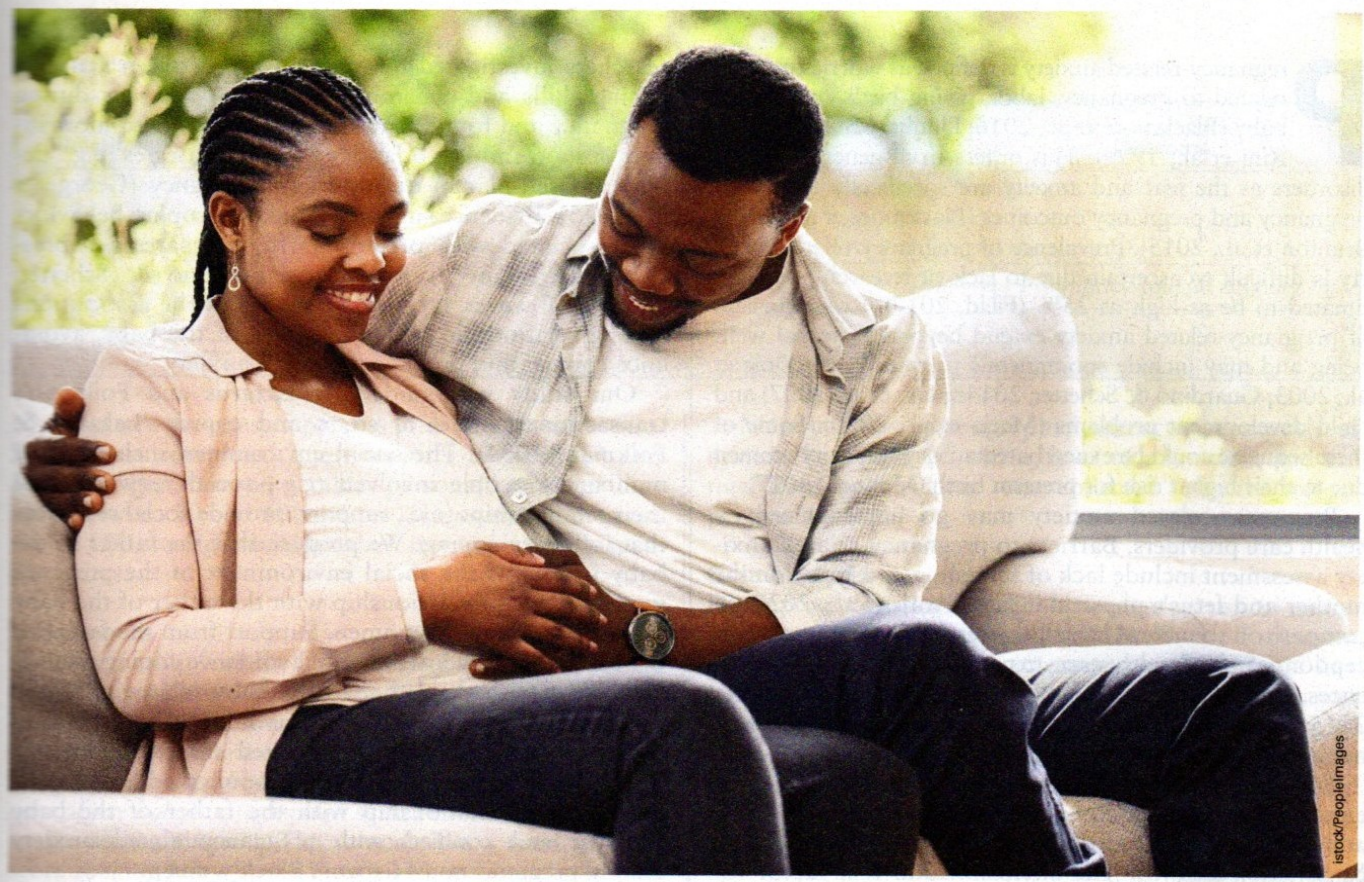

RELATIONSHIP WITH THE FATHER OF THE BABY AND PREGNANCY-RELATED ANXIETY AMONG PREGNANT BLACK WOMEN

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Abstract

Purpose: Pregnancy-related anxiety may increase the risk of preterm birth. Effective coping strategies and social support may help minimize pregnancy-related anxiety.

Study Design: Secondary analysis of cross-sectional data.

