SAS PRAQ, Edinburg, CDA-Q
------------------------------	--	---	--	---	--

Tools abbreviation

BDI: Beck Depression Inventory; BAI: Beck Anxiety Inventory; PHQ-2: Patient Health Questionnaire-2; GAD-7: Generalized Anxiety Disorder-7; STAI-T: State-Trait Anxiety Inventory-T; STAI-S: State-Trait Anxiety Inventory-S; EDS: Edinburgh Depression Scale; HADS: Hospital Anxiety and Depression Scale; COVID-19 Anxiety Scale(CDAS); Perceived stress scale (PSS-10); self -rating anxiety scale (SAS) and self -depression rating scale (SDS); Tilburg Pregnancy Distress Scale (TPDS); Stress related to the psychological impact of COVID-19 (IES-r); National stressful events survey (NSESSS);pregnancy-related anxiety scale and questionnaire respectively (PRAS and PRAQ); Inventory of Depression and Anxiety Symptoms II (IDAS-II); content analysis; open-ended questions and covid-19 anxiety questionnaire (CDA-Q).

Discussion

During the third trimester, pregnant women will have a high level of anxiety due to a lack of social support during COVID (Yue et al., 2021). High levels of anxiety and stress have occurred in infertile women whose treatment was postponed due to the pandemic and those leading to impaired fertility (Tokgoz, Kaya & Tekin, 2020). There were no significant differences between pregnant women with high levels of anxiety before and after COVID-19 (Zilver et al., 2021). The studies found on pregnant women's psychological well-being implied the risk of long-term mental difficulties for COVID-19 (Durankus & Aksu, 2022). During the COVID-19 crisis, healthy eating habits and improved health literacy played key roles in reducing pregnant anxiety and depression. (Luong et al., 2021).

The study shows that pregnant women have a higher level of anxiety disorder pandemic due to the place of residency and the type of information received regarding COVID-19 are the key predictors of anxiety level. (Maleki et al., 2021). With the declaration of human-to-human transmission and the increasing rapid dissemination of COVID-19, the prevalence of anxiety symptoms is increased among pregnant women (Demirican & Bor 2021). Stress, anxiety, and depression had a highly detrimental impact on sexual functioning (Effati- Daryani et al., 2021).

During COVID-19, pregnant women in Wuhan were no more nervous or depressed than pregnant women in other places because, during the pandemic, pregnant women's family members were at home, which may have increased time spent with pregnant women and social support. In addition, the successful delivery of women during pregnancy using COVID-19 was reported on TV news. (Dong et al., 2020). There was a considerable disparity between the change in getting health care and the concern because mobile applications usage by pregnant women during the COVID-19 pandemic (OzkanSat & Sozbir, 2021). During COVID-19, high levels of depression, anxiety & stress experiences of prenatal trauma, antenatal attachment, low family income, lack of physical exercise, health anxiety, sleep disorders, low social support, and having a COVID-19 infected person among relatives (Filippetti, Clarke & Rigato, 2022; Stampini et al., 2021; Khazaeian, Khazaeian & Fathnezhad-kazemi, 2021; Ravalidi et al., 2020; Jelcic, et al., 2021; Colak et al., 2021; Kajdy et al., 2021 & Yu, et al., 2020). High on psychological stress, who are unable to attend the delivery of critical obstetric visits and receive support from friends, family, and birthing classes (Leiker et al., 2021). The predominance of COVID-19, a high level of education, and the income of the spouse might help reduce symptoms of stress, anxiety, and depression in pregnant women (Effati-Daryani, et al., 2020).

The study revealed that premature delivery, height, weight, and head circumference of kids, as well as lungs and respiratory state of children with mental health and stress levels of pregnant women during the corona, are significant compared to previous corona (Nodoushan, Nazari & Alimoradi, 2020). High and moderate levels of trait anxiety during the third trimester of pregnancy (Jelcic, et al., 2021). Negative impacts on healthcare workers' job satisfaction and job-related anxiety for pregnant women during COVID-19 (Bender et al., 2020). High on State anxiety, preterm labor, preterm ruptures of membranes, and obsessive-compulsive

symptoms of pregnant women during covid-19 (Yassa et al., 2020 & Sinnaci et al., 2020). Coronavirus has a high potential for causing anxiety, stress, and fear, which have a detrimental emotional impact on pregnant women (Sahin & Kabakci, 2021).

