The Associations Among Racial Discrimination, Perceived Stress and Birth Satisfaction Among Black Women

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THE ASSOCIATIONS AMONG RACIAL DISCRIMINATION, PERCEIVED STRESS AND BIRTH SATISFACTION AMONG BLACK WOMEN

by

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ABSTRACT

The purpose of this dissertation research was to examine the associations among experiences of racial discrimination, perceived stress and birth satisfaction among Black women, and to examine the mediating effect of perceived stress on the association of experiences of racial discrimination with birth satisfaction among Black women. The first manuscript is an integrative literature review which evaluates prior research of the association of stress with birth satisfaction, with consideration to studies that included Black women in their samples. This review revealed a need for further research evaluating stress and birth satisfaction specific to Black women. The second manuscript examines the associations among racial discrimination, perceived stress, and birth satisfaction among a sample of 154 Black women. Experiences of racial discrimination were positively correlated with perceived stress. Perceived stress was negatively correlated with birth satisfaction. Experiences of discrimination were not related to birth satisfaction. Racial discrimination had a positive effect on perceived stress, and perceived stress had a negative effect on birth satisfaction. Racial discrimination had no direct effect on birth satisfaction; therefore, perceived stress was not applicable as a mediator in the model. The third manuscript presents challenges and successful strategies faced in the recruitment and retention of Black women in the immediate postpartum period. This dissertation adds to the current body of knowledge regarding the effects of racial discrimination on perceived stress, and the relationship between perceived stress and birth satisfaction, while also presenting successful recruiting strategies of Black postpartum women in nursing research, which is crucial to reducing racial disparities in health care.
This dissertation is dedicated to my husband and two amazing daughters who have supported me and encouraged me throughout this process. I would not have been able to do this without your unwavering support and understanding. I’d also like to dedicate this to my mom who has been there for me through all of life’s challenges and is my biggest cheerleader and to my dad, who I lost too many years ago. I would not be where I am today without your love, support, and examples of what it is like to work hard and keep going.
ACKNOWLEDGEMENTS

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CHAPTER 1: INTRODUCTION

Non-Hispanic Black (hereafter Black) women are three times more likely to die during the pregnancy and postpartum period than non-Hispanic White women (55.3 vs 19.1 deaths per 100,000 live births, respectively, in 2020) (Hoyert, 2022). Compared with White women, Black women also have higher rates of adverse pregnancy outcomes (e.g., preterm birth, low birthweight infants) at every economic and educational level (Alhusen et al., 2016; Barber & Robinson, 2022; Collins et al., 2021; Giurgescu et al., 2012). Black women also experience postpartum depression (PPD) at disproportionately higher rates than women of other races (Ertel et al., 2012; Shour et al., 2021). Higher lifetime exposure to chronic stressors increases the risk of Black women having adverse birth outcomes (Alhusen et al., 2016; Chambers et al., 2020). Social determinants of health which includes racial discrimination, defined as being hassled or made to feel inferior due to one’s race or ethnicity (Kreiger et al., 2010), are responsible for these health inequities among Black women (Ades et al., 2018; Alhusen et al., 2016; Barber & Robinson, 2022; Collins et al., 2021). Black women have historically experienced racial discrimination when receiving prenatal and postpartum care (Alhusen et al., 2016; Chambers et al., 2021; Ertel et al., 2012; Gillespie & Weeks, 2021; McLemore et al., 2018; Murphy et al., 2022). Chronic worry about racism and discrimination may cause mistrust in the health care system (Shour et al., 2021). Addressing social determinants of health and incorporating lifetime experiences, including experiences of discrimination, in prenatal and postpartum care is needed to reduce health care disparities and improve reproductive health outcomes among Black women.
Racial discrimination has been associated with higher levels of perceived stress in pregnant women (Gillespie et al., 2021; Sroka et al., 2023). Increased levels of stress during pregnancy and birth are associated with increased labor-related difficulties (e.g., increased need for pain relief, longer duration of labor, increased risk of cesarean section) (Attanasio et al., 2014; Preis, Mahaffey, Pati, et al., 2021; Saxbe et al., 2018) and decreased birth satisfaction (Congdon et al., 2016). Birth satisfaction refers to a woman’s perception and satisfaction with her intrapartum care (Barbosa-Leiker et al., 2015). It may include assessing for the mother’s perceptions of care received, maternal control, health care provider support and communication, social support, coping well during labor, being treated with respect, and stress experienced during labor (Fair & Morrison, 2012; Martin & Fleming, 2011). Negative experiences with childbirth are strongly associated with postpartum depression and post-traumatic stress disorder (Bell & Andersson, 2016; Capik & Durmaz, 2018; Urbanová et al., 2021; Webb et al., 2021), and these psychological factors can have negative effects on both women and their infants (Capik & Durmaz, 2018; Hinic, 2017). In contrast, maternal birth satisfaction has been linked to improved bonding with the infant, higher breastfeeding rates (Hinic, 2016), and lower risk for postpartum depression (Bell & Andersson, 2016; Hamm et al., 2019; Urbanová et al., 2021). Although prior research has shown associations of racial discrimination and perceived stress with adverse birth outcomes (Alhusen et al., 2016; Chambers et al., 2020; Giurgescu et al., 2012; Segre et al., 2021), research has not examined the associations among racial discrimination, perceived stress and birth satisfaction among Black postpartum women. Therefore, the purpose of this dissertation research was to examine the associations among racial discrimination, perceived stress, and birth satisfaction among Black women. The aims of the study were to:
Specific Aim 1. *Examine the associations among racial discrimination, perceived stress, and birth satisfaction among Black women.*

H.1.1. Women who report more experiences of discrimination will also report higher levels of perceived stress and lower levels of birth satisfaction.

H.1.2. Women who report higher levels of perceived stress will report lower levels of birth satisfaction.

Specific Aim 2. *Examine the mediating effect of perceived stress on the association between experiences of racial discrimination and birth satisfaction among Black women.*

H.2.1 Perceived stress will mediate the effect of racial discrimination on birth satisfaction.

The second chapter of this dissertation research is an integrative literature review with a focus on the relationship between stress and birth satisfaction. Stress during pregnancy has been found to have negative consequences on maternal and birth outcomes and labor-related difficulties which may decrease birth satisfaction. The integrative literature review also highlights the limited research on this topic conducted among Black women and need for future research for these women. Thus, evaluating the literature of the relationship between stress and birth satisfaction adds valuable information to the body of knowledge. The third chapter reports the main findings of the dissertation research for the two aims of the study to (1) examine the associations among racial discrimination, perceived stress, and birth satisfaction among Black women; and (2) examine the mediating effect of perceived stress on the association between racial discrimination and birth satisfaction among Black women. The fourth chapter presents successful strategies and challenges faced in the recruitment and retention of Black women in the immediate postpartum period. Recruitment and retention of people of color for nursing research is critical to reducing racial disparities in health care. Due to participation in research being
historically low among people of color it is important to evaluate recruitment strategies to
decrease bias, make findings more generalizable to larger populations, and allow people of color
to benefit from research findings (Barrett et al., 2017; Murthy et al., 2004; Tan et al., 2018).

The theoretical framework guiding this study is the Social-Ecological Model which has
been adapted from Bronfenbrenner’s Ecological Model stating that personal and environmental
factors affect health outcomes (Bronfenbrenner, 1986; Krug et al., 2002). Bronfenbrenner
theorizes that a person’s external environment influences their development. The Social-
Ecological Model considers the interactions between an individual, their relationships, their
community, and society. Individual factors include a person’s age, education, income, and
behaviors. The relationship involves a person’s close social circle. Community includes schools,
churches, workplaces, and neighborhoods. Society refers to factors such as health, economic,
educational, and societal policies and norms. These systems overlap and interact with each other
to affect development and health outcomes (CDC, n.d.). In this research study, experiences of
racial discrimination and perceived stress are personal factors that may affect health outcomes.
Birth satisfaction is the outcome. For this dissertation research, I proposed that women who
experience racial discrimination throughout their lives will have higher levels of perceived stress,
which will result in lower levels of birth satisfaction.
References


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https://search.ebscohost.com/login.aspx?direct=true&AuthType=cookie,shib&db=cmedm


CHAPTER 2: THE RELATIONSHIP BETWEEN STRESS AND BIRTH SATISFACTION: AN INTEGRATIVE LITERATURE REVIEW

Abstract

Stress during pregnancy has been found to have negative consequences on maternal and birth outcomes including preterm birth, delivering low birth weight infants, and the development of depressive symptoms. Stress during pregnancy and birth has also been related to labor-related difficulties such as an increased need for pain relief, a longer duration of labor, an increased risk of cesarean section, and decreased birth satisfaction. Negative experiences with childbirth are strongly associated with postpartum depression and post-traumatic stress disorder. Black women are more likely than non-Hispanic White women to be dissatisfied with the birth process and are found to have lower scores related to preparedness for labor which can increase stress and anxiety during pregnancy. This integrative literature review evaluated prior research of the association of stress with birth satisfaction. An electronic search was conducted in CINAHL, MEDLINE, and APA PsycInfo using the key terms stress, birth/childbirth satisfaction, and birth/childbirth experience. There was no limitation placed on the years of publication. Seven research studies were included in the review. The review included one mixed method approach study and six quantitative studies; three studies had a cross-sectional design, and four studies had a longitudinal design. The results reveal that higher levels of perceived stress during pregnancy or the postpartum period related to lower levels of birth satisfaction. Further, stress during pregnancy and birth was exacerbated by the COVID-19 pandemic. Women who experienced acute stress reactions in the postpartum period reported that they had less confidence in themselves during birth, more anxiety intensity, more intense exhaustion, less good acceptance and letting go which led to a more negative birth experience. Four of the studies included Black
women in their sample. This integrative literature review has revealed a need for further research evaluating stress and birth satisfaction specific to Black women.
Introduction

Childbirth can have a profound impact on women’s physical and psychosocial health. Many women view childbirth as stressful, and some women view it as a traumatic and negative experience (Saxbe et al., 2018). Stress during pregnancy has been found to have negative consequences on maternal and birth outcomes including preterm birth (< 37 completed weeks gestation), delivering low birth weight infants (<2500 grams), and the development of depressive symptoms (Congdon et al., 2016; Eick et al., 2020; Giurgescu et al., 2012; Preis, Mahaffey, Heiselman, et al., 2021). Stress during pregnancy and birth has also been associated with labor-related difficulties such as an increased need for pain relief, a longer duration of labor, an increased risk of cesarean section and decreased birth satisfaction (Alhusen et al., 2016; Attanasio et al., 2014; Congdon et al., 2016; Preis, Mahaffey, Heiselman, et al., 2021; Saxbe et al., 2018).

Birth satisfaction, defined as a woman’s perception and satisfaction with her intrapartum care (Barbosa-Leiker et al., 2015), may include assessing for the mother’s perceptions of care received, maternal control, health care provider support and communication, social support, coping well during labor, being treated with respect, and stress experienced during labor (Fair & Morrison, 2012; Martin & Fleming, 2011). Maternal satisfaction with birth can have effects on both maternal and neonatal health, such as improved bonding, improved rates of breastfeeding, and a lower risk of postpartum depression (PPD) (Hamm et al., 2019; Hinic, 2016, 2017). Women who are confident during labor have a greater sense of control, feel more confident in making decisions, and perceive their labor and birth as less painful resulting in a more positive birth experience (Attanasio et al., 2014; Martin et al., 2020). In contrast, negative childbirth experiences are associated with increased anxiety, PPD, post-traumatic stress disorder (PTSD),
and fear surrounding future pregnancies (Attanasio et al., 2014; Bell & Andersson, 2016; Capik & Durmaz, 2018; Martin et al., 2020; Urbanová et al., 2021; Webb et al., 2021).

Chronic stress is pervasive in the lives of Black women and has a significant impact on their reproductive health (Chambers et al., 2020; Gillespie et al., 2021; Strutz et al., 2014). Black women report higher levels of perceived stress compared to other minority populations due to social determinants of health such as racial discrimination (W. A. Grobman et al., 2016; Toledo-Corrал et al., 2022). Research suggests that experiences of racial discrimination have been related to perceived stress among Black pregnant women (Gillespie et al., 2021; Sroka et al., 2023).

Previous research has found that Black women report negative experiences and dissatisfaction with their health care (Chambers et al., 2021; Ertel et al., 2012; Kalata et al., 2020; McLemore et al., 2018; Murphy et al., 2022). Black women are also more likely to be dissatisfied with the birth process compared with non-Hispanic White women (Hamm et al., 2019; Janevic et al., 2021; Mollard & Kupzyk, 2022). Black women reported lower scores related to preparedness for labor than White women (Hamm et al., 2019). However, research that examines birth satisfaction among Black women is limited. This integrative literature review evaluated prior research of the association of stress with birth satisfaction, with consideration to studies that included Black women in their samples.

**Methods**

In November 2022, a comprehensive literature search was conducted to examine the association of stress with birth satisfaction. The three databases searched were CINAHL, MEDLINE, and APA PsycInfo. Search terms used were “birth satisfaction” or “childbirth satisfaction” or “birth experience” or “childbirth experience” AND stress NOT “post-traumatic stress disorder” or "posttraumatic stress disorder". Inclusion criteria consisted of quantitative or
mixed method approach studies that were peer-reviewed and published in English with full-text availability. Due to limited research, there were no date exclusions. The search yielded 351 articles, of which 92 were duplicates, resulting in 260 articles. After a review of titles and abstracts, 30 articles were selected for an in-depth evaluation. Of those 30 articles, seven studies met inclusion criteria. The reasons for the exclusion were studies not examining the association of stress with birth satisfaction; and publications focused only on fathers, parenting stress, biological measures of stress, traumatic birth, or postpartum depression. The seven studies were published between 2015 and 2021 (see Table 1). The PRISMA framework (see Figure 1) was used for reporting the search results (Moher et al., 2009).
Figure 1: PRISMA Flow Diagram

