Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

General Hospital Psychiatry 84 (2023) 39–43

Contents lists available at ScienceDirect

General Hospital Psychiatry

journal homepage: www.elsevier.com/locate/genhospsych

Social determinants of perinatal mental health during the COVID-19 pandemic

Kodi Endres [a], Katherine Haigler [b], Marissa Sbrilli [c], Sona Jasani [d], Heidemarie Laurent [b,*]

[a] Penn State College of Medicine, Hershey, PA, USA
[b] Pennsylvania State University, Dept. of Human Development and Family Studies, University Park, PA, USA
[c] University of Illinois, Dept. of Psychology, Champaign, IL, USA
[d] Yale School of Medicine Dept. of Obstetrics, Gynecology and Reproductive Sciences, Newhaven, CT, USA

ARTICLE INFO

Keywords:
Social determinants of mental health
Perinatal
Racial disparities

ABSTRACT

Objective: We sought to clarify relevant social-structural determinants of perinatal mental health—material and social resources, as well as pandemic employment-related stressors, in White and BIPOC child-bearers—toward building comprehensive risk screening and prevention/intervention models that can alleviate health disparities. Each of these determinants was hypothesized to contribute to perinatal symptoms in ways that disproportionately benefit White child-bearers.

Method: A community sample of Illinois child-bearers (n = 409 pregnant, 122 new parents) completed online questionnaires from May 2020–June 2021. Relations between composite measures of child-bearers' material resources, social resources, and pandemic employment-related stressors and mental health symptoms were tested in multiple regression models. Main effects of social determinant composites and moderated effects by race/ethnic identification were tested.

Results: All social determinants displayed significant unique associations with mental health in the sample, with social resources carrying the greatest weight. Although no moderated effects of composite resource measures were found, the relation between pandemic employment-related reduced resources and symptoms proved stronger in BIPOC compared to White child-bearers.

Conclusions: Both stable social-structural determinants and acute crisis-related shifts contribute to perinatal mental health, with higher levels and/or impacts of resources helping to explain racial/ethnic disparities. These findings can inform more comprehensive screening and prevention protocols and policy recommendations that improve perinatal health outcomes.

1. Introduction and rationale for the current study

Mental health disorders during the perinatal period are common [1,2] and can lead to significant morbidity and mortality [3,4], particularly for Black, Indigenous, and People of Color (BIPOC; see [5]). Many who experience these disorders—and especially BIPOC [6–8]—are not screened for risk and identified as requiring closer follow-up, and/or do not receive adequate treatment, resulting in serious long-term health costs for individuals and society [9,10]. One reason for this may be the lack of a standardized, comprehensive screening protocol that captures relevant determinants of risk, with the understanding that social-structural variables are likely as important as biological or other proximal health risk factors in this equation [11–13]. In clinical practice, the most common screening tools used to assess peripartum mood disorders (i.e., the EPDS, PHQ, SCID) fail to capture key social determinants of mental health (SDOMH) [14]. In order to develop effective universal screening protocols, researchers have called for an integrated life-span model of social determinants of mental health (SDOMH) that would allow better targeting of aid and prevention programs on a systems level [15,16]. However, in order for that to happen, a better understanding of a range of key perinatal SDOMH—especially during crises—is needed. The current study contributes to this understanding by probing key SDOMH in White and BIPOC birthing people during an early period of the COVID-19 pandemic.

Both material and social resources have been highlighted as important determinants of mental health broadly speaking (see [15]), and the

* Corresponding author at: 234 Health and Human Development, Pennsylvania State University, University Park, PA 16802, USA.
E-mail address: heidemarielaurent@psu.edu (H. Laurent).

