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## Access to Prenatal Care and Mental Health in Pregnant Women during COVID-19: A Systematic Review

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**Access to Prenatal Care and Mental Health in Pregnant Women during COVID 19:  
A Systematic Review**

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**Author Note**

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## Abstract

COVID-19 affected the world in many ways. Pregnant women were greatly impacted by a change in their access to prenatal care, from in-person care to telehealth methods, and social support being limited by social isolation. Compared with prevalence of anxiety and depression in pregnant women pre-COVID-19, pregnant women during COVID-19 reported higher levels of anxiety and depression symptoms due to the stress of circumstantial changes. The purpose of this systematic review is to review and critically appraise the evidence about access to prenatal care and mental health in pregnant women during the COVID-19 pandemic. The following PICOT formatted question will be answered: In pregnant women, how does adequate access to prenatal care and mental health during COVID-19 compare with access and mental health pre-COVID? Systematic search methods using keywords resulted in selecting twenty-two research sources. Publications were clustered on the following commonalities: access to prenatal care and communication, and mental health and social support. Through critical appraisal of the evidence, recommendations developed include increased education, mental health screenings, and proper social support to improve outcomes of pregnant women.

## **Access to Prenatal Care and Mental Health in Pregnant Women during COVID 19:**

### **A Systematic Review**

Since spring 2020, COVID-19 has affected every aspect of healthcare, especially the accessing of healthcare services (Dotters-Katz et al., 2021; McMillan et al., 2021). Among others in situations requiring access to and ongoing healthcare, COVID-19 has affected pregnant women in significant ways from decreasing access to prenatal care and changing care delivery structures (McMillan et al., 2021; Moyer et al., 2020) to long term outcomes, such as mental health (Ceulemans et al., 2021; López-Morales et al., 2021). This is a problem because pregnant women and fetuses can have many unfavorable effects ranging from inadequate prenatal care, decreased stability of maternal mental health, and delivery complications, such as preterm birth, an infant born small for gestational age, and unplanned cesarean or operative vaginal delivery (Preis, Mahaffey, Pati, et al., 2021). Understanding the effects of COVID-19 in pregnant women is crucial for nurses to best implement best evidence-based practices, such as proper education processes, screenings for mental illness symptoms and risk factors, and further advocating for social support. Prenatal care refers to the healthcare delivered to the expectant mothers throughout their pregnancies. Mental health is a part of prenatal care which focuses on the symptoms of depression and anxiety and risk factors associated with these. Access to care refers to the methods of healthcare delivery available to patients, which may be in-person clinic visits or visits through telehealth. Communication is imperative to comprehensive and effective healthcare delivery in this population and can be established with providers through both in-person and online healthcare portal conversations. Social support is important for pregnant women to fulfill their emotional needs and help maintain their mental wellbeing. A social support system could include family, friends, providers, and even strangers online through

support groups of individuals who share similar circumstances. Although specific symptoms may vary across individuals, depression can be described as a serious mood disorder that negatively affects actions, emotions, and thought processes of the expecting women. Similarly, anxiety can have varied symptoms but primarily affects emotions, thoughts, and physical sensations with increased levels of fear and worry. The purpose of this systematic review is to review and critically appraise the evidence about access to prenatal care and mental health in pregnant women during the COVID-19 pandemic. The following PICOT formatted question will be answered: In pregnant women, how does adequate access to prenatal care and mental health during COVID-19 compare with access and mental health pre-COVID?

## **Methods**

### **Search Strategies**

To identify primary sources answering the PICOT question, a search was conducted using the following databases: CINAHL and Health Source: Nursing/Academic edition to find studies about COVID-19 and pregnancy. Through use of Boolean search strategies, specific keywords were used to narrow down the search and find scholarly publications or journals. Some keywords used to identify sources included: pregnant, prenatal, antenatal, perinatal, maternal, covid-19, coronavirus, 2019-ncov, sars-cov-2, cov-19, mental health, depression, anxiety. The search included only studies that were conducted within the past 2 years and focused on a specific population: pregnant, postpartum, and breastfeeding women. Inclusion criteria also included using only studies that are written in English and are primary sources, excluding any studies that were secondary sources such as systematic reviews. Overly focused studies, such as case studies, were also excluded in favor of studies with larger sample sizes. Articles selected had to be academic peer-reviewed publications in scholarly journals and relevant to our research

topic as filtered by the keywords used. Articles with authors not from the healthcare field were also excluded.

### **Description of Selection Process**

The search also included research that shows the scope of the topic without regard to personal beliefs and values and those without evidence of bias. Studies outside this range were excluded, as well as secondary sources such as systematic reviews and meta-analyses. Publications in academic journals were evaluated based on the date written, type of study, relevance of topic studied, language, population studied, and type of journals to select the most applicable resources. Relevance to the PICOT question was analyzed when selecting and studies with inconsistent and controversial findings were included to decrease chance of selection bias. These criteria aided in selecting the 20 studies used for this systematic review of COVID-19 in pregnant women (see Appendix A for PRISMA flowchart).

## **Review of Literature**

### **Description of Studies**

The collection of studies used in this systematic review is composed of 20 academic articles. The research on this topic is recent, with the publication years of these articles spanning from 2020 to 2021. The study designs in the articles include one quasi-experimental design and 19 nonexperimental designs. The level of evidence generated in these articles is level 4 in the 19 nonexperimental studies, and level 3 in the one quasi-experimental study (Palmer et al., 2021). The lack of experimental designs is due to the population being studied and the time frame in which these studies occurred. There are significant ethical issues that arise when using human subjects in experimental studies, especially pregnant women because of any risk to the fetus. These studies also took place very recently and during the COVID-19 pandemic which caused

many barriers to normal study methods. The restrictions due to the pandemic limited study methods, leading many studies to be conducted through online methods. The settings of these studies include many countries across the world including Canada (Khoury et al., 2021), China (Lin et al., 2021), Argentina (López-Morales et al., 2021), Iran (Naghizadeh & Mirghafourvand, 2021), Australia (Chivers et al., 2020; Palmer et al., 2021) England (Ceulemans et al., 2021; Sharifi-Heris et al., 2021), Spain (Chaves et al., 2021; Puertas-Gonzalez et al., 2021), and the United States (Dotters-Katz et al., 2021; Javaid et al., 2021; McMillan et al., 2021; Moyer et al., 2020; Perzow et al., 2021; Preis et al., 2020; Preis, Mahaffey, & Lobel, 2021; Preis, Mahaffey, Pati, et al., 2021; Rathbone et al., 2021). The sample size range varied widely across the studies. The largest sample size was 4451 (Preis et al., 2020) and the smallest sample size was 49 (McMillan et al., 2021). A majority of the studies had sample sizes between 200 and 831. The variables measured were symptoms of depression, anxiety, and stress among pregnant, postpartum, and breastfeeding women. The gap in knowledge present in all of the studies is a strong cause and effect relationship. Neither nonexperimental study designs nor quasi-experimental study designs can determine a strong cause and effect relationship. In order to draw this conclusion, an experimental study design would be needed. This leaves a gap in knowledge of whether there is a strong cause and effect relationship between the variables studied.

### **Integrated Review**

The COVID-19 pandemic affected the experiences of pregnant women by changing access to prenatal care due to care delivery structure changes (Javaid et al., 2021; Palmer et al., 2021), increasing anxiety and depression in this population (Ceulemans et al., 2021; Koyucu & Karaca, 2021; López-Morales et al., 2021), decreasing or changing use of support groups (Chivers et al., 2020; McMillan et al., 2021), and changing provider-patient communication

ventures (Javaid et al., 2021; Preis et al., 2020) Studies were grouped based on these two commonalities: changes in access to prenatal care & provider communication (4 studies), and mental health & social support (16 studies).

### ***Access to Prenatal Care & Communication***

Access to prenatal care is imperative for healthy pregnancies. Prenatal care is all the healthcare pregnant women receive prior to their labor and delivery. Communication between patients and healthcare providers is an important part of developing a positive patient-provider relationship. These factors impact the maternal and newborn outcomes.

Two articles were reviewed with a main focus on changes in prenatal care access and the change in patient-provider communication as a result of these changes. Due to the COVID-19 pandemic, some prenatal care accessibility sites were no longer able to operate due to potential exposure of pregnant women to COVID-19. These sites did not have the capacity to safely provide the care the facility normally would have given due to the risk of exposure to the expectant mothers, their guests, and the staff of the facility. The change from in person visits to primarily telehealth visits impacted patient-provider communication. Telehealth consisted of both conference video calls and voice calls, both of which eliminated in-person assessments. Dotters-Katz et al. (2021) discussed implementing a new model of care to address the lack of access to in person appointments for COVID-19-exposed and infected pregnant patients. This model of care helped provide consistent assessments while minimizing exposure for patients, helping to make in person visits accessible to patients (Dotters-Katz et al., 2021). The need for communication between providers and patients, regardless of virtual delivery format, was made obvious due to the changes to care delivery in the COVID-19 pandemic. Javaid et al. (2021) used an anonymous online survey to ask pregnant women how their prenatal care was affected by



COVID-19. Findings of this research showed changes in the number and delivery of visits but despite these changes, many women reported that “the quality of their care remains unchanged (Javaid et al., 2021, p. 5).” The communication between care team providers and patients needs to be improved to manage expectations and ensure patient understanding about new processes and procedures due to the changing healthcare delivery systems.

Two articles included in this systematic review centered on discussing the effects of the changes in access to care and care delivery on maternal and newborn outcomes. Despite the shift in care delivery, there were no significant differences in low and high risk pregnancy outcomes in those who had virtual visits during COVID-19, compared to those who had conventional care during pre-COVID-19 (Palmer et al., 2021). These findings suggest that telehealth visits provided pregnant women with quality antepartum care despite changed communications between providers and patients, and due to the time saved by using telehealth and distance barriers this platform removes, telehealth could provide prenatal care to a larger segment of the population. It is well established that stress is related to negative perinatal outcomes, as such it is imperative that the reasons for these stressors be communicated to and documented by healthcare professionals in order to give the best care (Preis et al., 2020). The research by Preis et al. (2020) focused on identifying impacts of pandemic stress on maternal and newborn outcomes. One source of pandemic stress was the change in care delivery and decrease in communication as a result of prenatal visits being through telehealth rather than in person. Findings showed that with the more infrequent nature of prenatal care visits and the delivery changes to telehealth, it is pivotal to have proper and thorough documentation to better assess potential issues and to provide better communication to improve maternal and newborn outcomes (Preis et al., 2020). There is need for better observations during the less frequent appointments, better documentation

for more thorough treatments, and to deliver more well-rounded prenatal care to the mothers during the trials initiated by the COVID-19 pandemic.

### ***Mental Health & Social Support***

Many aspects of the COVID-19 pandemic have led to a decrease in the mental health of pregnant women. The decrease in mental health was measured through the reported symptoms of depression and anxiety. Due to pandemic conditions, an increase in anxiety and depression has been found in pregnant women, compared with levels in pregnant women pre-COVID (Ceulemans et al., 2021; Sharifi-Heris et al., 2021; Rathbone et al., 2021). Social support is a necessity for the emotional wellbeing of a pregnant woman, especially during periods of increased stress such as during the COVID-19 pandemic.