Notes: Reasons for exclusion of 230 articles (e.g., did not contain both variables, did not compare variables of stress and birth satisfaction); reasons for exclusion of 22 full-text articles (e.g., focused on fathers, parenting stress, biological measures of stress, traumatic birth, or PPD).
<table>
<thead>
<tr>
<th>Author, Year, Country, Title</th>
<th>Question/ Purpose/ Aim</th>
<th>Study Design</th>
<th>Sample</th>
<th>Variables and Instruments</th>
<th>Results</th>
<th>Strengths and Limitations</th>
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<tbody>
<tr>
<td>Bielinski-Blattmann et al. (2016)</td>
<td>To examine the relationship between qualitatively and quantitatively assessed birth experiences and rates of post-birth distress and depressive symptoms three to four weeks postpartum.</td>
<td>Mixed Methods</td>
<td>N=30 women</td>
<td>Quantitative: Acute stress reactions Impact of Event Scale (15 items) (Cronbach’s α = NA)</td>
<td>Women who reported postpartum acute stress reactions reported more feelings of anxiety intensity (4.33 and 2.65, respectively, ( p &lt; .05 )), higher levels of exhaustion intensity (4.00 and 2.44, respectively, ( p &lt; .05 )), less confidence in themselves during birth (1.70 and 3.40, respectively, ( p &lt; .001 )) and less good acceptance and letting go (2.05 and 3.77, respectively, ( p &lt; .01 )) compared with women without symptoms of acute stress reactions. There were no differences in other birth experiences between women who reported acute stress reactions and women without symptoms.</td>
<td>Small sample size limits the generalizability of the findings. Study conducted in Europe between 1997-2010; thus, the results do not represent the experiences of Black pregnant women from the U.S.</td>
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<tr>
<td>Switzerland</td>
<td></td>
<td>Cross-sectional</td>
<td>3-4 weeks postpartum</td>
<td>Qualitative: Birth experiences Basic experiences-Anxiety intensity Pain intensity Dominance of bodily processes intensity Exhaustion intensity Coping strategies-Full confidence Good coping with the pain Good acceptance and letting go Relationship experiences-In contact with the child Helpful partner support Good caregiver support</td>
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<tr>
<td>Congdon et al. (2017) U.S.</td>
<td>To explore associations between prenatal mood and birth perceptions in a socioeconomically diverse, American sample.</td>
<td>Quantitative Prospective T1 3rd trimester (weeks not specified) T2 5.4 ± 2.7 weeks postpartum</td>
<td>N=136 women</td>
<td>Perceived Stress Perceived Stress Scale (10 items) (Cronbach’s $\alpha$ = NA) collected at T1</td>
<td>Higher levels of stress in the third trimester of pregnancy were related to lower CEQ scores ($r=-.34$, $p&lt;.001$), and lower scores for the subscales of sense of control ($r=-.42$, $p&lt;.001$), professional support ($r=-.19$, $p&lt;.05$), and perceived safety ($r=-.25$, $p&lt;.01$).</td>
<td>Small sample size limits the generalizability of the findings. Only women with high BMI due to sampling. Over sampled minority and low-income women.</td>
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<td>Birth experiences Childbirth Experience Questionnaire (CEQ) (22 items) (Cronbach’s $\alpha$ = .86) collected at T2</td>
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<td>Subscales: -Sense of Control -Professional Support -Perceived Safety -Participation</td>
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<td>Household annual income $23,600 ± 20,000</td>
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<td>Level of education some college/vocational = 73 (53.7%)</td>
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<td>Parity 57 (41.9%) primiparous</td>
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<td>Gestational age at birth 39.5 ± 1.6 (weeks)</td>
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<td>Preterm birth 9 (7%)</td>
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<td>Mode of delivery</td>
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<td>Gurber et al. (2017) Switzerland</td>
<td>To examine the interplay of depressive symptoms in pregnancy and the subjective childbirth experience of mothers and fathers with regard to the development of postpartum depressive symptoms and acute stress reactions postpartum</td>
<td>Quantitative Longitudinal</td>
<td>N=140 mothers and fathers n=70 mothers Maternal characteristics Race/ Ethnicity NA Maternal age 33.9± 4.6 years Household annual income NA Level of education NA Parity n=62 (44.3%) primiparous n=76 (54.3%) multiparous Gestational age at birth NA Preterm birth NA Mode of delivery n=91 (65%) vaginal n=36 (25.8%) C/s</td>
<td>Acute stress reactions Impact of Event Scale – Revised (14 items) (Cronbach’s α =0.78) collected at T3 Birth experience Salmons Item List (20 items) (Cronbach’s α = 0.91) collected at T2</td>
<td>Lower levels of subjective birth experiences were related to higher levels of acute stress reactions after childbirth ($r=-.30$, $p&lt;0.001$). Small sample size affects generalizability. Birth experiences were collected 2-5 days postpartum. Acute stress reactions were measured during the 4th week postpartum.</td>
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<td>Hinic (2017) U.S. Understanding and Promoting Birth Satisfaction in New Mothers</td>
<td>To examine the impact of select maternal psychosocial and experiential factors on birth satisfaction of new mothers during early postpartum.</td>
<td>Quantitative Cross-sectional 1-4 days postpartum</td>
<td>N=107 mothers</td>
<td>Perceived Stress Perceived Stress Scale (10 items) (Cronbach’s α =.88) Birth Satisfaction Birth Satisfaction Scale-Revised (BSS-R) (10 items) (Cronbach’s α =.72)</td>
<td>Higher levels of perceived stress related to lower levels of birth satisfaction (r = -.299, p &lt; .05). PSS scores predicted BSS-R scores after controlling for breastfeeding self-efficacy, preparation for birth, skin-to-skin contact with the infant, breastfeeding assistance and type of birth (β=.165, r=-2.528, p=0.013). The predictive model for birth satisfaction was significant (R2 = .204, F [6, 99] = 4.225, p = .001), explaining approximately 20.4% of variance in birth satisfaction in the sample.</td>
<td>Small sample size affects generalizability. Sample is primarily white educated women who are married with a high income affects generalizability.</td>
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<td>N=107 mothers</td>
<td>Maternal characteristics Race/ Ethnicity n= 11 Black n= 74 White n= 8 Hispanic n= 6 Asian n= 7 Other Maternal age 32.43± 4.82 years Household annual income &gt;$100,000 n=66 (62.3%) Level of education Bachelor’s degree or higher n=84 (78.5%) Parity 53 (49.5%) primiparous 54 (50.5%) multiparous Gestational age at birth NA Preterm birth n=0 Mode of delivery n=66 (61.7%) vaginal</td>
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<td>Author, Year, Country, Title</td>
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</table>
| Janevic et al. (2021) U.S.   | To examine the impact of the COVID-19 pandemic on birth satisfaction and perceived health care discrimination during childbirth, and in turn, the influence of these birth experiences on postpartum health | Quantitative Cross-sectional | N=237 women  
*Maternal characteristics*  
Race/Ethnicity  
n=20 Black  
n=145 White  
n=34 Hispanic  
n=29 Asian  
n= 7 Other  
Maternal age  
n= 7 (3.0%) 19-24 years  
n=27 (11.6%) 25-29 years  
n=90 (38.8%) 30-34 years  
n=85 (36.6%) 34-39 years  
n=23 (9.9%) 40-49 years  
Household annual income  
NA  
Level of education  
n=198 (84.3%) college graduate or higher  
Parity  
n=103 (50.5%) primiparous  
n=101 (49.6%) multiparous  
Gestational age at birth  
NA | *Perceived stress*  
Perceived Stress Scale (PSS) (14 items)  
(Cronbach’s $\alpha = NA$)  
*Birth satisfaction*  
Birth Satisfaction Scale – Revised (10 items)  
(Cronbach’s $\alpha = NA$) | Perceived stress predicted birth satisfaction (adjusted risk ratio [RR]=0.4; 95% confidence interval [CI]: 0.2-0.8. $p=.008$) after adjustment for age, race/ethnicity, education, insurance status, nativity, previous number of births, BMI, history of abuse/maltreatment, cesarean delivery.  
Women who gave birth during the pandemic had lower levels of birth satisfaction compared with women who gave birth prior to the pandemic; 43.1% high birth satisfaction (pandemic) vs. 58.6% (pre-pandemic) ($p=.042$). | Pre-pandemic comparison groups strengthens results.  
No explanation on how many weeks/months postpartum participants were at the time of survey is a limitation. |
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</tr>
</thead>
<tbody>
<tr>
<td>Preis et al. (2021) U.S.</td>
<td>The impacts of the COVID-19 pandemic on birth satisfaction in a prospective cohort of 2,341 U.S. women</td>
<td>To investigate the extent to which pandemic-related factors predicted lower birth satisfaction.</td>
<td>Quantitative Longitudinal</td>
<td>Preterm birth n=11 (6.5%) Mode of delivery n=118 (69.4%) vaginal n=52 (30.6%) c/s</td>
<td>Pandemic-related prenatal perceptions Pandemic-Related Prenatal Stress Scale (PREPS) (15 items) collected at T1 Subscales: Preparedness Infection Positive Appraisal (Cronbach’s α= 0.69-0.85 for the subscales) Birth satisfaction Childbirth Satisfaction Scale (8 items)– (Cronbach’s α= 0.95) collected at T2 and T3 Maternal stress about feeling unprepared for birth (β=0.13, p&lt;0.001) due to the pandemic and positive appraisals of pregnancy during the pandemic (β=0.06, p&lt;.001) independently predicted birth satisfaction when controlling for maternal characteristics (e.g., age, race/ethnicity, marital status, financial status, nulliparity, maternal complications), and other factors (e.g., social support, appointment alterations, intrapartum mask wearing, intrapartum accompaniment). Higher levels of PREPS-Preparedness (r=-.23, p&lt;.001) and higher levels of PREPS- Infection (r=-.12, p&lt;.01) subscales related to lower levels of birth satisfaction. PREPS-Preparedness had a direct effect on medicalization of birth (β=.12, p &lt;.05) and incongruence with birth preference (β=.05, p&lt;.05). Medicalization of birth</td>
<td>Primarily white women which affects generalizability. No breakdown of other races/ethnicities 46% attrition, excluded patients who were still pregnant at T3</td>
</tr>
<tr>
<td>Author, Year, Country, Title</td>
<td>Question/ Purpose/ Aim</td>
<td>Study Design</td>
<td>Sample</td>
<td>Variables and Instruments</td>
<td>Results</td>
<td>Strengths and Limitations</td>
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<td>Saxbe et al. (2018) U.S.</td>
<td>The Birth Experiences Questionnaire: A Brief Measure Assessing Psychosocial Dimensions of Childbirth</td>
<td>To develop and test the Birth Experiences Questionnaire (BEQ), a brief 10-item measure designed to assess stress, fear, and partner support during birth.</td>
<td>Quantitative Longitudinal</td>
<td>N=102 parents (51 couples)</td>
<td>Higher levels of maternal prenatal stress related with higher total BEQ scores ($r=.31, p&lt;.05$).</td>
<td>All women were primiparous. Small sample size Majority of women were college educated. All limit generalizability</td>
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<td>Race/Ethnicity 5% Black 57% White 17% Latino 14% Asian 6% Mixed</td>
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<td>Maternal age 32.00 ± 4.47</td>
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<td>Household annual income N/A</td>
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<td>Level of education Majority – college degree</td>
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<td>Parity NA</td>
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<td>Gestational age at birth N/A</td>
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<td>Mode of delivery n=1619 (69.7%) vaginal n=706 (30.3%) c/s</td>
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<td>Perceived stress Perceived Stress Scale (14 items) (Cronbach’s α = N/A) collected at T1</td>
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<td>Birth experience Birth Experience Questionnaire (BEQ) (10 items) (Cronbach’s α = .81 for mothers) collected at T2</td>
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<tr>
<td></td>
<td>pregnant, some lost pregnancy, some postpartum (October 1st – October 26th, 2020)</td>
<td>NA</td>
<td>Preterm birth n=168 (7.3%)</td>
<td>($β=-.21, p &lt;.05$) and incongruence with birth preference ($β=-.33, p&lt;.05$) had a direct effect on birth satisfaction. Medicalization of birth and incongruence with birth preference mediated the associations of PREPS-Preparedness with birth satisfaction.</td>
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<td>Mode of delivery n=1619 (69.7%) vaginal n=706 (30.3%) c/s</td>
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<td>Author, Year, Country, Title</td>
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<td>Sample</td>
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<td>Results</td>
<td>Strengths and Limitations</td>
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<td>Preterm birth N/A</td>
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<td></td>
<td>Mode of delivery n=37 vaginal n=13 c/s</td>
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Results

Design and Sample

This review includes one mixed method study and six quantitative studies. Three of these studies employed a cross-sectional design (Bielinski-Blattmann et al., 2016; Hinic, 2017; Janevic et al., 2021) and four studies used a longitudinal design (Congdon et al., 2016; Gürber et al., 2017; Preis, Mahaffey, Heiselman, et al., 2021; Saxbe et al., 2018). One of the quantitative studies reported on the psychometric properties of a birth experience questionnaire (Saxbe et al., 2018) and two studies focused on stress and birth satisfaction during the COVID-19 pandemic (Janevic et al., 2021; Preis, Mahaffey, Heiselman, et al., 2021). Two of the studies assessed for acute stress reactions (Bielinski-Blattmann et al., 2016; Gürber et al., 2017).

The sample sizes ranged from 30 to 2341 women. Of the seven studies included in this review, only one study focused specifically on an ethnically diverse sample, with Black women being the majority (Congdon et al., 2016). Congdon et al. (2016) included the largest proportion of Black women (n=55, 40%) out of the seven studies included in this review; race did not predict birth satisfaction in this study. Three other studies included Black women in their samples; however, Black women were not the majority in those samples (Hinic, 2017; Janevic et al., 2021; Saxbe et al., 2018). Their samples largely consisted of non-Hispanic White, college-educated women. Neither Bielinski-Blattmann et al. (2016) nor Gürber et al. (2017) reported race of the participants in their study; however, both studies were conducted in Switzerland and may have included mostly White women. Five of the studies were conducted in the United States (Congdon et al., 2016; Hinic, 2017; Janevic et al., 2021; Preis, Mahaffey, Heiselman, et al., 2021; Saxbe et al., 2018); two studies were conducted in Switzerland (Bielinski-Blattmann et al., 2016; Gürber et al., 2017).
The sample characteristics of participants included in the literature review are presented below. Six of the seven studies included in the review reported a mean maternal age ranging from 28 to 34 years. Janevic et al. (2021) reported that the participants in their study ranged in age from 19-49 years of age. Four studies reported the majority of the participants to have some college/vocational training (53.7%) (Congdon et al., 2016), or college degree or higher (Hinic, 2017; Janevic et al., 2021; Saxbe et al., 2018). The other three studies did not report the level of education of participants. Three of the five studies conducted in the United States reported participant’s annual income. Congdon et al. (2016) reported that the mean annual income was $23,600. Hinic (2017) reported that 62% of their participants had an annual income of more than $100,000. Preis reported that 87% of the participants had an income above the overall participant average. Two studies did not report on participants’ income (Janevic et al., 2021; Saxbe et al., 2018). Only one study reported the mean gestation age at birth (39.5 weeks gestation) (Congdon et al., 2016). All seven studies reported mode of delivery (vaginal vs. cesarean section). The majority of women had a vaginal delivery ranging from 61.7% to 73.5% among all studies.

Measures

Stress

Four studies used the Perceived Stress Scale (PSS) to evaluate perceived stress during pregnancy or the postpartum period; two studies used the 14-item PSS (Janevic et al., 2021; Saxbe et al., 2018) and two studies used the 10-item PSS (Congdon et al., 2016; Hinic, 2017). The PSS measures the degree to which participants feel their lives have been unpredictable, uncontrollable, and overwhelming in the previous month. The PSS asks about feelings and thoughts during the prior month (e.g., “felt things were going your way,” “felt nervous and stressed”) on a 5-point scale (0=never to 4=very often). The total score ranges from 0-40 after
reverse coding of specified items, with higher scores representing higher levels of perceived stress (Cohen, 1988; Cohen et al., 1983). Cronbach’s α for the PSS was only reported in one study and was .88 (Hinic, 2017).

Two studies used the Impact of Event scale (IES) to assess acute stress responses to birth (Bielinski-Blattmann et al., 2016; Gürber et al., 2017); one study used the revised version (Gürber et al., 2017). Participants rated how often they experienced intrusion (e.g., unwanted thoughts), avoidance (e.g., numb feelings relating to childbirth) and hyperarousal (e.g., feeling irritable and angry) in the previous week. The original version has 15-items on a 4-point scale (0 = not at all, 1 = rarely, 3 = sometimes, 5 = often). Total scores range from 0-75 with results over nine being indicative of having an acute stress reaction (Horowitz et al., 1979). The revised version has 22-items and is scored on a 5-point scale (0=not at all to 4=extremely). Total scores for the revised version range from 0-88 with scores above 24 indicating an acute stress reaction (Weiss, 2007). Cronbach’s α for the IES-r was .78 (Gürber et al., 2017), and not reported for the original IES.