In a multivariate analysis, those who reported higher levels of agreement with COVID-19-related stressors showed higher changes in pre- to post-COVID-19 pregnancy-related anxiety (Moyer et al., 2020). With mild stress, women reported increasing support and exchanging their feelings with family members, primarily in the first and third trimesters of pregnancy (Hashim, et al., 2021). SARS-CoV-2 infections were prone to higher levels of prenatal anxiety (Ma et al., 2020). According to the findings, pregnant women who had COVID-19 anxiety were thirteen percent more likely to experience prenatal anxiety (Hamzehgardeshi et al., 2021). Pregnant women with a bachelor's degree or higher had much lower levels of anxiety (Yu, et al., 2020). Pregnant women in the 2nd and 3rd trimesters had a higher level of anxiety about covid than in the first trimester (Mortazavi, Mehrabadi & KiaeeTabar, 2021). Very few studies were conducted in India related to prenatal distress. Why Indian researchers are not focused to do studies on pregnant relating psychological distress? Further studies recommended doing more research on psychological distress among pregnant women.

Conclusion

The COVID-19 pandemic introduces several new risk factors for mental health throughout the prenatal phase and promotes healthy family functioning for pregnant women. Further research could increase understanding and give effective intervention to relieve prenatal psychological distress during COVID-19 in women in the prenatal and perinatal periods.

Recommendation

More care should be provided to pregnant women's mental health, particularly depression, and timely information, intervention, and counseling. Rapid management of the epidemic, open communication, and increased social support will help to protect pregnant women's mental health.

ACKNOWLEDGEMENTS

We would like to thank Dr. Yuvaraj T. for helping with revising the whole part.

AUTHOR CONTRIBUTIONS

The authors made significant contributions to the work reported in this manuscript, participated in its drafting or critical revision for key intellectual ideas, and authorized the final version before it was submitted for publication.

DECLARATION OF CONFLICTING INTERESTS

The author(s) declared no potential conflicts of interest with respect to the study, authorship, and/or publication of this article.

FUNDING

The author(s) received no financial support for the study, authorship, and/or publication of this article.

SUPPLEMENTAL MATERIAL

There is online supplemental content for this article.

References

- Akgor, U., Fadiloglu, E., Soyak, B., Unal, C., Cagan, M., Temiz, B. E., Erzenoglu, B. E., Ak, S., Gultekin, M., & Ozyuncu, O. (2021). Anxiety, depression, and concerns of pregnant women during the COVID-19 pandemic. *Archives of gynecology and obstetrics*, 304(1), 125–130. <https://doi.org/10.1007/s00404-020-05944-1>
- 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>
- Abdollahpour S, Khadivzadeh T. (2020). Improving the quality of care in pregnancy and childbirth with coronavirus (COVID-19): a systematic review. *J Matern Fetal Neonatal Med*. 2020;1–9. doi:10.1080/14767058.2020.1759540
- Ayaz, R., Hocaoglu, M., Gunay, T., Yardımcı, O. D., Turgut, A., & Karateke, A. (2020). Anxiety and depression symptoms in the same pregnant women before and during the COVID-19 pandemic. *Journal of perinatal medicine*, 48(9), 965–970. <https://doi.org/10.1515/jpm-2020-0380>
- Bender, W. R., Srinivas, S., Coutifaris, P., Acker, A., & Hirshberg, A. (2020). The psychological experience of obstetric patients and health care workers after implementation of universal sars-cov-2 testing. *American Journal of Perinatology*, 37(12), 1271–1279. <https://doi.org/10.1055/s-0040-1715505>