Ten research articles were focused on studying the mental health of pregnant, postpartum, and breastfeeding women during the COVID-19 pandemic. A key aspect of prenatal care services is the identifying psychological issues and because of the inadequate mental health appointments, mental health is deteriorating (López-Morales et al., 2021). López-Morales et al. (2021) focused on studying the potential for the COVID-19 pandemic conditions to cause psychological distress in the already vulnerable population of pregnant women. Participants completed the Beck Depression Inventory-II, the State-Trait Anxiety Inventory, and the Positive and Negative Affect Schedule. Puertas-Gonzalez et al. (2021) and Ceulemans et al. (2021) studied the mental health status and the psychological effects of the COVID-19 pandemic on pregnant and breastfeeding women. The Symptom Checklist-90-Revised, Prenatal Distress Questionnaire, and Athens Insomnia Scale were used by Puertas-Gonzalez et al. (2021) and The Edinburgh Postnatal Depression Scale and the Generalized Anxiety Disorder-7 were used by Ceulemans et al. (2021). Both studies used the Perceived Stress Scale. The findings of these

research studies showed that depression and anxiety indicators were significantly higher in pregnant women compared to women who were not pregnant. The fear of contagion by COVID-19 increased the anxiety of expectant mothers in many situations which worsened their overall mental health. Stress levels were also higher in women who were pregnant during the pandemic compared to women who did not have this experience, showing that quarantine and isolation periods negatively impacted the mental health of pregnant women. Rathbone et al. (2021) focused specifically on measuring anxiety levels through participant responses on the Generalized Anxiety Disorder-7, Health Anxiety Inventory, and State-Trait Anxiety Inventory. Findings further confirmed that the pandemic conditions led to increased levels of health anxiety and generalized anxiety in this population. Preis, Mahaffey, & Lobel (2021) studied the psychological factors leading to an increase in pregnant women giving birth outside of a traditional hospital setting. The Pandemic-Related Pregnancy Stress Scale was used in a questionnaire answered by participants. Findings showed that this increase was associated with anxiety and concern that hospitals were hazardous due to the potential for COVID-19 exposure and infection. The association of COVID-19 related experiences such as confirmed or suspected COVID-19 cases among close contacts, a high risk of being infected by COVID-19, and psychological impacts by COVID-19 with the incidence of depression and anxiety was studied by Lin et al. (2021). Responses were collected using the Self-Rating Anxiety Scale and Patient Health Questionnaire with findings showing a strong association between COVID-19 related experiences and higher levels of anxiety and depression (Lin et al., 2021). Sharifi-Heris et al. (2021) researched the associations between the perceived risk of infection and the psychological distress of pregnant women. Participants answered questionnaires that measured psychological distress indicators through the Perceived Stress Scale, State-Trait Anxiety Inventory, and Beck

Depression Inventory. These findings showed increased psychological distress associated with a higher perceived risk of COVID-19 infection which “can be due to the vulnerability of the pregnant population that is resulted from cardiopulmonary system adaptations during pregnancy, amplifying the fatal consequences of any infectious disease that targets the respiratory system (Sharifi-Heris et al., 2021, p. 147).” Perzow et al. (2021) aimed to study the mental health of pregnant and postpartum women before and during the COVID-19 pandemic. Participants answered questionnaires with the Edinburgh Postnatal Depression Scale, State-Trait Anxiety Inventory, UCLA Loneliness Scale, and the NIH Coronavirus Health Impact Survey-Adult Self-Report Baseline Short Form. Findings highlighted the importance of identifying pregnant mothers at risk is important in early diagnosis for finding proper treatment for the pregnant women with anxiety and depression to decrease fetal exposure to the stress of these psychological issues (Perzow et al., 2021). As prenatal care was limited, observing and identifying risks is even more important to minimize further complications throughout each mother’s pregnancy. Increased anxiety and stress have a negative impact on the quality of life for pregnant women. Naghizadeh & Mirghafourvand (2021) focused on studying the relationship between fear of COVID-19 and quality of life for pregnant women. Findings showed that fears regarding COVID-19 and its effects are significant stressors for pregnant women. Pregnant women who had more fear of COVID-19 experienced decreased quality of life, supported by a negative relationship between fear of COVID-19 and quality of life (Naghizadeh & Mirghafourvand, 2021). The overall decrease in mental health and drastic increase in stress of pregnant women causes riskier births, as stress is linked to preterm deliveries. Preis, Mahaffey, Pati, et al. (2021) studied how the increase in stress experienced by pregnant women during the COVID-19 pandemic affected maternal and newborn outcomes. Participants answered a

questionnaire including the Pandemic-Related Pregnancy Stress Scale and Generalized Anxiety Disorder-7. Findings indicated that increased stress and anxiety as a result of the COVID-19 pandemic led to increased risk of adverse maternal and newborn outcomes such as preterm deliveries and poses a risk of long-term complications (Preis, Mahaffey, Pati, et al., 2021).

Six of the articles in this systematic review had a main focus on the necessity of social support for maternal mental health. Social support has been found to help alleviate anxiety and distress for pregnant women. The presence of a social support system is important for pregnant women, especially during the COVID-19 pandemic due to the negative impact on mental health. Koyucu & Karaca (2021) aimed to identify the prevalence of depression, anxiety, and stress in pregnant women during the pandemic and identify factors that impact the development of mental disorders during the perinatal period. Participants answered a questionnaire that included the Depression, Anxiety, and Stress Scale and the Multidimensional Scale of Perceived Social Support and findings showed that the presence of an obstetric risk and/or presence of chronic disease, advanced age, and lack of social support are predictive factors for antenatal maternal mental disorders during the pandemic (Koyucu, & Karaca, 2021). Khoury et al. (2021) also concluded that social support acts as a protective factor to buffer individuals from experiencing exacerbated mental health symptoms. The research also aimed to identify the prevalence of mental health disturbances, how COVID-19 related experiences impacted mental health, and how social support affected the impact of the pandemic conditions. Participants in this study completed the Cambridge Worry Scale, Centre for Epidemiologic Studies Depression Scale, Insomnia Severity Index, and the Multidimensional Scale of Perceived Social Support. Fears of job loss, economic instability, loss of food, loss of childcare, social isolation, and of contracting COVID-19 all contributed to the increase in anxiety (Khoury et al., 2021). Women who

maintained a strong support system during their pregnancy had lower levels of anxiety compared to women who lacked a strong social support system during their pregnancy (Koyucu & Karaca, 2021; Khoury et al., 2021). Therefore, social support is useful in minimizing the negative effects of the COVID-19 pandemic conditions. Interventions to address decreasing maternal mental health is a priority because the frequency of obstetric complications is higher in women with mental illness than in women without mental illness. Delivery complications are also associated with maternal depression (Koyucu & Karaca, 2021). Chaves et al. (2021) defines the psychosocial stress during pregnancy and identifies why COVID-19 pandemic conditions caused distress. Participants answered questionnaires with The Edinburgh Postnatal Depression Scale, the Positive and Negative Affect Schedule, and the Satisfaction With Life Scale. Findings showed that the novelty of the pandemic, uncertainty, and lethality of the pandemic were all reasons why psychological distress occurred in pregnant women as well as the lack of skin-to-skin bonding, support systems, and breastfeeding in some women as a result of infection. Support for pregnant women should address reasons for distress as well as ways to promote well-being and coping (Chaves et al., 2021; Khoury et al., 2021). McMillan et al. (2021) was focused on determining how COVID-19 pandemic conditions affected first-time mothers and investigating how the pandemic changes impacted maternal mental health. Participants answered the COVID-19 Questionnaire-Adult Alternate Version, Epidemic Pandemic Impact Inventory, The Dyadic Adjustment Scale, and the Depression, Anxiety and Stress Scale. Findings showed that most pregnant women experienced distress due to changes to their prenatal care, birth plan, and support system (McMillan et al., 2021). Chivers et al. (2020) focused on identifying the unmet emotional, support, and information needs of perinatal women during the pandemic. Findings showed distress due to a lack of resources on the risks of COVID-19 during pregnancy,

a lack of social rituals such as baby showers, and a lack of social support because of strained relationships in isolation. Moyer et al. (2020) focused on the impact of the COVID-19 pandemic on anxiety in pregnant women and the factors that caused the increase in anxiety. Participants answered a Modified Pregnancy-Related Anxiety Scale. Findings showed the factors most associated with anxiety during the pandemic were fears of food running out, increased tension in relationships at home, and infection. This stress led to an increase in women changing their birth plans to deliver outside of hospitals. This indicates a need for support systems to help alleviate fears of COVID-19 in pregnant women with focuses on prevention education (Moyer et al., 2020). These stressors can cause anxiety and therefore support programs to help minimize these problems are important to implement. A social support system can include family, friends, or even strangers who are able to find connection in shared experiences such as through a support group. Healthcare providers should provide multiple support options in the forms of psychiatric care, support group recommendations, and patient education. Psychiatric care is an important support option for women who are experiencing depression and anxiety either due to the pandemic or if they had these mental health problems prior to COVID-19 and these symptoms are being exacerbated by the pandemic conditions. Support group recommendations can be a positive influence for pregnant women to meet and socialize with others experiencing similar circumstances. These support groups could be conducted virtually or safely in person to meet this need for social support in pregnant women. Support recommendations for women with specific needs such as financial or food insecurity are important to provide for women impacted in various ways from the pandemic. Patient education on prevention of COVID-19 infection and education on birth planning and preparation are also needed to help address the stress caused by changes in the hospital environment due to COVID-19 (Lin et al., 2021; Moyer et al., 2020).

### **Critical Appraisal of the Evidence**

It is important to critically analyze each of the studies used in this systematic review of literature to understand what the limitations of the studies were, the validity of the methods used in each of the studies, and the reliability of the study results to be able to apply this information to an entire population. From these deductions, results can be confirmed and better understood as a whole.

#### **Limitations**

The research analyzed has limitations. Through analysis of the research studies, limitations of the findings were found. Due to the purpose of research being performed during the COVID-19 pandemic, research methods were limited. The methods used for designing samples, recruiting participants and for conducting the studies were sources of limitation in the research studies analyzed. Limitations were also seen in potential sample bias due to small sample sizes and reduced demographics researched.

Research was primarily conducted in virtual formats, such as in online chat forums or in online surveys. This methodology was used in order to protect researchers and participants due to health concerns associated with COVID-19 exposure. Many facilities that would conduct this type of research were also temporarily closed, therefore virtual research was the only option as seen in multiple studies (Javaid et al., 2021; López-Morales et al., 2021). Not all people in the target population have reasonable access and availability of internet and internet capable devices and therefore using an online survey is limiting. In many of the studies, selection or sampling bias could have affected study results because the participants were recruited selected through the method of social media utilization (Ceulemans et al., 2021; Koyucu et al., 2021; López-Morales et al., 2021; Moyer et al., 2020; Rathbone et al., 2021). This may lead to difficulty



generalizing the results over the entire population of pregnant, postpartum, and breastfeeding women because people who have social media or ways to access social media tend to be of higher education and of higher socio-economic class, which doesn't account for people who do not have access to social media. Certain platforms of social media would also be exclusive in recruitment based off of the current behaviors of the women furthering sample bias.