One study utilized the Pandemic-Related Prenatal Stress Scale (PREPS) to evaluate pandemic-related stress during pregnancy (Preis, Mahaffey, Heiselman, et al., 2021). The PREPS includes three distinct factors: preparedness, infection, and positive appraisal. Preparedness (pandemic-related un-preparedness stress) measures the extent to which women feel stressed about being unprepared for birth (k=7) (e.g., “I am worried that the pandemic could ruin my birth plans”, “I am concerned that I am not getting enough healthy food or sleep or exercise because of COVID-19 restrictions”). Infection (pandemic-related perinatal infection stress) refers to concerns related to the participant or their fetus/baby contracting COVID-19 (k=5) (e.g., “I am worried that my baby could get COVID-19 at the hospital after birth”, “I am concerned that a
COVID-19 infection could harm my pregnancy”). Positive appraisal (pandemic-related positive appraisal) measures the extent to which positive perceptions about pregnancy during the pandemic help women cope (k=3) (e.g., “I feel that being pregnant is giving me strength during the pandemic”, “I feel that COVID-19 is helping me appreciate my pregnancy more”). Participants rate their agreement with the statements on a 5-point scale (1=very little to 5=very much). Scale scores are calculated as the mean response of items on the corresponding factor (Preis et al., 2020). All three PREPS factors were internally consistent with Cronbach’s α ranging between 0.69 and 0.85 (Preis, Mahaffey, Heiselman, et al., 2021).

Birth Satisfaction

Two studies utilized the Birth Satisfaction Scale – Revised (BSS-R) to evaluate birth satisfaction (Hinic, 2017; Janevic et al., 2021). The BSS-R assesses satisfaction of childbearing women’s experiences with labor and its outcomes. It has 10-items (e.g., “felt anxious,” “felt well supported,” “staff communicated well”) on a 5-point scale (0=strongly disagree to 4=strongly agree), with some items being reverse scored. The BSS-R has 3 subscales: stress experienced during labor (k=4), quality of care provisions (k=4), and women’s personal attributes (k=2). Total scores range from 0-40 after reverse coding of items 2, 4, 7, and 8, with higher scores representing higher levels of birth satisfaction (Barbosa-Leiker et al., 2015). Cronbach’s α was only reported in one study and was .72 (Hinic, 2017).

One study used the Childbirth Experience Questionnaire (CEQ) to evaluate the childbirth experience of first-time mothers (Congdon et al., 2016). It is a 22-item assessment of four birth experience domains; the “own capacity” subscale assesses feelings of control or internal strength and pain and is also referred to as the “sense of control” subscale (e.g., “I felt strong”, “I felt tired”); the “professional support” subscale assesses practitioner care and communication (e.g.,
“I felt very well taken care of by the midwife”, “My midwife devoted enough time to me”); the “perceived safety” subscale assesses sense of security and memories (e.g., “I have many negative memories from the labour process”, “I felt scared”) and the “participation” subscale assesses choice and personal influence (e.g., “I felt I could choose the delivery position”, “I felt I could choose which pain relief method to use”). Nineteen of the 22 items consist of 4-point scale response options (1= totally agree to 4=totally disagree). Memory of labor pain, sense of security and control are assessed with visual analogue scales (VAS). The VAS-scales scores are transformed to categorical values (0-40 = 1, 41-60 = 2, 61-80 = 3 and 81-100 = 4). Positively worded items are reverse coded with a higher score indicating a more positive experience. Mean scores are calculated for each of the subscales (Dencker et al., 2010). In Congdon et al. (2016) Cronbach’s $\alpha = 0.71$, 0.91, and 0.72, respectively, for the sense of control, professional support, and perceived safety subscales. The participation subscale had poor internal consistency (Cronbach’s $\alpha=.50$).

Gürber et al. (2017) used the Salmon’s item list – German language version (SILGer) to evaluate subjective childbirth experience. The SILGer rates 20 adjectives (e.g., ‘disappointed’, “sad”, “relaxed”) on a numerical scale ranging from 1 to 7 and assesses fulfilment, emotional adaption, postnatal negative emotional experience, and physical discomfort. Higher scores reflect a more positive birth experience (Stadlmayr et al., 2001). Cronbach’s $\alpha$ for this study was .91 (Gürber et al., 2017).

One study used the Childbirth Satisfaction Scale (CSS) to evaluate birth satisfaction (Preis, Mahaffey, Heiselman, et al., 2021). The CSS measures women’s subjective general satisfaction with the birth experience using 8 items (e.g., “I am happy with my childbirth experience”, “I wish my labor and delivery had gone differently than they did”). Women rate
their agreement with the statements on a 5-point scale (1 = strongly disagree to 5 = strongly agree). Scores are calculated by reversing responses on one negative indicator and summing across all items, then using the average item response (Graham et al., 2002). Cronbach’s $\alpha$ for this study was 0.95 (Preis, Mahaffey, Heiselman, et al., 2021).

Saxbe et al. (2018) developed the Birth Experience Questionnaire (BEQ) which has 10-items that measure stress, fear, and partner support during birth (e.g. “Did you fear for your own life”, “Did your partner’s support make your birth experience easier”). Women rate their agreement with the statements on a 1-7 Likert scale (1 = not at all to 7 = extremely). Scoring is done by summing across all items and dividing by the number of questions, with higher scores indicating more stress and fear and less support. The BEQ showed good reliability and internal consistency (Cronbach’s $\alpha$ = .81) (Saxbe et al., 2018).

One study used a mixed methods design for their study and assessed the birth experience using a qualitative approach (Bielinski-Blattmann et al., 2016). The Bern-Basal Childbirth Interview was developed from 73 women in their original longitudinal study. They utilized semi-structured interviews three to four weeks postpartum to assess various aspects of birth from onset of labor to after delivery (e.g., mood, partners, unborn infants, coping strategies). The interviews took between 45-90 minutes, were recorded, and analyzed without transcription. Ten themes emerged from the interviews: anxiety, dominance of bodily processes, exhaustion, intense pain, hopelessness vs. confidence, coping with pain, fearful control vs. acceptance, contact with unborn child, partner support, and health care provider support. These 10 themes were reduced to three major birth experience dimensions: basic experiences, coping strategies, and relationship experiences. For their current study they randomly chose 10 women with acute stress reactions, 10 women without symptoms, and 10 women with depressive symptoms and reviewed these 30
videotaped interviews further. These 30 interviews were transcribed verbatim and examined. Each birth theme was then coded based on a 5-point scale (1=not present to 5=highest value; strong prevalence) (Bielinski-Blattmann et al., 2016).

Time of data collection

Time of data collection for stress measures and birth satisfaction measures varied amongst the different studies. Three studies measured stress during pregnancy and four studies measured stress during the postpartum period. For example, Congdon et al. (2016) administered the PSS during the third trimester (weeks not indicated) and Saxbe et al. (2018) administered the PSS at a mean of 28 weeks gestation. The PREPS was administered during pregnancy at a mean of 30 weeks gestation (Preis, Mahaffey, Heiselman, et al., 2021). Hinic (2017) administered the PSS one to four days postpartum. Janevic et al. (2021) also administered the PSS during the postpartum period but did not indicate how many days/weeks postpartum. The IES was administered at three to four weeks postpartum for one study (Bielinski-Blattmann et al., 2016), and four weeks postpartum in the other study (Gürber et al., 2017). Birth satisfaction was measured at different times during the postpartum period. Data for the BSS-R were collected one to four days postpartum in Hinic’s (2017) study and not indicated in the other study (Janevic et al., 2021). The BEQ was administered one to two days postpartum (Saxbe et al., 2018), the SILGer was administered two to five days postpartum (Gürber et al., 2017), and the CEQ was administered at a mean of five weeks postpartum (Congdon et al., 2016). The CSS was administered three months after the PREPS which was done during pregnancy, however, the mean weeks postpartum is not reported (Preis, Mahaffey, Heiselman, et al., 2021).
Findings

Overall results from this review reveal that higher levels of perceived stress during pregnancy related to lower levels of birth satisfaction and more stressful birth experiences (Congdon et al., 2016; Hinic, 2017; Saxbe et al., 2018). Stress during pregnancy and birth was exacerbated by the COVID-19 pandemic (Janevic et al., 2021; Preis, Mahaffey, Heiselman, et al., 2021). Women who experienced acute stress reactions in the postpartum period also reported that they had less confidence in themselves during birth, more anxiety intensity, intense exhaustion, less good acceptance and letting go and more negative birth experiences (Bielinski-Blattmann et al., 2016; Gürber et al., 2017). The following describes the findings related to perceived stress during the pregnancy, acute stress reactions, and COVID-19 pandemic-related stress.

Perceived Stress During Pregnancy and the Postpartum Period

Three studies reported on the association between perceived stress during pregnancy and birth satisfaction or birth experiences (Congdon et al., 2016; Hinic, 2017; Saxbe et al., 2018). The results of these studies suggest that higher levels of perceived stress during pregnancy related to lower levels of birth satisfaction or negative birth experiences (Congdon et al., 2016; Hinic, 2017; Saxbe et al., 2018). In a sample of 107 women (10% Black), Hinic (2017) found that women who reported higher levels of perceived stress during their postpartum hospitalization also reported lower levels of birth satisfaction \( (r = -.299, p < .05) \). Of the six independent variables included in the analysis (e.g., perceived stress, breastfeeding self-efficacy, feeling prepared for birth, skin-to-skin immediately after birth, receiving breastfeeding assistance in the first hour, type of birth) perceived stress was the only variable that predicted birth satisfaction \( (\beta = -.165, t = -2.53, p = 0.013) \) (Hinic, 2017). Congdon, et al. (2016) found that women who reported higher levels of perceived stress during the third trimester of pregnancy...
also reported lower scores on the sense of control \((r = -0.42, p < 0.001)\), perceived safety \((r = -0.25, p < 0.01)\) and professional support \((r = -0.19, p < 0.01)\) domains of the Childbirth Experience Questionnaire (CEQ), and lower CEQ total score \((r = -0.34, p < 0.001)\) among a sample of 136 women (40% Black). Higher levels of perceived stress during the third trimester predicted lower levels of sense of control \((\beta = -0.47, p < 0.001)\), perceived safety \((\beta = -0.25, p < 0.05)\), and overall birth satisfaction \((\beta = -0.32, p < 0.01)\) after controlling for income, race, parity, maternal age, Body Mass Index [BMI], type of birth (e.g., vaginal birth, unplanned cesarean section), pregnancy-related anxiety and depression (Congdon et al., 2016). Saxbe et al. (2018) found that higher levels of perceived stress during pregnancy \((28 \pm 3.48, \text{range 20-35 weeks gestation})\) related to more stressful birth experiences among a sample of 51 women (5% Black) \((r = 0.31, p < 0.05)\).

**Acute Stress Reactions**

Two studies in this review reported on the association between acute stress reactions and birth satisfaction (Bielinski-Blattmann et al., 2016; Gürber et al., 2017). These studies reported that higher levels of acute stress reactions during the postpartum period related to lower levels of birth satisfaction (Bielinski-Blattmann et al., 2016; Gürber et al., 2017). Bielinski-Blattman et al. (2016) reported that women with symptoms of acute stress reactions felt less confident during labor and birth \((1.7 \text{ and } 3.4, \text{respectively}, p < 0.001)\), reported more anxiety intensity \((4.3 \text{ and } 2.7, \text{respectively}, p < 0.05)\), experienced more intense exhaustion \((4.0 \text{ and } 2.4, \text{respectively}, p < 0.05)\), and had less good acceptance and letting go \((2.05 \text{ and } 3.77, \text{respectively}, p < 0.01)\) compared with women without symptoms of acute stress reactions (Bielinski-Blattmann et al., 2016). Gürber et al. (2017) found a negative birth experience correlated with acute stress reactions in the postpartum period \((r = -0.30, p < 0.001)\), even after controlling for maternal age, mode of birth, parity, epidural use, infant gender and weight.
COVID-19 Pandemic-Related Stress

Two studies reported that pregnant and postpartum women had negative psychological outcomes from the COVID-19 pandemic resulting in lower levels of birth satisfaction (Janevic et al., 2021; Preis, Mahaffey, Heiselman, et al., 2021). Janevic et al. (2021) found that women who delivered during the peak of the pandemic had lower levels of birth satisfaction compared with women who gave birth prior to the pandemic (high birth satisfaction: 43.1% vs. 58.6%, respectively, \(p=.042\)). Women who reported higher levels of perceived stress were more likely to report lower levels of birth satisfaction (60.6%). Perceived stress predicted birth satisfaction (adjusted risk ratio [RR]=0.4; 95% confidence interval [CI]: 0.2-0.8, \(p=.008\)) after adjustment for maternal age, race/ethnicity, level of education, insurance status, nativity, previous number of births, BMI, history of abuse/maltreatment, and cesarean delivery (Janevic et al., 2021). Preis et al. (2021) found that women who reported higher levels of pandemic-related unpreparedness stress (\(r=-.23, p<.001\)) and pandemic-related perinatal infection stress (\(r=-.12, p<.01\)) during pregnancy reported lower levels of birth satisfaction during the COVID-19 pandemic. Pandemic-related unpreparedness stress (\(\beta=-0.13, p<0.001\)) and positive appraisals of pregnancy during the pandemic (\(\beta=0.06, p<.001\)) independently predicted birth satisfaction during the COVID-19 pandemic after controlling for maternal characteristics (e.g., marital status, financial status, nulliparity, preterm birth, maternal and infant complications, social support) and pandemic-related factors (e.g., appointment alterations, intrapartum mask wearing, intrapartum accompaniment) (\(\beta = -0.13, p <.01, 95\% \text{ CI}: -.19; -.10\) (Preis, Mahaffey, Heiselman, et al., 2021). Preis et al. (2021) also reported that medicalization of birth and incongruence with birth preference mediated the associations of PREPS-preparedness with birth satisfaction.
Discussion

Despite the limited number of research studies, findings from this integrative literature review showed an association of higher levels of stress during pregnancy, childbirth, and the postpartum period with lower levels of birth satisfaction. Stress during pregnancy and birth was consistently found to decrease birth satisfaction (Congdon et al., 2016; Hinic, 2017; Preis, Mahaffey, Heiselman, et al., 2021; Saxbe et al., 2018). In fact, one study found perceived stress during pregnancy to have the biggest impact on birth satisfaction compared with five other factors (e.g., feeling prepared for birth, skin-to-skin immediately after birth, type of birth) (Hinic, 2017). Another study found that the increase in stress during pregnancy affected women’s sense of control and perceived safety during birth which decreased overall birth experiences (Congdon et al., 2016). Women who were less prepared for birth reported higher levels of stress and lower levels of birth satisfaction (Hinic, 2017). This integrative review also revealed that the COVID-19 pandemic increased pregnant and postpartum women’s perceived stress levels (Janevic et al., 2021; Preis, Mahaffey, Heiselman, et al., 2021). One study reported that women who delivered during the pandemic reported increased stress during pregnancy and birth (Preis, Mahaffey, Heiselman, et al., 2021), while the other study reported that postpartum women had an increase in perceived stress related to delivering during the pandemic (Janevic et al., 2021). One study reported that women who had increased stress levels regarding preparedness for birth and contracting perinatal infection of COVID-19 had lower birth satisfaction scores (Preis, Mahaffey, Heiselman, et al., 2021). Acute stress reactions during postpartum period also related to lower levels of birth satisfaction (Bielinski-Blattmann et al., 2016; Gürber et al., 2017). These researchers found that women who experienced acute stress reactions reported that they had less...
confidence during labor and birth, feelings of anxiety, intense exhaustion, less good acceptance and letting go which decreased their birth satisfaction (Bielinski-Blattmann et al., 2016).