Methods: A sample of 408 pregnant non-Hispanic Black women completed questionnaires between 19 and 31 weeks gestation. Mediation analysis with structural equation modeling was used to explore effects of the relationship with the father of the baby on pregnancy-related anxiety.

Results: Support from the father of the baby was negatively associated with avoidance coping ($r = -.22$, $p < .001$) and pregnancy-related anxiety ($r = -.17$, $p < .001$), whereas conflict with the father of the baby was positively associated with avoidance coping ($r = .37$, $p < .001$) and pregnancy-related anxiety ($r = .29$, $p < .001$). Avoidance coping was positively associated with pregnancy-related anxiety ($r = .34$, $p < .001$). After adjustment, avoidance coping partially mediated the effect of conflict with the father of the baby on pregnancy-related anxiety.

Clinical Implications: Discussions with women about management of pregnancy-related anxiety should consider her current social support and coping mechanisms. Providers should offer support and resources on adaptive coping strategies.

Key words: Adaptation/psychological; Anxiety; Conflict/psychological; Fathers; Pregnancy; Social support.

Pregnancy-related anxiety is defined as worries or fears related to pregnancy, labor, giving birth, and/or the baby (Blackmore et al., 2016; Dunkel Schetter, 2011; Rini et al., 1999). This differs from general anxiety disorders as the fear and anxiety are specifically related to pregnancy and pregnancy outcomes (Blackmore et al., 2016; Brunton et al., 2015). Prevalence of pregnancy-related anxiety is difficult to ascertain due to lack of research but is estimated to be as high as 25% (Field, 2017). Consequences of pregnancy-related anxiety extend beyond maternal well-being and may include spontaneous preterm birth (Dole et al., 2003; Guardino & Schetter, 2014b; Orr et al., 2007) and child development problems (Maria et al., 2020). Some of these sequelae could be exacerbated among minority women due to their higher risk for preterm birth (Manuck, 2017).

Pregnancy-related anxiety may go unrecognized by health care providers. Barriers to pregnancy-related anxiety assessment include lack of screening or a focus on the mother and fetus's physical health (Araji et al., 2020) in comparison to mental health concerns. The woman's perception of the health care experience and past experiences, particularly among Black women (Dahlem et al., 2015), may be an additional barrier to identifying pregnancy-related anxiety.

Risk factors for pregnancy-related anxiety include preexisting general anxiety, socioeconomic characteristics, and environmental factors (Araji et al., 2020; Guardino & Schetter, 2014b). The environmental risk factor for pregnancy-related anxiety most frequently studied is social support, broadly as well as specific to the woman's family or her partner. In a rare longitudinal study, Rini et al. (2006) reported partner support may protect pregnant women against increases in pregnancy-related anxiety. In a large socioeconomically, racially, and ethnically diverse study, low partner support was associated with increased odds of high pregnancy-related anxiety (Cheng et al., 2016). Pregnant Black women, the group at highest risk for adverse maternal and fetal outcomes, are more likely to report lower levels of partner support compared with non-Hispanic White and Hispanic pregnant women (Cheng et al., 2016). However, there are limited data on the impact of the father of the baby on maternal pregnancy-related anxiety among Black women.

Coping is defined as an attempt to deal with situations perceived to be stressful (Lazarus & Folkman, 1984). Psychosocial resources for coping with anxiety, such as adaptive coping skills or social support, play a pivotal role in managing pregnancy-related anxiety (Dunkel Schetter, 2011). Coping strategies can be a cognitive or emotional process. Emotion-focused coping (e.g., avoidance) is directed at changing meaning of the stressful situation, denying, or avoiding dealing directly with the problem (Hamilton & Lobel, 2008; Lazarus & Folkman, 1984). The extent of an individual's appraisal of stress and coping is multidimensional and dynamic with the goal of reducing stress. Although no published literature was found that examined the relationship between coping and pregnancy-related anxiety that used a validated pregnancy-specific measure of anxiety, in one study, researchers investigated the relationship between adaptive coping skills and generalized anxiety symptoms during pregnancy and found that anxious women used more inappropriate and less adaptive coping strategies (e.g., denial and self-blame) during their pregnancy (George et al., 2013). Evidence suggests avoidance coping behaviors are associated with preterm birth, postpartum depression, and infant development (Guardino & Schetter, 2014a). However, little is known about the associations among relationship with the father of the baby, avoidance coping, and pregnancy-related anxiety.