Another limitation of the nature of this research is the amount of pregnant, postpartum, and breastfeeding women included in the research. In many of the studies, the sample size was too small to be generalizable to the entire population of pregnant women (Chaves et al., 2021; Lin et al., 2021; McMillan et al., 2021; Naghizadeh & Mirghafourvand, 2021; Preis et al., 2020). Many obstacles included cultural and educational barriers, the cross-sectional nature of the studies, and the use of social media as a recruiting and survey platform. Some studies only used people from specific places like Iran or Spain, where there are specific cultural barriers in mental health understanding and social support that makes it more difficult to apply the information to other countries or an entire population of pregnant women, like the United States (Naghizadeh & Mirghafourvand, 2021; Puertas-Gonzalez et al., 2021; Sharifi-Heris et al., 2021). The small sample sizes and narrowed demographics surveyed can introduce sample bias and could skew the results of the data collected.

Limitations also include the newness of the topic, as COVID-19 began in 2019, as well as the fact there are many ethical issues in studying human subjects for experimental studies, meaning most research for this topic is non experimental. The state of the research is therefore very early as the time period has been very short. The early nature of the research as well as population restrictions leads to a limitation in the types of study designs found for this topic. Many studies were forced to conduct their research in a small time frame in order to publish their

results (Ceulemans et al., 2021; Chivers et al., 2020; Dotters-Katz et al., 2021; Javaid et al., 2021; Khoury et al., 2021; Lin et al., 2021; López-Morales et al., 2021; McMillan et al., 2021; Moyer et al., 2020; Palmer et al., 2021; Perzow et al., 2021; Preis et al., 2020; Preis, Mahaffey, & Lobel, 2021; Preis, Mahaffey, Pati, et al., 2021; Rathbone et al., 2020; Sharifi-Heris et al., 2021). The duration of many of the studies was around 1 month, and others were two, three and four months.

There are many ethical issues in studying human subjects for experimental studies, meaning most research for this topic is nonexperimental. Many studies included were non-experimental in design (Ceulemans et al., 2021; Chaves et al., 2021; Chivers et al., 2020; Dotters-Katz et al., 2021; Javaid et al., 2021; Khoury et al., 2021; Koyucu et al., 2021; Lin et al., 2021; López-Morales et al., 2021; McMillan et al., 2021; Moyer et al., 2020; Naghizadeh & Mirghafourvand, 2021; Perzow et al., 2021; Preis et al., 2020; Preis, Mahaffey, & Lobel, 2021; Preis, Mahaffey, Pati, et al., 2021; Puertas-Gonzalez et al., 2021; Rathbone et al., 2021). The early state of the research also contributes to these as experimental studies may not be performed until the results of nonexperimental studies are analyzed by researchers in order to plan studies with experimental designs. The more research gathered over longer periods of time could alter the overall results of the data.

### **Validity & Reliability**

Reduced validity and reliability are evident in this research due to the newness of the topic causing a narrowed representation of the population studied. Multiple studies suffered the limitation of small sample sizes due to the nature of the design of the research studies (López-Morales et al., 2021; McMillan et al., 2021; Preis et al., 2020). In one study, the researchers only studied participants from one hospital (Dotters-Katz et al., 2021). In multiple studies, the

participants did not represent all socioeconomic, racial, or educational backgrounds. The majority of participants were white, well-educated and from higher socioeconomic backgrounds (Javaid et al., 2021; López-Morales et al., 2021). Reduced sample size and the narrowed field of demographics represented in participants creates a sample bias. The presence of this sample bias in these studies decreases the validity and reliability of these results. The results are not fully representative of the diversity of the target population, therefore, the results found in the studies are limited in generalizing finding to the broader population.

Some validity issues arise around the correlation between the mental health symptoms and the COVID-19 pandemic. It is challenging to differentiate whether these symptoms associated with anxiety and stress disorders were seen before the pandemic and worsened because of the pandemic or if they started due to the pandemic. In some of the studies, the participants were anonymous, or no demographical or geographical information was taken about the participants (Chivers et al, 2020; Khoury et al, 2021). This increases the difficulty to correlate mental health outcomes related to the pandemic because there was not any previous mental health information recorded. If the participants had previous mental health issues, the data would be skewed and results of the study cannot prove or correlate the pandemic with inducing mental health issues. The reliability of the results can also be questioned based on the survey designs of many of the studies. Many of the studies utilized self-reporting surveys, where participants completed online surveys to report symptoms, feelings of anxiety and depression, to participate in the study. This approach led to recall or response bias when participants answered the online surveys (Chivers et al, 2020; Moyer et al, 2020; Naghizadeh & Mirghafourvand, 2021). Recall bias refers to the participant not accurately remembering their experiences when asked during the data collection process. The connection of recall bias and previous mental

health issues both can skew the validity of the results as the data is not an accurate representation of the participants.

The recruitment of the study participants also created a narrowed representation of the demographics of the population. Social media was used as a recruitment tool in many of the studies which led to only a subset of the population being reached (Ceulemans et al., 2021; Javaid et al., 2021; Koyucu et al., 2021; López-Morales et al., 2021; Moyer et al., 2020; Preis et al., 2020; Rathbone et al., 2021). The online format of many of these studies limited those eligible to participate because not every pregnant, postpartum, or breastfeeding woman has access to resources to participate online. It also shows selection bias in the participants because many participants who have access to online resources, like social media and the internet, were educated and of a higher socioeconomic class. This made it difficult to generalize the findings to an entire population due to similar demographic information that cannot include all pregnant, postpartum, and breastfeeding women. Reliability would be increased with repetition of studies with a wider range of participants and a broader approach to recruitment for the studies.

### **Synthesis of the Evidence**

Through this systematic review, the current state of the science was determined by critical appraisal of the available research. The evidence shows that the COVID-19 pandemic had an impact on the access to prenatal care and maternal mental health. The changes brought by the pandemic highlighted the need for changes in care delivery and communication as well as the need for mental health resources to provide pregnant women with the support they need for physical and mental health.

In 2020, the COVID-19 virus was novel and therefore the state of the science was new and developing. In 2023, more thorough research has been done compared to 2020 and as a

result this science is still developing. A longitudinal study on the depression, anxiety, and stress levels of women during their pregnancy and postpartum period during the pandemic shows evidence that pregnant and postpartum women felt increased levels of stress and anxiety and more frequent periods of depression compared to the levels observed in studies performed pre-pandemic (Rabinowitz et al., 2023). Telehealth grew during the pandemic to increase accessibility of care during quarantines while also enabling healthcare providers and patients to limit transmission of COVID-19. During the pandemic, telehealth became a more frequently offered option for perinatal appointments and was sometimes the only option offered. Telehealth appointments are still a helpful option for many patients as the pre-pandemic conditions return. Telehealth is especially helpful for patients living in rural areas where distance to high quality healthcare is an obstacle (Palmer et al., 2021). The quality of telehealth perinatal appointments is a topic of current research and the findings of a recently published study shows evidence that most women found telehealth appointments to be high quality care but many would prefer in person appointments in the post-pandemic period (Marshall et al., 2023). The results of the newer studies give confidence and reliability to the results of studies performed earlier in the pandemic as well as expand the research on pregnancy and COVID-19.

### **Recommendations**

Social support for pregnant women has been proven to be very helpful to the overall outcomes of the client's care. Social support can refer to joining support groups, relying on significant others, or being supported by friends and family members. Strong social systems can be a supportive barrier against rising levels of anxiety during pregnancy compared to those without strong social support (Khoury et al., 2021; Koyucu & Karaca, 2021; Lin et al., 2021). Support groups, both virtual and in person, can be helpful if friends and family are not available

for the client. Support groups can provide a safe, positive space for pregnant women to connect with those who share common experiences (Preis, Mahaffey, & Lobel, 2021). It is recommended that nurses access patient's support systems and advocate for support groups, when necessary, to help alleviate stress.

Pregnant women may require refined education on COVID-19, including symptoms, transmission, and changes in any procedures. Fear associated with COVID-19 infection and its effects increases the overall anxiety of pregnant women and can worsen mental health outcomes (Puertas-Gonzalez et al., 2021). A large part of this strain was the unknowns associated with the changes in society around the expectant mothers caused by a lack of proper communication. Communication specifically about new processes and procedural changes in healthcare systems due to the pandemic must be improved to support these women and provide proper understanding (Javaid et al., 2021). Proper education of COVID-19 infection and prevention during birth preparation and planning are also necessary to alleviate stress caused by the changes due to the pandemic (Lin et al., 2021; Moyer et al., 2020). Based on the evidence gathered in this systematic review, further education on COVID-19 effects, prevention, and transmission can lead to lessened levels of anxiety in pregnant women.

Thorough screenings for mental illness should be conducted on pregnant women throughout the pregnancy. Screening surveys in both virtual and in-person appointments can help nurses recognize risk factors linked to mental illness, such as stress and anxiety. Properly identifying expectant mothers who are at high risk is vital for early diagnosis and establishing correct treatment plans to manage the physiological effects of stress and anxiety during fetal development (Perzow et al., 2021). Psychological aid is an important aspect of prenatal care because of the lack of adequate mental health appointments for the general public (López-

Morales et al., 2021). The role of nurses should be expanded to better address the mental health needs of perinatal, pregnant, and postpartum women by increasing funding and education for nurses. The addition of mental health nurse practitioners to the multidisciplinary team caring for this population of patients would help to address this overlooked issue. Stressors and levels of anxiety should be assessed with each appointment by trained professionals to best provide psychological care to this population.

Further research should be conducted to more fully implement the data gathered into better nursing practices. As the topic is relatively new, further research is required to best understand and form recommendations on the topic. The research studies reviewed were done through online surveys with limited demographics being reached. It is important to reach all populations affected by this issue and further research should be done with larger populations being polled in online surveys or screenings during scheduled appointments for clients to eliminate the limitations of current recruitment strategies. By doing the screenings in person, the validity of survey results will be more complete, as only virtual techniques lack personal observations for risk factors of mental illness. Research could also be conducted specifically on the nursing role with communication and how nurses can best support patients. This research is important to continue as many pregnant women are seeking this personal connection to the nurses during this time. As society transitions past the COVID-19 pandemic, retrospective studies can begin to better understand the effects by comparing before, during, and after the pandemic peaked. Research can further be conducted on women who gave birth in these three time periods as well. By having the same women compare her own experiences, some bias developed from personal experiences can be alleviated. Conducting research on the women who gave birth in different time periods can also compare first births to that of births after the peak of

the pandemic to further experience differences. This research can better evidence-based practices by creating a more patient-centered atmosphere throughout a woman's pregnancy.

