

Literature Review: Anxiety in Pregnant Women during the Covid-19 Pandemic

Nadila Imania Awanda*, and Dwi Handayani

Department of Public Health, Faculty of Health, Universitas Nahdlatul Ulama, Surabaya, Indonesia

*corresponding author: Imanianadila86@gmail.com

ARTICLE INFO

Article history

Received 7/21/22

Revised 8/31/22

Accepted 11/24/22

Keywords

Anxiety Factor

Anxiety in Pregnant Women

Covid-19 Pandemic

ABSTRACT

Background: The prevalence of pregnant women during the Covid-19 pandemic increased by 72% compared to before the pandemic. The increase in the number of pregnant women during the Covid-19 pandemic goes hand in hand with the increase in the prevalence of pregnancy-related anxiety which can be influenced by internal and external factors and which, in turn, may impact the health of the mother and her baby. The purpose of this literature review is to examine pregnancy-related anxiety during the Covid-19 pandemic. **Method:** The research is literature review research. The data sources used were Google Scholar and PubMed databases from 2019-2021. The keywords used were "anxiety in pregnant women during a pandemic" (in English) and "*kecemasan ibu hamil di masa pandemi*" (in Indonesia). Twenty-one articles with the most relevant topics were analyzed comprehensively. **Results:** Pregnant women aged <20 and >35 years old who only get a primary and secondary education, have a lack of knowledge, are working, have lower economic status, and do not receive support from their husbands are at risk of experiencing anxiety during the Covid-19 pandemic. The anxiety level of pregnant women during the Covid-19 pandemic increased compared to before the pandemic. **Conclusion:** There is a relationship between age, education, knowledge, employment status, economic status, husband's support, and anxiety in pregnant women during the Covid-19 pandemic. There is a difference in the anxiety level of pregnant women before and during the Covid-19 pandemic. Pregnant women are expected to be able to prepare for and manage their pregnancy during the Covid-19 pandemic and the husband's support is an important element during pregnancy, especially during a pandemic.



This is an open access article under the [CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.

Introduction

The Covid-19 pandemic has greatly affected life around the world. Everything has changed and almost all regions in Indonesia are affected by the pandemic. The pandemic can cause various manifestations, especially in at-risk groups such as pregnant women. Based on the data obtained from the Mother and Newborn Service Program Policy, the number of pregnancies increased significantly during the Covid-19 pandemic, reaching 72%, which is a very big difference if compared to 54.22% in 2018 [1]. Pregnant women are at risk of experiencing anxiety with a percentage of 15-23% compared to people in general with 3-5% [2].

Symptoms of anxiety in pregnant women at Istanbul Medeniyet University, Goztepe Training and Research Hospital before and during the Covid-19 pandemic were calculated using Beck Anxiety Inventory (BAI) score. It was found that the number of pregnant women without anxiety declined from 10 to 6, those with mild anxiety also declined from 31 to 24; while those with moderate anxiety increased from 20 to 25, and those with severe anxiety from 2 to 8 [3]. Research shows that 39.8% of pregnant women in the city of Bengkulu experienced mild anxiety while 37% experienced moderate anxiety [4]. The majority of pregnant women in Madura experienced severe anxiety during the Covid-19 pandemic with a percentage of 44.3% [5]. Research by Firmansyah dan Aini (2021) also suggests that 40% of pregnant women in Bhuluh Village, Socah District, Bangkalan Regency experienced severe anxiety during the Covid-19 pandemic [6]. Similarly, most pregnant women (64%) in Baturraden District experienced mild to moderate anxiety during the Covid-19 pandemic [7].

New protocols and guidelines are proposed to cater to pregnancies during the Covid-19 pandemic for certain conditions, such as for women who are about to give birth. Pregnant women are obliged to have a rapid test before giving birth to prevent complications and virus transmission to the baby, doctors, and midwives who assist with the delivery. Pregnant women generally feel anxious when they give birth if they are not accompanied by their loved ones and worried about being infected with Covid-19 that, in turn, will prevent them from hugging their babies [8]. If not taken seriously, anxiety in pregnant women will impact the physical and psychological state of both the mother and the baby.