Our study was guided by Lazarus and Folkman's transactional model of stress and coping (Lazarus & Folkman, 1984). The social environment including the number of people involved (e.g., social network) and their relationships (e.g., support) provide social resources that influence coping. We propose that the father of the baby is part of the social environment of the pregnant woman, and the relationship with the father of the baby influences coping for women. Support from the father of the baby relates to lower use of avoidance coping, whereas conflict with the father of the baby relates to higher use of avoidance coping. In turn, avoidance coping relates to higher levels of pregnancy-related anxiety (Figure 1). We examined whether avoidance coping mediated the associations of relationship with the father of the baby (support and conflict) with pregnancy-related anxiety among pregnant non-Hispanic Black women.

Methods

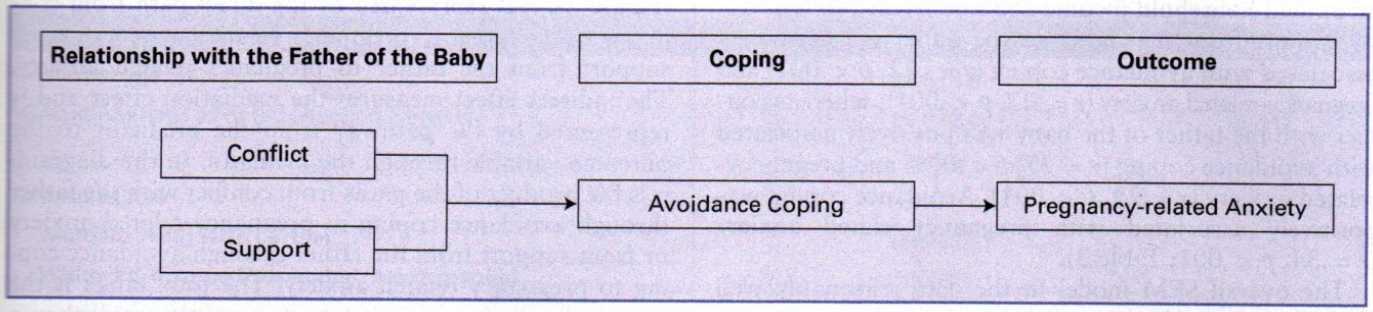
Design, Sample, and Setting

We conducted a secondary analysis on cross-sectional, self-reported survey data from the Biosocial Impact on Black Births (BIBB), an ongoing longitudinal cohort study that examines the role of social stressors on birth outcomes among pregnant Black women. Women were enrolled in the BIBB study from urban prenatal clinics in Detroit, Michigan and Columbus, Ohio prior to the COVID-19 pandemic. Women were eligible for enrollment if they self-identified as African American or Black, were 18 to 45 years old, had a singleton pregnancy, were of any parity, and were English-speaking. Data from a subsample of 408 women who met the same inclusion criteria as the parent study and completed the questionnaires between 19 and 31 weeks gestation are reported here. A posterior power analysis was conducted using the method of Vittinghoff et al. (2009) as implemented in R package *powerMediation* (version 0.3.4.). The minimal detectable effect size for correlations among continuous variables in a sample of 408 is .135, with 80% power and a two-tail alpha = .05. Thus, small pathways and mediated effects as small as .135 are detectable.

Procedures

The Institutional Review Boards at the participating sites approved the study. Black women were recruited from prenatal clinics affiliated with urban medical centers. A member of the research team approached women who fit inclusion criteria before or after their prenatal visit, explained the study, and invited them to participate. Wom-

FIGURE 1. CONCEPTUAL MODEL



en completed the consent process prior to data collection. Participants completed questionnaires between 19 and 31 weeks gestation on a tablet personal computer that took between 20 and 40 minutes. They were reimbursed with a $30 store gift card for their time completing questionnaires.

Instruments

The relationship with the father of the baby was measured by the Social Networks in Adult Relations Questionnaire (Antonucci, 1986; Kahn & Antonucci., 1980). The support subscale has 9 items (e.g., *father of the baby is always there when I need him*; *someone I can count on to take care of my baby*) on a 5-point scale (1 = strongly disagree to 5 = strongly agree). The subscale has a total possible score ranging from 9 to 45 with higher scores indicating more support. Cronbach's alpha for the support subscale was 0.98. The conflict subscale has 5 items (e.g., *I sometimes fight or argue with the father of the baby*; *is often critical [disapproving] of me*) on a 5-point scale. The total possible subscale score ranges from 5 to 25 with higher scores reflecting more conflict with the father of the baby. Cronbach's alpha for the conflict subscale was 0.82. Prior research has shown that the instrument is reliable among Black women (Caldwell et al., 2018).