### **Conclusion**

Overall, the effect COVID-19 and the pandemic had on pregnant women resulted in a reassessment of how healthcare can be accessed by these clients during trying times. The main focus of online healthcare is to increase outcomes by including online visits and ensure continuity of quality care. It is necessary to assess the mental health of pregnant women, especially since they are under a great deal of stress. The pandemic heightened these stressors contributing to increased depression and anxiety in pregnant women, but adequate access to healthcare and support groups can aid in overcoming these issues. It was apparent, as a result of the pandemic, that communication between healthcare providers and patients is necessary to provide quality care. The switch to virtual appointments due to the pandemic showed that a higher volume of patients can be seen for prenatal care, but the frequency of canceled appointments made it difficult to see patients regularly. This contributed to decreased mental health screenings of pregnant women, which therefore led to an increase in anxiety and depression in many of these patients during this time. It is important to adequately assess the mental health of pregnant women in any type of healthcare visit, virtual or in-person, and educate these patients about accessing support groups or the importance of a health support system.

### **Timeline of Project Completion**

This systematic review will be completed over the course of fall 2022 and spring 2023. Independent study for this honors project will be 4 total credit hours, split into 2 credit hours in fall 2022 and 2 credit hours in spring 2023. The review of literature discussion will be developed



as research is completed in the fall 2022 and spring 2023 semesters. Recommendations about clinical practice, education, and future research will be developed near the conclusion of this research in order to develop recommendations that are evidence based. The faculty sponsor for this project is Debra Horning and the readers for this project are Dr. Michele Zelko and Breanna Milsap.

We met with our sponsor once a semester to review our paper and discuss other ideas to add or revise. We submitted three drafts to our sponsor and revised accordingly. We submitted our final paper to our readers in April of 2023 and revised accordingly. Our finished paper was submitted to our sponsor by mid-April of 2023. Throughout our paper, we used APA 7th edition format and confirmed that everything follows those formatting guidelines. The paper provides clear, logical, well-developed ideas and concepts to convey a systematic review of research on the effect COVID-19 had on pregnant women and their mental health.

## References

- Ceulemans, M., Foulon, V., Ngo, E., Panchaud, A., Winterfeld, U., Pomar, L., Lambelet, V., Cleary, B., O'Shaughnessy, F., Passier, A., Richardson, J. L., Hompes, T., & Nordeng, H. (2021). Mental health status of pregnant and breastfeeding women during the COVID-19 pandemic—A multinational cross-sectional study. *Acta Obstetrica et Gynecologica Scandinavica*, *100*(7), 1219–1229.  
<https://obgyn-onlinelibrary-wiley-com.ezproxy.uakron.edu:2443/doi/10.1111/aogs.14092>
- Chaves, C., Marchena, C., Palacios, B., Salgado, A., & Duque, A. (2021). Effects of the COVID-19 pandemic on perinatal mental health in Spain: Positive and negative outcomes. *Women and Birth*. <https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.wombi.2021.01.007>
- Chivers, B. R., Garad, R. M., Boyle, J. A., Skouteris, H., Teede, H. J., & Harrison, C. L. (2020). Perinatal distress during COVID-19: Thematic analysis of an online parenting forum. *Journal of Medical Internet Research*, *22*(9), N.PAG.  
<https://doi-org.ezproxy.uakron.edu:2443/10.2196/22002>
- Dotters-Katz, S. K., Harris, H., Wheeler, S. M., Swamy, G. K., & Hughes, B. L. (2021). Specialized prenatal care delivery for coronavirus disease 2019-exposed or -infected pregnant women. *American Journal of Obstetrics & Gynecology*, *224*(3), 325–327.  
<https://doi.org/10.1016/j.ajog.2020.11.025>
- Javaid, S., Barringer, S., Compton, S. D., Kaselitz, E., Muzik, M., & Moyer, C. A. (2021). The impact of COVID-19 on prenatal care in the United States: Qualitative analysis from a survey of 2519 pregnant women. *Midwifery*, *98*.  
<https://doi.org/10.1016/j.midw.2021.102991>

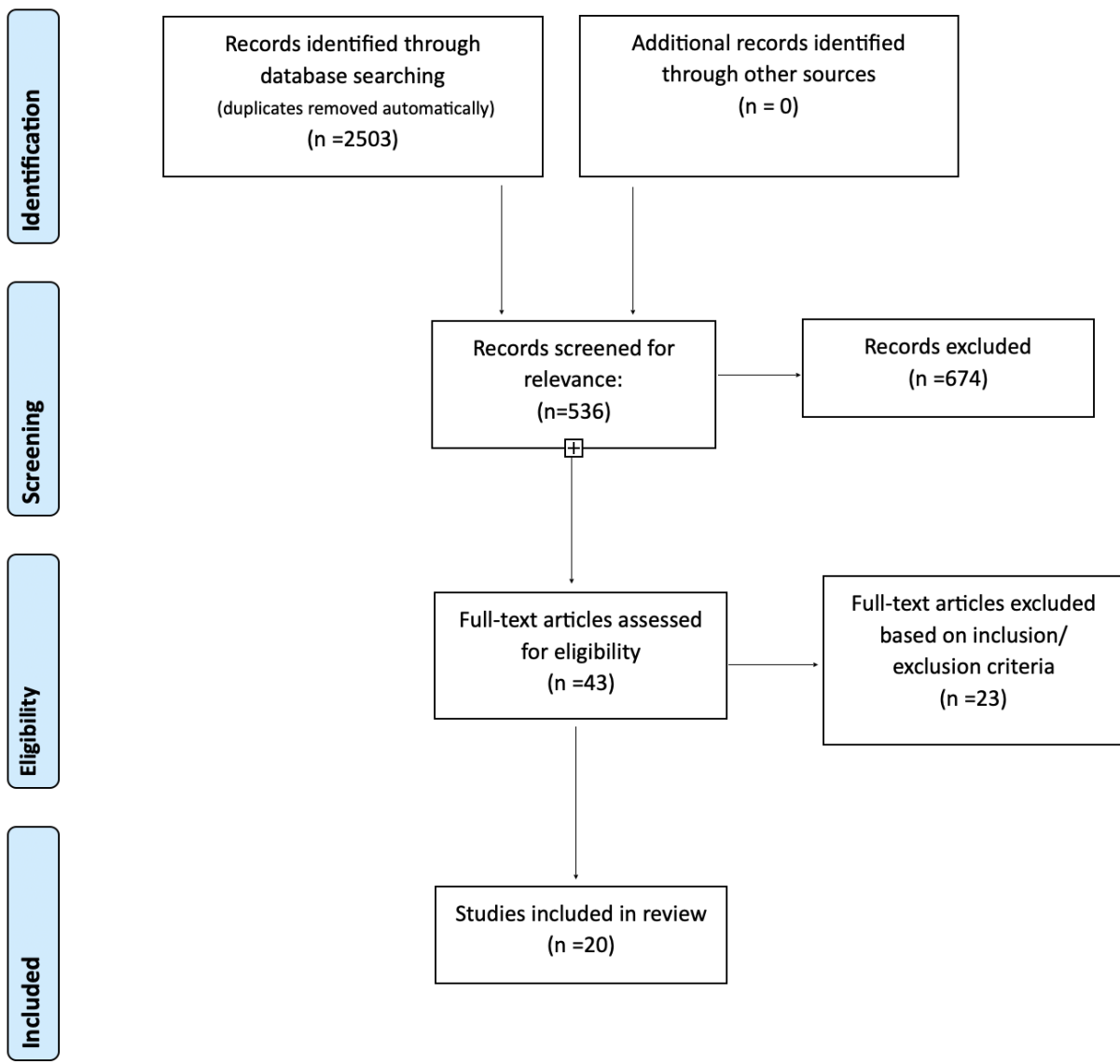
- Khoury, J. E., Atkinson, L., Bennett, T., Jack, S. M., & Gonzalez, A. (2021). COVID-19 and mental health during pregnancy: The importance of cognitive appraisal and social support. *Journal of Affective Disorders*, 282, 1161–1169.  
<https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.jad.2021.01.027>
- Koyucu, R. G., & Karaca, P. P. (2021). The Covid 19 outbreak: Maternal mental health and associated factors. *Midwifery*, 99.  
<https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.midw.2021.103013>
- Lin, W., Wu, B., Chen, B., Zhong, C., Huang, W., Yuan, S., Zhao, X., & Wang, Y. (2021). Associations of COVID-19 related experiences with maternal anxiety and depression: implications for mental health management of pregnant women in the post-pandemic era. *Psychiatry Research*, 304. <https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.psychres.2021.114115>
- López-Morales, H., del Valle, M. V., Canet-Juric, L., Andrés, M. L., Galli, J. I., Poó, F., & Urquijo, S. (2021). Mental health of pregnant women during the COVID-19 pandemic: A longitudinal study. *Psychiatry Research*, 295. <https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.psychres.2020.113567>
- Marshall, C., Gutierrez, S., Hecht, H., Logan, R., Kerns, J., & Diamond-Smith, N. (2023). Quality of prenatal and postpartum telehealth visits during COVID-19 and preferences for future care. *AJOG Global Reports*, 3(1). <https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.xagr.2022.100139>
- McMillan, I. F., Armstrong, L. M., & Langhinrichsen-Rohling, J. (2021). Transitioning to parenthood during the pandemic: COVID-19 related stressors and first-time expectant

- mothers' mental health. *Couple and Family Psychology: Research and Practice*, 10(3), 179–189. <https://doi-org.ezproxy.uakron.edu:2443/10.1037/cfp0000174>
- 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.ezproxy.uakron.edu:2443/10.1007/s00737-020-01073-5>
- Naghizadeh, S., & Mirghafourvand, M. (2021). Relationship of fear of COVID-19 and pregnancy-related quality of life during the COVID-19 pandemic. *Archives of Psychiatric Nursing*, 35(4), 364–368. <https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.apnu.2021.05.006>
- Palmer, K. R., Tanner, M., Davies-Tuck, M., Rindt, A., Papacostas, K., Giles, M. L., Brown, K., Diamandis, H., Fradkin, R., Stewart, A. E., Rolnik, D. L., Stripp, A., Wallace, E. M., Mol, B. W., & Hodges, R. J. (2021). Widespread implementation of a low-cost telehealth service in the delivery of antenatal care during the COVID-19 pandemic: an interrupted time-series analysis. *Lancet*, 397(10294), 41–52. [https://doi.org/10.1016/S0140-6736\(21\)00668-1](https://doi.org/10.1016/S0140-6736(21)00668-1)
- Perzow, S. E. D., Hennessey, E.-M. P., Hoffman, M. C., Grote, N. K., Davis, E. P., & Hankin, B. L. (2021). Mental health of pregnant and postpartum women in response to the COVID-19 pandemic. *Journal of Affective Disorders Reports*, 4. <https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.jadr.2021.100123>
- Preis, H., Mahaffey, B., Heiselman, C., & Lobel, M. (2020). Vulnerability and resilience to pandemic-related stress among U.S. women pregnant at the start of the COVID-19