Factors affecting anxiety in pregnant women are divided into internal factors (mother's age, education, knowledge, employment status, economic status, parity, health status, and healthcare institution's environment) and external factors (midwife's role and husband's support) [8]. However, this literature review will only focus on a number of internal factors (mother's age, education, knowledge, employment status, and economic status) and external factor (husband's support). Based on the description of the problem, a literature review is needed to further analyze anxiety in pregnant women during the Covid-19 pandemic.

Materials and Method

This literature review used the traditional literature review method. The sources of the articles were Google Scholar and PubMed. The keywords used were "*kecemasan ibu hamil di masa pandemic*" (in Indonesia) and "anxiety in pregnant women during a pandemic" (in English). The articles were analyzed comprehensively and those with the most relevant topic were selected. The data processing was carried out with the steps derived from previous studies and a comparative analysis of anxiety in pregnant women during the Covid-19 pandemic based on the mother's age, education, knowledge, employment status, economic status, husband's support, and the difference in the anxiety level of pregnant women before and during the Covid-19 pandemic was carried out. The data analysis was carried out to identify the anxiety level of pregnant women during the Covid-19 pandemic based on the mother's age, educational background, knowledge, employment status, economic status, husband's support, and the difference in the anxiety level pregnant women before and during the Covid-19 pandemic.

Results and Discussion

Results

Based on the selected articles, findings on the relationship between internal factors and anxiety in pregnant women during the Covid-19 pandemic are obtained. The findings of the article are in [Table 1](#) which shows there are 12 articles that discuss the relationship between internal factors, i. e. age, education, knowledge, employment status, economic status, and anxiety in pregnant women during the Covid-19 pandemic. There are 4 articles that report a relationship between age and anxiety in pregnant women during the Covid-19 pandemic. Six articles suggest that there is a relationship between education and anxiety in pregnant women during the Covid-19 pandemic. Three articles show a relationship between knowledge and anxiety in pregnant women during the Covid-19 pandemic. Four articles show a relationship between employment status and anxiety in

pregnant women during the Covid-19 pandemic. Five articles reveal that there is a relationship between economic status and anxiety in pregnant women during the Covid-19 pandemic. Based on the selected articles, findings on the relationship between external factors and anxiety in pregnant women during the Covid-19 pandemic are obtained. Table 2 shows that 6 articles discuss the relationship between husband support and anxiety in pregnant women during the Covid-19 pandemic. Five of the six articles reveal that there is a relationship between husband's support and anxiety in pregnant women during the Covid-19 pandemic.

Table 1. Internal Factors and Anxiety in Pregnant Women during the Covid-10 Pandemic

Reference	P-Value				
	Age	Education	Knowledge	Employment Status	Economic Status
Ge et.al (2021)	0.004*	0.001*	-	-	0.002*
Dewi et.al (2021)	0.010*	0.001*	-	0.024*	-
Hasriati, Suiyarti dan Gusriani (2021)	0.010*	0.001*	-	0.024*	-
Nwafor, Okedo-Alex dan Ikeotuonye (2021)	0.001*	0.001*	-	0.001*	-
Nurtini, Dewi dan Noriani (2021)	-	-	0.001*	-	-
Putri, Putri dan Purwaningrum (2021)	-	-	0.001*	-	-
Septiasari dan Viandika (2021)	-	-	0.029*	-	-
Muzayyana dan Saleh (2021)	-	0.028*	-	-	-
Jelly et.al (2021)	0.322**	0.002*	-	0.001*	0.001*
Cui et.al (2021)	0.100**	0.225**	-	-	0.025*
Esteban-Gonzalo et.al (2021)	-	0.129**	-	0.771**	0.025*
Wu et.al (2021)	-	-	-	-	0.012*

Note: - : not studied; *) : related; **) : not related

Table 2. External Factors and Anxiety in Pregnant Women during the Covid-19 Pandemic

Reference	P value
	Husband's Support
Dwiwanto, Putri dan Sudiadnyani (2021)	0.001*
Effati-daryani et.al (2020)	0.008*
Efendi dan Aini (2021)	0.001*
Hendriani et.al (2021)	0.359**
Fitriahadi, Cahyawati dan Winarsih (2021)	0.04*
Ayaz et.al (2020)	0.02*

Note: *) : related; **) : not related

Based on the selected articles, findings on the difference in the anxiety level of pregnant women before and during the Covid-19 pandemic are obtained. Table 3 shows that 3 out of 4 studies reveal that there is a difference in the anxiety level of pregnant women before and during the Covid-19 pandemic. However, one study states that there is no difference in the anxiety level of pregnant women before and during the Covid-19 pandemic.