This review discovered that research that examines the relationship between stress and birth satisfaction among Black women or other people of color is very limited. Congdon et al. (2016) were the only researchers who reported Black women as the largest number of participants in their sample (n=55, 40%). Although they found a relationship between higher levels of stress during pregnancy and lower levels of birth satisfaction, they reported that race was not a factor in their results (Congdon et al., 2016). Janevic et al. (2021) discovered that Black women reported more stress related to delivering during the COVID-19 pandemic than White women. However, this study consisted of a predominantly White sample. Two studies in this review did not report results by race/ethnicity possibly due to being conducted in Switzerland (Bielinski-Blattmann et al., 2016; Gürber et al., 2017). Preis et al. (2021) reported that some participants were non-White or Hispanic but did not specify which races were included. The remaining two studies reported small numbers of Black and minority women in their sample but did not report results related to race (Hinic, 2017; Saxbe et al., 2018).

Limitations

This integrative literature review has some limitations. One of the criteria for studies to be included in the review consisted of English only articles, which may have eliminated some research in other countries. Limiting the search to only quantitative or mixed methods studies ruled out the use of qualitative data regarding stress and birth satisfaction. Some studies reported small sample sizes of Black women while mostly all the studies in this review either did not report ethnicity or reported that White women were the largest number of participants in their samples. Many of the studies also reported that the majority of women in their samples were
fairly well educated with a good income. This limits generalizability to a larger population. Two studies did not report how many weeks postpartum women were at the time of participation. The further from childbirth women are, the more likely that their memory or evaluation of the birth experience can change. Another limitation to this review is that many articles evaluated stress in the postpartum period. Women who have recently gave birth are likely dealing with many factors that increase stress, altering their response to questions about stress that may not be related to pregnancy or birth. The heterogeneity of the stress and birth satisfaction measures was an additional limitation. The variety of instruments used may have limited the ability to compare results of each study.

Implications

Improving the well-being of mothers, infants, and children is an essential public health goal for the United States. Due to the profound impact that childbirth has on women and their psychological health, it is necessary to evaluate the relationship between stress and birth satisfaction. Many women report higher levels of stress during pregnancy and birth leading to a decrease in birth satisfaction. Low levels of birth satisfaction can lead to psychological complications such as PPD and PTSD, along with decreased rates of breastfeeding and increased fears regarding future children. Therefore, it is essential to recognize the importance that stress and birth satisfaction have on pregnant and postpartum women to provide interventions and policy changes to improve their health care experiences and well-being.

Black women are more likely to be affected by chronic stress throughout their lives due to social determinants of health such as racial discrimination. Recognizing the importance of the effect of social determinants of health on health outcomes can help health care providers better understand patients, effectively communicate about health-related conditions and behavior, and
improve birth outcomes. Assessing stress experienced by Black women both before and during pregnancy is vital in understanding birth outcome disparities. Advocating for policy changes that promote healthy environments in which Black women feel safe is important.

Conclusion

Although limited, this integrative literature review found that stress is related to a decrease in birth satisfaction; thus, it is essential that the relationship between stress and birth satisfaction is evaluated to inform interventions that promote the most positive birth experience possible among Black women. A positive birth experience leads to positive postpartum outcomes. Examining the association of perceived stress with birth satisfaction among Black women can lead to interventional studies which may reduce adverse birth outcomes, improve birth experiences, and reduce postpartum psychosocial complications among these women.
References


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CHAPTER 3: THE ASSOCIATIONS AMONG RACIAL DISCRIMINATION, PERCEIVED STRESS AND BIRTH SATISFACTION AMONG BLACK WOMEN

Abstract

The purpose of this study was to examine the associations among experiences of racial discrimination, perceived stress, and birth satisfaction among Black women; and to examine the mediating effect of perceived stress on the association between racial discrimination and birth satisfaction among Black women. This is a secondary analysis of data from a retrospective, cross-sectional, correlational design study of participants enrolled in the Biosocial Impact on Black Births (BIBB) study, a survey design study that examines the associations of social determinants of health with birth outcomes among Black women. A subsample of 155 women were recruited on the postpartum unit of a large hospital in Central Florida. Participants completed the Experiences of Discrimination scale, the Perceived Stress Scale and the Birth Satisfaction Scale - Revised between 24 hours and 23 days postpartum. Experiences of discrimination were positively correlated with perceived stress ($\rho= .176$, $p<.05$). Perceived stress was negatively correlated with birth satisfaction ($\rho = -.188$, $p<.05$) and the personal attributes subscale of the BSS-R ($\rho = -.209$, $p<.01$). Experiences of discrimination were not associated with birth satisfaction. Racial discrimination had a positive effect on perceived stress ($\beta = 2.445$, $p=0.032$) and perceived stress had a negative effect on birth satisfaction ($\beta = -0.221$, $p=0.015$). Racial discrimination had no direct effect on birth satisfaction ($\beta = -0.091$, $p=0.937$); therefore, perceived stress was not a mediator of the association of racial discrimination with birth satisfaction, as there was no significant association between racial discrimination and birth satisfaction. The results of this study add to the current body of knowledge regarding the
association of racial discrimination with perceived stress, and the relationship between perceived stress and birth satisfaction. Health care providers should assess for experiences of discrimination and levels of perceived stress among Black women, and advocate for their health care needs to improve birth satisfaction and their overall postpartum health.
Introduction

Black women have historically experienced racial discrimination when receiving prenatal and postpartum care (Alhusen et al., 2016; Chambers et al., 2021; Ertel et al., 2012; Gillespie & Weeks, 2021; McLemore et al., 2018; Murphy et al., 2022). Receiving inadequate or disrespectful medical and prenatal care (e.g., stressful interactions with health care staff, unmet informational needs, and inconsistent social support) has been frequently reported by Black women (Chambers et al., 2021; Ertel et al., 2012; Kalata et al., 2020; McLemore et al., 2018; Murphy et al., 2022). Chronic worry about racism and discrimination when receiving health care may lead to mistrust in the health care system (Shour et al., 2021). Addressing social determinants of health and assessing for experiences of discrimination in prenatal and postpartum care is needed to reduce health care disparities and improve reproductive health outcomes among Black women.

Racial discrimination, defined as being hassled or made to feel inferior due to one’s race or ethnicity (Kreiger et al., 2010), has been associated with higher levels of perceived stress among Black pregnant women (Gillespie et al., 2021; Sroka et al., 2023). For example, Gillespie et al. (2021), found that women who reported more experiences of racial discrimination had higher levels of perceived stress among a sample of 93 Black pregnant women. Sroka et al. (2023) reported that racial discrimination was positively correlated with perceived stress among a sample of 168 Black pregnant women. Thus, experiences of racial discrimination relate to higher levels of perceived stress among Black pregnant women. Although research has found an association between racial discrimination and psychological distress (e.g., anxiety, depressive symptoms) among Black postpartum women (Giurgescu et al., 2012; Segre et al., 2021; Shour et
al., 2021), no known studies have examined the association of racial discrimination with perceived stress among Black postpartum women.

Higher levels of perceived stress during pregnancy and birth have been related to lower levels of birth satisfaction (Congdon et al., 2016; Hinic, 2017; Janevic et al., 2021). Birth satisfaction refers to a woman’s perception and satisfaction with her intrapartum care (Barbosa-Leiker et al., 2015). It may include assessing for the mother’s perceptions of care received, maternal control, health care provider support and communication, social support, coping well during labor, being treated with respect, and stress experienced during labor (Fair & Morrison, 2012; Martin & Fleming, 2011). Although studies that examined the association of perceived stress with birth satisfaction included Black women in their sample, the subsamples of Black women were small (Congdon et al., 2016; Hinic, 2017; Janevic et al., 2021). For example, Congdon, et al. (2016) found that higher levels of perceived stress during the third trimester of pregnancy predicted more negative birth experiences after controlling for covariates (e.g., annual household income, race, parity, maternal age, Body Mass Index [BMI], type of birth) among a sample of 136 women (n=55 Black). Hinic (2017) found that higher levels of perceived stress during the postpartum hospitalization predicted lower levels of birth satisfaction after controlling for breastfeeding self-efficacy, feeling prepared for birth, skin-to-skin immediately after birth, receiving breastfeeding assistance in the first hour, and type of birth among a sample of 107 women (10% Black). Lastly, Janevic et al. (2021) found that higher levels of perceived stress during the postpartum period predicted birth satisfaction after adjustment for maternal age, race/ethnicity, nativity, education, insurance status, previous number of births, BMI, history of abuse/maltreatment, and cesarean delivery among a sample of 237 women (n=20 Black); (n=58 recruited during the pre-peak COVID-19 pandemic and n=168 recruited during the peak
COVID-19 pandemic). These results suggest that higher levels of perceived stress during the pregnancy and the postpartum period related to lower levels of birth satisfaction; however, the studies included small subsamples of Black women.

Stress may explain the large proportion of variance in birth experiences (Congdon et al., 2016). Saxbe et al. (2018) reported that higher levels of perceived stress during pregnancy related to more stressful birth experiences among a sample of 51 women (5% Black). Higher levels of stress during pregnancy and birth were also associated with increased labor-related difficulties (e.g., increased need for pain relief, longer duration of labor, increased risk of cesarean section) (Attanasio et al., 2014; Preis, Mahaffey, Pati, et al., 2021; Saxbe et al., 2018); however, the subsample of Black women was small. Stressful birth experiences can have negative effects on both women and their infants (e.g., postpartum depression, post-traumatic stress disorder, lower breastfeeding self-efficacy) (Capik & Durmaz, 2018; Hinic, 2017). In contrast, higher levels of birth satisfaction have been linked to improved bonding with the infant, higher breastfeeding rates (Hinic, 2016), and lower risk for postpartum depression (Bell & Andersson, 2016; Hamm et al., 2019; Urbanová et al., 2021). However, research that examined birth satisfaction among Black women is limited. Therefore, it is imperative to assess Black women’s satisfaction with their birth experiences.

Research suggests that racial discrimination relates to perceived stress (Gillespie et al., 2021; Sealy-Jefferson et al., 2019; Vaughan et al., 2023), and perceived stress relates to birth satisfaction (Congdon et al., 2016; Hinic, 2017; Janevic et al., 2021). However, research has not examined the associations among racial discrimination, perceived stress, and birth satisfaction, nor has it evaluated the mediating effect of perceived stress on the association of experiences of
racial discrimination with birth satisfaction among Black women. Therefore, the specific aims of this study were to (1) Examine the associations among racial discrimination, perceived stress, and birth satisfaction among Black women; and (2) Examine the mediating effect of perceived stress on the association of racial discrimination with birth satisfaction among Black women.

Methods

Study Design

This is a secondary analysis of data from a retrospective, cross-sectional, correlational design study of participants enrolled in the Biosocial Impact on Black Births (BIBB) parent study. The BIBB study is a longitudinal, survey design study that examines the associations of social determinants of health (e.g., experiences of racial discrimination) with birth outcomes (e.g., preterm birth) among Black women.

Setting and Sample

A subsample of 155 women from the BIBB study were recruited on the postpartum unit of a large hospital in Central Florida between October 2021 and June 2022. Women were eligible to enroll in the postpartum subsample of the BIBB study if they self-identified as African American or Black, spoke and read English, were between 18-45 years of age, and had a live singleton birth >24 hours and ≤ 20 days prior to the time of enrollment. Women were excluded from the BIBB study if they had multiple pregnancies (e.g., twins).

Procedures

The BIBB study was approved by the Institutional Review Boards from the hospital system and participating universities. Eligible participants were approached in the postpartum units by one of three research assistants. Research assistants collaborated with nursing
administrators to obtain a daily census that included name, room number, maternal birth date, language spoken, delivery date and time, and race/ethnicity. Upon approach by the research assistant, women who expressed interest were given a study pamphlet and were provided with a short overview of the study’s purpose and eligibility. Some reasons for not participating in the study included the eligible participant getting ready to be discharged from hospital, being busy with infant care, and being hesitant to give access to medical records. Women who chose to participate completed a consent process using the study provided iPad and were encouraged to complete the survey at that time. Data were collected using an online questionnaire stored in Qualtrics. These data were collected on a study provided iPad in the hospital or through a link emailed to participants to complete on a personal device at a later time. The questionnaires took approximately 40 minutes to complete. If participants were unable or unwilling to complete the survey at that time, their contact information was obtained and they were emailed a survey link and sent email or text reminders at 3, 7, and 11 days after enrollment. The survey included questions about socio-demographic characteristics (e.g., maternal age, levels of education), experiences of racial discrimination, perceived stress, and birth satisfaction. The participants were provided a $40 store gift card code, sent by text or email, upon completion of the survey.

Variables and Instruments

*Maternal characteristics*

Social and demographic data including maternal age, level of education, employment status, and household annual income were self-reported. Mode of birth and gestational age at birth were abstracted from the medical records.
Experiences of Discrimination (EOD) scale

Racial discrimination was self-reported using the Experiences of Discrimination (EOD) scale which measures subjective reports of racial discrimination throughout the life course (Krieger et al., 2005). This scale includes nine situations of discrimination based on race, ethnicity, or color across the lifespan (e.g., “Have you ever experienced discrimination, been prevented from doing something, been hassled or made to feel inferior in any of the following situations because of your race, ethnicity, or color”: at home, at school, getting hired or getting a job) (yes vs. no). Total score ranges from 0-9, with higher scores indicating more experiences of racial discrimination. Construct validity was established by correlating the EOD with the Williams Major and Everyday Discrimination Scale ($r = .612, p<0.001$; and $r = .612, p<0.0001$, respectively) and several single-item discrimination questions (Krieger et al., 2005). Test–retest reliability was 0.7, and Cronbach’s $\alpha$ was 0.86 among a sample of Black and Latino adults (Krieger et al., 2005). The instrument was reliable among Black pregnant and postpartum women (Cronbach’s $\alpha = 0.78$ and 0.79) (Giurgescu et al., 2012; Giurgescu et al., 2017). Cronbach’s $\alpha$ for the EOD in this study was .82.

Perceived Stress Scale (PSS)

Perceived stress was self-reported using Cohen’s Perceived Stress Scale (PSS) which measures the degree to which participants feel their lives have been unpredictable, uncontrollable, and overwhelming in the previous month (Cohen et al., 1983). The PSS has 10-items that asks about feelings and thoughts during the prior month (e.g., “How often have you been upset because of something that happened unexpectedly,” “How often have you felt nervous and stressed”) on a 5-point scale (0=never to 4=very often). Items 4, 5, 7, and 8 are reversed scored. The total score ranges from 0-40, with higher scores representing higher levels
of perceived stress. Construct validity was established by correlating the PSS with Life Event Scores among three groups: college students sample 1, college students sample 2, and a smoking cessation study sample before and after treatment. Results were as follows: Life Event Scores; Number of Life Events ($r = .20, .17, .38$ and $.39$, respectively) and Impact of Life Events ($r = .35, .24, .49$ and $.33$, respectively) (Cohen et al., 1983). The PSS was reliable among Black pregnant and postpartum women (Cronbach’s $\alpha = 0.80$ and $0.87$, respectively) (Sealy-Jefferson et al., 2019; Vaughan et al., 2023). Cronbach’s $\alpha$ for the PSS in this study was $.83$.