Avoidance coping was measured with the Revised Prenatal Coping Inventory (Hamilton & Lobel, 2008). The avoidance coping subscale measures pregnancy-specific coping strategies (e.g., *took out your frustrations on other people*; *slept in an effort to escape problems*). The subscale has 7 items on a 4-point scale (0 = *never* to 4 = *almost always*) with a total possible subscale score ranging from 0 to 28. Higher scores indicate greater use of the avoidance coping strategy. Previous research using this instrument with Black women participants demonstrated its use and reliability (Giurgescu et al., 2015). Cronbach's alpha was 0.77.

Pregnancy-related anxiety was measured by the Pregnancy-related Anxiety Scale (Rini et al., 1999). This scale assesses the extent to which women worried or felt concerned about their health, their baby's health, labor, giving birth, and caring for a baby. The scale has 10 items (e.g., *concerned how the baby is growing; having a difficult delivery*) on a 4-point scale (1 = *not at all* to 4 = *very much*) with a total possible score ranging from 10 to 40. Higher scores reflect more anxiety about pregnancy/birth. The instrument was reliable among pregnant Black and White women (Kinser et al., 2018). Cronbach's alpha was 0.85.

Maternal sociodemographic characteristics such as maternal age, marital status, level of education, and annual household income were collected from the self-report survey.

Data Analysis

Descriptive statistics and the subsequent statistical analyses were performed using statistical software R (version 4.0.1). Relying on strong interitem correlation and low missing rate (<5%), missing values in individual items, education level, and household income level were imputed by predictive mean matching method from the *mice* package in R. To investigate effects of the relationship with the father of the baby on pregnancy-related anxiety, and possible mediation mechanisms through avoidance coping, structural equation modeling (SEM) was conducted in R using the *lavaan* package (Gana & Broc, 2019; Kline, 2015). In SEM, relationships among the key variables were modeled through four latent variables (*pregnancy-related anxiety, conflict, support, avoidance coping*). The latent variables were manifested by multiple observed indicators. Five potential confounders (maternal age, marital status, employment status, levels of education, and annual household income level) were controlled for in the regression equations for the endogenous variables (pregnancy-related anxiety and avoidance coping). These covariates were observed variables and, by convention, were represented by rectangles in the path diagram (Figure 2). Among all variables, marital status, employment status, level of education, and annual household income level were categorical and treated as such in the SEM model. To reduce any potential biasing effects caused by violation of the multivariate normality assumption of endogenous variables, maximum likelihood estimation with robust standard errors and robust model fit test statistics were used in the analysis. The sample in the SEM analysis included 408 women who had data available for pregnancy-related anxiety, the relationship with the father of the baby, and avoidance coping subscale items.

Results

A summary of participants' characteristics (Table 1) and range, means, and standard deviations of major variables (Table 2) are provided. Women had a mean age of 26.6 (SD = 6) years and a mean gestational age at data collection of 24.7 (SD = 3) weeks. Less than half of women were married to or living with the father of the baby

(39%), half were unemployed (50%), and a majority had an annual household income ≤$30,000/year (80%).