https://doi.org/10.1016/j.genhosppsych.2023.05.010
Received 12 January 2023; Received in revised form 21 April 2023; Accepted 19 May 2023
Available online 23 May 2023

perinatal period could represent a critical window for identifying and intervening on the bidirectional influences between available resources and mental health symptoms given this life phase typically sets the stage for further employment opportunities [17,18]. Research specifically in pregnant and postpartum samples identifies individual paths from material hardship and/or social support to mental health symptoms [19–22], but more integrative research is needed that can examine how multiple sources of risk and protection combine in relation to symptoms across this time. It is further important to discern how child-bearer racial identity may dictate both differential distribution of material and social resources and differential effects of these resources, given known racial/ethnic disparities in perinatal mental health and calls to better understand how distal social determinants may lead to disparate outcomes via modifiable social-structural inequities [23,24]. At present, despite a wealth of evidence highlighting various SDOMH to consider during pregnancy and/or postpartum, as well as racial health disparities during this time, there remains a gap in knowledge of how these different factors contribute uniquely and together to such disparities via differential distribution and/or magnitude of effects across white and BIPOC child-bearers.

In the current study, we examine the mental health associations of different types of resources in the context of pregnancy-early postpartum during the COVID-19 pandemic. Using self-reports of pregnant people and birthing parents of young infants on a set of questionnaires based on a larger study effort addressing perinatal pandemic adjustment (see [25] for details; repository access: https://www.covgen.org/cope-surveys), we consider the contributions of birthing people's existing social and material resources, as well as acute pandemic-related shifts in employment, to better understand sources of mental health inequities and guide recommendations. In light of evidence that the pandemic has profoundly impacted different aspects of a proposed perinatal SDOMH model—that is, exacerbating adverse social determinants of health, limiting access to care and delivery of healthcare/community support services, with especially harmful impacts on BIPOC patients [26]—this study provides a unique opportunity to probe processes that give rise to perinatal health disparities under such heightened conditions.

In particular, we test the hypotheses that (1) both social and material resources will relate to better mental health in perinatal people; (2) potentially stressful pandemic-related changes to household employment—i.e., increased work responsibilities and/or reduced resources available to the perinatal person and other household contributors—will relate to poorer mental health in this group; and (3) the levels and/or effects associated with each of these factors will vary by race/ethnicity in ways that disproportionately support White-identifying participants' mental health relative to that of their BIPOC counterparts. These tests represent a subset of a larger set of preregistered analyses associated with this study (see [27] for full preregistration), selected a priori based on fit with a call for manuscripts addressing sources of inequities in perinatal mental health and impacts of social determinants.

2. Method

2.1. Participants

As guided by the larger perinatal COVID-19 study design [25], the present sample comprises pregnant people (n = 409) or new parents within six-months postpartum (n = 122). Child-bearers were recruited via social media targeted to residents of Illinois and email to participants of larger ongoing perinatal studies conducted in the principal investigator's lab to participate in an online survey administered through REDCap [28]. All participants gave informed consent before participating and were entered in a gift card raffle. The sample size was dictated by the time period in which the PI was able to collect data, between May 2020 and June 2021, and analyses were conducted using all available data points for a given variable resulting in different n's for analyses with different measures. Table 1 offers descriptive information about the sample.

Table 1
Sample Descriptives.

Variable	Mean, *SD*	Sample Proportion (of n = 531)
Age (years)	32.18, 4.81	
Race/Ethnicity		
White European-American		79%
Black		5%
Indigenous		1%
Asian/Asian-American		3%
Hispanic/Latinx		11%
Other		1%
Education		
High school or less		9%
Trade school/2-year degree		16%
College degree (4-year)		31%
Graduate degree		44%
Marital Status		
Single		5%
Partnered		92%
Divorced or separated		2%
Widowed		1%
Household Income		
< $30,000		14%
$30,000–$60,000		15%
$60,000–$100,000		28%
$100,000–$160,000		30%
> $160,000		13%
Rooms in the Home	5.48, 2.30	
Children in the Home	1.30, 1.29	
Adults in the Home	2.10, 0.56	

2.2. Study measures

2.2.1. Social determinants of mental health

Material resources were assessed through reports of the following: household income (1 item self-reported income); home size (1 item self-reported number of rooms in home); and food security (5 items from USDA Household Food Security/Hunger Module [29]). Correlations were examined to determine that computing a composite score of standardized variables representing overall material resources was justified.

Social resources were tapped by reports of the following: social support (11 items from Rand Social Support Survey Instrument [30]) and loneliness (2 items from UCLA Loneliness Scale, reverse scored [31]). As above, correlation between the variables was verified to justify a composite score based on standardized variables.

