OBSTETRICS

Mode of delivery and postpartum depression: the role of patient preferences

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OBJECTIVE: The purpose of this study was to explore the relationship between strength of preference for vaginal delivery, delivery mode undergone, and postpartum depression.

STUDY DESIGN: We conducted a secondary analysis of data from a longitudinal study of delivery-mode preferences. During an interview between 24-36 weeks of gestation, participants were asked whether they preferred vaginal or cesarean delivery; the strength of this preference was measured by the standard gamble metric. Depression was assessed antepartum and at 8-10 weeks and 6-8 months after delivery by using the Patient Health Questionnaire (PHQ-9). The primary outcome was PHQ-9 score at 8-10 weeks after delivery. We used multivariable regression analysis to assess the effect of strength of preference for vaginal delivery and delivery mode undergone on postpartum depression.

RESULTS: Of 160 participants, 33.1% were nulliparous, and 30.6% had a previous cesarean delivery. Most of the participants (92.4%) preferred vaginal delivery, but the strength of preference varied substantially. The mean strength-of-preference score (0-1 scale; higher scores denote stronger vaginal delivery preference) was 0.658 (SD, ±0.352). A significant interaction emerged between the effects of delivery mode and vaginal delivery preference score on postpartum PHQ-9 score ($P = .047$). Specifically, a stronger preference for vaginal delivery was associated with higher PHQ-9 scores among women who underwent cesarean delivery ($P = .027$) but not among women who underwent vaginal delivery ($P = .761$). The interaction between delivery mode and vaginal delivery preference score was no longer significant at 6-8 months after delivery.

CONCLUSION: Women who have a strong antepartum preference for vaginal delivery and deliver by cesarean may be at increased risk for depression in the early postpartum period.

Key words: mode of delivery, patient preferences, postpartum depression

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Depression is a common but often overlooked diagnosis in the postpartum period that affects approximately 15% of women who give birth.[1] Although the American College of Obstetricians and Gynecologists does not recommend universal antepartum or postpartum screening, they acknowledge that diagnosis and treatment are beneficial to women and their families.[2] The American Academy of Pediatrics recommends screening for postpartum depression because it can have an impact on infant development.[3] Despite these recommendations, rates of screening, diagnosis, and treatment remain low, at least in part because of a number of clinical barriers including time constraints, patient discomfort, and lack of expertise with psychiatric disorders.[4,5]

The identification of women who are at increased risk for postpartum depression is one strategy to focus screening and improve care. Women with a history of depression are more likely to have postpartum depression, accounting for approximately one-half of the cases.[6] Additional risk factors include lack of social support, stressful life events, and pregnancy complications.[4,6,7] Numerous studies have explored the association between cesarean delivery and postpartum depression,[8-16] and most studies have concluded that mode of delivery is not a predictor.[8-11,13,15] However, a patient's antepartum delivery preferences may play an important role in the determination of how a woman perceives her childbirth experience and outcome,

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which potentially could affect her risk for postpartum depression.

To our knowledge, whether the strength of a woman's antepartum preference for a particular mode of delivery affects the relationship between mode of delivery and postpartum depression has not been investigated systematically. We aimed to investigate the role of patient preferences for mode of delivery in relationship to postpartum depression. As planned vaginal delivery remains most common, we sought to use data from a prospective study of mode of delivery preferences to gain an understanding of the association, if any, between strength of preferences for vaginal delivery, delivery mode undergone, and postpartum depression.

Materials and Methods

The "Mode of Delivery Preferences among Diverse Populations of Women" study was conducted at the University of California, San Francisco, from 2008-2012. Details of this study have been described elsewhere.[17,18] Briefly, women who received prenatal care were sent letters that described the study that included an "opt-in/opt-out" response card. Patients who returned the card with "opt in" checked off or who did not return the card were contacted by a research associate who further described the study and assessed the woman's eligibility and interest in participation. Additionally, patients who contacted the research associate after seeing a flyer or hearing about the study by word of mouth were enrolled if they met eligibility criteria, which included being English-speaking and <36 weeks of gestation. Participants received $40 remuneration for each face-to-face interview. Institutional review board approval was obtained from the University of California, San Francisco, Committee on Human Research. Written informed consent was obtained from all participants.

