OBSTETRICS

The maternal childbirth experience more than a decade after delivery

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BACKGROUND: Maternal satisfaction with the birth experience is multidimensional and influenced by many factors, including mode of delivery. To date, few studies have investigated maternal satisfaction outside of the immediate postpartum period.

OBJECTIVE: This study investigated whether differences in satisfaction based on mode of delivery are observed more than a decade after delivery.

STUDY DESIGN: This was a planned, supplementary analysis of data collected for the Mothers' Outcomes after Delivery study, a longitudinal cohort study of pelvic floor disorders in parous women and their association with mode of delivery. Obstetric and demographic data were obtained through patient surveys and obstetrical chart review. Maternal satisfaction with childbirth experience was assessed via the Salmon questionnaire, administered to Mothers' Outcomes after Delivery study participants >10 years from their first delivery. This validated questionnaire yields 3 scores: fulfillment, distress, and difficulty. These 3 scores were compared by mode of delivery (cesarean prior to labor, cesarean during labor, spontaneous vaginal delivery, and operative vaginal delivery). In addition, the impact of race, age, education level, parity, episiotomy, labor induction, and duration of second stage of labor on maternal satisfaction were examined.

RESULTS: Among 576 women, 10.1-17.5 years from delivery, significant differences in satisfaction scores were noted by delivery mode. Salmon scale scores differed between women delivering by cesarean and those delivering vaginally: women delivering vaginally reported greater fulfillment (0.40 [−0.37 to 0.92] vs 0.15 [−0.88 to 0.66], $P < .001$) and less distress (−0.34 [−0.88 to 0.38] vs 0.20 [−0.70 to 0.93], $P < .001$) than those who delivered by cesarean. Women who delivered by cesarean prior to labor reported the greatest median fulfillment scores and the lowest median difficulty scores. Median distress scores were lowest among those who delivered by spontaneous vaginal birth. Among women who underwent cesarean delivery, labor induction and prolonged second stage were associated with higher difficulty scores. These factors did not affect satisfaction scores among women who delivered vaginally. Among women who delivered vaginally, operative vaginal delivery was associated with less favorable scores across all 3 scores.

CONCLUSION: Maternal satisfaction with childbirth is influenced by mode of delivery. The birth experience leaves an impression on women more than a decade after delivery.

Key words: childbirth experience, maternal perception of childbirth, mode of delivery, patient satisfaction, Salmon questionnaire

Introduction

Maternal satisfaction with the birth experience is multidimensional and influenced by a variety of factors, including mode of delivery.[1-4] Prior research has suggested that childbirth is perceived differently by women who deliver by cesarean vs vaginal birth. Several studies reported that women who undergo cesarean delivery have a more negative birth experience,[3,5-7] while others reported minimal or no effect of mode of delivery on maternal satisfaction and instead attribute the differences in satisfaction to other factors such as perceived maternal control, realization of preferred mode of delivery, and support during labor.[8-10] Other factors shown to play a role in maternal satisfaction include separation from the newborn, communication with providers, neonatal intensive care admissions, and pain control.[3,4,8,11]

Whether a woman's birth experience is positive or negative has implications beyond the delivery event. Posttraumatic stress disorder related to a traumatic birth experience has been described.[12,13] A negative birth experience may increase the risk of postpartum depression, as well.[14] Furthermore, women who have a negative birth experience have a longer interval to their second delivery and fewer subsequent deliveries.[15]

Prior research on maternal birth experience has primarily been limited to the period immediately surrounding delivery. Less is known about whether immediate perceptions of birth persist and have a long-term impact on a woman's impressions of her birth experience. In this research, we take advantage of a unique opportunity to investigate maternal satisfaction in a cohort of women remote from delivery. Our primary objective is to investigate the extent to which maternal satisfaction with childbirth differs by mode of delivery >10 years after childbirth. A second objective is to identify other aspects of childbirth that have a long-term influence on maternal satisfaction.

Materials and Methods

This was a planned, supplementary analysis of data collected for the Mothers' Outcomes after Delivery (MOAD) study,[16] a longitudinal cohort study. The parent study is an investigation of pelvic floor disorders after childbirth. The goal of this supplementary study was to investigate the maternal birth experience. Investigators from Johns Hopkins Medical Institutions and Greater Baltimore Medical Center conducted and designed the study. The

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study was approved by the institutional review board at all participating institutions and written informed consent was obtained from all participants.

Recruitment for participation in the MOAD study was previously described.[16] To summarize, eligible participants were identified via obstetric diagnoses 5-10 years after the participant's first delivery. Given the primary goal of the parent study, recruitment was based on delivery type. The recruitment strategy specified that 60% of the study population would have delivered their first child by cesarean; women who delivered vaginally and those delivered by cesarean were matched for maternal age and years since delivery. Once potential participants were identified, hospital records were reviewed to verify eligibility and delivery type. Enrolled participants attend annual study visits that include an annual health questionnaire. Recruitment for this study was completed in 2015 and enrolled participants were followed up annually thereafter.