Table 3. The Difference in the Anxiety Level of Pregnant Women before and during the Covid-19 Pandemic

Reference	Difference in Anxiety Scores	
	Before the Pandemic	During the Pandemic
Ayaz et.al (2020)	Without anxiety = 10 women Mild anxiety = 31 women Moderate anxiety = 20 women Severe anxiety = 2 women	Without anxiety = 6 women Mild anxiety = 24 women Moderate anxiety = 25 women Severe anxiety = 8 women
Moyer et.al (2020)	Score 20.6	Score 23.9
Zilver et.al (2021)	Score 23.1	Score 19.5
Mei et.al (2021)	Normal = 75.34% of pregnant women Mild anxiety = 21.56% of pregnant women Moderate – severe anxiety = 3.10% of pregnant women	Normal = 73.07% of pregnant women Mild anxiety = 22.41% of pregnant women Severe anxiety = 4.52% of pregnant women

Discussion

Pregnant women aged <22 have a 1.948 times more chance of experiencing anxiety during the Covid-19 pandemic compared to those aged 22-35 [8]. Mothers who are too young tend to have less ability and knowledge about how to care for themselves and their babies during pregnancy due to their physical and psychological immaturity. Meanwhile, those who are older than 35 are at risk of experiencing pregnancy failure and chromosomal abnormalities in the fetus. Mother's age can determine maternal health, such as the anatomical and physiological conditions during the pregnancy and the psychological capacity to calmly solve pregnancy problems during the Covid-19 pandemic [10].

This finding is in line with research that argues that the age of the mother greatly determines the health of pregnant women because it is related to her anatomical, psychological, and physiological conditions during pregnancy [11]. Pregnant women aged 38-45 have a 2.2 times more chance of experiencing anxiety compared to pregnant women aged 18-37 [12]. Pregnant women aged 38-45 are at risk of experiencing anxiety and higher maternal and infant mortality. There are 2 studies that reveal that there is no relationship between age and the anxiety of pregnant women during the Covid-19 pandemic because most of the subjects were 21-30 years old, meaning that they were not at risk and were able to psychologically and physically manage the pregnancy [13].

Pregnant women with a high school diploma or lower education background have a 0.852 times more chance of experiencing anxiety [9]. This research is in line with the research conducted research which states that pregnant women with only primary education have a lack of knowledge to deal with pregnancy problems during the Covid-19 pandemic. Meanwhile, pregnant women with a higher education background are more willing to accept changes, such as the obligation to wear masks, keep their distance from others, and always wash their hands during the pandemic to maintain their health [10]. Pregnant women who have gotten higher education are willing to receive information and, with more knowledge, they are not at risk of experiencing anxiety. Meanwhile, most pregnant women with poorer education backgrounds have a lack of knowledge in dealing with pregnancy during the Covid-19 pandemic [11]. Research state that pregnant women with a better education background will have a good understanding of the pattern of spread and the prevention of Covid-19, making them feel less anxious during the pandemic compared to those with lower education background [8]. There are 2 articles which state that there is no relationship between pregnant women's education background and anxiety during the Covid-19 pandemic because most of the subjects were highly educated [14,15].

Pregnant women who have more knowledge will try to find information about their pregnancy during the Covid-19 pandemic through mass and electronic media, resulting in them having normal anxiety. On the other hand, pregnant women with less knowledge are at risk of experiencing severe anxiety due to the lack of information they are exposed to [16,17]. An increase in one's knowledge is obtained from information exposure; if the information is not supported by the appropriate level of knowledge and awareness, it will cause fear and worry which can increase anxiety [18]. Pregnant women who have more knowledge on this issue are able to avoid the anxiety that may affect the health of both the mother and the baby during the Covid-19 pandemic [30].