Pandemic employment-related stress was examined through reported changes in participant and/or household employment during the pandemic (sum of 15 items participants completed regarding their own work, their partner's work, and other contributing household members' work). These comprised items indicating either an increase in work responsibilities (such as having to work more hours or oversee more supervisees) or a reduction in resources (such as cuts in hours and/or pay, loss of health insurance). A total summed score represented cumulative pandemic employment-related stress, and separate scores for increased responsibility vs. reduced resource components were computed to allow for follow-up analysis of how these potentially distinct dimensions might contribute to outcome disparities.

2.2.2. Mental health

The mental health outcome was indexed by the following: affective symptoms (17 items from Brief Symptom Inventory-18 [32]) and trauma symptoms (10 items from PTSD Checklist for *DSM-5* [33]). Again, a composite score based on standardized variables was computed following verification of significant correlation.

2.3. Data analysis plan

The three SDOMH composite scores were entered simultaneously as main effect predictors of the mental health composite outcome in a multiple linear regression model to test the first and second study hypotheses. The third study hypothesis was examined through (a) *t*-tests of differences between White and BIPOC portions of the sample on the SDOMH variables, and (b) regression models that included interaction effects of participant racial/ethnic identification by each SDOMH predictor.

3. Results

Correlations among study variables are given in Table 2. The main effects model test showed that all proposed SDOMH were significant statistical predictors of participants' mental health, supporting the first two study hypotheses (see Table 3, top panel). Of the three predictors, social resources appeared to carry the largest unique predictive weight.

The third study hypothesis was partially supported: White compared to BIPOC participants reported significantly higher levels of both social (t [368] = 2.37, p = .02) and material (t [527] = 8.31, p < .001) resources but no difference in overall pandemic employment-related stress (t [528] = 0.06, *ns*). Tests of interaction effects showed differential effects of the reduced resources component of pandemic employment-related stress only, such that the negative predictive effect on mental health was stronger for BIPOC compared to White participants (see Table 3, lower panel).

4. Discussion

The current study advances efforts toward building a comprehensive SDOMH model that would better inform perinatal screening and prevention/intervention strategies by examining the unique contributions of birthing people's existing social and material resources, as well as recent shifts in employment during the COVID-19 pandemic, to their psychological wellbeing. Our findings underline the importance of each of these resources as determinants of perinatal mental health, applied to a heightened risk context represented by the pandemic. Further, given evidence for inequitable distribution of these resources and/or differential benefits by participant race/ethnicity, these findings are relevant to understanding sources of costly ongoing perinatal health disparities associated with race and intervening to improve the health of current and future generations.

All of the SDOMH considered here demonstrated significant associations with perinatal symptoms, even while controlling for levels of the other determinants. Of this range of key determinants considered in the integrated model, social resources—represented here by sufficient support across multiple types of needs and lack of loneliness—stood out as particularly strong. In part, this association likely reflects overlap between these constructs (i.e., social difficulties also represent a symptom of depression) and a bidirectional process in which social isolation both feeds into and is in turn exacerbated by affective distress. Without downplaying either the complexity of such self-reinforcing cycles or the importance of ensuring access to material resources, such as adequate income and housing, this finding highlights a need to screen for and

Table 3
Prediction Models: Child-bearers' Psychological Symptoms Regressed on Proposed Social Determinants.