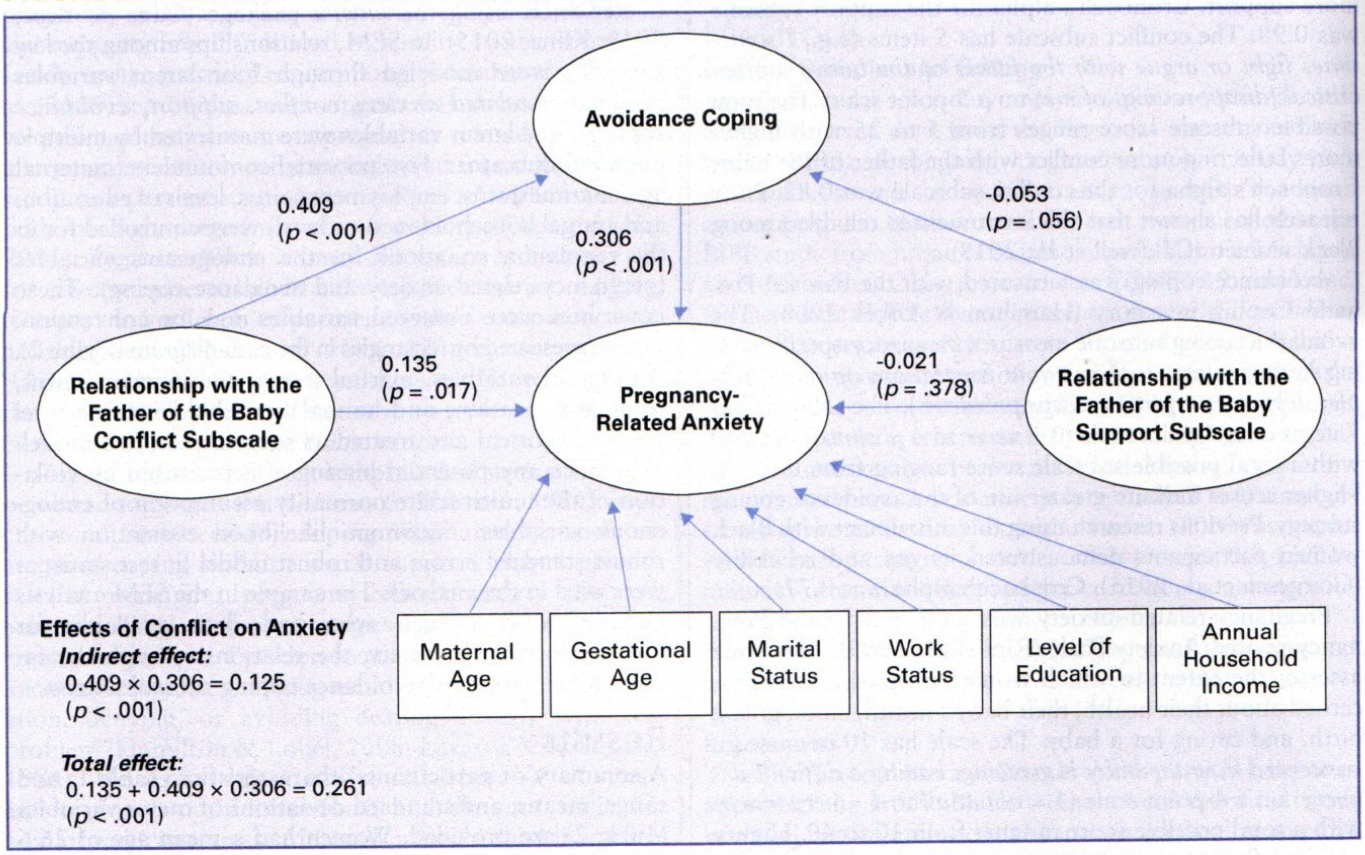
Support from the father of the baby was negatively associated with avoidance coping (r = -.22, p < .001) and pregnancy-related anxiety (r = -.17, p < .001), whereas conflict with the father of the baby was positively associated with avoidance coping (r = .37, p < .001) and pregnancy-related anxiety (r = .29, p < .001). Avoidance coping was positively associated with pregnancy-related anxiety (r = .34, p < .001; Table 3).

The overall SEM model fit the data reasonably well according to multiple model fitting measures, Robust Comparative Fit Index (CFI) = 0.967, Robust Tucker-Lewis Index (TLI) = 0.964, and Robust Root Mean Square Error of Approximation (RMSEA) = 0.034. Results of the analysis are summarized in Figure 2, where arrows were used to illustrate the (directional) associations among the variables. Estimates of the regression coefficients along with their p values are displayed above each direct path connecting the latent variables. The pathways between the exogenous covariates and the endogenous latent variables (pregnancy-related anxiety and avoidance coping) were overall insignificant (p > .05), therefore they were omitted in the diagram.

In the mediation analysis, the direct effect is the pathway from the predictor to the outcome variable while controlling for the mediator. In our path diagram (Figure 2), it is represented by the direct path from conflict with the father to pregnancy-related anxiety or from support from the father to pregnancy-related anxiety. The indirect effect measures the mediation effect and is represented by the pathway from the predictor to the outcome variable through the mediator. In the diagram, it is the product of the paths from conflict with the father through avoidance coping to pregnancy-related anxiety or from support from the father through avoidance coping to pregnancy-related anxiety. The total effect is the sum of the direct and indirect effects of the predictor on the outcome variable.