- pandemic. *Social Science & Medicine*, 266. <https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.socscimed.2020.113348>
- Preis, H., Mahaffey, B., & Lobel, M. (2021). The role of pandemic-related pregnancy stress in preference for community birth during the beginning of the COVID-19 pandemic in the United States. *Birth: Issues in Perinatal Care*, 48(2), 242–250. <https://doi.org/10.1111/birt.12533>
- Preis, H., Mahaffey, B., Pati, S., Heiselman, C., & Lobel, M. (2021). Adverse perinatal outcomes predicted by prenatal maternal stress among U.S. women at the COVID-19 pandemic onset. *Annals of Behavioral Medicine*, 55(3), 179–191. <https://doi.org/10.1093/abm/kaab005>
- Puertas-Gonzalez, J. A., Mariño-Narvaez, C., Peralta-Ramirez, M. I., & Romero-Gonzalez, B. (2021). The psychological impact of the COVID-19 pandemic on pregnant women. *Psychiatry Research*, 301. <https://doi.org/10.1016/j.psychres.2021.113978>
- Rabinowitz, E. P., Kutash, L. A., Richeson, A. L., Sayer, M. A., Samii, M. R., & Delahanty, D. L. (2023). Depression, anxiety, and stress in pregnancy and postpartum: A longitudinal study during the COVID-19 pandemic. *Midwifery*, 121. <https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.midw.2023.103655>
- Rathbone, A. L., Prescott, J., & Cross, D. (2021). Pregnancy in a pandemic: generalized anxiety disorder and health anxiety prevalence. *British Journal of Midwifery*, 29(8), 440–446. <https://doi-org.ezproxy.uakron.edu:2443/10.12968/bjom.2021.29.8.440>
- Sharifi-Heris, Z., Moghasemi, S., Ghamsary, M., Moodi, S., Ghprbani, Z., & Amiri-Farahani, L. (2021). Perceived risk of COVID-19 acquisition and maternal mental distress. *British Journal of Midwifery*, 29(3), 140–149. <https://doi.org/10.12968/bjom.2021.29.3.140>

Appendix A

PRISMA 2009 Flow Diagram



## Appendix B

### Systematic Review Table of Evidence<sup>[1]</sup>

APA formatted reference	Purpose statement. Research question <sup>[2]</sup> .	Clinical Practice Setting, Sampling methods, Sample size <sup>[3]</sup> .	Design. Level of Evidence. <sup>[4]</sup>	Findings, Conclusion <sup>[5]</sup>	Practice & Research Implications <sup>[6]</sup>	Critical Appraisal. Strengths and limitations <sup>[7]</sup>
<p>1 Ceulemans, M., Foulon, V., Ngo, E., Panchaud, A., Winterfeld, U., Pomar, L., Lambelet, V., Cleary, B., O'Shaughnessy, F., Passier, A., Richardson, J. L., Hompes, T., &amp; Nordeng, H. (2021). Mental health status of pregnant and breastfeeding women during the COVID-19 pandemic—A multinational cross-sectional study. <i>Acta Obstetrica et Gynecologica Scandinavica</i>, 100(7), 1219–1229. <a href="https://obgyn-onlinelibrary-wiley-com.ezproxy.uakron.edu:2443/doi/10.1111/aogs.14092">https://obgyn-onlinelibrary-wiley-com.ezproxy.uakron.edu:2443/doi/10.1111/aogs.14092</a></p>	<p>Purpose Statement: “To assess the mental health status of pregnant and breastfeeding women during the pandemic (pg 1220)” Research question: Are there potential associations between depressive symptoms, anxiety, and stress and women's sociodemographic, health, and reproductive characteristics?</p>	<p>Setting: Ireland, Norway, Switzerland, the Netherlands, and the UK Sampling method: online, anonymous survey was promoted through social media and hospital websites Sample size: 3907 pregnant and 5134 breastfeeding women</p>	<p>Design: nonexperimental, cross sectional The online, anonymous survey. Social media and hospital websites were used to send out this survey. To assess mental health, the following scales were used: The Edinburgh Depression Scale (EDS), the Generalized Anxiety Disorder seven-item scale (GAD-7), and the Perceived Stress Scale (PSS). To identify factors related to poor mental health status, there was Regression model analysis. Level of Evidence: 4</p>	<p>Major depressive symptoms were found in 15% in the pregnancy cohort and in 13% in the breastfeeding cohort. 11% of the pregnant women and 10% of the breastfeeding women were reported to have moderate to severe generalized anxiety symptoms (GAD <math>\geq</math> 10). The risk factors found to be related to poor mental health were previous diagnosis of a chronic mental illness, a chronic somatic illness in the postpartum period, smoking, having an unplanned pregnancy, professional status, and living in the UK or Ireland.</p>	<p>The study showed that there were increased levels of depression symptoms and anxiety among pregnant and breastfeeding women during the COVID-19 pandemic. This shows that it is critical to monitor perinatal mental health during pandemics and other societal issues. It will protect the maternal and infant mental health in the long run.</p>	<p>One of the limitations of the study included how the study was distributed through social media. This increases the risk of selection/sampling bias. These web-based studies are deemed an acceptable way to recruit for studies on epidemiology. There is a high prevalence of European women of childbearing age on social media or the internet, so recruitment of the preferred population was adequate. Many of the participants in the study were first-time mothers, had a higher education level, professionally active, nonsmokers, and most had a partner. This information may show selection bias for more healthy participants.</p>

<p>2 Chaves, C., Marchena, C., Palacios, B., Salgado, A., &amp; Duque, A. (2021). Effects of the COVID-19 pandemic on perinatal mental health in Spain: Positive and negative outcomes. <i>Women and Birth</i>. <a href="https://doi-org.ezproxy.uakron.edu/2443/10.1016/j.wombi.2021.01.007">https://doi-org.ezproxy.uakron.edu/2443/10.1016/j.wombi.2021.01.007</a></p>	<p>Purpose Statement: “to describe the effects of the COVID-19 pandemic on maternal perinatal mental health in Spain” (pg 3). Research question: How was prenatal maternal mental health affected during the COVID-19 pandemic and what other factors contributed to this stress?</p>	<p>Setting: Spain  Sampling method: Online survey  Sample size: 724 women, pregnant and postpartum</p>	<p>Design: Nonexperimental, Cross-sectional study. The following scales were included in the online survey: Edinburgh Postnatal Depression Scale, the Positive and Negative Affect Schedule, and the Satisfaction With Life Scale.  Level of Evidence: 4</p>	<p>The study showed that 58% of women reported depressive symptoms as well as 51% of women reporting anxiety symptoms.</p>	<p>A focus on clinical support for pregnant and postpartum women during this pandemic is necessary. Coping methods that can be used by maternity services during the pandemic can be discovered by better understanding the pathways to both distress and well-being in pregnant women.</p>	<p>The study was done online which limits it to only being able to assess acute psychological responses. Due to this, it may not be representative of the population.</p>
<p>3 Chivers, B. R., Garad, R. M., Boyle, J. A., Skouteris, H., Teede, H. J., &amp; Harrison, C. L. (2020). Perinatal Distress During COVID-19: Thematic Analysis of an Online Parenting Forum. <i>Journal of Medical Internet Research</i>, 22(9), N.PAG. <a href="https://doi-org.ezproxy.uakron.edu/2443/10.2196/22002">https://doi-org.ezproxy.uakron.edu/2443/10.2196/22002</a></p>	<p>Purpose Statement: “To understand the sentiment and impacts to emotional well-being as well as the unmet information and support needs arising from changes to social dynamics and support in a perinatal cohort during the COVID-19 pandemic” (pg 2).  Research question: What impacts on mothering identity and social dynamics can be seen due to COVID-19?</p>	<p>Setting: An Australian online support forum for women pre- through to post birth Sampling method: Keyword search for posts on “COVID,” “corona,” and “pandemic.” Sample size: 831 posts</p>	<p>Design: Nonexperimental Observational, qualitative analysis. Online discussions within a leading Australian forum for new or expecting parents were analyzed in the study. Key search terms were used to find relevant information including “COVID,” “corona,” or “pandemic.”  Level of Evidence: 4</p>	<p>Due to the lack of scholarly and researched information, the psychological and psychosocial stressors have been increased in women who are pregnant. These women are in a vulnerable group that have higher stress, increased isolation, decreased social and emotional support, rising familial troubles, and impacts on family planning.</p>	<p>Information about risk and avoiding getting infected needs to be quick, consistent, and accessible, according to the findings of the study. Adoption of interventions related to strategies to reduce or de-escalate anxiety. Also, support strategies are needed for these women for familial losses, social support, communication between health professionals, and mental health interventions that are unique to pregnant women during the pandemic.</p>	<p>The study was anonymous so no demographical or geographical data was obtained about the participants which could influence their involvement in the study. It could also influence their perception and attitude toward the pandemic. Due to the fact that these were real-life, anonymous discussions, the information gathered from them are not as likely to have social desirability or recall bias.</p>



<p>4 Dotters-Katz, S. K., Harris, H., Wheeler, S. M., Swamy, G. K., &amp; Hughes, B. L. (2021). Specialized prenatal care delivery for coronavirus disease 2019-exposed or -infected pregnant women. <i>American Journal of Obstetrics &amp; Gynecology</i>, 224(3), 325–327. <a href="https://doi.org/10.1016/j.ajog.2020.11.025">https://doi.org/10.1016/j.ajog.2020.11.025</a></p>	<p>Purpose Statement: “to demonstrate feasibility of a cohorted prenatal care model that isolates COVID-19–positive and quarantined COVID-19–exposed pregnant women in a separate clinic location” (pg 325). Research question: Is it possible to provide obstetrical care while minimizing exposure risk through a separate clinic for COVID-19 exposed and quarantined pregnant women?</p>	<p>Setting: a single academic health system’s obstetrics (OB) COVID-19 clinic Sampling method: Women receiving prenatal care within a 3-hospital system with COVID-19 or at high risk. The risk was assessed using the American College of Obstetricians and Gynecologists COVID-19 algorithm. Sample size: 85 women</p>	<p>Design: Nonexperimental. Women who were receiving prenatal care within a 3-hospital system with COVID-19 or at high risk were recruited for the study. The risk level was assessed using the American College of Obstetricians and Gynecologists COVID-19 algorithm<sup>2</sup>. Nurses at each hospital providing obstetrical care were trained on using the algorithm, ordering testing, and scheduling.  Level of Evidence: 4</p>	<p>In March 18, 2020, to July 30, 2020, 63 women had COVID-19 that came into the clinic. Of these women, 6 (9.5%) were asymptomatic, 49 (77.8%) had mild symptoms, 6 (9.5%) had moderate symptoms, 2 (3.2%) had severe disease, and only 7 patients required hospitalization. Of those hospitalized, the length of stay ranged from 1 to 6 days. For treatments, 3 patients received remdesivir, and none received corticosteroids. None of the patients developed fetal growth restriction, and 28 (44%) of the women have delivered their baby.</p>	<p>This study shows how resources should be allocated through different health care systems. It helps with developing skills for experts such as donning and doffing PPE. It also helps with providing consistent and quality care and recommendations to patients with COVID-19.</p>	<p>The limitations of the study were that it was only limited to one hospital system.</p>
<p>5 Javaid, S., Barringer, S., Compton, S. D., Kaselitz, E., Muzik, M., &amp; Moyer, C. A. (2021). The impact of COVID-19 on prenatal care in the United States: Qualitative analysis from a survey of 2519 pregnant women. <i>Midwifery</i>, 98. <a href="https://doi.org/10.1016/j.midw.2021.102991">https://doi.org/10.1016/j.midw.2021.102991</a></p>	<p>Purpose Statement: “To explore if and how women perceived their prenatal care to have changed as a result of COVID-19” (pg 2). Research question: What impact have perceived changes in</p>	<p>Setting: Online survey with participants from 47 states within the US Sampling method: Survey Sample size:</p>	<p>Design: Nonexperimental An anonymous, online, cross-sectional survey of pregnant women in the United States. The study was conducted between April 3, 2020 and April 24, 2020. The</p>	<p>The themes that dominated this study included the role COVID-19 has played in making changes within the healthcare system, changes in the behavior of pregnant women and their communication with</p>	<p>There needs to be better communication between healthcare providers and patients to make sure that they understand the new processes and procedures as well as managing the outlooks for the future. There needs to be better support for women</p>	<p>There could have been possible selection biases associated with an online survey. Since it was distributed primarily through social media, the recruited participants are relatively well-educated and disproportionately white.</p>