	Coefficient	Standardized Coefficient	Model Test
Predictor Variable	B [95% CI lower, upper bound]	*β*, *p*	*F (df)*, *p*
1. Overall predictive model (main effects)			35.50 (3, 315), < 0.001
Economic resources	−0.14 [−0.26, −0.01]	−0.11, 0.035	
Social resources	−0.38 [−0.50, −0.25]	−0.33, < 0.001	
Employment stress	0.05 [0.03, 0.07]	0.22, < 0.001	
2. Moderated predictive models (interactions with race)			
2.1 Race x economic resources			9.13 (3, 314), < 0.001
White (vs. BIPOC)	−0.12 [−0.43, 0.18]	−0.05, 0.44	
White x economic resources	−0.18 [−0.47, 0.12]	−0.11, 0.24	
2.2 Race x social resources			25.98 (3, 314), < 0.001
White (vs. BIPOC)	−0.18 [−0.45, 0.08]	−0.07, 0.18	
White x social resources	−0.17 [−0.46, 0.11]	−0.13, 0.24	
2.3 Race x employment stress			16.85 (3, 314), < 0.001
White (vs. BIPOC)	−0.19 [−0.49, 0.12]	−0.07, 0.24	
White x employment stress	−0.11 [−0.41, 0.19]	−0.09, 0.48	
2.3.1 Race x employment stress components			6.85 (5, 312), < 0.001
White (vs. BIPOC)	−0.27 [−0.56, 0.01]	−0.11, 0.063	
White x reduced resources	−0.34 [−0.62, −0.05]	−0.33, 0.021	
White x increased responsibility	0.17 [−0.06, 0.39]	0.17, 0.14	

Table 2
Correlations among Study Measures.

	1.	1a.	1b.	1c.	2.	2a.	2b.	3.	3a.	3b.	4.	4a.	4b.
1. Material resources	–												
1a. Income	**0.82**	–											
1b. Home size (rooms)	**0.78**	**0.44**	–										
1c. Food security	**0.74**	**0.39**	**0.26**	–									
2. Social resources	**0.34**	**0.23**	**0.20**	**0.33**	–								
2a. Social support	**0.41**	**0.28**	**0.25**	**0.38**	**0.88**	–							
2b. Loneliness (reversed)	**0.19**	**0.12**	0.10	**0.21**	**0.88**	**0.56**	–						
3. Pandemic employment stress	−0.04	0.02	<0.001	**−0.26**	**−0.35**	**−0.32**	**−0.31**	–					
3a. Reduced resources	**−0.09**	−0.01	−0.02	**−0.27**	**−0.26**	**−0.25**	**−0.20**	**0.86**	–				
3b. Increased responsibility	0.08	**0.12**	0.04	0.01	**−0.13**	**−0.11**	**−0.13**	**0.59**	**0.34**	–			
4. Psychological symptoms	**−0.28**	**−0.24**	**−0.16**	**−0.23**	**−0.44**	**−0.33**	**−0.45**	**0.36**	**0.24**	**0.11**	–		
4a. Affective symptoms	**−0.28**	**−0.26**	**−0.15**	**−0.24**	**−0.44**	**−0.32**	**−0.45**	**0.35**	**0.24**	0.09	**0.96**	–	
4b. PTSD symptoms	**−0.25**	**−0.21**	**−0.16**	**−0.21**	**−0.41**	**−0.31**	**−0.41**	**0.34**	**0.23**	**0.13**	**0.96**	**0.85**	–

Note. *n*'s range from 314 to 530 depending on missingness in variable measures; bold indicates significance at p < .05.

provide assistance building social care networks that safeguard birthing people's wellbeing during a transitional period in which help of various kinds is typically needed. Some of this assistance can happen at the individual level (i.e., connecting individuals to support groups or other networking resources), but ultimately this need calls for investment in the types of community planning and childcare systems that offer an ongoing structural remedy. Policies advancing aid to populations at risk for perinatal health problems should thus encompass each of these domains, which are themselves interrelated and could build on one another with cascading benefits.

Beyond evaluating the contributions of each proposed SDOMH for birthing people as a whole in this sample, we sought to shed light on processes giving rise to disparate outcomes by race/ethnicity. We found evidence for two distinct pathways potentially contributing to such disparities: (1) differing levels of social and material resources across groups, with BIPOC birthing people reporting less access to each of these than their White counterparts; and (2) differing costs of a recent (pandemic-related) employment disruption, with BIPOC child-bearers' mental health suffering more from such disturbances. These findings suggest not only that achieving equity in the distribution of social and financial capital more broadly is critical to safeguard BIPOC families' health, but also that that crisis-related shifts in household employment—which may involve access to childcare, health insurance, and other crucial supports for birthing people—should be addressed to begin turning the tide on disparities [34].