For the effects of the conflict-level relationship with the father of the baby on pregnancy-related anxiety, our SEM model showed that the standardized indirect effect of conflict with the father on pregnancy-related anxiety mediated through avoidance coping was significant (indirect effect: 0.148, p < .001) when controlling for potential confounders including maternal age, marital status, level of education, employment, and annual household income. Both estimated paths for the indirect effect were significant (the regression coefficients were 0.416 for conflict → avoidance and 0.356 for avoidance → pregnancy-related anxiety, respectively). There was also a significant total effect of conflict on pregnancy-

FIGURE 2. MEDIATION ANALYSIS WITH STRUCTURAL EQUATION MODEL



Path diagram of the structural equation model for the effects of the relationships with the father of the baby on pregnancy-related anxiety and the mediating role of avoidance coping strategies while controlling for five covariation factors (n = 408). The numbers on the arrows show the unstandardized regression coefficients and p values.

TABLE 1. CHARACTERISTICS OF PARTICIPANTS ($N = 408$)

Characteristics	Mean (SD)	Range
Maternal age (years)	26.6 (5.6)	18–41
Gestational age at data collection (weeks)	24.7 (2.6)	19–31
	n (%)	
Marital status		
Married/living with partner	159 (39%)	
Widowed/divorced/separated/never married	249 (61%)	
Employment status		
Employed	203 (50%)	
Not employed	205 (50%)	
Education level		
Less than high school	67 (16%)	
Less than some college	220 (54%)	
Some college and above	121 (30%)	
Annual household income		
<$10,000	187 (46%)	
$10,000–$30,000	139 (34%)	
>$30,000	82 (20%)	

TABLE 2. STUDY MEASURES ($N = 408$)

Scale	Mean (SD)	Range
Social Networks in Adult Relations Questionnaire		
Relationship with FOB Support Subscale	33.5 ± 11.9	9–45
Relationship with FOB Conflict Subscale	11.5 (4.7)	5–25
Revised Prenatal Coping Inventory		
Avoidance Coping Subscale	12 (5.6)	0–27
Pregnancy-related Anxiety Scale	16.3 (5.8)	10–40

Note. FOB = father of the baby.

related anxiety (total effect: 0.308, $p < .001$). The direct effect of conflict with the father on pregnancy-related anxiety was weakened but was still significant (direct effect = 0.160, $p = .01$) when controlling for avoidance coping. The 95% confidence intervals based on robust corrections were [0.086, 0.211] for the indirect effect, [0.039, 0.282] for the direct effect, and [0.193, 0.424] for the total effect.

Our estimates of the effects of support from father of the baby showed there was no significant total effect of support from the father of the baby on pregnancy-related anxiety, nor a significant indirect effect of support from the father of the baby on pregnancy-related anxiety mediated via avoidance coping (indirect effect: -0.042, $p = .067$; total effect: -0.094, $p = .107$). Therefore, the effect of the conflict with the father of the baby on pregnancy-related anxiety was partially mediated via avoidance coping. There were no significant indirect or total effects of support from father of the baby on pregnancy-related anxiety.

Clinical Implications

We found conflict with the father of the baby was positively associated with avoidance coping and pregnancy-related anxiety. Avoidance coping mediated the association of conflict with the father of the baby with pregnancy-related anxiety. The constructs from Lazarus and Folkman's transactional model of stress and coping (Lazarus & Folkman, 1984) provided the theoretical underpinning for this study. The theory offers a guide for evaluating and measuring the social environment and coping. We proposed that the father of the baby is part of the social environment of the pregnant woman, and the relationship with the father of the baby influences coping for these women. In turn, avoidance coping relates to higher levels of pregnancy-related anxiety. These findings also are consistent with previous studies that suggest anxiety during pregnancy is related to lack of support from or conflict with the father of the baby (Basharpoor et al., 2017). Although, avoidance coping throughout pregnancy has been found to predict greater emotional

TABLE 3. RELATIONSHIPS AMONG STUDY VARIABLES

Variable	1	2	3	4	5	6
1. Maternal age	-	0.03	0.03	-0.12	-0.28**	-0.04
2. GA[a]		-	0.04	-0.05	-0.07	-0.03
3. FOB[b] support			-	-0.26**	-0.22**	-0.17**
4. FOB conflict				-	0.37**	0.29**
5. Avoidance coping					-	0.34**
6. Pregnancy-related anxiety						-

**$p < .001$.

[a]GA = gestation age at data collection

[b]FOB = father of the baby

distress in late pregnancy (Ibrahim et al., 2019), no reports on the influence of the relationship with the father on this association were found in the literature to date.