*Birth Satisfaction Scale-Revised (BSS-R)*

Birth satisfaction was self-reported using the Birth Satisfaction Scale – Revised which assesses satisfaction of childbearing women’s experiences with labor and its outcomes (Barbosa-Leiker et al., 2015). The BSS-R has 10-items (e.g., “I felt very anxious during my labor and birth,” “I felt well supported by staff during my labor and birth”) on a 5-point scale (0=strongly disagree to 4=strongly agree), with items 2, 4, 7, and 8 being reverse scored. The total score ranges from 0-40 with higher scores representing higher levels of birth satisfaction. The BSS-R has 3 subscales: stress experienced during labor (k=4), quality of care provisions (k=4), and women’s personal attributes (k=2). Construct validity was established using a measurement invariance testing approach to determine the relative equivalence between the original UK English-language version and the Greek-translated version of the BSS-R (Martin et al., 2016). The BSS-R demonstrated divergent validity with maternal age and known groups validity was established based on normal versus non-normal deliveries (Hollins Martin & Martin, 2014). The scale and the subscales were reliable in a sample of mostly White mothers (Cronbach’s $\alpha = .72 - .89$) (Barbosa-Leiker et al., 2015; Hinic, 2017). Reliability had not been previously reported in a Black or mostly Black sample. Cronbach’s $\alpha$ for the BSS-R in this study was $.71$. 

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Data Management and Analysis

All data collected, including consent forms, were managed and stored in Qualtrics. Qualtrics is a password-protected web-based survey tool that allows users to build and analyze online surveys and export data in multiple formats including SPSS and Excel data and report files. The Qualtrics data were accessible only by a password provided to those on the study team. All participants were provided identification numbers accessible only by the research team to protect participants’ identities. Data such as participant ID, email, and phone number were then copied to a password protected Excel document for logging. All de-identified study data were entered into IBM SPSS version 28 for cleaning and statistical analysis which was done using SPSS and R (version 4.0.1). Any questionnaires with more than 20% missing data were not included in the analysis. In addition, data for one participant who did not complete the BSS-R were removed from the analysis. This resulted in a final sample size of 154 participants. Multiple imputations were completed for the data points that were missing at random using mice package in statistical software R. Tests for normality of data were conducted. The Kolmogorov–Smirnov test for normality was significant (p<.001) meaning that data were not normally distributed; therefore, non-parametric testing was performed to examine the associations among racial discrimination, perceived stress and birth satisfaction. Descriptive statistics were used to analyze sample characteristics (e.g., maternal age, level of education, employment) and main study variables (racial discrimination, perceived stress, birth satisfaction). Spearman rho correlation coefficient was used to examine the associations of racial discrimination, perceived stress and birth satisfaction with maternal age. Mann-Whitney U was used to evaluate differences in EOD, PSS, and BSS-R total scores based on marital status (married/ partnered vs single), employment status (employed/ maternity leave vs unemployed), education level (high school or less, some
college or vocational training vs. associate degree or higher), household income (<$39,000 vs ≥ $40,000), mode of delivery (vaginal vs. cesarean section) and birth outcome (term birth [≥ 37 weeks gestation] vs preterm birth [<37 weeks gestation]). Data were analyzed according to the study aims. Spearman rho was used to evaluate pairwise relationships among racial discrimination, perceived stress, and birth satisfaction. A mediation analysis was performed using multiple linear regression analysis to determine the potential mediating effect of perceived stress on the association of racial discrimination with birth satisfaction, while controlling for maternal age, marital status, levels of education, employment status, annual household income, and comorbidities. For the perceived stress to function as a mediator the following conditions must be met: variations in levels of the independent variable (i.e., racial discrimination) must account for variations in the mediator (i.e., perceived stress); variations in the mediator must account for variations in the dependent variable (i.e., birth satisfaction); when these two paths are controlled, a previous significant relationship between the independent and dependent variables is no longer significant (Baron & Kenny, 1986). The mediation package in R (v4.5.0) was used to perform the mediation analysis (Tingley et al., 2014). The significance level for all statistical tests was set at 0.05, two-sided tail.

Results

Sample Characteristics

Sample characteristics are presented in Table 2. The mean maternal age for this sample was 28 years and the mean gestational age at birth was 38 weeks. The majority of women had a term birth (86%), were single (63%), had some college education or higher (60.4%), were employed or on maternity leave (71.4%), and had household incomes less than $40,000 per year (53.8%). Most women had a vaginal birth (59.7%). Twenty-two women (14.3%) had preterm
birth. Some of the participants reported health problems, with asthma or other lung problems (16.9%), hypertension (9.1%), and other conditions (12.3%) being the most common. Mean scores for the main variables were: EOD (2.6 ± 2.51), PSS (16.88 ± 5.71), and BSS-R (28.32 ± 5.65). The most common situations of discrimination were getting service in a store or restaurant (48.7%), on the street or in a public setting (37%), or at school (37%).
Table 2: Sociodemographic and Obstetric Characteristics (N=154)

<table>
<thead>
<tr>
<th>Variable</th>
<th>M±SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal Age</td>
<td>28.8 ± 6.08</td>
<td>18-43</td>
</tr>
<tr>
<td>Gestational Age at Birth</td>
<td>38.1 ± 2.1</td>
<td>26.1-40.5</td>
</tr>
<tr>
<td>EOD score</td>
<td>2.6 ± 2.51</td>
<td>0-9</td>
</tr>
<tr>
<td>PSS Score</td>
<td>16.88 ± 5.71</td>
<td>1-30</td>
</tr>
<tr>
<td>BSS-R score</td>
<td>28.32 ± 5.65</td>
<td>12-40</td>
</tr>
<tr>
<td>BSS-R Stress experienced during labor subscale score</td>
<td>10.07 ± 3.28</td>
<td>0-16</td>
</tr>
<tr>
<td>BSS-R Women’s personal attributes subscale score</td>
<td>4.2 ± 2.09</td>
<td>0-8</td>
</tr>
<tr>
<td>BSS-R Quality of care provisions subscale score</td>
<td>14.05 ± 2.02</td>
<td>8-16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>57 (37)</td>
</tr>
<tr>
<td>Living with partner</td>
<td>43 (27.9)</td>
</tr>
<tr>
<td>Widowed</td>
<td>1 (0.6)</td>
</tr>
<tr>
<td>Divorced</td>
<td>4 (2.6)</td>
</tr>
<tr>
<td>Separated</td>
<td>4 (2.6)</td>
</tr>
<tr>
<td>Never married</td>
<td>45 (29.2)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employment</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not working</td>
<td>38 (24.7)</td>
</tr>
<tr>
<td>Temporarily laid off</td>
<td>6 (3.9)</td>
</tr>
<tr>
<td>Variable</td>
<td>N%</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Working</td>
<td>22 (14.3)</td>
</tr>
<tr>
<td>On maternity leave</td>
<td>88 (57.1)</td>
</tr>
<tr>
<td>Annual Household Income</td>
<td></td>
</tr>
<tr>
<td>&lt;$10,000</td>
<td>16 (10.4)</td>
</tr>
<tr>
<td>$10,000 – $19,999</td>
<td>15 (9.7)</td>
</tr>
<tr>
<td>$20,000 - $29,999</td>
<td>23 (14.9)</td>
</tr>
<tr>
<td>$30,000 - $39,999</td>
<td>29 (18.8)</td>
</tr>
<tr>
<td>$40,000 - $59,999</td>
<td>34 (22.1)</td>
</tr>
<tr>
<td>$60,000 - $79,999</td>
<td>16 (10.4)</td>
</tr>
<tr>
<td>&gt;$80,000</td>
<td>21 (13.6)</td>
</tr>
<tr>
<td>Level of Education</td>
<td></td>
</tr>
<tr>
<td>Less than High School</td>
<td>5 (3.2)</td>
</tr>
<tr>
<td>Graduated High School/GED</td>
<td>45 (29.2)</td>
</tr>
<tr>
<td>Technical/Vocational training</td>
<td>11 (7.1)</td>
</tr>
<tr>
<td>Some college</td>
<td>36 (23.4)</td>
</tr>
<tr>
<td>Associate degree</td>
<td>20 (13)</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>26 (16.9)</td>
</tr>
<tr>
<td>Graduate program or higher</td>
<td>11 (7.1)</td>
</tr>
<tr>
<td>Mode of birth</td>
<td></td>
</tr>
<tr>
<td>Vaginal</td>
<td>92 (59.7)</td>
</tr>
<tr>
<td>Cesarean section</td>
<td>62 (40.3)</td>
</tr>
<tr>
<td>Variable</td>
<td>N%</td>
</tr>
<tr>
<td>--------------------------------------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>Health problems</td>
<td></td>
</tr>
<tr>
<td>Asthma/lung problems</td>
<td>26  (16.9)</td>
</tr>
<tr>
<td>Hypertension/elevated Blood Pressure</td>
<td>14  (9.1)</td>
</tr>
<tr>
<td>Thyroid problems</td>
<td>5   (3.2)</td>
</tr>
<tr>
<td>Diabetes/high blood sugar (not pregnant)</td>
<td>5   (3.2)</td>
</tr>
<tr>
<td>Heart problems</td>
<td>1   (.6)</td>
</tr>
<tr>
<td>Kidney problems</td>
<td>2   (1.3)</td>
</tr>
<tr>
<td>Other conditions</td>
<td>19  (12.3)</td>
</tr>
<tr>
<td>EOD – situations of discrimination</td>
<td></td>
</tr>
<tr>
<td>No discrimination</td>
<td>47  (30.5)</td>
</tr>
<tr>
<td>Discrimination in 1-9 situations</td>
<td>107 (69.5)</td>
</tr>
<tr>
<td>At school</td>
<td>57  (37)</td>
</tr>
<tr>
<td>Getting hired or getting a job</td>
<td>46  (29.9)</td>
</tr>
<tr>
<td>At work</td>
<td>56  (36.4)</td>
</tr>
<tr>
<td>Getting housing</td>
<td>20  (13)</td>
</tr>
<tr>
<td>Getting medical care</td>
<td>20  (13)</td>
</tr>
<tr>
<td>Getting service at a store or restaurant</td>
<td>75  (48.7)</td>
</tr>
<tr>
<td>Getting credit, bank loans, or a mortgage</td>
<td>28  (18.2)</td>
</tr>
<tr>
<td>On the street or in a public setting</td>
<td>57  (37)</td>
</tr>
<tr>
<td>From police or in courts</td>
<td>41  (26.6)</td>
</tr>
<tr>
<td>Variable</td>
<td>N%</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Term birth</td>
<td>132 (85.7)</td>
</tr>
<tr>
<td>Preterm birth</td>
<td>22 (14.3)</td>
</tr>
</tbody>
</table>

Note: EOD=Experiences of Discrimination, PSS=Perceived Stress Score, BSS-R = Birth Satisfaction Scale – Revised
Differences Between Groups

Women who were older reported more experiences of racial discrimination ($\rho=.251$, $p=.002$). Women who were married reported more experience of racial discrimination compared with women who were single (median 2 and 1, respectively, $\mu=3283$, $p=.025$). Women who had a cesarean section had lower levels of birth satisfaction compared with women who had a vaginal delivery (median 25 and 29, respectively, $\mu=2167$, $p=.012$). There were no statistically significant differences in racial discrimination, perceived stress, or birth satisfaction based on employment status, education level, household income, or term versus preterm birth (data not shown).

Relationships Among Racial Discrimination, Perceived Stress, and Birth Satisfaction

Correlations among racial discrimination, perceived stress, and birth satisfaction are presented in Table 3. Experiences of racial discrimination were positively correlated with perceived stress ($\rho=.176$, $p=.029$), indicating that women who reported more experiences of racial discrimination also had higher levels of perceived stress. Perceived stress was negatively correlated with birth satisfaction ($\rho=-.188$, $p=.020$), indicating that women with higher levels of perceived stress had lower levels of birth satisfaction. Further, perceived stress was negatively correlated with the women’s personal attributes ($\rho=-.209$, $p=.009$) subscale of the BSS-R, after reverse scoring, which evaluates whether women feel anxious or out of control during labor or birth. There was no statistically significant correlation between experiences of racial discrimination and birth satisfaction ($p =.934$).
Table 3: Relationships Among Variables (N=154)

<table>
<thead>
<tr>
<th>Variables</th>
<th>EOD</th>
<th>PSS</th>
<th>BSS-R Stress experienced during labor</th>
<th>BSS-R Women’s personal attributes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSS</td>
<td>.176*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSS-R</td>
<td>-.007</td>
<td>-.188*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSS-R Stress experienced during labor</td>
<td>-.022</td>
<td>-.112</td>
<td>.881**</td>
<td></td>
</tr>
<tr>
<td>BSS-R Women’s personal attributes</td>
<td>.026</td>
<td>.209**</td>
<td>.746**</td>
<td>.569**</td>
</tr>
<tr>
<td>BSS-R Quality of care provision</td>
<td>.076</td>
<td>-.152</td>
<td>.565**</td>
<td>.284**</td>
</tr>
</tbody>
</table>

Note: The results represent Spearman Rho correlations; EOD=Experiences of Discrimination, PSS=Perceived Stress Scale, BSS-R=Birth Satisfaction Scale - Revised
* p < .05 two-tailed
** p < .01 two-tailed
Mediation Analysis

A linear regression with least squares for the model independent variable racial discrimination predicting the mediator perceived stress was fitted. Having one or more experiences of racial discrimination had a positive effect on perceived stress ($\beta=2.445$, $p=0.032$). Next, the model mediator perceived stress on birth satisfaction was fitted. Perceived stress had a negative effect on birth satisfaction ($\beta=-0.221$, $p=0.015$). However, there was no direct effect of racial discrimination on birth satisfaction ($\beta=-0.091$, $p=0.937$) through the model independent variable racial discrimination on birth satisfaction (see Figure 2). Therefore, there was no ground for investigating the mediating effect of perceived stress based on Baron and Kenny framework (Baron & Kenny, 1986). Based on the modern causal mediation analysis framework (Tingley et al., 2014), the average causal mediation effect of perceived stress was significant ($\beta=-0.553$, $p=0.05$), but the average direct effect from racial discrimination on birth satisfaction ($\beta=0.392$, $p=0.74$), and the total effect ($\beta=0.161$, $p=0.91$) were not significant. The results indicate that the association between racial discrimination and birth satisfaction was not mediated by perceived stress as there was no correlation between the two variables.
Figure 2: Path Analysis Model (N=154)

Note: Numbers represent path coefficients. Control variables: maternal age, marital status, employment status, level of education, annual household income, comorbidities, mode of delivery, and birth outcome (preterm vs. term).
Discussion

Black postpartum women from our study who reported experiences of racial discrimination also reported higher levels of perceived stress. This is consistent with previous studies that examined the association of experiences of racial discrimination with perceived stress among samples of Black pregnant women (Gillespie et al., 2021; Sroka et al., 2023). Experiences of racial discrimination and higher levels of perceived stress have been related to adverse maternal (e.g., postpartum depression, post-traumatic stress disorder) and birth (e.g., preterm birth) outcomes among Black women (Alhusen et al., 2016; Barber & Robinson, 2022; Giurgescu et al., 2022). Postpartum depression, post-traumatic stress disorder, and preterm birth have detrimental effects on infant health (e.g., lower breastfeeding initiation, low birth weight infants, less infant weight gain, poor maternal and infant bonding) (Gress-Smith et al., 2012; Ko et al., 2017; Sanjuan et al., 2021). Although prior studies have examined the associations between racial discrimination and psychological distress (e.g., anxiety, depressive symptoms) among Black postpartum women (Giurgescu et al., 2012; Segre et al., 2021; Shour et al., 2021), this is the first known study to examine the association of racial discrimination and perceived stress among this population.