Importantly, once these social-structural determinants are taken into consideration, we found no differences in symptoms by race/ethnicity; this is consistent with arguments that there is nothing essential about "race" itself driving disparities, but rather that observed disparities are driven by inequitable allocation and delivery of resources in a racist society [35]. Although the present study design does not allow testing causal paths, part of the potential explanatory process for these observations may lie in the psychobiological toll of repeated exposures to racism-related stressors for BIPOC child-bearers during this time; in particular, we previously found evidence of associations between perinatal experiences of various forms of racism—including indirect and more subtle microaggression exposures—and both heightened inflammatory stress reactivity and poorer mental health [36]. This points to the urgency of mitigating social-structural sources of racism and accumulated stressors for the health of vulnerable birthing-people and their children. Widely, current treatment for depression and other mental health disorders remains aimed at the individual as the main target for change. Incorporating a systems-wide approach to diagnosing and treating perinatal mental health concerns by addressing structural and systemic determinants may be a more successful approach [9].

As part of these efforts, screening and intervention should occur earlier, ideally during regular primary or gynecological care engagement prior to potential conception. Although prenatal care can be used to provide the types of risk assessment and support provision advocated by many in the perinatal health field [11,37,38], the fact that BIPOC birthing people typically find prenatal care less accessible and receive lower levels of such care adds to the more general reasoning for early intervention to enable healthy transitions later in the life cycle [16]. Finally, it bears note that even with integrated SDOMH screening tools and early intervention strategies in place, meaningful change will require collaborative engagement with BIPOC individuals and community organizations to identify and respond to needs [39,40], as well as political advocacy to enact policy change at larger systems-structural levels [23,41].

Bearing in mind the limitations of the current study—especially the cross-sectional, questionnaire-only design, and restrictions in size and diversity of the sample—this work is offered as a step toward a more comprehensive understanding of how different SDOMH that may be neglected in a perinatal health context work together to impact mental health across racial/ethnic identity groups. Our findings add to a growing awareness of social determinants that should be considered in universal screening and timely intervention, while emphasizing the urgency of addressing larger underlying systems driving risk to create a more resilient population as a whole.

Author statement

This study represents part of a larger study effort addressing perinatal pandemic adjustment; see https://www.covgen.org/cope-surveys for repository access. De-identified data can be made available upon request. The authors wish to thank the child-bearers who chose to contribute to this research through their participation.

Declaration of Competing Interest

The authors have no conflicts of interest to declare.

Data availability

Data will be made available on request.

Acknowledgments

The authors wish to thank the broader COPE team effort on which the current study was based, as well as the participating families who took part in the research.