Working pregnant women also tend to experience anxiety compared to those who are not because they must often meet co-workers, have a heavy workload, and are exposed to the danger of Covid-19 transmission [10]. This research is in line with the findings in research where working pregnant women must often leave the house, meet their colleagues, have a heavy workload and, on top of that, take care of their pregnancy during the Covid-19 pandemic [11]. Research states that pregnant women who work as retailers tend to experience anxiety caused by the heavy workload, household chores, and the need to meet buyers and still have to look after their pregnancy during the Covid-19 pandemic [12]. There is 1 article that shows no relationship between employment status and anxiety in pregnant women during the Covid-19 pandemic because most of the subjects were working and did not lose their jobs during the pandemic; losing a job causes one to be at risk of mental health disorder and increased anxiety [15].

Pregnant women with low economic status will only have access to poor health care services and will not have optimum prenatal care due to lower income during the Covid-19 pandemic; these

conditions lead to anxiety in pregnant women [14]. Pregnant women whose household income has decreased by 20-50% have a 1,498 times more chance of experiencing anxiety compared to those with stable income during the Covid-19 pandemic. Decreased income and increased rate of unemployment during the Covid-19 pandemic have led to increased anxiety in pregnant women [19,20]. Anxiety in pregnant women is also caused by economic factors because a lot of them are laid off while the cost of childbirth is quite high [28]. The research argues that a large number of pregnant women's income in Italy during the Covid-19 pandemic was reduced and the fear of losing their job could increase their anxiety level during the Covid-19 pandemic [15].

Pregnant women who do not get support from their husbands are at risk of experiencing anxiety during the Covid-19 pandemic. The lack of husband's support is caused by weak emotional connection, high attachment to the husband, the fear of losing the baby, and the fear of contracting Covid-19; those conditions can increase pregnant women's anxiety level during the Covid-19 pandemic [21,22]. Family and health workers also play an important role in this issue and should try to offer their support to minimize the bad impression of Covid-19 to reduce the risk of anxiety [5]. There is 1 article that states that there is no relationship between a husband's support and anxiety in pregnant women during the Covid-19 pandemic. Research state that pregnant women's anxiety during the Covid-19 pandemic is not caused by the husband's support but by other factors, such as reduced face-to-face visits, the fear of contracting Covid-19, reduced food supply, and household conflicts [23,24].

Research suggests that moderate and severe anxiety in pregnant women increased during the Covid-19 pandemic because of the strict regulations issued by the Turkish government, such as closing the borders, limiting transportation, and imposing quarantine to prevent the spread of the Covid-19 virus [3]. As a result, in-person prenatal visits are terminated during the Covid-19 pandemic and replaced with video and telephone consultations. The demand for giving birth at hospitals during the Covid-19 pandemic decreased compared to before the pandemic and most people opt for a home birth. Pregnant women are afraid of running out of food supplies and contracting Covid-19, either from their family members or on their own. Anxiety in pregnant women is also affected by lower income for those who live in areas with a higher rate of Covid-19 cases [25,27-28]. There is 1 article that states that there is not any difference in the anxiety level of pregnant women before and during the Covid-19 pandemic because the data collection period is from May to the 22nd of June, which is the end of the first peak of the Covid-19 pandemic in the Netherlands. It suggests that pregnant women's anxiety symptoms decrease during the more stable phase of the Covid-19 pandemic [26,29-30].

Conclusion

The anxiety in pregnant women during the Covid-19 pandemic is related to internal factors (age of the mother (<20 and >35 years old), lower education background, a lack of knowledge, employment status, and lower economic background) and external factors (lack of husband's support). Pregnant women's anxiety levels during the Covid-19 pandemic increased compared to before the pandemic. Husbands are expected to give their support by spending time with their wives and giving encouragement during the pregnancy, especially during the Covid-19 pandemic. Pregnant women are expected to plan a pregnancy at the age of 20-35 years. Working pregnant women should look after their pregnancies by implementing health protocols. Health workers are expected to provide promotive efforts, such as giving education to pregnant women about pregnancy during the Covid-19 pandemic. Future researchers are expected to use different methods and conduct further research on the factors that affect pregnant women's anxiety during the Covid-19 pandemic which have not been discussed in this literature review.