In this study, Black postpartum women who reported higher levels of perceived stress also reported lower levels of birth satisfaction. This is consistent with the limited literature that examined the association of perceived stress with birth satisfaction (Congdon et al., 2016; Hinic, 2017). However, prior research included small subsamples of Black women. To my knowledge, this is the first known study to examine the association of perceived stress with birth satisfaction among a sample of Black women exclusively. Of the three subscales of BSS-R, only the women’s attributes subscale related significantly to perceived stress. This sub-scale asks women
if they felt anxious or out of control during labor and birth. Control during labor and birth has been consistently noted to influence birth satisfaction (Congdon et al., 2016; Fair & Morrison, 2012; Hollins Martin & Martin, 2014).

Women in this study who had cesarean sections had lower levels of satisfaction compared with women who had vaginal births. Previous studies have reported similar findings; some women are dissatisfied and report a negative experience regarding their cesarean section, particularly women who had an emergency delivery (Coates et al., 2020). This study did not examine whether the cesarean sections were scheduled or due to emergency situations. Although this study did not find a significant differences in EOD, PSS, and BSS-R scores among women who had a term versus preterm infant, prior research has found that preterm birth was associated with a decrease in birth satisfaction among a mostly white sample (Preis, Mahaffey, Heiselman, et al., 2021).

Racial discrimination was not related to birth satisfaction among this sample; thus perceived stress was not a mediator in this model. The EOD asks about lifetime experiences of discrimination; therefore, it may not be the most appropriate tool to use with postpartum women to examine if there is an association between racial discrimination and birth satisfaction. Thirteen percent of women in this study reported situations of discrimination while receiving medical care. Research suggest that Black women experience racial discrimination in health care settings (Alhusen et al., 2016; Chambers et al., 2021; Ertel et al., 2012; Gillespie & Weeks, 2021; McLemore et al., 2018; Murphy et al., 2022). Thus, future research should examine the association of experiences of racial discrimination related to the health care setting and birth satisfaction among Black women.
**Limitations**

This study was a secondary data analysis of a sub-sample from a larger cohort study. Data were collected at one hospital site in a large metropolitan area. Most women were single, had some college education or higher levels of education, and were employed or on maternity leave. Our sample may not be representative of Black childbearing women in the United States, limiting the generalizability of study findings. Self-report bias may also be a limitation due to the survey study design. Participants were recruited and data were collected during the COVID-19 pandemic. This may have limited the number of enrolled participants as well increase the level of stress women were experiencing during their pregnancy.

**Future Research**

Future research should examine the associations among racial discrimination, perceived stress, and birth satisfaction in a larger sample of Black postpartum women. Further research that focuses on the relationship between perceived stress and birth satisfaction will help to determine what interventions and policies may decrease stress levels and improve birth satisfaction among Black women. Future research also needs to evaluate the gap that exists in the literature regarding the association of experiences of racial discrimination with childbirth experiences and satisfaction among a larger more diverse sample of Black women. Despite the knowledge that racism and stress are closely related, what is not entirely known is how perceived stress and dissatisfaction with the childbirth experience affects maternal and neonatal outcomes specifically in Black women.

**Implications**

This study has many implications for health care providers caring for Black postpartum women. This study demonstrates the importance of evaluating social determinants of health and
experiences of racial discrimination when caring for Black women during pregnancy, birth, and in the postpartum period. Recognizing the importance of social determinants of health (e.g., experiences of discrimination) can help health care providers better understand patients, effectively communicate about health-related conditions and behaviors, and improve health outcomes. Evaluating and understanding that these experiences may increase stress levels is important in this population. Health care providers can assist women by referring to social services and helping them find community resources that may assist them with their needs. Health care providers caring for these women during labor and birth should be aware that higher levels of stress related to lower levels of birth satisfaction. Communicating with patients and taking the time to evaluate their lifetime experiences may improve the bond nurses, midwives and physicians have with their patients. This may decrease the stress and anxiety that Black women have during labor and birth. Racial disparities in health outcomes among Black women may be decreased by addressing risk factors for adverse birth outcomes and their overall well-being. Lastly, policy and health care improvements can be made to decrease experiences of discrimination and racial disparities within health care and improve childbirth satisfaction and birth outcomes among Black women.

**Conclusion**

This study is the first known study to evaluate the relationships among racial discrimination, perceived stress, and birth satisfaction among Black women. Racial discrimination related to perceived stress, and perceived stress related to birth satisfaction among women in this sample; however, racial discrimination was not related to birth satisfaction among these women. The results of this study add to the body of knowledge regarding the relationship between (1) racial discrimination and perceived stress, (2) perceived stress and birth satisfaction
among Black women. Health care providers need to assess for experiences of discrimination, and levels of perceived stress in order to provide the best possible care for their patients. They also need to be aware of racial biases in health care and need to advocate for the needs of Black women. By incorporating the lifetime experiences of Black women in health care and assessing their levels of perceived stress, health care providers can develop and test interventions that may improve the childbirth experiences and birth outcomes of Black women and their infants.
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CHAPTER 4: STRATEGIES FOR SUCCESSFUL RECRUITMENT OF BLACK WOMEN IN THE IMMEDIATE POSTPARTUM PERIOD

Abstract

Recruitment and retention of people of color for nursing research is critical to reducing racial disparities in health care. The Biosocial Impact on Black Births (BIBB) study used a variety of strategies to recruit and retain Black postpartum women at a large hospital in Central Florida. The purpose of this paper is to present challenges and successful strategies faced in the recruitment and retention of Black women in the immediate postpartum period. A sub-sample of 228 women were recruited over seven months in the postpartum unit of a large hospital for women and babies. Black women, at least 24 hours after birth, were recruited as a part of a larger study that examines the role of social determinants of health on birth outcomes among Black families. The participants completed a survey (e.g., racial discrimination) and had saliva collected for telomere assays. Successful recruitment strategies included collaborating with the nursing staff; prioritizing patient care over recruitment; respecting privacy and the need for rest and infant care; allowing the participants to complete the survey at a time most convenient for them; and compensating participants for their time. Recruitment challenges included prioritizing enrollment of women based on time of birth and time of hospital discharge; participant’s reluctance to complete the survey while in the hospital; and potential participant’s hesitance to allow the saliva collection and access to medical records. Factors that limited data collection were the short enrollment window and the COVID-19 pandemic. Recruitment strategies that focused on accommodating the needs of both participants and hospital staff were successful overall despite the short enrollment window. Retention was highest when participants completed
their surveys during their hospitalization, but reminders sent out by the recruitment team aided in decreasing attrition.
Introduction

Recruitment and retention of people of color for nursing research is critical to reducing racial disparities in health care. Participation in research has been historically low among people of color (Barrett et al., 2017; Murthy et al., 2004; Tan et al., 2018). This underrepresentation within research can have significant scientific implications such as compromising generalizability of research findings, increased concern about bias, and limiting people of color to benefiting from research findings (Barrett et al., 2017). The challenges in recruiting and retaining people of color in research studies may be due to the past medical experimentation and poor medical treatment received, leading to mistrust in the medical system and a hesitation to participate in research (Barrett et al., 2017; Braunstein et al., 2008; Coakley et al., 2012).

Non-Hispanic Black women are three times more likely to die during the pregnancy and postpartum period than non-Hispanic White women (55.3 vs 19.1 deaths per 100,000 live births, respectively, in 2020) (Hoyert, 2022). Black women also experience postpartum depression (PPD) at disproportionally higher rates than women of other races (Ertel et al., 2012; Shour et al., 2021). Research has determined that the racial discrimination Black women experience relates to a higher lifetime exposure to chronic stress (Chambers et al., 2020; Gillespie et al., 2021; Strutz et al., 2014) which increases their risk for adverse pregnancy outcomes (e.g., preterm birth [< 37 completed weeks gestation], low birthweight infants [<2,500 grams], and postpartum complications [e.g., PPD, maternal morbidity]) (Alhusen et al., 2016; Barber & Robinson, 2022; Bossick et al., 2022; Giurgescu et al., 2012; Segre et al., 2021; Shour et al., 2021). In a study by Johnson et al. (2019) Black women have been found to have a higher disproportion of severe maternal morbidity (e.g., hemorrhage, eclampsia, renal failure, cardiomyopathy) in the postpartum period compared to women of other races. Therefore, it is essential to evaluate the
specific challenges faced in the recruitment and retention of Black postpartum women for nursing research since their participation is vital to reducing health care disparities.

Experiences of discrimination and lack of trust within the health care system are ongoing barriers to recruitment of Black women in research (Barrett et al., 2017; Durant et al., 2014; Martin et al., 2013; Murthy et al., 2004; Prather et al., 2018). Black women have historically experienced racial discrimination when receiving prenatal and postpartum care, increasing chronic worry and mistrust in the health care system (Alhusen et al., 2016; Chambers et al., 2021; Ertel et al., 2012; Gillespie & Weeks, 2021; McLemore et al., 2018; Shour et al., 2021). They consistently describe structural racism throughout their lives as a system of oppression which includes limited access to health care resources within their communities and inadequate medical care (Chambers et al., 2021). There is extensive literature that corroborates Black women’s experiences with receiving inadequate and disrespectful medical care (Altman et al., 2019; Chambers et al., 2020; McLemore et al., 2018; Prather et al., 2018). In a study by McLemore et al. (2018), pregnant and postpartum women of color reported disrespect, racism, and discrimination during health care encounters such as disrespectful language and conversation with staff specific to race. These women also reported feeling ignored, that they did not believe their wishes were respected, and concern over receiving lower caliber care because of insurance reasons. Stressful interactions with all levels of staff throughout their prenatal care and birth experience were also reported (McLemore et al., 2018). This included a lack of staff empathy over treatment for co-morbidities and the difficulties associated with frequent appointments and lab testing. These women also felt that they were “red flagged” if they had previous criminal convictions. All the women in this study described unmet informational needs related to procedures, clinical tests, or the rationale for certain medical decisions (McLemore et al., 2018).
Information that is provided based on racial or classist assumptions of knowledge, education, or ability is a form of discrimination (Altman et al., 2019). When the information received by a woman is incomplete, misleading, or biased, it prevents them from maintaining autonomy and makes it more difficult for them to make informed health care decisions that are best for themselves and their families (Altman et al., 2019).

Recruitment and retention of underrepresented populations for clinical research has historically presented participant-level challenges including fear and distrust over confidentiality and privacy, competing priorities and needs, unmet transportation needs, low education levels, disinterest in research, feeling that compensation is too low, and language barriers (Barrett et al., 2017; Braunstein et al., 2008; Durant et al., 2014; Fam & Ferrante, 2018; Otado et al., 2015; Vaughan et al., 2022). In a study by Braunstein et al. (2008) African Americans were more likely than White participants to report that physicians would less fully explain research participation to them, use them as “guinea pigs” without their consent, prescribe medication as experimentation without their knowledge, and ask them to participate in research even if it would cause harm. Some participants in this study believed that they could not freely ask their doctor questions and that doctors had previously experimented on them without their consent (Braunstein et al., 2008). Research protocol and clinical-level challenges also exist when recruiting people of color. Rigid research protocols that consist of time constraints do not allow recruiters enough time to develop a relationship with potential participants (Barrett et al., 2017). Lack of flexible scheduling, unengaged or overburdened staff, and a lack of communication between the researchers and the clinic teams also create barriers to successful recruitment (Barrett et al., 2017; Fam & Ferrante, 2018). Additional clinic-level barriers include, a layout of a clinic that does not allow for recruiters to see all potential participants, a low patient census, limited space to meet with
potential participants, long appointment wait times which make patients hesitant to stay after their appointments, and unexpected events (e.g. staff meetings, emergency medical situations, lockdowns) (Fam & Ferrante, 2018).

Recruitment of pregnant and postpartum women has historically presented its own challenges. In a review by Frew et al. (2014) socioecological factors such as public scandals (e.g., thalidomide), federal guidelines, Institutional Review Board provisions, and liability issues have been found to affect successful recruitment of pregnant women. Lack of awareness, social network, spouse/partner influences, and transportation and clinic study accessibility were found to be community and social-level factors that affect recruitment. Individual factors such as demographic factors (e.g., age, income, education), time, fear, and pregnancy-related health problems were also found to affect recrtuiment of pregnant women (Frew et al., 2014). A review by Goldstein et al. (2021) found many of these barriers as well as concern over invasive biosampling, pregnancy loss, relocation, substance use/mental health problems, and cultural factors such as mistrust, cultural insensitivity, and language barriers. Vaughan et al. (2022) found that lack of interest, lack of time, and competing priorities (e.g., work, family, transportation) were the biggest challenges faced during recruitment of Black pregnant women. Martin et al. (2013) reported that the primary reasons Black postpartum women did not participate in research was due to a lack of interest, feeling too tired or in too much pain, feeling overwhelmed, and issues surrounding confidentiality. Other challenges faced in the recruitment of postpartum women have included short postpartum hospital stays and low response rates if babies did not survive (Watson et al., 2008). Thus, data are limited on the challenges and successful strategies in recruitment and retention of Black postpartum women.
Purpose

The purpose of this paper is to present challenges and successful strategies faced in the recruitment and retention of Black women in the immediate postpartum period.

Methods

A sub-sample of 228 women were recruited in the postpartum unit of a large hospital for women and babies as part of the Biosocial Impact on Black Births (BIBB) study, a longitudinal, survey design study that examines the associations of social determinants of health with birth outcomes among Black women. Women were approached to participate in the study if they were 18 to 45 years of age, self-identified as Black or African American, spoke and read English, had a singleton pregnancy, had a live infant, and were $\geq$ 24 hours postpartum. The Institutional Review Boards (IRBs) for the participating universities and clinical site approved this research. The nurse administrator at the participating clinical site collaborated with the research staff in identifying eligible participants. The research staff approached eligible participants in their hospital rooms, introduced themselves and their affiliation with the BIBB study, and provided a short overview of the study’s purpose and eligibility. The research staff also provided the patient with a pamphlet that included a description of the study and research staff contact information. If women chose to participate, the research staff completed a consent process. The participants completed a survey and had saliva collected for telomere assays. The participants were encouraged to complete the survey on the study-provided iPad. If they were unable or unwilling to complete the survey at that time, they were emailed a survey link and sent email or text reminders at 3, 7, and 11 days after enrollment. If eligible participants were undecided at the time of approach they were reminded of the contact information on the pamphlet and recommended
contacting research staff should they decide to participate in the study. Data were collected regarding how many eligible participants were approached, declined, consented, and completed the survey. This included whether they completed the survey in the hospital or by the emailed link at a later time. The research staff involved in recruitment and data collection of the sub-sample of the BIBB study consisted of a doctoral nursing student with a master’s in nursing education, and two research assistants with bachelor’s degrees. These three recruiters worked together to determine what strategies were successful and what challenges were faced in recruitment of Black women in the immediate postpartum period. Descriptive statistics and cross-tabulations were used to identify trends in recruitment and retention.

Results

Recruitment occurred between October 2021 and June 2022. A total of 384 women were approached, out of which 228 women were enrolled in the study. The number of completed surveys was 154, a 68% completion rate. The completion rate of participants who completed the survey at the time of consent was higher than the completion rate of participants who were emailed a survey link (90.7% and 56.9%, respectively). Most participants (77.4%) completed the survey within two days of enrollment. One third of participants (34.7%) completed their survey three to 20 days after enrollment. The longer the time from the enrollment date, the less likely that the participants completed the survey.