	prenatal care had on pregnant women?	2519 pregnant women from 47 states	participants were given an open-ended prompt asking about how COVID-19 has affected their prenatal care. Level of Evidence: 4	healthcare providers, and the emotional repercussions of women that were pregnant during the pandemic.	pregnant during the pandemic as well as National guidelines to improve care.	
6	<p>Khoury, J. E., Atkinson, L., Bennett, T., Jack, S. M., &amp; Gonzalez, A. (2021). COVID-19 and mental health during pregnancy: The importance of cognitive appraisal and social support. <i>Journal of Affective Disorders</i>, 282, 1161–1169. <a href="https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.jad.2021.01.027">https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.jad.2021.01.027</a></p> <p>Purpose Statement: “To understand the impact of COVID-19 on mental health and identify risk and protective factors during pregnancy” (pg 1161 and 1162).</p> <p>Research question: What risk and protective factors can be identified during pregnancy?</p>	<p>Setting: Ontario, Canada</p> <p>Sampling method: Survey</p> <p>Sample size: 303 pregnant women</p>	<p>Design: Nonexperimental. Depression, anxiety and insomnia were measured using validated questionnaires</p> <p>Level of Evidence: 4</p>	<p>During the COVID-19 pandemic, pregnant women are experiencing higher symptoms of depression, anxiety, and similar rates of insomnia which has increased from pre-COVID. The study found that the increase in mental health symptoms are related to factors including threat of contact tracing for COVID-19, economic hardship, social isolation, and relationship hardships. The introduction of social support has been shown to protect pregnant women from having increased mental health symptoms.</p>	<p>The factors that can be influenced by interventions include social support and cognitive appraisal. The study found that there is a necessity to enhance the mental health status of pregnant women, especially going through a stressful time like the pandemic.</p>	<p>The information about mental health obtained from the questionnaire may look different than if it were conducted using in-person interviews. There was no data collected about previous mental health issues among the participants which prevents the researchers from identifying if there was actually an increase in mental health symptoms due to the pandemic. There is no way to tell if the anxiety or depression symptoms were elevated because of the pandemic or if it is related to other mental health problems.</p>
7	<p>Koyucu, R. G., &amp; Karaca, P. P. (2021). The Covid 19 outbreak: Maternal Mental Health and</p> <p>Purpose Statement: “To identify the rates of prevalence of maternal depression,</p>	<p>Setting: Online survey</p> <p>Sampling method:</p>	<p>Design: Nonexperimental. The survey questions were introduced using</p>	<p>The study showed that there were high levels of stress, anxiety, and depression among</p>	<p>There needs to be more social support, obstetric counseling and support, and psychosocial</p>	<p>There could be selection bias due to the fact that the study was conducted solely online on social media.</p>

<p>Associated Factors. <i>Midwifery</i>, 99. <a href="https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.midw.2021.103013">https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.midw.2021.103013</a></p>	<p>anxiety, and stress during the mandatory social isolation period and to investigate factors affecting the risk for clinically significant symptoms” (pg 2).</p> <p>Research question: Is there an increased rate of maternal depression during the social isolation period related to before the pandemic and what factors affect the risk for depression?</p>	<p>Online survey</p> <p>Sample size: 729 Pregnant women over the age of 18 years with no mental disorder during the pre-pregnancy period</p>	<p>“Google Forms” as the survey method. The survey was distributed on a social media page that included postings about healthy recommendations based on current scientific research.</p> <p>Level of Evidence: 4</p>	<p>women during the COVID-19 pandemic. These findings were higher than they were before the pandemic. Many factors contributed to the rise in anxiety, stress, and depression including job loss, the obstetric risk, risk of chronic disease, advanced age, and lack of social support. These factors were predictive for prenatal maternal mental disorders during the pandemic. There were also concerns reported by pregnant women that were unique to their pregnancy and birth, which surfaced after the COVID-19 outbreak.</p>	<p>screening-support. The study also showed that there should be necessary precautions taken to ensure the safety and “perceptions of safety” related to the infection among pregnant women.</p>	
<p>8 Lin, W., Wu, B., Chen, B., Zhong, C., Huang, W., Yuan, S., Zhao, X., &amp; Wang, Y. (2021). Associations of COVID-19 related experiences with maternal anxiety and depression: implications for mental health management of pregnant women in the post-pandemic era. <i>Psychiatry Research</i>, 304. <a href="https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.psychres.2021.114115">https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.psychres.2021.114115</a></p>	<p>Purpose Statement: “to clarify the associations of COVID19 related experiences with maternal anxiety and depression symptoms, which may help to guide the mental health management of pregnant women in</p>	<p>Setting: A survey from February 17th to March 16th, 2020 in Shenzhen, China</p> <p>Sampling method: a cross-sectional survey</p> <p>Sample size: 751 pregnant women</p>	<p>Design: Nonexperimental. An electronic survey, or questionnaire, was sent to Pregnant Women schools using WeChat which is a social media platform for messaging. Participants were also recruited by Shenzhen Maternity and Child</p>	<p>The study found that there was lower anxiety and depression in older individuals, higher anxiety and depression in women younger than 35. The higher the anxiety and depression symptoms, the more severe the COVID-19 experience. Women</p>	<p>There should be an emphasis on providing psychiatric care to pregnant women who are uninfected. Also, they should be educated on how to self-assess for physiological symptoms of COVID-19 and taught where they can find support groups.</p>	<p>The researchers were only able to verify a casual hypothesis for already existing associations, due to the cross-sectional design. The sample size was small. The online survey was not random, so it is not perfectly representative of the population (all pregnant women).</p>

	<p>the post-pandemic era” (pg 2).</p> <p>Research question: Are unpleasant COVID-19 experiences a cause for maternal prenatal mental distress?</p>		<p>Healthcare Hospital (SMCHH)</p> <p>Level of Evidence: 4</p>	<p>with more family support had lower anxiety or depression. Conclusions were made that women who were pregnant under 30 had higher anxiety and depression. Women who are older may have more resilience. There was higher anxiety among pregnant women with confirmed or suspected COVID-19 cases around them. There were strong associations of life and psychological impacts on pregnant Chinese women regarding COVID-19.</p>		
<p>9 López-Morales, H., del Valle, M. V., Canet-Juric, L., Andrés, M. L., Galli, J. I., Poó, F., &amp; Urquijo, S. (2021). Mental health of pregnant women during the COVID-19 pandemic: A longitudinal study. <i>Psychiatry Research</i>, 295. <a href="https://doi-org.ezproxy.uakron.edu/2443/10.1016/j.psychres.2020.113567">https://doi-org.ezproxy.uakron.edu/2443/10.1016/j.psychres.2020.113567</a></p>	<p>Purpose Statement: “To analyze longitudinally the presence and evolution of psychopathological indicators in pregnant women throughout their period of confinement, and to compare it with non-pregnant women” (pg 2).</p> <p>Research question: What health policies</p>	<p>Setting: Argentinian cities</p> <p>Sampling method: Longitudinal study. There was a survey through Google Forms</p> <p>Sample size: 204 women</p>	<p>Design: nonexperimental, A survey on Google Forms was dispersed through social media databases. There were three different surveys that were completed at different times. The first was from March 22-25, the second was from April 3-6, and the third was from May 6-10.</p>	<p>Pregnant women showed a more prominent increase in anxiety and depression than non-pregnant women. As the pandemic progressed, depression symptoms increased for the sample group. In this time, the pregnant women reported moderate to severe depression, which is higher than non-pregnant women.</p>	<p>Prompt implementation of interventions for psychological issues. It is important that institutions delivering prenatal care have the information necessary to provide services to aid in psychological issues.</p>	<p>The sample size is small which limits the scope of the study. There were also more participants of higher socioeconomic status and educational level with only slight effects from the pandemic. The online survey could’ve added bias.</p>

	can be created for pregnant women to reduce the negative effects on maternal mental health during the pandemic?		Level of Evidence: 4	Pregnant women also had moderate anxiety, which was higher than non-pregnant women. There was an interaction between time and group on anxiety levels. Pregnancy was an extra factor in increasing anxiety levels on top of the anxiety associated with the pandemic.		
10 Marshall, C., Gutierrez, S., Hecht, H., Logan, R., Kerns, J., & Diamond-Smith, N. (2023). Quality of prenatal and postpartum telehealth visits during COVID-19 and preferences for future care. <i>AJOG Global Reports</i> , 3(1). <a href="https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.xagr.2022.100139">https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.xagr.2022.100139</a>	<p>Purpose Statement: “This study aimed to describe perceived quality of prenatal and postpartum telehealth visits during COVID-19 and to examine the association between telehealth quality during the pandemic and future telehealth preferences”</p> <p>Research Question: What is the quality of telehealth visits during the pandemic and how is it associated with future telehealth quality?</p>	<p>Setting: United States</p> <p>Sampling method: online survey</p> <p>Sample size: 1496 pregnant women and 482 postpartum women</p>	<p>Design: nonexperimental online survey</p> <p>Level of Evidence: 4</p>	<p>Those who had higher quality telehealth visits had better outcomes overall. These participants also stated that they were more likely to use telehealth in the future. Most people preferred in-person visits, but quality telehealth visits</p>	<p>It is important to provide adequate and quality telehealth appointments. This also requires extensive communication and offer many appointment options.</p>	<p>The study had a large sample size. There was only a small sample size of previously pregnant women and currently pregnant women, which makes it harder to assess change over time. There was no information on whether the participants had a choice of telehealth or in-person visits. There was not much data on high risk pregnancies. There was bias in the sampling due to using Facebook as the source.</p>
11 McMillan, I. F., Armstrong, L. M., & Langhinrichsen-Rohling, J.	<p>Purpose Statement: “To determine how COVID-19 factors are</p>	<p>Setting: survey of women in the United States</p>	<p>Design: nonexperimental, cross-sectional</p>	<p>Many pregnant women had increased stress about the</p>	<p>There needs to be proper emotional and mental support for first time</p>	<p>The sample size was small, so it may not be generalizable to all pregnant</p>

