Coping strategies for COVID-19 pandemic-related stress and mental health during pregnancy

Sylvia E. Badon [*], Lisa A. Croen, Assiamira Ferrara, Jennifer L. Ames, Monique M. Hedderson, Kelly C. Young-Wolff, Yeyi Zhu, Lyndsay A. Avalos

Kaiser Permanente Northern California Division of Research, Oakland, CA, USA

ABSTRACT

Background: Increased stress has likely contributed to the observed high prevalence of depression and anxiety in pregnant individuals during the COVID-19 pandemic. The objective of this study was to assess the prevalence of coping strategies for COVID-19 pandemic-related stress and associations of these coping strategies with depression and anxiety symptoms during pregnancy.
Methods: 8320 members of Kaiser Permanente Northern California who were pregnant between June 22, 2020 and May 10, 2021 completed an online survey including questions about coping strategies since the start of the COVID-19 pandemic and current depression and anxiety symptoms. We used weighted regression to estimate prevalence ratios for moderate/severe depression and anxiety symptom severity associated with coping strategies.
Results: The most common coping strategies for COVID-19 pandemic-related stress were talking with friends and family (77%), outdoor physical activity (54%), and increasing screen time activities (52%). Exercising using online programs or videos, outdoor physical activity, talking with friends and family, and engaging in more family activities were associated with 29% to 38% lower prevalence of moderate/severe depression symptom severity and 16% to 34% lower prevalence of moderate/severe anxiety symptom severity.
Limitation: We are unable to rule out reverse temporality as an explanation for the observed results because of the cross-sectional design; depression or anxiety symptom severity may influence use of specific coping strategies.
Conclusion: Our results suggest that physical activity and connecting with others are coping strategies for COVID-19 pandemic-related stress that may be associated with better mental health in pregnant individuals.

1. Introduction

The COVID-19 pandemic has resulted in many stressors for pregnant individuals. A recent global survey reported that 59–67% of pregnant individuals reported being worried about contracting COVID-19 or their unborn baby and other family members and loved ones contracting COVID-19 (Basu et al., 2021). Uncertainty and changes in prenatal care, childcare, social support, and finances as a result of the COVID-19 pandemic have also increased stress in many pregnant individuals (Basu et al., 2021). Increased stress has likely contributed to the observed high prevalence of depression and anxiety in pregnant individuals during the COVID-19 pandemic (Shorey et al., 2021).

Active emotion-focused and positive appraisal coping styles and strategies for dealing with stress, such as focusing on positives and seeking emotional support, have been associated with better mental health during pregnancy, while avoidant coping styles and strategies have been associated with poor mental health during pregnancy (Guardino and Schetter, 2014; Ibrahim et al., 2019). Specifically during the COVID-19 pandemic, previous research supports the effectiveness of simple coping strategies, such as pursuing hobbies and going outside, for reducing depression and anxiety symptoms in the general population (Fullana et al., 2020). In pregnant individuals, emotion-focused coping has been reported to reduce some of the negative impact of COVID-19-related stressors on depression and anxiety symptoms (Khoury et al., 2021); however, specific strategies were not evaluated. The objective of this study was to assess the prevalence of coping strategies for COVID-19-pandemic-related stress and the associations of these coping strategies with depression and anxiety symptoms during pregnancy.

2. Methods

2.1. Study setting and population

We conducted a survey among members of the Kaiser Permanente Northern California integrated healthcare delivery system who were ≥12 weeks gestation between June 22, 2020 to May 10, 2021 (Ames et al., 2021). Eligible members were identified by a positive pregnancy test result or scheduled prenatal visit documented in the electronic health record (EHR). All eligible members (*n* = 58,767) were invited to participate via email; 11,848 (20% response rate) completed the survey. We included participants who indicated that they were stressed about the COVID-19 pandemic (*n* = 11,033) in this analysis.

2.2. Data collection

The Kaiser Permanente Northern California Institutional Review Board approved all study procedures. Participants provided electronic informed consent prior to participation in the survey.