Maternal satisfaction with childbirth was assessed with the Salmon questionnaire,[2] included in the annual health questionnaire during the sixth year of study participation. At this time point, participants were at least 10 years from their first delivery. Some study participants were multiparous at the time of data collection. These women were asked to assess their satisfaction with regard to their first delivery. The Salmon questionnaire is a validated instrument that consists of 20 items with the following instruction: "For each description below, please check the value from 1-5 that best describes how you felt during the whole birthing process, including the first hours after birth." Each of the 20 descriptors (Appendix) is rated on a 5-point Likert scale: (1) not at all; (2) a little bit; (3) moderately; (4) quite a bit; or (5) extremely. The Salmon questionnaire is scored across 3 domains: fulfillment, distress, and difficulty. Each score is calculated by summing the values for relevant items and then normalizing the scores. For each scale score, we calculated median and interquartile range stratified by delivery group.

Women were grouped by delivery type. Each delivery was classified as either a vaginal birth or cesarean birth. Cesarean births were further classified as having occurred prior to or during labor. This classification was based on information abstracted from the hospital record. Vaginal births were further classified as operative (ie, assisted with forceps or vacuum) or spontaneous.

Additional maternal characteristics were also considered: age, age at the time of first delivery, interval (in years) between first delivery and study enrollment, parity, years between first and second delivery (if applicable), race, and educational attainment. Race and educational attainment were self-reported. Obstetrical data were derived from abstraction of the delivery record for each participant. Abstracted data included labor induction, duration of the second stage of labor (the time from complete dilation to delivery), episiotomy, and indication for cesarean. The second stage was classified as prolonged if >2 hours.

Maternal and obstetrical characteristics were compared across delivery groups using median and interquartile range for continuous data and frequency and percent for categorical data. Statistical significance between delivery groups was determined using Kruskal-Wallis and χ^2 tests. Differences in scale scores between groups were compared in multivariate linear regression models. Separate models were created for cesarean and vaginal birth groups, modeling each Salmon scale score as a function of maternal characteristics and obstetrical characteristics specific to the delivery group. All multivariable models included age at first delivery, parity, race, education, induction of labor, and prolonged second stage. Among women delivered by cesarean, we also considered the association between each score and labor prior to cesarean; among women delivered vaginally, we considered operative vaginal birth and episiotomy. All analysis was performed using statistical software (SAS, Version 9.4; SAS Institute Inc, Cary, NC). The Figure was also created using statistical software (R, Version 3.2.1; R Foundation for Statistical Computing, Vienna, Austria). In all analyses, $P < .05$ was considered statistically significant.

Results

At the time of this analysis, 742 participants completed the sixth year of the MOAD study and the Salmon questionnaire was completed by 593 (80%) of these women. Seventeen women were excluded secondary to incomplete data, leaving 576 for analysis.

At the time of survey completion, women were 10.1-17.5 years from first delivery and 74% were parous (Table 1). The modes of delivery were as follows: 64 (11%) cesarean prior to labor, 281 (49%) cesarean during labor, 174 (30%) spontaneous vaginal delivery, and 57 (10%) operative vaginal delivery. Indications for the cesarean prior to labor group included malpresentation (n = 32, 50%), fetal macrosomia (n = 15, 23%), concerns about fetal well-being (n = 3, 5%), and other diagnoses (n = 14, 22%). Indications in the cesarean during labor group included arrest of dilation (n = 92, 33%), failure to descend (n = 77, 27%), concerns about fetal well-being (n = 34, 12%), malpresentation (n = 26, 9%), and other diagnoses (n = 52, 19%). For the cesarean during labor group, 33 (12%) had an unsuccessful trial of labor induction, 24 (9%) were in early labor at the time of cesarean, and 224 (80%) were in the active phase of labor.

Characteristics of the 4 delivery groups are described in Table 1. There were no statistically significant differences between the groups with regard to current age, age at first delivery, years since first delivery, parity, years between first and second delivery, race, or education. Differences were noted with regard to labor induction, episiotomy, and duration of second stage among the groups (where applicable).

Salmon scale scores (fulfillment, distress, and difficulty) differed between women delivering by cesarean vs vaginally. Women delivering vaginally reported greater median fulfillment (0.40 [−0.37 to 0.92] vs 0.15 [−0.88 to 0.66], $P < .001$) and less median distress (−0.34 [−0.88 to 0.38] vs 0.20 [−0.70 to