<p>(2021). Transitioning to parenthood during the pandemic: COVID-19 related stressors and first-time expectant mothers' mental health. <i>Couple and Family Psychology: Research and Practice</i>, 10(3), 179–189. <a href="https://doi-org.ezproxy.uakron.edu/2443/10.1037/cfp0000174">https://doi-org.ezproxy.uakron.edu/2443/10.1037/cfp0000174</a></p>	<p>impacting first-time pregnant U.S. women, while also investigating whether these pandemic-related changes predict maternal mental health” (pg 180).</p> <p>Research question: Do external and internal factors related to COVID-19 have on first time mother's mental health and prenatal experiences?</p>	<p>Sampling method: recruited through Amazon MTurk</p> <p>Sample size: 49 first time mothers</p>	<p>design. Participants were given a survey where they were assessed on their COVID-19 related pregnancy distress, the pandemic impacts, marital satisfaction, and the expecting mothers mental health symptoms.</p> <p>Level of Evidence: 4</p>	<p>changes in prenatal care due to COVID-19. Some of the expecting mothers reported changes in their prenatal care from in-person to virtual. Most reported moderate to severe distress regarding prenatal care changes due to COVID. There was higher general anxiety in expecting mothers associated with higher COVID-19 related stress. Isolation in expecting mothers increased the level of depression symptoms. Many expectant mothers reported their prenatal health care provider canceled one or all of their visits. Expectant mothers having to care for COVID-19 infected people increased anxiety immensely. Isolation resulted in less stress. Not many women reported changing their birth plan.</p>	<p>pregnant women to find adequate coping mechanisms during the pandemic. Clear communication between prenatal healthcare providers and the expectant mothers is extremely important. Education and support is also necessary for expectant mothers from their prenatal care providers. Making sure to include the expectant mothers in the healthcare decisions may reduce their anxiety. Better access to telehealth for these patients is necessary.</p>	<p>women. Special attention was needed to ensure that pregnancy-related data was obtained. The cross-sectional design limits the conclusion of the direction of the effects.</p>
<p>12 Moyer, C. A., Compton, S. D., Kaselitz, E., &amp; Muzik, M. (2020).</p>	<p>Purpose Statement: “To explore the impact of the COVID-</p>	<p>Setting: United States. English</p>	<p>Design: nonexperimental, cross-sectional study</p>	<p>The anxiety mainly stemmed from running out of food, losing a</p>	<p>For providers, it is important to recognize pregnant patient's</p>	<p>Relying on women's memory of their anxiety levels before COVID</p>

<p>Pregnancy-related anxiety during COVID-19: a nationwide survey of 2740 pregnant women. <i>Archives of Women's Mental Health</i>, 23(6), 757–765. <a href="https://doi-org.ezproxy.uakron.edu:2443/10.1007/s00737-020-01073-5">https://doi-org.ezproxy.uakron.edu:2443/10.1007/s00737-020-01073-5</a></p>	<p>19 pandemic on pregnant women's anxiety, as well as to identify the factors that were most strongly associated with a greater increase in anxiety” (pg 758).</p> <p>Research question: What factors during the COVID-19 pandemic greatly increase the anxiety level in pregnant women?</p>	<p>language. Online survey.</p> <p>Sampling method: Snowball sampling</p> <p>Sample size: 2,740 pregnant women</p>	<p>of pregnant women. An anonymous, online survey. The survey included a modified pregnancy-related anxiety scale for before COVID and during.</p> <p>Level of Evidence: 4</p>	<p>job or income, or loss of childcare. One third of the sample reported already having mental health related symptoms. About 25% reported stopping in-person prenatal visits. Smaller changes in anxiety symptoms were seen in women who were older, married, had higher education, and planned to give birth at home. 93% of the sample reported higher anxiety about possibly contracting COVID-19.</p>	<p>anxiety and provide additional support to those who need it. It is also important for providers to see that with higher levels of anxiety, there were more changes from giving birth in a hospital to at home. Discussion about birth plans is important due to the pandemic.</p>	<p>because it has potential for recall bias. The online survey caters more to tech-savvy, higher educated individuals. Minority populations are underrepresented.</p>
<p>13 Naghizadeh, S., &amp; Mirghafourvand, M. (2021). Relationship of fear of COVID-19 and pregnancy-related quality of life during the COVID-19 pandemic. <i>Archives of Psychiatric Nursing</i>, 35(4), 364–368. <a href="https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.apnu.2021.05.006">https://doi-org.ezproxy.uakron.edu:2443/10.1016/j.apnu.2021.05.006</a></p>	<p>Purpose Statement: “To determine the relationship between fear of COVID-19 and pregnancy-related quality of life during prevalence of COVID-19 in Tabriz-Iran, for which we considered the conditions of disasters, crisis and diseases such a COVID-19 followed by a quarantine as well as increasing level of fear, stress and mental damages</p>	<p>Setting: Iran</p> <p>Sampling method: Questionnaire, convenience sampling</p> <p>Sample size: 250 pregnant women</p>	<p>Design: nonexperimental, cross-sectional study. A questionnaire was distributed for pregnant women to answer. There were three parts to this questionnaire to assess fear and quality of life.</p> <p>Level of Evidence: 4</p>	<p>As the fear of COVID increased in pregnant women, their quality of life decreased. Also, the higher the fear level of COVID the decreased quality of mental life.</p>	<p>The development of interventions to overcome fear of COVID-19 is necessary to help these pregnant patients.</p>	<p>The relationship between fear and quality of life does not indicate a casual relationship due to the cross-sectional nature of the study. Convenience sampling reduces the generalizability of the study. There could also be response bias due to the questionnaire. The study was done with only Tabriz and Azeri Iranian people so it can not be generalized to other cities or ethnic groups.</p>

	<p>in the people of society” (pg 365).</p> <p>Research question: What is the relationship between fear of COVID-19 and the quality of life for pregnant women in the pandemic?</p>					
<p>14 Palmer, K. R., Tanner, M., Davies-Tuck, M., Rindt, A., Papacostas, K., Giles, M. L., Brown, K., Diamandis, H., Fradkin, R., Stewart, A. E., Rolnik, D. L., Stripp, A., Wallace, E. M., Mol, B. W., &amp; Hodges, R. J. (2021). Widespread implementation of a low-cost telehealth service in the delivery of antenatal care during the COVID-19 pandemic: an interrupted time-series analysis. <i>Lancet</i>, 397(10294), 41–52. <a href="https://doi.org/10.1016/S0140-6736(21)00668-1">https://doi.org/10.1016/S0140-6736(21)00668-1</a></p>	<p>Purpose Statement: “to assess the effectiveness and safety of telehealth in antenatal care” (pg 41).</p> <p>Research question: Is using telehealth for prenatal care effective and safe to use for patient “visits” during the pandemic compared to in-person visits?</p>	<p>Setting: a hospital in Victoria, Australia</p> <p>Sampling method: All consecutive pregnancies at the hospital</p> <p>Sample size: 2,292 pregnant women</p>	<p>Design: quasi-experimental, An interrupted time-series analysis. Telehealth appointments were used and data was collected during the appointment.</p> <p>Level of Evidence: 3</p>	<p>There weren’t many differences in outcomes with low or high-risk pregnancies using the telehealth consultations compared to conventional care. The integration of telehealth decreased the amount of in-person visits which did not compromise pregnancy.</p>	<p>Telehealth could be integrated to reduce the number of in-person visits during COVID-19 and to protect people from the spread of it. This could change the way prenatal care is delivered in the future as well. Telehealth could be a new way to deliver prenatal care going forward.</p>	<p>The study only used video calls, so it is not generalizable for all telehealth, specifically those who use voice call. Differences in outcomes may change over time due to the study only assessing the first 3 months after integration of telehealth.</p>
<p>15 Perzow, S. E. D., Hennessey, E.-M. P., Hoffman, M. C., Grote, N. K., Davis, E. P., &amp; Hankin, B. L. (2021). Mental health of pregnant and postpartum women in response to the COVID-19 pandemic. <i>Journal of Affective Disorders Reports</i>, 4. <a href="https://doi.org.ezproxy.uakron.edu:2443/10.1016/j.jadr.2021.100123">https://doi.org.ezproxy.uakron.edu:2443/10.1016/j.jadr.2021.100123</a></p>	<p>Purpose Statement: “To examine change in internalizing symptoms from before to during the COVID-19 pandemic among pregnant and postpartum women longitudinally, and investigate moderation by loneliness and other</p>	<p>Setting: Care Project in Denver, Colorado</p> <p>Sampling method: Randomized control trial</p> <p>Sample size: 135 pregnant women</p>	<p>Design: Nonexperimental, It is a longitudinal study. A self-report questionnaire was given to pregnant women. Depressive symptoms, anxiety symptoms, loneliness, income-to-needs ratio, and COVID-19</p>	<p>Depression symptoms during the pandemic were just as high as during pre-pregnancy. Anxiety symptoms were higher in pregnant women during COVID-19. Women with higher loneliness symptoms had higher depressive symptoms during the</p>	<p>Identifying pregnant mothers at risk is important in early diagnosis and finding proper treatment. Utilizing proper treatment for pregnant women with anxiety and depression will decrease fetal exposure to the stress of these psychological issues.</p>	<p>There are only causal conclusions made on the mental health of mother’s due to the correlational nature of data.</p>



	<p>contextual risk factors” (pg 1).</p> <p>Research question: What would happen to depressive and anxiety symptoms in pregnant mothers during the COVID-19 pandemic compared to pre-COVID?</p>		<p>specific adversity were assessed.</p> <p>Level of Evidence: 4</p>	<p>pandemic. Higher levels of depression and anxiety were seen in women who experienced more COVID-19 adversity.</p>		
<p>16 Preis, H., Mahaffey, B., Heiselman, C., &amp; Lobel, M. (2020). Vulnerability and resilience to pandemic-related stress among U.S. women pregnant at the start of the COVID-19 pandemic. <i>Social Science &amp; Medicine</i>, 266. <a href="https://doi-org.ezproxy.uakron.edu/2443/10.1016/j.socscimed.2020.113348">https://doi-org.ezproxy.uakron.edu/2443/10.1016/j.socscimed.2020.113348</a></p>	<p>Purpose Statement: “Given the well-documented harms associated with elevated prenatal stress and the critical importance of developing appropriately targeted interventions, we investigated factors predictive of pandemic-related pregnancy stress” (pg 1).</p> <p>Research question: “Which sociodemographic, medical, and situational factors are most associated with greater pandemic-related pregnancy stress among pregnant women in the U.S.</p>	<p>Setting: United States Sampling method: online questionnaire</p> <p>Sample size: 4,451 pregnant women</p>	<p>Design: Nonexperimental. There was an online survey/questionnaire that was given to the participants to fill out. It included sociodemographic, medical, and COVID-19 situational factors. The Pandemic-Related Pregnancy Stress Scale (PREPS) was used to assess the level of stress. To compute the odd ratios for high stress, the binary logistic regression method was used.</p> <p>Level of Evidence: 4</p>	<p>There were about 30% of the sample group that reported that they had high preparedness stress, while a similar amount reported high perinatal infection stress. One or both types of stress levels were increased when there were other risk factors like abuse history, chronic illness, income loss due to the pandemic, perceived risk of having had COVID-19, alterations to prenatal appointments, high-risk pregnancy, and being a woman of color were involved. Some of the protective factors against stress were found to be access to outdoor space, older age, and</p>	<p>The study’s findings help to understand the experiences of pregnant women during the pandemic as well as look at other evidence that shows the effect of stress during pregnancy in general. The study identifies which kinds of women are at a higher risk of stress and how this may be coped with or fixed. It is important to understand these categories of information because it allows for the best quality of life for mothers and their children.</p>	<p>The sample size is smaller and narrowed due to the fact that social media was used to recruit the participants.</p>