Participant-Level Strategies

The most effective strategy for successful recruitment of Black postpartum women in the immediate postpartum period was establishing a respectful, kind, and patient atmosphere. This allowed recruiters to build trust with eligible participants. Potential participants were often distracted by infant care or crying, pain, fatigue, family members/visitors, scheduling postpartum
appointments, or the discharge process. The research staff asked women if it was a good time to discuss the study and would often have to return later if requested by the eligible participant. Although this presented time-management challenges for the research team, being respectful of potential participant’s time and allowing the woman and staff to prioritize rest and infant care was a necessity. The research staff also returned at a later time to discuss the study with potential participants if the women were visiting their infants in the NICU, taking showers, or napping at the time of approach. Eligible participants were also often breastfeeding, unclothed, or talking on the phone, so patience and respect for privacy was essential for successful recruitment.

Participant-level barriers included distractions (e.g., infant care, pain, fatigue, discharge process) which led eligible participants to be reluctant to discuss the study. If the research staff was asked to return at a later time, this was not always successful, as some women were still distracted, sleeping, or discharged to home upon return of the staff. If women were close to the time of hospital discharge and were interested to learn about the study, the recruiters offered the pamphlet, presented an overview of the study, and provided contact information for the research team. Lack of interest in the study was also a barrier. Despite highlighting the goals and the importance of the study, many women were not interested in participating in research or hearing further explanation. Recruiters would discuss how the BIBB study evaluated social determinants of health and their role in preterm birth. Some women were initially reluctant to participate in the study because they had term births. The recruiters would explain how important it was to have both women with term and preterm births in the study. Recruiters would also emphasize how Black women have a higher risk for preterm birth and how it is essential to include Black women in research to reduce health disparities in birth outcomes. This would sometimes increase a
woman’s willingness to participate. Often, if family members were in the room, they would encourage the women to participate for these reasons as well.

Another barrier to recruitment was eligible participants’ hesitance to allow medical record access to the research team. Many women would ask questions about who would access their medical records and specifically what information would be available. Recruiters would provide a full explanation of what records would be accessed and by whom. All women were given reassurance regarding confidentiality of their information and medical records, which helped increase recruitment. The collection of saliva for telomere assays was also a barrier to recruitment. Many women did not understand what this entailed, needed further explanation on what information was being gathered, and how this would affect them in the future. Some women expressed concern about “collecting their DNA” and using it against them, despite recruiters expressing otherwise. Women who refused to provide saliva were still provided the opportunity to complete the survey which helped increase recruitment, but some women were still reluctant to participate.

Sixty-seven percent of participants requested to have the survey emailed to them rather than completing it on the study-provided iPad, likely due to the previously discussed barriers. The completion rate of participants who were emailed a survey link was 56.9%. The research team assumed that participants were distracted by infant care, fatigued, and too busy to complete their survey which contributed to the low completion rate for participants who were emailed the link for the survey.

Clinical-Level Strategies

A clinical level strategy that was essential for successful recruitment within the postpartum unit of a large hospital involved developing a respectful relationship with nursing
administrators and nursing staff. The principal investigator and research staff met with nursing
administrators prior to starting recruitment to discuss the study, toured the three postpartum
units, and introduced themselves to nurses and explained the goals of the study. This created
engagement and cooperation from the nursing staff. During recruitment, one nursing
administrator from the postpartum units collaborated with the research staff in identifying
potential participants based on the postpartum census. Having a respectful and friendly
relationship with the nursing administrator was of utmost importance. Recruiters were able to
contact the nurse administrator in advance to determine if she would be available on days of
recruitment. If the nurse administrator was absent or in meetings, the research staff would
reschedule for another day or could ask the charge nurse to help identify potential participants,
although the information from the charge nurse was limited. This limitation made it more
difficult for recruiters to determine eligibility before approaching potential participants. On some
occasions recruiters could approach the nurses to evaluate the eligibility of patients, but this was
kept to a minimum to allow the nurses to prioritize patient care without interruption. However,
some nurses who were familiar and engaged with our research study would willingly inform
recruiters about eligible patients or patients who should not be approached. Allowing the hospital
staff to prioritize patient care was also essential to successful recruitment. If nurses, physicians,
social workers, or patient care technicians were at the bedside, the research staff waited for the
hospital staff to complete their tasks or returned at a later time. Maintaining a friendly and
respectful relationship with the hospital staff also consisted of saying hello and thank you when
appropriate, providing cookies during the holidays, and occasionally offering to get them coffee
or lunch.
A major barrier to successful recruitment was the COVID-19 pandemic. Recruitment of this sub-sample was conducted between October 2021 and June 2022. This time was during the height of the Omicron variant spreading throughout the United States. Recruiters were not allowed to approach patients who had tested positive for COVID-19. Some days, there were up to four or five eligible participants who were in isolation and therefore unable to be approached.

Protocol-Level Strategies

Our team utilized protocol-level strategies that proved to be successful for recruitment. One of the strategies was having a study-provided iPad to complete the survey. Ninety-one percent of participants who selected to complete the survey on the iPad completed the surveys on the same day. Having the ability to email the survey to participants was also a successful strategy. Although the completion rate for emailed surveys was only 56.9%, offering the option to complete the survey after hospital discharge allowed the research team to retain a significant number of additional participants. E-mail and text reminders sent to participants who had requested an email link was also a successful strategy. The participants were sent a welcome message after enrollment, thanking them for participating in the study along with the survey link. Each email or text reminder would thank them again and remind them to complete the survey as soon as possible.

An additional protocol-level strategy that increased recruitment was providing participants compensation for their time and participation in the study. Each participant received a $40 Amazon gift card code when they completed the survey. This was often a motivating factor to participate in the study and to complete the survey. Many participants commented on how this compensation would help them buy diapers, clothes, or other necessities for the baby. One participant used the study provided iPad to start shopping for a car seat. If the survey was
completed on site, the gift card code was texted to them immediately upon completion to the cell phone number they provided. If the survey was completed by email, research staff would text gift card codes in batches within a few days.

Providing a study pamphlet and explaining the study purpose and procedures were also protocol-level strategies that increased recruitment. The pamphlet and explanation of the study were helpful recruitment strategies when women were busy or otherwise hesitant to participate. If recruiters had to return at a later time, women often viewed the pamphlet and had decided by the time the recruiter returned. It was essential that we were transparent regarding medical records access, saliva collection (part of the BIBB protocol), and confidentiality of the participants personal data. Many women expressed concern regarding these topics, but reassurance and detailed explanation increased the likelihood of participation. Explaining the specific goals of the study and the importance of including Black women in research was also a successful strategy.

Protocol-level challenges consisted of the short enrollment window (24 hours to 3 weeks postpartum). The research staff prioritized the eligible participants to be approached first based on the period of time since birth. Despite prioritizing the women based on date and time of birth, eligible participants were often discharged from the hospital or getting ready to be discharged upon approach by the research staff. Many women were discharged 24-48 hours after birth. Allowing participants to complete the survey after discharge and within two weeks was only moderately successful.

Discussion

Our research team identified many successful strategies during recruitment of Black women in the immediate postpartum period. Our participant-level strategy of establishing a
respectful, kind, and patient atmosphere that built trust with participants is consistent within the literature as a successful recruitment strategy for underrepresented populations (Barrett et al., 2017; Durant et al., 2014; Fam & Ferrante, 2018; Getrich et al., 2013; Heller et al., 2014; Otado et al., 2015; Vaughan et al., 2022). Getrich et al. (2013) emphasized the critical importance of establishing and maintaining trust through relationship building during recruitment of underrepresented communities in health research. Vaughan et al. (2022) noted that building trust and maintaining confidentiality are intertwined and were a key strategy for successful recruitment of Black pregnant women. Allowing the patient and hospital staff to prioritize infant care and other responsibilities showed respect for the patient by our research staff. Barrett, et al. (2017) and Vaughan et al. (2022) identified that respecting other priorities in the participant’s life is essential in the recruitment of minority populations. Respecting privacy, assuring patient confidentiality, and being transparent regarding study goals and procedures, as our recruiters consistently did, also contributed to building trust and is consistent in the literature as a successful recruitment strategy (Barrett et al., 2017; Coakley et al., 2012; Fam & Ferrante, 2018; Getrich et al., 2013; Otado et al., 2015; Vaughan et al., 2022). Similar to Martin et al. (2013) we found that postpartum women were often tired or overwhelmed with newborn care. By allowing the participants to prioritize infant care and by returning at a later time to allow the patient to rest, our research team respected patient privacy and built trust with participants.

Lack of interest in participating in health research by underrepresented populations was a barrier faced by our recruiters that is frequently discussed in the literature (Fam & Ferrante, 2018; Martin et al., 2013; Otado et al., 2015; Vaughan et al., 2022). Strategies employed by our recruiters to combat this barrier included providing a pamphlet to the patient and allowing time for questions and answers before and during the consent process. Fam & Ferrante (2018) and
Vaughan et al. (2022) discussed that emphasizing the importance of the study in helping to improve health care in the future can also overcome this barrier. Explaining the goals of the study, the inclusion of Black women, and the study’s hope to identify strategies for preventing preterm birth for Black women in the future, was a consistent strategy used by our recruiters to increase interest in the study.

A clinical-level strategy discussed in this paper essential to successful recruitment was building a respectful and friendly relationship with nursing administration and the staff nurses. Engaging the clinical staff and building rapport between the research team and clinical staff is described in the literature as imperative in helping recruiters identify eligible participants and in encouraging the clinical staff to discuss the research project with patients (Barrett et al., 2017; Fam & Ferrante, 2018; Vaughan et al., 2022). Vaughan et al. (2022) noted that to facilitate a good relationship with the clinic staff they needed to fit into the flow of the clinic and allow the staff to provide care without interruption. Our research team relied heavily on nursing administration and occasionally the staff nurses in identifying eligible women for the study, but always allowed patient care to be the priority. We also utilized strategies that included being friendly and respectful to administration and staff by simply saying “hello” or “thank you” or offering to get them coffee. Explaining our research to the hospital staff was also a key strategy in gaining interest and cooperation in allowing us to recruit participants.

The COVID-19 pandemic presented challenges for our recruiters due to our inability to approach patients who had tested positive for COVID-19 in the hospital setting. Although the literature is limited, other researchers have also had to make adjustments in their recruitment during the COVID-19 pandemic. Dol et al. (2022) had to pivot recruitment of antenatal and postpartum patients from in-person recruitment to online recruitment during the pandemic for
their randomized controlled trial. Daniel et al. (2022) also had to switch in-person recruitment to online recruitment and found a significant decrease in the percentage of Black women recruited into their research study during the pandemic.

Our team also utilized protocol-level strategies that were successful in recruitment of Black women. Flexibility in allowing participants to complete the survey on a study provided iPad or at a later time by email, providing pamphlets, and providing compensation are some successful strategies used consistently in the literature (Barrett et al., 2017; Fam & Ferrante, 2018; Otado et al., 2015; Vaughan et al., 2022). Barrett et al. (2017) discussed the need to allow protocol modifications such as completing interviews in more than one “sitting” and offering alternatives for biospecimen collection. Fam & Ferrante (2018) also discussed the need to be flexible regarding research protocols (e.g., plan for extra time, addition of research staff, revise eligibility and length of study). Our research team found that the short postpartum stay was a consistent barrier to recruitment. This has also been reported in other postpartum studies (Watson et al., 2008). Similar to our recruitment, Vaughan et al. (2022) provided flexibility by allowing participants to take their survey on study provided iPads or later by email. Lack of adequate compensation for research is consistently mentioned as a barrier to recruitment of people of color. Many researchers have found that providing fair and proper incentive for participants increases enrollment (Fam & Ferrante, 2018; Getrich et al., 2013; Otado et al., 2015; Vaughan et al., 2022). Although only moderately successful, our team utilized email and text reminders to increase retention. Otado et al. (2015) and Vaughan et al. (2022) also utilized this strategy to remind participants of appointments and to increase retention among minority participants. Successful recruitment and retention of people of color is essential in reducing health disparities among these populations. It allows researchers to advance existing knowledge and make results
more generalizable. Failure to recruit and retain diverse groups of research participants impedes our ability to evaluate differences among populations and therefore decreases our ability to provide health care resources and interventions to improve equity in health care. Recruitment of underrepresented groups continues to be a challenge for many researchers. This presentation of successful recruitment strategies and challenges in recruitment of Black women adds to the existing literature on recruitment of people of color, while specifically focusing on the recruitment of Black women in the immediate postpartum period.
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CHAPTER 5: CONCLUSION

Non-Hispanic Black women are more likely to experience racial discrimination compared with non-Hispanic White women (Dole et al., 2004; W. Grobman et al., 2016). Racial discrimination has been related to higher levels of perceived stress among Black pregnant women (Gillespie et al., 2021; Sroka et al., 2023). Higher levels of perceived stress during pregnancy and birth are related to increased labor-related difficulties and decreased birth satisfaction (Attanasio et al., 2014; Congdon et al., 2016; Preis, Mahaffey, Pati, et al., 2021; Saxbe et al., 2018). Black women are more likely to be dissatisfied with the birth process than White women (Hamm et al., 2019; Janevic et al., 2021; Mollard & Kupzyk, 2022). Higher levels of birth satisfaction are associated with improved mother, infant, and family well-being (Hamm et al., 2019; Hinic, 2016, 2017). In contrast, negative childbirth experiences are associated with increased maternal anxiety, postpartum depression (PPD), post-traumatic stress disorder (PTSD), and fear surrounding future pregnancies (Attanasio et al., 2014; Bell & Andersson, 2016; Capik & Durmaz, 2018; Martin et al., 2020; Urbanová et al., 2021; Webb et al., 2021). Racial discrimination relates to higher levels of perceived stress among Black women, and higher levels of perceived stress relate to lower levels of birth satisfaction. However, research has not examined the associations among racial discrimination, perceived stress, and birth satisfaction among Black postpartum women. Further, research focused on birth satisfaction among Black women is limited. Therefore, the purpose of this dissertation research was to examine the associations among racial discrimination, perceived stress, and birth satisfaction among Black women. The aims of the study were to:
Specific Aim 1. *Examine the associations among racial discrimination, perceived stress, and birth satisfaction among Black women.*

H.1.1 Women who report more experiences of racial discrimination will also report higher levels of perceived stress and lower levels of birth satisfaction.

H.1.2 Women who report higher levels of perceived stress will report lower levels of birth satisfaction.

Specific Aim 2. *Examine the mediating effect of perceived stress on the association of racial discrimination with birth satisfaction among Black women.*

H.2.1 Perceived stress will mediate the effect of racial discrimination on birth satisfaction.

This dissertation research included three manuscripts focused on the associations of racial discrimination and perceived stress with birth satisfaction among Black postpartum women. The first manuscript (Chapter 2) was an integrative literature review of studies that examined the relationship between stress and birth satisfaction, with consideration to studies that included Black women in their samples. The second manuscript (Chapter 3) was a secondary analysis of cross-sectional survey data that examined the associations among racial discrimination, perceived stress and birth satisfaction among a subsample of 154 Black postpartum women participating in the BIBB study. The third manuscript (Chapter 4) presented challenges and successful strategies faced in the recruitment and retention in research of Black women in the immediate postpartum period.