Declaration

Acknowledgments: No acknowledgments.

Conflicts of Interest: The authors declare no conflict of interest.

References

- Brigante L, Morelli A, Jokinen M, Plachcinski R, Rowe R. Impact of the COVID-19 Pandemic on Midwifery-Led Service Provision in the United Kingdom In 2020-21: Findings of Three National Surveys. *Midwifery*. 2022 Sep;112:103390. doi: [10.1016/j.midw.2022.103390](https://doi.org/10.1016/j.midw.2022.103390). Epub 2022 Jun 1. PMID: 35709677; PMCID: PMC9155188.
- Nana M, Nelson-Piercy C. COVID-19 in Pregnancy. *Clin Med (Lond)*. 2021 Sep;21(5):e446-e450. doi: [10.7861/clinmed.2021-0503](https://doi.org/10.7861/clinmed.2021-0503). PMID: 34507928; PMCID: PMC8439502.
- Ayaz R, Hocaoglu M, Gunay T, Yardimci O devrim, Turgut A, Karateke A. Anxiety and Depression Symptoms in the Same Pregnant Women Before and During the COVID-19 Pandemic. *J Perinat Med [Internet]*. 2020 Nov 26;48(9):965-970. doi: [10.1515/jpm-2020-0380](https://doi.org/10.1515/jpm-2020-0380). PMID: 32887191.
- Tomfohr-Madsen LM, Racine N, Giesbrecht GF, Lebel C, Madigan S. Depression and Anxiety in Pregnancy during COVID-19: A Rapid Review and Meta-Analysis. *Psychiatry Res*. 2021 Jun;300:113912. doi: [10.1016/j.psychres.2021.113912](https://doi.org/10.1016/j.psychres.2021.113912). Epub 2021 Apr 1. PMID: 33836471; PMCID: PMC9755112.
- Zainiyah Z, Susanti E. Anxiety in Pregnant Women During Coronavirus (Covid-19) Pandemic in East Java, Indonesia. *Maj Kedokt Bandung [Internet]*. 2020 Sep;52(3):149–53. <https://doi.org/10.15395/mkb.v52n3.2043>
- Lebel C, MacKinnon A, Bagshawe M, Tomfohr-Madsen L, Giesbrecht G. Elevated Depression and Anxiety Symptoms Among Pregnant Individuals during the COVID-19 Pandemic. *J Affect Disord*. 2020 Dec 1;277:5-13. doi: [10.1016/j.jad.2020.07.126](https://doi.org/10.1016/j.jad.2020.07.126). Epub 2020 Aug 1. 2021 Jan 15;279:377-379. PMID: 32777604; PMCID: PMC7395614.
- Moyer CA, Compton SD, Kaselitz E, Muzik M. Pregnancy-related Anxiety during COVID-19: A Nationwide Survey of 2740 Pregnant Women. *Arch Womens Ment Health*. 2020 Dec;23(6):757-765. doi: [10.1007/s00737-020-01073-5](https://doi.org/10.1007/s00737-020-01073-5). Epub 2020 Sep 29. PMID: 32989598; PMCID: PMC7522009.
- Salehi L, Rahimzadeh M, Molaei E, Zaheri H, Esmaelzadeh-Saeieh S. The Relationship Among Fear and Anxiety of COVID-19, Pregnancy Experience, and Mental Health Disorder in Pregnant Women: A Structural Equation Model. *Brain Behav*. 2020 Nov;10(11):e01835. doi: [10.1002/brb3.1835](https://doi.org/10.1002/brb3.1835). Epub 2020 Sep 23. PMID: 32969190; PMCID: PMC7536966.
- Ge Y, Shi C, Wu B, Liu Y, Chen L, Deng Y. Anxiety and Adaptation of Behavior in Pregnant Zhuang Women During the COVID-19 Pandemic: A Mixed-Mode Survey. *Risk Manag Healthc Policy [Internet]*. 2021 Apr;Volume 14:1563–73. <https://doi.org/10.2147/rmhps.s303835>
- Stepowicz A, Wencka B, Bieńkiewicz J, Horzelski W, Grzesiak M. Stress and Anxiety Levels in Pregnant and Post-Partum Women during the COVID-19 Pandemic. *Int J Environ Res Public Health*. 2020 Dec 17;17(24):9450. doi: [10.3390/ijerph17249450](https://doi.org/10.3390/ijerph17249450). PMID: 33348568; PMCID: PMC7766953.
- Wang CL, Liu YY, Wu CH, Wang CY, Wang CH, Long CY. Impact of COVID-19 on Pregnancy. *Int J Med Sci*. 2021 Jan 1;18(3):763-767. doi: [10.7150/ijms.49923](https://doi.org/10.7150/ijms.49923). PMID: 33437211; PMCID: PMC7797535.
- Nwafor JI, Okedo-Alex IN, Ikeotuonye AC. Prevalence and Predictors of Depression, Anxiety, and Stress Symptoms among Pregnant Women during COVID-19-Related Lockdown in Abakaliki, Nigeria. *Malawi Med J [Internet]*. 2021;33(1):54–8. <https://doi.org/10.1101/2020.08.30.20184697>
- Jelly P, Chadha L, Kaur N, Sharma S, Sharma R, Stephen S, et al. Impact of COVID-19 Pandemic on the Psychological Status of Pregnant Women. *Cureus [Internet]*. 2021 Jan 23;13(1):1–10. <https://doi.org/10.7759/cureus.12875>