Between 24-36 weeks of gestation, participants underwent a face-to-face interview, during which they completed a questionnaire that included items that were related to sociodemographic characteristics (age, race/ethnicity, education, employment, marriage status, and income), pregnancy history, their preferred delivery mode, and a 9-item depression measure (Patient Health Questionnaire [PHQ-9]).[19] The PHQ-9, which is recommended by American College of Obstetricians and Gynecologists for perinatal depression assessment,[2] has been validated in obstetrics and gynecology clinical settings[20] and is used commonly in research and clinical practice to assess symptoms of depression, to make a preliminary diagnosis of depression, or to categorize depression severity. Scores range from 0−27; higher scores indicate more depressive symptoms (specifically, 0−4, 5−9, 10−14, and >15 represent minimal, mild, moderate, and severe levels of depression, respectively).

During the baseline interview, participants also completed a series of standard gamble[21] exercises with the use of a computer tool our group developed for preference elicitation.[22] The standard gamble exercise yields a preference score that ranges from 0-1, with *0* defined as the least desired outcome of a decision being considered and *1* defined as the most preferred outcome. Scores for intermediately ranked outcomes are generated by presenting the assessor with a hypothetical choice between certainty of experiencing the intermediate ranked outcome and a gamble between experiencing the preferred outcome vs experiencing the least desired outcome. The probability of experiencing the preferred vs the least desired outcome is varied until the assessor is indifferent between certainty of the intermediary outcome and the gamble.

As planned vaginal delivery is the most common delivery approach in the United States, we focused on the strength of preference for vaginal delivery. For this measurement, participants who had a stated preference for vaginal delivery were presented with a choice between certainty of having an uncomplicated planned cesarean delivery and a gamble between an uncomplicated vaginal delivery (their preferred delivery mode) vs undergoing labor and ending with an uncomplicated cesarean delivery (their less desired delivery mode in this exercise). The probability that their labor would end in a cesarean delivery was varied until the woman was indifferent between the 2 choices. Stronger preferences for vaginal delivery are reflected in a higher score, indicating women would accept a greater chance that labor would end in a cesarean delivery before opting for an uncomplicated planned cesarean delivery. The preference score for vaginal delivery was calculated as the probability of having the planned vaginal delivery end in a cesarean delivery at her indifference point. For example, if a woman who had a stated preference for vaginal delivery but indicated that she would opt for a planned cesarean delivery if the chance that her planned vaginal birth would end in cesarean delivery was 25%, her preference score for vaginal delivery would be assigned a value of 0.25. On the other hand, if a woman with a stated preference for vaginal delivery indicated that she would opt for a planned cesarean delivery only if the chance of labor ending in a cesarean delivery was 75%, she would have a preference score of 0.75 for vaginal delivery. As this analysis focused on the strength of preference for a vaginal delivery, participants who had a stated preference for cesarean delivery (ie, those who indicated they would "probably" or "definitely" choose to have a cesarean delivery) were assigned a preference score of 0 for vaginal delivery.

A telephone interview was conducted at 8-10 weeks after delivery during which participants again completed the PHQ-9, and the delivery mode undergone was assessed. At 6-8 months after delivery, participants had a face-to-face interview during which they completed the PHQ-9 a third time.

The primary outcome for this analysis was PHQ-9 score at 8-10 weeks after delivery; PHQ-9 score at 6-8 months after delivery was a secondary outcome. The primary predictors were the strength of preference for vaginal delivery and delivery mode undergone. Univariable and multivariable regression analyses were performed to identify predictors of PHQ-9 score at each of the postpartum time points. In the