	and which appear to be protective?” (pg 2).			engagement in healthy behaviors.		
17 Preis, H., Mahaffey, B., & Lobel, M. (2021). The role of pandemic-related pregnancy stress in preference for community birth during the beginning of the COVID-19 pandemic in the United States. <i>Birth: Issues in Perinatal Care</i> , 48(2), 242–250. <a href="https://doi.org/10.1111/birt.12533">https://doi.org/10.1111/birt.12533</a>	Purpose Statement: “The purpose of this study was to investigate contributors to preference for community birth among women residing in the United States who were pregnant at the beginning of the COVID- 19 Pandemic” (pg 243). Research question: What concerns are there about where it is the safest to give birth, while preserving their rights and wishes?	Setting: United States Sampling method: recruited online between April 24 and May 15, 2020  Sample size: 3896 pregnant women from the COVID-19 Pregnancy Experiences (COPE) Study who were anticipating a vaginal birth	Design: Nonexperimental. A survey/questionnaire included the preference with respect to place of birth and psychological constructs: fear of childbirth, basic beliefs about birth, pandemic-related preparedness stress, and pandemic-related perinatal infection stress  Level of Evidence: 4	In the study, women had less fear of childbirth, stronger beliefs that the birth process is natural, were less stressed about preparedness for birth, did not see birth as a medical procedure, and less stressed about contracting COVID-19 when they favored a community birth. In another study model which was multivariate, the women who favored community birth had elevated stress related to contracting COVID-19 while pregnant. The study found that when there was preparedness stress, there was a higher prevalence of infection stress as well.	Risk perception was a main theme that was uncovered in the study. Risk perception was related to pregnant women’s psychological processes and affected their birth preferences during the pandemic. Going to the hospital to give birth was a perceived risk for many women which made community births more attractive. The study found that there should be interventions and policies in place for prenatal care to make hospital and community births safer.	Due to the online nature of the survey and that it was distributed through Facebook advertisements, the sample size could be biased to only people who use the specific social media.
18 Preis, H., Mahaffey, B., Pati, S., Heiselman, C., & Lobel, M. (2021). Adverse Perinatal Outcomes Predicted by Prenatal Maternal	Purpose Statement: “To understand whether stress experienced by women pregnant at	Setting: USA aged $\geq 18$ years old Sampling method: Voluntary enrollment	Design: nonexperimental, prospective cohort study	In the study, sociodemographic and medical factors were controlled for. Preterm birth was estimated to	According to this study, the higher the prenatal stress during the pandemic, the higher the	IN the questionnaire, there was self-reporting done which can be unreliable or biased. Due to the self-report method, the reporting

<p>Stress Among U.S. Women at the COVID-19 Pandemic Onset. <i>Annals of Behavioral Medicine</i>, 55(3), 179–191. <a href="https://doi.org/10.1093/abm/kaab005">https://doi.org/10.1093/abm/kaab005</a></p>	<p>the beginning of the pandemic was associated with a greater prevalence of adverse perinatal outcomes” (pg 179).</p> <p>Research question: Does stress experienced by pregnant women at the start of the pandemic influence a higher instance of adverse perinatal outcomes?</p>	<p>Sample size: 1,367 participants who gave birth prior to July–August 2020</p>	<p>Level of Evidence: 4</p>	<p>increase due to stress. Infants born small for gestational age rates were estimated by stress due to unpreparedness for birth due to the pandemic and interpersonal violence. Prenatal appointment alterations influenced the type of delivery, either unplanned cesarean or operative. Delivering preterm was increased in African American women, not related to these correlations.</p>	<p>risk of poorer prenatal outcomes.</p>	<p>of stress levels, factors and triggers affecting stress may be unreliable.</p>
<p>19 Puertas-Gonzalez, J. A., Mariño-Narvaez, C., Peralta-Ramirez, M. I., &amp; Romero-Gonzalez, B. (2021). The psychological impact of the COVID-19 pandemic on pregnant women. <i>Psychiatry Research</i>, 301. <a href="https://doi.org/10.1016/j.psychres.2021.113978">https://doi.org/10.1016/j.psychres.2021.113978</a></p>	<p>Purpose Statement: “To analyze this psychological impact on pregnant women and the factors that may influence these effects” (pg 2).</p> <p>Research question: How the different variables relating to the COVID-19 pandemic and the lockdown could affect the psychological state of pregnant women?</p>	<p>Setting: San Cecilio University Hospital, Góngora and Mirasierra health centers in Granada</p> <p>Sampling method: Voluntary survey</p> <p>Sample size: 200 pregnant women. The first group called the Pandemic Group (PG) included 100 women who were evaluated with psychological assessment</p>	<p>Design: Nonexperimental, Cross-sectional study</p> <p>Level of Evidence: 4</p>	<p>Pregnant women are part of a vulnerable group. They are more at risk of developing depression and anxiety symptoms which increased due to the pandemic, according to this study.</p>	<p>The risk of being infected with COVID-19 has sparked fear in many pregnant women and increased anxiety and depression symptoms. These negative symptoms and stress due to COVID-19 could cause harmful effects on the mother and child.</p>	<p>This study is the only one that assesses the effect of the pandemic on pregnant women in Spain.</p>

		instruments during the COVID-19 pandemic. The second group titled Pre-Pandemic Group (PPG) consisted of 100 women who were evaluated prior to the pandemic.				
20 Rabinowitz, E. P., Kutash, L. A., Richeson, A. L., Sayer, M. A., Samii, M. R., & Delahanty, D. L. (2023). Depression, anxiety, and stress in pregnancy and postpartum: A longitudinal study during the COVID-19 pandemic. <i>Midwifery</i> , <i>121</i> . <a href="https://doi-org.ezproxy.uakron.edu/2443/10.1016/j.midw.2023.103655">https://doi-org.ezproxy.uakron.edu/2443/10.1016/j.midw.2023.103655</a>	<p>Purpose Statement: “The present paper examined the trajectory of symptoms over time during the pandemic as well as investigated risk factors for elevated postpartum symptoms”</p> <p>Research Question: “Based on the existent literature, we made the following hypotheses: 1.Levels of depression, anxiety, and stress will remain consistently elevated over time. 2.The trajectories of depression, anxiety and stress over time will show a curvilinear trend such that symptoms will increase from early to later pregnancy and</p>	<p>Setting: United States Sampling method: online recruiting for survey Sample size: 127 pregnant or &lt;1 month postpartum women</p>	<p>Design: nonexperimental online questionnaire Longitudinal study</p> <p>Level of Evidence: 4</p>	<p>The prevalence of postpartum anxiety and depression symptoms during the pandemic was higher than pre-pandemic levels. Stress levels were elevated through the pandemic compared to pre-pandemic stress levels. There was a higher incidence of stress in the second trimester. Canceled virtual appointments and lack of social support may have contributed to this stress.</p>	<p>Adequate support groups and assessment of mental health is necessary to promote beneficial outcomes for pregnant women during the pandemic. Also, screening for symptoms of anxiety and depression should be a priority during prenatal, trimester, and postpartum visits.</p>	<p>The study may not be generalizable to all pregnant women because it did not assess race or ethnicity and there was a limited number of participants for the first trimester part of the study.</p>

then decrease in the postpartum period.  
3. Findings will remain significant after controlling for sociodemographic and COVID-19 related factors.

4. Baseline low social support, high pregnancy risk status, high perceived changes in routine and higher levels of worry about going to a healthcare facility due to COVID-19 will significantly predict higher levels of depression, anxiety, and stress at one-month postpartum. Additionally, we hypothesized that maternal age and parity would significantly predict depression, anxiety, and stress levels one-month postpartum. As the literature is mixed on the effects of maternal age and parity on mental health symptoms, we did not hypothesize a

	direction for these effects”					
21 Rathbone, A. L., Prescott, J., & Cross, D. (2021). Pregnancy in a pandemic: generalized anxiety disorder and health anxiety prevalence. <i>British Journal of Midwifery</i> , 29(8), 440–446. <a href="https://doi.org.ezproxy.uakron.edu/2443/10.12968/bjom.2021.29.8.440">https://doi.org.ezproxy.uakron.edu/2443/10.12968/bjom.2021.29.8.440</a>	<p>Purpose Statement: “This study aimed to explore current, actual and perceived levels of generalized anxiety disorder and health anxiety in pregnant women during the COVID-19 outbreak” (pg 440).</p> <p>Research question: How have current, general, and health anxiety levels changed through the course of the pandemic for pregnant women?</p>	<p>Setting: United States</p> <p>Sampling method: Social media promotions</p> <p>Sample size: 674 participants</p>	<p>Design: Nonexperimental. online questionnaire consisting of demographic and pregnancy related questions. It includes the GAD-7 and HAI. Level of Evidence: 4</p>	<p>There was an increase of self-reported symptoms of general and health anxiety in pregnant women due to the COVID-19 pandemic. Most of the women reported that the pandemic increased their anxiety.</p>	<p>Normal pre and postnatal care is recommended to go back to, to help reduce the negative effects of the anxiety that is caused by the pandemic in pregnant women.</p>	<p>Due to the use of social media as the method of recruitment, this sample selection may be biased.</p>
22 Sharifi-Heris, Z., Moghasemi, S., Ghamsary, M., Moodi, S., Ghprbani, Z., & Amiri-Farahani, L. (2021). Perceived risk of COVID-19 acquisition and maternal mental distress. <i>British Journal of Midwifery</i> , 29(3), 140–149. <a href="https://doi.org/10.12968/bjom.2021.29.3.140">https://doi.org/10.12968/bjom.2021.29.3.140</a>	<p>Purpose Statement: “This study aims to examine the association of perceived risk toward COVID-19 viral infection acquisition and maternal mental distress” (pg 140).</p> <p>Research question: What is the effect of perceived risk of COVID-19 infection</p>	<p>Setting: United Kingdom</p> <p>Sampling method: Social media recruitment</p> <p>Sample size: 392 pregnant women</p>	<p>Design: Nonexperimental. Cross sectional study</p> <p>Level of Evidence: 4</p>	<p>In this study, stress, anxiety factor 1 and 2, depression, and protective behaviors all increased due to an increased perceived risk of being infected with COVID-19.</p>	<p>There may be an added stress for pregnant women regarding COVID-19.</p>	<p>This study is not set in the United States which means there may be a cultural barrier that doesn’t make the study representative of the entire population of pregnant women. There could be bias due to this.</p>

	on maternal mental stress?					
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