- Bener, A., Gerber, L.M., Sheikh, J. (2012). Prevalence of psychiatric disorders and associated risk factors in women during their postpartum period: A major public health problem and global comparison. *Int. J. Women's Health* 2012, 4, 191.
- Colak, S., Gurlek, B., Onal, O., Yilmaz, B., &Hocaoglu, C. (2021). The level of depression, anxiety, and sleep quality in pregnancy during coronavirus disease 2019 pandemic. *The journal of obstetrics and gynecology research*, 47(8), 2666–2676. <https://doi.org/10.1111/jog.14872>
- Cui, C., Zhai, L., Sznajder, K. K., Wang, J., Sun, X., Wang, X., Zhang, W., Yang, F., & Yang, X. (2021). Prenatal anxiety and the associated factors among Chinese pregnant women during the COVID-19 pandemic--a smartphone questionnaire survey study. *BMC psychiatry*, 21(1), 619. <https://doi.org/10.1186/s12888-021-03624-1>
- Darvill, R., Skirton, H., & Farrand, P. (2010). Psychological factors that impact on women's experiences of first-time motherhood: A qualitative study of the transition. *Midwifery* 2010, 26, 357–366.
- Dennis, C. L., Falah-Hassani, K., & Shiri, R. (2017). Prevalence of antenatal and postnatal anxiety: Systematic review and meta-analysis. *Br. J. Psychiatry* 2017, 210, 315–323.
- Dong, H., Hu, R., Lu, C., Huang, D., Cui, D., Huang, G., & Zhang, M. (2021). Investigation of the mental health status of pregnant women in China during the Pandemic of COVID-19. *Archives of gynecology and obstetrics*, 303(2), 463–469. <https://doi.org/10.1007/s00404-020-05805-x>.

Durankuş, F., & Aksu, E. (2022). Effects of the COVID-19 pandemic on anxiety and depressive symptoms in pregnant women: a preliminary study. *The journal of maternal-fetal & neonatal medicine: the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians*, 35(2), 205–211. <https://doi.org/10.1080/14767058.2020.1763946>

George, A., Luz, R.F., De Tychev, C., Thilly, N., Spitz, E. (2013). Anxiety symptoms and coping strategies in the perinatal period. *BMC Pregnancy Childbirth* 2013, 13, 1–6. [CrossRef]

Gumussoy, S., Keskin G, Cicek, O., et al., 2020. Psychological € problem areas of pregnant women diagnosed with abortusimminens as a result of assisted reproductive techniques: a comparative study. *Perspect Psychiatr Care*. 2020:1–9. doi:10.1111/PPC.12526

Effati-Daryani, F., Jahanfar, S., Mohammadi, A., Zarei, S., &Mirghafourvand, M. (2021). The relationship between sexual function and mental health in Iranian pregnant women during the COVID-19 pandemic. *BMC Pregnancy and Childbirth*, 21(1). <https://doi.org/10.1186/s12884-021-03812-7>

Effati-Daryani, F., Zarei, S., Mohammadi, A., Hemmati, E., GhasemiYngykd, S., &Mirghafourvand, M. (2020). Depression, stress, anxiety and their predictors in Iranian pregnant women during the outbreak of COVID-19. *BMC psychology*, 8(1), 99. <https://doi.org/10.1186/s40359-020-00464-8>

- Filippetti, M. L., Clarke, A., & Rigato, S. (2022). The mental health crisis of expectant women in the UK: effects of the COVID-19 pandemic on prenatal mental health, antenatal attachment, and social support. *BMC pregnancy and childbirth*, 22(1), 68. <https://doi.org/10.1186/s12884-022-04387-7>
- Hamzehgardeshi, Z., Omidvar, S., Amoli, A. A., & Firouzbakht, M. (2021). Pregnancy-related anxiety and its associated factors during COVID-19 pandemic in Iranian pregnant women: A web-based cross-sectional study. *BMC Pregnancy and Childbirth*, 21(1). <https://doi.org/10.1186/s12884-021-03694-9>
- Hong, K., Hwang, H., Han, H., et al. (2020). Perspectives on antenatal education associated with pregnancy outcomes: systematic review and meta-analysis. *Women Birth*. 2020:S1871-5192(20):3023–6
- Juan J, Gil MM, Rong Z, et al. Effect of coronavirus disease 2019 (COVID-19) on the maternal, perinatal and neonatal outcome: a systematic review. *Ultrasound Obstet Gynecol*. 2020;56(1):15–27.
- Jelicic, L., Sovilj, M., Bogavac, I., Drobnjak, A. E., Gouni, O., Kazmierczak, M., & Subotic, M. (2021). The Impact of Maternal Anxiety on Early Child Development during the COVID-19 Pandemic. *Frontiers in psychology*, 12, 792053. <https://doi.org/10.3389/fpsyg.2021.792053>
- Kajdy, A., Feduniw, S., Ajdacka, U., Modzelewski, J., Baranowska, B., Sys, D., Pokropek, A., Pawlicka, P., Kaźmierczak, M., Rabijewski, M., Jasiak, H., Lewandowska, R., Borowski, D., Kwiatkowski, S., & Poon, L. C. (2020). Risk factors for anxiety