The online 26-question survey asked participants about the impact of the COVID-19 pandemic on their health, health-related behaviors, and health care. The survey was adapted from the NIH Environmental Influences on Children's Health Outcomes COVID-19 Questionnaire (National Institutes of Health, 2020) (see S1 Appendix of (Ames et al., 2021) for a copy of the full survey). Data on sociodemographic and medical characteristics were obtained from linkage with the EHR for all invited individuals.

2.2.1. Coping strategies

Participants were asked to endorse all strategies they used for coping with COVID-19 pandemic-related stress during their pregnancy from a list of 14 strategies (Supplemental Table 1). Coping strategy options included emotion-focused strategies (e.g., using emotional support, religion), problem-focused strategies (e.g., using instrumental support), dysfunctional/avoidant coping strategies (e.g., self-distraction, substance use), and physical activity.

2.2.2. Depression and anxiety symptoms

Participants reported depression symptom severity in the last two weeks at the time of the survey using the 8-item Patient Health Questionnaire (PHQ-8) depression screener, a validated instrument for use in perinatal populations with 77% sensitivity and 62% specificity in pregnancy compared to a World Mental Health Composite International Diagnostic Interview (Smith et al., 2010). The PHQ-8 is adapted from the PHQ-9 and omits the question about thoughts of suicide or self-harm. Moderate/severe depression symptom severity was defined as PHQ-8 score ≥10. Participants reported anxiety symptom severity in the last two weeks using the GAD-7, a validated instrument for use in perinatal populations with 76% sensitivity and 52% specificity in pregnancy compared to a diagnostic interview (Simpson et al., 2014). Moderate/severe anxiety symptom severity was defined as GAD-7 score ≥10.

2.2.3. Covariates

Maternal sociodemographic characteristics (age, self-reported race and ethnicity, insurance type), parity, and history of depression or anxiety diagnosis in the three years prior to pregnancy (depression ICD-10 codes: F32.0–4, F32.8–9, F33.0–3, F34.1, F43.21, F43.23, F53.0, O90.6, O99.34; anxiety ICD-10 codes: F06.4, F40, F41, F42, F43.22, F43.23, O99.34) were obtained from the EHR. Sources of stress, self-reported COVID-19 diagnosis by a healthcare provider, and the impact of the COVID-19 pandemic on employment and childcare were obtained from survey questions.

2.3. Statistical analyses

We used inverse probability weighting to account for missing data due to survey non-response (*n* = 46,919 members did not participate in the survey) and item non-response (*n* = 2713 participants with missing variables for this analysis among 11,033 included participants) for our analytic sample of 8320 participants with complete data for analysis (Supplemental Table 2). Inverse probability weights for survey response and for having complete data for analysis models were calculated separately using predicted probabilities from logistic regression models. The survey response model included variables predicted to be associated with survey response (race and ethnicity category, insurance type, parity, trimester of pregnancy at the start of the COVID-19 pandemic) and additional variables strongly associated with depression or anxiety symptoms (maternal age). For women missing age (0.01%) we imputed using the mean value of age in all invited women (31.7 years). For women missing any other variables included in the survey response model, we included a 'missing' category for each variable. The final survey response model included all main effects and interaction terms. The complete data for analysis model included variables predicted to be associated with missing data (maternal age, race and ethnicity category, insurance type). The final complete data for analysis model included only main effects. The inverse of the predicted probability from each model was calculated. Weights from survey response and complete data for analysis models were multiplied to calculate final inverse probability weights for all women with complete data for analysis (*n* = 8320). Weights ranged from 1.8 to 43.6. For the 64 participants with weights greater than 20, weights were truncated at 20.

Weighted percent was calculated for each coping strategy. Weighted modified Poisson regression models were used to estimate prevalence ratios and 95% confidence intervals for moderate/severe depression symptom severity (compared to none/mild depression symptom severity) and separately for moderate/severe anxiety symptom severity (compared to none/mild anxiety symptom severity) associated with each coping strategy with greater than 1% prevalence. Models were adjusted for maternal age (years), race and ethnicity category (non-Hispanic white, Hispanic, Asian, non-Hispanic Black, Pacific Islander/Native American), insurance type (Medicaid, private), employment status (employed and working, other, unemployed because of the COVID-19 pandemic, unemployed not because of the COVID-19 pandemic, employed and on paid leave), childcare difficulties because of the COVID-19 pandemic (Y/N), parity (0/1+), history of depression or anxiety diagnosis (Y/N), self-reported COVID-19 diagnosis (Y/N), self-reported COVID-19 diagnosis in household (Y/N), and calendar month of survey completion.