Women who reported support from the father of the baby reported less use of avoidance coping and lower levels of pregnancy-related anxiety. However, avoidance coping did not mediate the association of support from the father of the baby with pregnancy-related anxiety. This finding is somewhat surprising given that previous literature has suggested that support often alleviates pregnancy-related anxiety (Basharpoor et al., 2017). This may be, in part, due to the controlling of the selected confounding variables. For instance, socioeconomic factors such as income have been observed to influence pregnancy-related anxiety (Guardino & Schetter, 2014b); whereby women who report support from the father of the baby may also perceive the socioeconomic stability of the father when reflecting on their anxiety during pregnancy.

Avoidance coping was positively related to pregnancy-related anxiety among this sample of women. Not inherently or initially maladaptive, avoidance coping is motivated by desire to avoid negative events, demands, or consequences and can serve as an effective temporary coping measure to allow a person to endure a distressing situation such as pregnancy (Balmores-Paulino, 2020; Sagui-Henson, 2020). Previous work has demonstrated a link between maladaptive coping strategies and anxiety during the perinatal period (George et al., 2013).

Due to the correlational design of our study, our results are limited to our cohort and may not be generalizable nor can we derive causal relationships. We did not have birth outcomes at the time of analysis to link pregnancy-related anxiety to infant outcomes such as preterm birth or low birthweight. Future analysis that includes these outcomes will be valuable. Our results suggest more conflict with the father of the baby is associated with higher usage of avoidance coping strategies, which, in turn, are associated with higher levels of pregnancy-related anxiety. However, support from the father of the baby did not have a significant effect on pregnancy-related anxiety either directly or indirectly via avoidance coping when controlling for covariates.

Our findings add to the scientific knowledge of the impact of the relationship between pregnant Black women and the father of the baby, pregnancy-related anxiety, and how avoidance coping may explain the link between these variables. It is important for nurses to recognize that pregnancy-related anxiety is a specific emotional state related to the pregnancy, labor, giving birth, and the baby. Nurses and other health care providers can screen for pregnancy-related anxiety early and throughout pregnancy by identifying risk factors (e.g., preexisting general anxiety) and using a validated self-report tool (e.g., Pregnancy-related Anxiety Scale) to differentiate pregnancy-related anxiety from other psychological conditions (Guardino & Schetter, 2014b). Nurses should offer emotional support to women experiencing pregnancy-related anxiety. Nursing interventions designed to modify pregnancy-related anxiety should consider the woman's social support system, specifically her relationship with the father of the baby and the use of adaptive coping strategies. Adaptive coping strategies specific to the focus of pregnancy-related anxiety (i.e., giving birth) may include antenatal yoga, group prenatal classes, extended child-

SUGGESTED CLINICAL IMPLICATIONS

- Provide emotional support to women experiencing pregnancy-related anxiety.
- Assess the woman's needs and readiness to learn adaptive coping strategies (e.g., stress reduction with yoga).
- Develop educational materials related to the mechanisms of pregnancy, labor, giving birth, and the baby along with approaches to strengthen the woman's ability to manage pregnancy-related anxiety through social support or prenatal classes.
- Nurses and other health care providers can screen for pregnancy-related anxiety early and throughout pregnancy by identifying risk factors (e.g., preexisting general anxiety) and using a validated self-report tool (e.g., Pregnancy-related Anxiety Scale) to differentiate pregnancy-related anxiety from other psychological conditions.
- Engage in dialogue to assess the woman's relationship with the father of the baby and offer support and resources for those who report conflict.

birth education, or cognitive behavioral therapy (Stoll et al., 2018). If assessment of the woman's relationship with the father of the baby reveals conflict, nurses could offer support and resources for counseling. Education related to clinical follow-up and referral to expert clinicians may increase provider efficacy and implementation. ✣

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The authors declare no conflicts of interest.

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