and depression among pregnant women during the COVID-19 pandemic: A web-based cross-sectional survey. *Medicine*, 99(30), e21279. <https://doi.org/10.1097/MD.00000000000021279>

Luong, T. C., Pham, T., Nguyen, M. H., Do, A. Q., Pham, L. V., Nguyen, H. C., Nguyen, H. C., Ha, T. H., Dao, H. K., Trinh, M. V., Do, T. V., Nguyen, H. Q., Nguyen, T., Tran, C. Q., Tran, K. V., Duong, T. T., Pham, H. X., Do, T. T., Nguyen, P. B., Tra, A. L., ... Duong, T. V. (2021). Fear, anxiety, and depression among pregnant women during COVID-19 pandemic: impacts of healthy eating behavior and health literacy. *Annals of medicine*, 53(1), 2120–2131. <https://doi.org/10.1080/07853890.2021.2001044>

Lee, R., Loy, S. L., Yang, L., Chan, J., & Tan, L. K. (2020). Attitudes and precaution practices towards COVID-19 among pregnant women in Singapore: a cross-sectional survey. *BMC pregnancy and childbirth*, 20(1), 675. <https://doi.org/10.1186/s12884-020-03378-w>

Ma, R., Yang, F., Zhang, L., Sznajder, K. K., Zou, C., Jia, Y., Cui, C., Zhang, W., Zhang, W., Zou, N., & Yang, X. (2021). Resilience mediates the effect of self-efficacy on symptoms of prenatal anxiety among pregnant women: a nationwide smartphone cross-sectional study in China. *BMC pregnancy and childbirth*, 21(1), 430. <https://doi.org/10.1186/s12884-021-03911-5>

- Masjouidi, M., Aslani, A., Seifi, M., Khazaeian, S., &Fathnezhad-Kazemi, A. (2021). Association between perceived stress, fear and anxiety of COVID 19 with self-care in pregnant women: a cross-sectional study. *Psychology, health & medicine*, 1–12. Advance online publication. <https://doi.org/10.1080/13548506.2021.1894344>
- MizrakSahin, B., &Kabakci, E. N. (2021). The experiences of pregnant women during the COVID-19 pandemic in Turkey: A qualitative study. *Women and birth: journal of the Australian College of Midwives*, 34(2), 162–169. <https://doi.org/10.1016/j.wombi.2020.09.022>
- Mortazavi, F., Mehrabadi, M., &KiaeeTabar, R. (2021). Pregnant women's well-being and worry during the COVID-19 pandemic: a cross-sectional study. *BMC pregnancy and childbirth*, 21(1), 59. <https://doi.org/10.1186/s12884-021-03548-4>
- Moyer, C. A., Compton, S. D., Kaselitz, E., &Muzik, M. (2020). Pregnancy-related anxiety during COVID-19: a nationwide survey of 2740 pregnant women. *Archives of women's mental health*, 23(6), 757–765. <https://doi.org/10.1007/s00737-020-01073-5>
- Nodoushan, R. J., Alimoradi, H., &Nazari, M. (2020). Spiritual Health and Stress in Pregnant Women During the Covid-19 Pandemic. *SN comprehensive clinical medicine*, 2(12), 2528–2534. <https://doi.org/10.1007/s42399-020-00582-9>
- OzkanŞat, S., &YamanSözbir, Ş. (2021). Use of Mobile Applications by Pregnant Women and Levels of Pregnancy Distress During the COVID-19 (Coronavirus) Pandemic. *Maternal and child health journal*, 25(7), 1057–1068. <https://doi.org/10.1007/s10995-021-03162-y>