- Cui C, Zhai L, Sznajder KK, Wang J, Sun X, Wang X, et al. Prenatal Anxiety and the Associated Factors among Chinese Pregnant Women during the COVID-19 Pandemic—A Smartphone Questionnaire Survey Study. *BMC Psychiatry [Internet]*. 2021 Dec 10;21(1):619. Available from: <https://doi.org/10.1186/s12888-021-03624-1>
- Esteban-Gonzalo S, Caballero-Galilea M, González-Pascual JL, Álvaro-Navidad M, Esteban-Gonzalo L. Anxiety and Worries among Pregnant Women during the COVID-19 Pandemic: A Multilevel Analysis. *Int J Environ Res Public Health [Internet]*. 2021 Jun 26;18(13):6875. <https://doi.org/10.3390/ijerph18136875>
- Yeşilçınar İ, Güvenç G, Kinci MF, Bektaş Pardes B, Kök G, Sivaslioğlu AA. Knowledge, Fear, and Anxiety Levels Among Pregnant Women During the COVID-19 Pandemic: A Cross-Sectional Study. *Clin Nurs Res*. 2022 May;31(4):758-765. doi: [10.1177/10547738221085662](https://doi.org/10.1177/10547738221085662). Epub 2022 Apr 2. PMID: 35369767.
- Indumathi P, Swain D, T P, Jacob J, Tigga R. Knowledge, Perceived Threats and Protective Behaviour Related to Covid 19 Among Pregnant Women. *Asian J Psychiatr*. 2022 Jun;72:103091. doi: [10.1016/j.ajp.2022.103091](https://doi.org/10.1016/j.ajp.2022.103091). Epub 2022 Apr 6. PMID: 35447513; PMCID: PMC8986275.
- Septiasari RM, Viandika N. The Correlation between Covid-19 Knowledge and Anxiety of Pregnant Women During Covid-19 Pandemic. *Jl-KES (Jurnal Ilmu Kesehatan) [Internet]*. 2021 Feb 28;4(2):71–4. <https://doi.org/10.33006/ji-kes.v4i2.197>
- Wu F, Lin W, Liu P, Zhang M, Huang S, Chen C, et al. Prevalence and Contributory Factors of Anxiety and Depression among Pregnant Women in the Post-Pandemic Era of COVID-19 in Shenzhen, China. *J Affect Disord [Internet]*. 2021 Aug;291:243–51. <https://doi.org/10.1016/j.jad.2021.05.014>
- Mohammadpour M, Mohammad-Alizadeh Charandabi S, Malakouti J, Nadar Mohammadi M, Mirghafourvand M. Effect of Counselling with Men on Perceived Stress and Social Support of Their Pregnant Wives. *J Reprod Infant Psychol*. 2022 Apr;40(2):118-132. doi: [10.1080/02646838.2020.1792428](https://doi.org/10.1080/02646838.2020.1792428). Epub 2020 Jul 16. PMID: 32673065.
- Effati-Daryani F, Zarei S, Mohammadi A, Hemmati E, Ghasemi Yngyknd S, Mirghafourvand M. Depression, Stress, Anxiety and Their Predictors in Iranian Pregnant Women During the Outbreak of COVID-19. *BMC Psychol [Internet]*. 2020 Dec 22;8(1):99. <https://doi.org/10.1186/s40359-020-00464-8>
- Cao Y, Liu J, Zhang Y, Li Y, Chen Z, Lu J. Pregnant Women's Psychological State and Influence Factors: Anxiety, and Depression during COVID-19 Outbreak. *J Perinat Med*. 2021 Apr 16;49(6):664-673. doi: [10.1515/jpm-2020-0541](https://doi.org/10.1515/jpm-2020-0541). PMID: 33866693.
- Alaem F, Jalali A, Almasi A, Abdi A, Khalili M. Investigating the Effect of Group Counseling on Family Stress and Anxiety of Primiparous Mothers during Delivery. *Biopsychosoc Med*. 2019 Mar 26;13:7. doi: [10.1186/s13030-019-0148-1](https://doi.org/10.1186/s13030-019-0148-1). PMID: 30962815; PMCID: PMC6438036.
- John-Akinola YO, Babatunde OO, Desmennu AT. Perspectives of Women About Social Support Provided by Men During Pregnancy: A Qualitative Study. *Matern Child Health J*. 2022 Jun;26(6):1255-1260. doi: [10.1007/s10995-021-03303-3](https://doi.org/10.1007/s10995-021-03303-3). Epub 2021 Dec 2. PMID: 34855059.
- Moyer CA, Compton SD, Kaselitz E, Muzik M. Pregnancy-Related Anxiety during COVID-19: A Nationwide Survey of 2740 Pregnant Women. *Arch Womens Ment Health [Internet]*. 2020 Dec 29;23(6):757–65. <https://doi.org/10.21203/rs.3.rs-37887/v1>
- Zilver SJM, Broekman BFP, Hendrix YMGA, de Leeuw RA, Mentzel S V., van Pampus MG, et al. Stress, Anxiety and Depression in 1466 Pregnant Women during and Before the COVID-19 Pandemic: A Dutch Cohort Study. *J Psychosom*