The integrative literature review included seven studies that examined the relationship between stress and birth satisfaction. The review included one mixed methods approach study and six quantitative studies. The sample sizes ranged from 30 to 2341 women. Of the seven studies included in this review, only one study focused specifically on an ethnically diverse
sample, with Black women being the majority (Congdon et al., 2016). Preis et al., (2021) reported a sample of non-White or Hispanic participants but did not specify how many Black participants. Three other studies did report the number of Black women in their samples, but they were not the majority (Hinic, 2017; Janevic et al., 2021; Saxbe et al., 2018) and the other two studies did not report inclusion of Black women in their studies (Bielinski-Blattmann et al., 2016; Gürber et al., 2017). The results of this integrative literature review revealed that higher levels of perceived stress during pregnancy related to lower levels of birth satisfaction and more stressful birth experiences. Stress during pregnancy and birth was exacerbated by the COVID-19 pandemic. Women who experienced acute stress reactions in the postpartum period also reported that they had feelings of anxiety, less confidence during labor and birth, intense exhaustion, and less good acceptance and letting go which decreased their birth satisfaction.

In the second manuscript, I reported the findings of a secondary data analysis on cross-sectional survey data of 154 Black postpartum women enrolled in the BIBB study to examine the associations among racial discrimination, perceived stress and birth satisfaction among Black women. I found that more experiences of racial discrimination related to higher levels of perceived stress (\(\rho=0.176, p<0.05\)). Higher levels of perceived stress related to lower BSS-R total score (\(\rho=-0.188, p<0.05\)) and lower attributes subscale scores (\(\rho=-0.209, p<0.01\)). Racial discrimination had a direct effect on perceived stress (\(\beta=2.392, p=0.027\)) and perceived stress had a direct effect on birth satisfaction (\(\beta=-0.231, p=0.009\)). Racial discrimination did not have a direct effect on birth satisfaction (\(\beta=-0.157, p=0.888\)). Thus, perceived stress was not a mediator of the association of racial discrimination with birth satisfaction among women in this sample.

In the third manuscript, I presented challenges and successful strategies faced in the recruitment and retention of a sub-sample of 228 Black women in the immediate postpartum
Successful recruitment strategies included collaborating with the nursing staff; prioritizing patient care over recruitment; respecting privacy and the need for rest and infant care; allowing the participants to complete the survey at a time most convenient for them; and compensating participants for their time. Recruitment challenges included prioritizing enrollment of women based on time of birth and time of hospital discharge; participant’s reluctance to complete the survey while in the hospital; and potential participant’s hesitance to allow the saliva collection and access to medical records. Factors that limited data collection were the short enrollment window and the COVID-19 pandemic. Recruitment strategies that focused on accommodating the needs of both participants and hospital staff were successful overall despite the short enrollment window. Retention was highest when participants completed their surveys during their hospitalization, but reminders sent out by the recruitment team aided in decreasing attrition.

The theoretical framework that guided this study was the Social-Ecological Model which theorizes that personal and environmental factors affect health outcomes and that a person’s external environment influences their development (Bronfenbrenner, 1986). The results of this dissertation research supported the Social-Ecological Model based on the findings that experiences of racial discrimination were related to perceived stress, and that perceived stress related to birth satisfaction. However, racial discrimination was not related to birth satisfaction in this sample. These findings related to the community, interpersonal, and individual factors of the Social-Ecological Model that affect health outcomes.

This dissertation research adds to the current body of knowledge regarding the positive association between lifetime experiences of racial discrimination and perceived stress, and the
negative association between perceived stress and birth satisfaction. Although this dissertation research did not find an association between lifetime experiences of racial discrimination and birth satisfaction, it adds to the limited research evaluating birth satisfaction among Black women. To my knowledge, this is the first study to examine the associations among racial discrimination, perceived stress, and birth satisfaction among Black women.

Limitations of this dissertation research include the small sample size and collection of data from one hospital, which may limit generalizability to other populations. This research used a secondary data analysis of survey data, which did not allow for additional participants or changes to the survey, and it relied on self-reported data which may contain bias. Future studies will need to include a larger sample size, and collection of data in more than one facility and in geographical areas to improve generalizability. Data were collected within 1-23 days postpartum, which is a very stressful time for women. This may have influenced their levels of perceived stress. This dissertation research evaluated lifetime experiences of discrimination. Evaluating discrimination related to the health care setting may be a better way to examine the association between racial discrimination and birth satisfaction. Future research should consider a longitudinal design study with data collected across pregnancy and during the postpartum period to better assess the association of perceived stress with birth satisfaction. Lastly, a mixed methods study approach in which stress scales and birth satisfactions scales can be used in conjunction with qualitative interviews to best capture stress and birth experiences.

This dissertation research emphasizes the importance of evaluating for social determinants of health, such as racial discrimination, and the perceived stress levels among Black pregnant and postpartum women. Assessing experiences of discrimination and perceived stress may be helpful in improving birth experiences among this population. This knowledge can
be utilized to create policies and interventions as well as education for both patients and health care providers that will improve birth experiences and outcomes. Nurses and other health care providers need to be aware of their own personal biases when caring for Black women and the need to provide culturally and racially sensitive care, while also using a shared decision-making model in order to provide the best care possible for this high-risk population.

In conclusion, this dissertation research found that:

**Specific Aim 1.** *Examine the associations among racial discrimination, perceived stress, and birth satisfaction among Black women.*

H.1.1. Women who report more experiences of racial discrimination will also report higher levels of perceived stress and lower levels of birth satisfaction.

H.1.2. Women who report higher levels of perceived stress will report lower levels of birth satisfaction.

The dissertation research partially supported H.1.1. and H.1.2. Women who reported more experiences of racial discrimination also reported higher levels of perceived stress. Women who reported higher levels of perceived stress also reported lower levels of birth satisfaction.

However, racial discrimination did not relate to birth satisfaction.

**Specific Aim 2.** *Examine the mediating effect of perceived stress on the association of racial discrimination with birth satisfaction among Black women.*

H.2.1. Perceived stress will mediate the effect of racial discrimination on birth satisfaction.

The dissertation research did not support H.2.1. Perceived stress did not mediate the association of racial discrimination with birth satisfaction.

Racial disparities in birth outcomes are profound in the United States, most notably in the Black population. Racial discrimination has been related to increased risk for adverse pregnancy
outcomes (e.g., preterm birth, low birthweight infants) and postpartum complications (e.g.,
postpartum depression, maternal morbidity) (Alhusen et al., 2016; Barber & Robinson, 2022;
Bossick et al., 2022; Giurgescu et al., 2012; Segre et al., 2021; Shour et al., 2021). This
dissertation research was conducted with the goal of examining racial discrimination and
perceived stress along with birth satisfaction to further our knowledge regarding the health
disparities that Black women face. My goal is to continue this research by expanding the sample
size and settings, while also considering different study methods such as a longitudinal and
mixed methods approach to data collection. I will also aim to examine health care related
discrimination related to birth satisfaction, and possibly other birth outcomes in the future.
Addressing social determinants of health, specifically racial discrimination, in prenatal and
postpartum women is needed to improve reproductive health outcomes among Black women.
References


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Wisconsin. *Wisconsin Medical Journal: Official publication of the State Medical Society of Wisconsin, 120*(S1), S24-S30.


https://doi.org/10.1007/s00737-023-01297-1


APPENDIX A: EXPERIENCES OF DISCRIMINATION TOOL
Experiences of Discrimination

For each item, please answer by checking the box(es) with your answer. For each question you answer yes, please answer how many times this happened.

F. Have you ever experienced discrimination, been prevented from doing something, been harassed or made to feel inferior in any of the following situations because of your race, ethnicity, or color?

1. At school?
   - Yes
   - No

1b. If yes, how many times did this happen (at school)?
   - Once
   - 2 or 3 times
   - 4 or more times

Have you ever experienced discrimination, been prevented from doing something, been harassed or made to feel inferior in any of the following situations because of your race, ethnicity, or color...

2. Getting hired or getting a job?
   - Yes
   - No

2b. If yes, how many times did this happen (getting hired or getting a job)?
   - Once
   - 2 or 3 times
   - 4 or more times

Have you ever experienced discrimination, been prevented from doing something, been harassed or made to feel inferior in any of the following situations because of your race, ethnicity, or color...

3. At work?
   - Yes
   - No

3b. If yes, how many times did this happen (at work)?
   - Once
4. Getting housing?
   - Yes
   - No

4b. If yes, how many times did this happen (getting housing)?
   - Once
   - 2 or 3 times
   - 4 or more times

5. Getting medical care?
   - Yes
   - No

5b. If yes, how many times did this happen (getting medical care)?
   - Once
   - 2 or 3 times
   - 4 or more times

6. Getting service in a store or restaurant?
   - Yes
   - No

6b. If yes, how many times did this happen (getting service in a store or restaurant)?
   - Once
   - 2 or 3 times
   - 4 or more times

7. Getting credit, bank loans, or a mortgage?
   - Yes
   - No
8b. If yes, how many times did this happen (on the street or in a public setting)?

- Once
- 2 or 3 times
- 4 or more times

Have you ever experienced discrimination, been prevented from doing something, been hassled or made to feel inferior in any of the following situations because of your race, ethnicity, or color?

9. From police or in the courts?

- Yes
- No

9b. If yes, how many times did this happen (from police or in the courts)?

- Once
- 2 or 3 times
- 4 or more times
APPENDIX B: PERCEIVED STRESS SCALE
Perceived Stress Scale

A more precise measure of personal stress can be determined by using a variety of instruments that have been designed to help measure individual stress levels. The first of these is called the Perceived Stress Scale.

The Perceived Stress Scale (PSS) is a classic stress assessment instrument. The tool, while originally developed in 1983, remains a popular choice for helping us understand how different situations affect our feelings and our perceived stress. The questions in this scale ask about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don’t try to count up the number of times you felt a particular way; rather indicate the alternative that seems like a reasonable estimate.

For each question choose from the following alternatives:
0 - never 1 - almost never 2 - sometimes 3 - fairly often 4 - very often

1. In the last month, how often have you been upset because of something that happened unexpectedly?

2. In the last month, how often have you felt that you were unable to control the important things in your life?

3. In the last month, how often have you felt nervous and stressed?

4. In the last month, how often have you felt confident about your ability to handle your personal problems?

5. In the last month, how often have you felt that things were going your way?

6. In the last month, how often have you found that you could not cope with all the things that you had to do?

7. In the last month, how often have you been able to control irritations in your life?

8. In the last month, how often have you felt that you were on top of things?

9. In the last month, how often have you been angered because of things that happened that were outside of your control?

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?
APPENDIX C: BIRTH SATISFACTION SCALE – REVISED
Birth Satisfaction Scale-Revised (BSS-R)  
(Hollins Martin and Martin, 2014)  

(VALIDATED UNITED STATES VERSION)

Tips for filling in the questionnaire:
(a) Find a quiet place where you will be undisturbed.
(b) Read each statement carefully and once you understand what is being asked, respond fairly quickly. Do not ponder too long over each statement.
(c) The statements are structured as follows. Please circle one of the following:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Neither Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>or Disagree</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(d) Please do not miss out any of the items and try to be as honest as possible.

Please respond to the following statements:

1. I came through childbirth virtually unharmful.
   - Strongly Agree
   - Neither Agree
   - Disagree
   - Strongly Disagree

2. I thought my labour was excessively long.
   - Strongly Agree
   - Neither Agree
   - Disagree
   - Strongly Disagree

3. The delivery room staff encouraged me to make decisions about how I wanted my birth to progress.
   - Strongly Agree
   - Neither Agree
   - Disagree
   - Strongly Disagree

4. I felt very anxious during my labour and birth.
   - Strongly Agree
   - Neither Agree
   - Disagree
   - Strongly Disagree

5. I felt well supported by staff during my labour and birth.
   - Strongly Agree
   - Neither Agree
   - Disagree
   - Strongly Disagree

6. The staff communicated well with me during labour.
   - Strongly Agree
   - Neither Agree
   - Disagree
   - Strongly Disagree

7. I found giving birth a distressing experience.
   - Strongly Agree
   - Neither Agree
   - Disagree
   - Strongly Disagree

8. I felt out of control during my birth experience.
   - Strongly Agree
   - Neither Agree
   - Disagree
   - Strongly Disagree

9. I was not distressed at all during labour.
   - Strongly Agree
   - Neither Agree
   - Disagree
   - Strongly Disagree

10. The delivery room was clean and hygienic.
    - Strongly Agree
    - Neither Agree
    - Disagree
    - Strongly Disagree

Doi.org/10.1016/j.midw.2013.10.006  
Update: 28 Feb 2020
APPENDIX D: PERMISSION TO USE BIRTH SATISFACTION SCALE - REVISED
Dear Amanda,

Thank you for your interest in the *Birth Satisfaction Scale-Revised (BSS-R)*, and yes we would be delighted for you to use the it. There are language specific versions and as you are based in Florida (US), I have attached the *US (English)-BSS-R* for your use, along with its validation paper. I have also copied in Professor Colin Martin who is my research partner in relation to BSS-R work. It is important to note that the ICHOM recommends the BSS-R as the measure of choice for assessing birth satisfaction:


There is also a BSS-R website: [https://www.bss-r.co.uk](https://www.bss-r.co.uk)

Please stay in touch with both of us and good luck with your study.

Best Cj

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The Birth Satisfaction Scale-Revised (BSS-R) is available free of charge at: [https://www.bss-r.co.uk](https://www.bss-r.co.uk)

The BSS-R is recommended as the key global clinical measure of birth satisfaction by the ICHOM Standard Set for Pregnancy And Childbirth: [www.ichom.org/medical-conditions/pregnancy-and-childbirth/](http://www.ichom.org/medical-conditions/pregnancy-and-childbirth/)

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Research Gate: [https://www.researchgate.net/profile/Caroline_Hollins_Martin](https://www.researchgate.net/profile/Caroline_Hollins_Martin)  
Scopus Author ID: 8665735000  
Orcid ID: [https://orcid.org/0000-0002-3185-8611/print](https://orcid.org/0000-0002-3185-8611/print)
EXEMPTION DETERMINATION

October 25, 2022

Dear Amanda De La Serna:

On 10/25/2022, the IRB determined the following submission to be human subjects research that is exempt from regulation:

<table>
<thead>
<tr>
<th>Type of Review</th>
<th>Initial Study, Exempt category 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>The Associations of Racial Discrimination and Perceived Stress with Birth Satisfaction among Black Women.</td>
</tr>
<tr>
<td>Investigator</td>
<td>Amanda De La Serna</td>
</tr>
<tr>
<td>IRB ID</td>
<td>STUDY00004843</td>
</tr>
<tr>
<td>Funding</td>
<td>None</td>
</tr>
</tbody>
</table>

Documents Reviewed:
- de la Serna HRP-251. FORM - Faculty Advisor Scientific-Scholarly Reviewfillable form.pdf, Category: Faculty Research Approval;
- de la Serna HRP-255. FORM - Request for Exemption for Secondary Research doc, Category: IRB Protocol;
- Proposal - A de la Serna docs, Category: Other;
- Variables and Instruments - IRB docs, Category: Test Instruments;

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made, and there are questions about whether these changes affect the exempt status of the human research, please submit a modification request to the IRB. Guidance on submitting Modifications and Administrative Checks-in are detailed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library within the IRB system. When you have completed your research, please submit a Study Closure request so that IRB records will be accurate.

If you have any questions, please contact the UCF IRB at 407-823-3901 or irb@ucf.edu. Please include your project title and IRB number in all correspondence with this office.