Stampini, V., Monzani, A., Caristia, S., Ferrante, G., Gerbino, M., De Pedrini, A., Amadori, R., Rabbone, I., & Surico, D. (2021). The perception of Italian pregnant women and new mothers about their psychological wellbeing, lifestyle, delivery, and neonatal management experience during the COVID-19 pandemic lockdown: a web-based survey. *BMC pregnancy and childbirth*, 21(1), 473. <https://doi.org/10.1186/s12884-021-03904-4>

Steinig J, Nagl M, Linde K, et al. Antenatal and postnatal depression in women with obesity: a systematic review. *Arch Womens Ment Health*. 2017;20(4): 569–585.

Spinola, O.; Liotti, M.; Speranza, A.M.; Tambellini, R. Effects of COVID-19 epidemic lockdown on postpartum depressive symptoms in a sample of Italian mothers. *Front. Psychiatry* 2020, 11, 1177. [CrossRef] *Int. J. Environ. Res. Public Health* 2021, 18, 7112
13 of 15

Taubman-Ben-Ari, O., Chasson, M., Abu Sharkia, S., & Weiss, E. (2020). Distress and anxiety associated with COVID-19 among Jewish and Arab pregnant women in Israel. *Journal of reproductive and infant psychology*, 38(3), 340–348. <https://doi.org/10.1080/02646838.2020.1786037>

Tokgoz, V. Y., Kaya, Y., & Tekin, A. B. (2020). The level of anxiety in infertile women whose ART cycles are postponed due to the COVID-19 outbreak. *Journal of psychosomatic obstetrics and gynecology*, 1–8. Advance online publication. <https://doi.org/10.1080/0167482X.2020.1806819>

Yang Z, Wang M, Zhu Z, et al. Coronavirus disease 2019 (COVID-19) and pregnancy: a systematic review. *Matern Fetal Neonatal Med.* 2020;30:1–4.

Yassa, M., Yassa, A., Yirmibeş, C., Birol, P., Ünlü, U. G., Tekin, A. B., Sandal, K., Mutlu, M. A., Çavuşoğlu, G., & Tug, N. (2020). Anxiety levels and obsessive compulsion symptoms of pregnant women during the COVID-19 pandemic. *Turkish journal of obstetrics and gynecology*, 17(3), 155–160. <https://doi.org/10.4274/tjod.galenos.2020.91455>

Yu, M., Qiu, T., Liu, C., Cui, Q., & Wu, H. (2020). The mediating role of perceived social support between anxiety symptoms and life satisfaction in pregnant women: a cross-sectional study. *Health and quality of life outcomes*, 18(1), 223. <https://doi.org/10.1186/s12955-020-01479-w>

Yue, C., Liu, C., Wang, J., Zhang, M., Wu, H., Li, C., & Yang, X. (2021). Association between social support and anxiety among pregnant women in the third trimester during the coronavirus disease 2019 (COVID-19) epidemic in Qingdao, China: The mediating effect of risk perception. *The International journal of social psychiatry*, 67(2), 120–127. <https://doi.org/10.1177/0020764020941567>

Wilson, A. N., Ravaldi, C., Scoullar, M., Vogel, J. P., Szabo, R. A., Fisher, J., & Homer, C. (2021). Caring for the carers: Ensuring the provision of quality maternity care during a global pandemic. *Women and birth: journal of the Australian College of Midwives*, 34(3), 206–209. <https://doi.org/10.1016/j.wombi.2020.03.011>

Zilver, S., Broekman, B., Hendrix, Y., de Leeuw, R. A., Mentzel, S. V., van Pampus, M. G., & de Groot, C. (2021). Stress, anxiety, and depression in 1466 pregnant women during and before the COVID-19 pandemic: a Dutch cohort study. *Journal of psychosomatic obstetrics and gynecology*, 42(2), 108–114. <https://doi.org/10.1080/0167482X.2021.1907338>