- Obstet Gynecol [Internet].* 2021 Apr 3;42(2):108–14. Available from: <https://doi.org/10.1080/0167482X.2021.1907338>
27. Mei H, Li N, Li J, Zhang D, Cao Z, Zhou Y, et al. Depression, Anxiety, and Stress Symptoms in Pregnant Women Before and during the COVID-19 Pandemic. *J Psychosom Res [Internet].* 2021 Oct;149(November 2020):110586. Doi: <https://doi.org/10.1016/j.jpsychores.2021.110586>
28. Akgor U, Fadiloglu E, Soyak B, Unal C, Cagan M, Temiz BE, Erzenoglu BE, Ak S, Gultekin M, Ozyuncu O. Anxiety, Depression and Concerns of Pregnant Women during the COVID-19 Pandemic. *Arch Gynecol Obstet.* 2021 Jul;304(1):125-130. doi: [10.1007/s00404-020-05944-1](https://doi.org/10.1007/s00404-020-05944-1). Epub 2021 Jan 12. PMID: 33433702; PMCID: PMC7802427.
29. Yue C, Liu C, Wang J, Zhang M, Wu H, Li C, et al. 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. *Int J Soc Psychiatry [Internet].* 2021 Mar 9;67(2):120–7. Doi: [10.1177/0020764020941567](https://doi.org/10.1177/0020764020941567)
30. Taubman – Ben-Ari O, Chasson M, Abu Sharkia S, Weiss E. Distress and Anxiety Associated with COVID-19 among Jewish and Arab Pregnant Women in Israel. *J Reprod Infant Psychol [Internet].* 2020 May 26;38(3):340–8. Doi: [10.1080/02646838.2020.1786037](https://doi.org/10.1080/02646838.2020.1786037)