3. Results

The most common sources of COVID-19 pandemic-related stress were health concerns (74%), social distancing/quarantine (62%), and impact of the pandemic on family members and children (56–57%) (Table 1). The most frequently endorsed coping strategy was talking with friends and family (77%), followed by going outside for physical activity (54%), and increasing screen time activities (52%) (Table 2). The average number of coping strategies endorsed was three. Eleven percent reported moderate or severe depression symptom severity and 12% reported moderate or severe anxiety symptom severity (Table 1).

Exercising using online programs or videos, going outside for physical activity, talking with friends and family, and engaging in more family activities were associated with 29% to 38% lower prevalence of moderate/severe depression symptom severity and 16% to 34% lower prevalence of moderate/severe anxiety symptom severity (Table 2). Talking to health care providers more frequently, increasing screen time activities, and eating more often were associated with 66% to 86% higher prevalence of moderate/severe depression symptom severity and 65% to 84% higher prevalence of moderate/severe anxiety symptom severity.

Table 1

Weighted characteristics of 8320 pregnant Kaiser Permanente Northern California members with complete data.

Sociodemographic characteristics	
Age (years), weighted mean (weighted SD)	32 (6)
Race and ethnicity category, n (weighted %)	
Non-Hispanic white	4324 (36)
Hispanic	1711 (29)
Asian	1904 (26)
Non-Hispanic Black	271 (7)
Pacific Islander/Native American	110 (2)
Medicaid insurance, n (%)	425 (9)
Employment status, n (%)	
Employed, working	5685 (64)
Other	1142 (16)
Unemployed, because of COVID-19 pandemic	680 (10)
Unemployed, not because of COVID-19 pandemic	660 (9)
Employed, on paid leave	153 (2)
Childcare difficulties because of COVID-19 pandemic, n (%)	2598 (32)

Medical characteristics	
Nulliparity, n (weighted %)	3575 (38)
History of depression or anxiety diagnosis[a], n (weighted %)	2242 (27)
Depression symptom severity category, n (weighted %)	
None (0–4)	5349 (62)
Mild (5–9)	2132 (26)
Moderate (10–14)	621 (8)
Severe (15–24)	218 (3)
Anxiety symptom severity category, n (weighted %)	
None (0–4)	5563 (66)
Mild (5–9)	1920 (23)
Moderate (10–14)	565 (8)
Severe (15–21)	272 (4)
COVID-19 diagnosis, n (weighted %)	238 (4)
COVID-19 diagnosis in household, n (weighted %)	450 (7)

Sources of COVID-19 pandemic-related stress	
Health concerns	6133 (74)
Social distancing or being quarantined	5405 (62)
Impact on family members	4830 (57)
Impact on child	4411 (56)
Impact on work	3077 (37)
Financial concerns	2744 (36)
Impact on community	2443 (28)
Access to personal care products or household supplies	1855 (24)
Access to medical care, including mental health care	1499 (19)
Access to baby supplies	975 (14)
Access to food	977 (13)

Timing of survey and pandemic exposure	
Trimester of pregnancy at survey completion, n (weighted %)	
First trimester (12–13 weeks)	1670 (21)
Second trimester (14–27 weeks)	5248 (65)
Third trimester (28–42 weeks)	1402 (14)
Weeks of pregnancy exposed to COVID-19 pandemic[b] at survey completion, weighted mean (weighted SD)	16 (4)

[a] In the three years prior to pregnancy.

[b] The first day of the shelter-in-place order in the Bay Area of northern California (March 16, 2020) was considered to be the date of the beginning of COVID-19 pandemic.

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