References

[1] Dennis CL, Falah-Hassani K, Shiri R. Prevalence of antenatal and postnatal anxiety: systematic review and meta-analysis. Br J Psychiatry 2017;210:315–23. https://doi.org/10.1192/bjp.bp.116.187179.
[2] Woody CA, Ferrari AJ, Siskind DJ, Whiteford HA, Harris MG. A systematic review and meta-regression of the prevalence and incidence of perinatal depression. J Affect Disord 2017;219:86–92. https://doi.org/10.1016/j.jad.2017.05.003.
[3] Field T. Postnatal anxiety prevalence, predictors and effects on development: a narrative review. Infant Behav Dev 2018;51:24–32. https://doi.org/10.1016/j.infbeh.2018.02.005.
[4] Slomian J, Honvo G, Emonts P, Reginster JY, Bruyère O. Consequences of maternal postpartum depression: a systematic review of maternal and infant outcomes. Womens Health 2019;15. https://doi.org/10.1177/1745506519844044. 174550651984404.
[5] Petersen EE, Davis NL, Goodman D, Cox S, Syverson C, Seed K, et al. Racial/ethnic disparities in pregnancy-related deaths—United States, 2007–2016. MMWR 2019;68:762–5. https://doi.org/10.15585/mmwr.mm6835a3.
[6] Crear-Perry J, Correa-de-Araujo R, Lewis Johnson T, McLemore MR, Neilson E, Wallace M. Social and structural determinants of health inequities in maternal health. J Womens Health 2021;30:230–5. https://doi.org/10.1089/jwh.2020.8882.
[7] Edge D. Falling through the net — black and minority ethnic women and perinatal mental healthcare: health professionals' views. Gen Hosp Psychiatry 2010;32:17–25. https://doi.org/10.1016/j.genhosppsych.2009.07.007.
[8] Owais S, Faltyn M, Johnson AVD, Gabel C, Downey B, Kates N, et al. The perinatal mental health of indigenous women: a systematic review and meta-analysis. Can J Psychiatry 2020;65:149–63. https://doi.org/10.1177/0706743719877029.
[9] Howard LM, Khalifeh H. Perinatal mental health: a review of progress and challenges. World Psychiatry 2020;19:313–27. https://doi.org/10.1002/wps.20769.
[10] Luca DL, Margiotta C, Staatz C, Garlow E, Christensen A, Zivin K. Financial toll of untreated perinatal mood and anxiety disorders among 2017 births in the United States. Am J Public Health 2020;110:888–96. https://doi.org/10.2105/AJPH.2020.305619.
[11] Blount AJ, Adams CR, Anderson-Berry AL, Hanson C, Schneider K, Pendyala G. Biopsychosocial factors during the perinatal period: risks, preventative factors, and implications for healthcare professionals. Int J Environ Res Public Health 2021;18:8206. https://doi.org/10.3390/ijerph18158206.
[12] Guintivano J, Manuck T, Meltzer-Brody S. Predictors of postpartum depression: a comprehensive review of the last decade of evidence. Clin Obstet Gynecol 2018;61:591–603. https://doi.org/10.1097/GRF.0000000000000368.
[13] Leach LS, Poyser C, Fairweather-Schmidt K. Maternal perinatal anxiety: a review of prevalence and correlates. Clin Psychol 2017;21:4–19. https://doi.org/10.1111/cp.12058.
[14] Long MM, Cramer RJ, Jenkins J, et al. A systematic review of interventions for healthcare professionals to improve screening and referral for perinatal mood and anxiety disorders. Arch Womens Ment Health 2019;22:25–36. https://doi.org/10.1007/s00737-018-0876-4.

[15] Alegria M, NeMoyer A, Falgas I, Wang Y, Alvarez K. Social determinants of mental health: where we are and where we need to go. Curr Psychiatry Rep 2018;20:95. https://doi.org/10.1007/s11920-018-0969-9.
[16] Misra DP, Guyer B, Allston A. Integrated perinatal health framework: a multiple determinants model with a life span approach. Am J Prev Med 2003;25:65–75. https://doi.org/10.1016/S0749-3797.
[17] Copeland WE, Shanahan L, Davis M, Burns BJ, Angold A, Costello EJ. Increase in untreated cases of psychiatric disorders during the transition to adulthood. Psychiatr Serv 2015;66:397–403.
[18] Hale DR, Viner RM. How adolescent health influences education and employment: investigating longitudinal associations and mechanisms. J Epidemiol Community Health 2018;72:465–70. https://doi.org/10.1136/jech-2017-209605.
[19] Bridle L, Walton L, van der Vord T, Adebayo O, Hall S, Finlayson E, et al. Supporting perinatal mental health and wellbeing during COVID-19. Int J Environ Res Public Health 2022;19:1777. https://doi.org/10.3390/ijerph19031777.
[20] Farewell CV, Jewell J, Walls J, Leiferman JA. A mixed-methods pilot study of perinatal risk and resilience during COVID-19. J Prim Care Community Health 2020;11:1–8. https://doi.org/10.1177/2150132720944074.
[21] Katz J, Crean HF, Cerulli C, Poleshuck EL. Material hardship and mental health symptoms among a predominantly low income sample of pregnant women seeking prenatal care. Matern Child Health 2018;22:1360–7. https://doi.org/10.1008/s10995-018-2518-x.
[22] Milgrom J, Hirshler Y, Reece J, Holt C, Gemmill AW. Social support—a protective factor for depressed perinatal women? Int J Environ Res Public Health 2019;16:1426. https://doi.org/10.3390/ijerph16081426.
[23] Clark A, Wescott P, Mitchell N, Mahdi I, Crear-Perry J. Centering equity: addressing structural and social determinants of health to improve maternal and infant health outcomes. Semin Perinatol 2022;46:151661. https://doi.org/10.1016/j.semperi.2022.151661.
[24] Gadson A, Akpovi E, Mehta PK. Exploring the social determinants of racial/ethnic disparities in prenatal care utilization and maternal outcome. Semin Perinatol 2017;41:308–17. https://doi.org/10.1053/j.semperi.2017.04.008.
[25] Zhou J, Havens KL, Starnes CP, Pickering TA, Brito NH, Hendrix CL, et al. Changes in social support of pregnant and postnatal mothers during the COVID-19 pandemic. Midwifery 2021;103:103162. https://doi.org/10.1016/j.midw.2021.103162.
[26] Hoang T, Hsieh W, Lee B, Lukacena K, Tabb KM. Navigating pregnancy and the healthcare system during COVID-19: a qualitative study with perinatal women of color. Int J Environ Res Public Health 2022;19:13698. https://doi.org/10.3390/ijerph192013698.
[27] BLINDED FOR REVIEW.
[28] Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. J Biomed Inform 2009;42:377–81. https://doi.org/10.1016/j.jbi.2008.08.010.
[29] Blumberg SJ, Bialostosky K, Hamilton WL, Briefel RR. The effectiveness of a short form of the household food security scale. Am J Public Health 1999;89:1231–4.
[30] Hays RD, Sherbourne CD, Mazel RM. The Rand 36-item health survey 1.0. Health Econ 1993;2:217–27. https://doi.org/10.1002/hec.4730020305.
[31] Russell D, Peplau LA, Ferguson ML. Developing a measure of loneliness. J Pers Assess 1978;42:290–4. https://doi.org/10.1207/s15327752jpa4203_11.
[32] Derogotis L. Brief symptom inventory (BSI) administration, scoring, and procedures manual. Minneapolis: NCS Pearson; 2000.
[33] Blevins CA, Weathers FW, Davis MT, Witte TK, Domino JL. The posttraumatic stress disorder checklist for DSM-5 (PCL-5): development and initial psychometric evaluation. J Trauma Stress 2015;28:489–98. https://doi.org/10.1002/jts.22059.
[34] Braveman PA, Arkin E, Proctor D, Kauh T, Holm N. Systemic and structural racism: definitions, examples, health damages, and approaches to dismantling. Health Aff 2022;41:171–8. https://doi.org/10.1377/hlthaff.2021.01394.
[35] Lorch SA, Enlow E. The role of social determinants in explaining racial/ethnic disparities in perinatal outcomes. Pediatr Res 2016;79:141–7. https://doi.org/10.1038/pr.2015.199.
[36] Dawson D, Goodman S, Granger DA, Laurent HK. Associations between direct and indirect forms of racism exposure and stress-induced inflammatory response and health in perinatal women. J Racial Ethn Health Disparities; epub ahead of print. doi:https://doi.org/10.1007/s40615-022-01442-z.
[37] Johnson D, Howard ED. Screening for the social determinants of health. J Perinat Neonatal Nurs 2020;34:289–91. https://doi.org/10.1098/JPN.0000000000000518.
[38] Ruyak SL, Kivlighan KT. Perinatal behavioral health, the COVID-19 pandemic, and a social determinants of health framework. JOGNN 2021;50:525–38. https://doi.org/10.1016/j.jogn.2021.04.012.
[39] Baumann AA, Cabassa LJ. Reframing implementation science to address inequities in healthcare delivery. BMC Health Serv Res 2020;20:190. https://doi.org/10.1186/s12913-020-4975-3.
[40] Markey K, Ibeajaero M. Double jeopardy: the importance of nurturing culturally responsive perinatal mental healthcare. Nurse Educ Today 2022;116:105446. https://doi.org/10.1016/j.nedt.2022.105446.
[41] Foster VA, Harrison JM, Williams CR, Asiodu IV, Ayala S, Getrouw-Moore J, et al. Reimagining perinatal mental health: an expansive vision for structural change. Health Aff 2021;40:1592–6. https://doi.org/10.1377/hlthaff.2021.00805.