Relationship between obstetricians' cognitive and affective traits and delivery outcomes among women with a prior cesarean

Lynn M. Yee, MD, MPH; Lilly Y. Liu, BA; William A. Grobman, MD, MBA

OBJECTIVE: We sought to investigate the relationship between obstetricians' cognitive traits and delivery outcomes among women with a prior cesarean delivery.

STUDY DESIGN: A total of 94 obstetricians completed 5 standardized psychometric scales: Reflective Coping, Proactive Coping, Multiple Stimulus Types Ambiguity Tolerance (MSTAT), Need for Cognition, and State-Trait Anxiety Inventory. Scores were analyzed by quartile. Delivery data were collected for primiparas with 1 prior low transverse cesarean delivery and a term, cephalic singleton. We used χ^2 tests and random effects logistic regression to examine the relationship between obstetricians' cognitive traits and their patients' frequency of trial of labor after cesarean (TOLAC) and vaginal birth after cesarean (VBAC).

RESULTS: Of 1502 eligible patients, 22.6% underwent TOLAC. Women were more likely to undergo TOLAC when cared for by physicians with scores in the highest quartile of the proactive coping (33.6% vs 19.6%; $P < .001$), MSTAT (29.2% vs 21.0%; $P = .002$), and Need for Cognition (27.9% vs 21.5%; $P = .02$) assessments, or in the lowest quartile for anxiety assessment (28.0% vs 20.6%; $P = .001$). Similarly, those with high proactive coping (18.0% vs 11.3%; $P = .001$), high MSTAT (16.6% vs 11.8%; $P = .03$), and low anxiety (19.2% vs 10.4%; $P < .001$) had greater VBAC rates. Random effects regression analyses revealed physicians with high proactive coping remained significantly more likely to have patients undergo TOLAC (adjusted odds ratio, 1.86; 95% confidence interval, 1.10–3.14) and those with low anxiety remained significantly more likely to have patients experience VBAC (adjusted odds ratio, 2.08; 95% confidence interval, 1.28–3.37).

CONCLUSION: There is an increased likelihood of TOLAC and VBAC for women delivered by physicians with more proactive coping and less anxiety.

Key words: physician cognitive skills, physician coping, trial of labor after cesarean, vaginal birth after cesarean

Cite this article as: Yee LM, Liu LY, Grobman WA. Relationship between obstetricians' cognitive and affective traits and delivery outcomes among women with a prior cesarean. Am J Obstet Gynecol 2015;213:413.e1-7.

In the United States, nearly one third of births occur via cesarean delivery (CD) and approximately 90% of low-risk women with a prior cesarean undergo a repeat CD.[1-3] The rising cesarean rate is of significant public health concern due to the associated maternal morbidity. As a result, reducing primary and repeat CD, the latter of which account for half of the increase in cesarean rate, is a goal of numerous professional organizations and the US Department of Health and Human Services.[1,2,4] While many patient- and system-based factors contribute to the cesarean rate, little work has focused on provider contributions to delivery approach and mode.

The dramatic decrease in the vaginal birth after cesarean (VBAC) rate has been attributed largely to a decrease in the likelihood of choosing a trial of labor after cesarean (TOLAC),[5] yet evidence suggests a majority of women with 1 prior low transverse cesarean are TOLAC candidates.[6] While the American Congress of Obstetricians and Gynecologists notes that after appropriate counseling, "the ultimate decision to undergo TOLAC or a repeat CD should be made by the patient in consultation with her health care provider,"[6] some evidence suggests provider factors can influence patient decisions in this regard.[7,8]

Patient safety and quality improvement initiatives increasingly reflect the concept that provider traits are associated with patient outcomes. Beyond demographic or training characteristics, provider cognitive traits are one type of characteristic thought to affect clinical decisions. Cognitive traits include cognitive biases and clinical reasoning skills, coping ability, analytical skills, cognitive efficiency, and learner motivation.[9-12] Provider emotional influences and affective traits, or predisposition toward types of emotional responses, have additionally been proposed to affect clinical decisions.[9-12] In a small study of 12 obstetricians, Dunphy et al[13] found that physicians with better coping skills and lower trait anxiety were more likely to care for women who achieved spontaneous vaginal deliveries. In previous work, our group studied the relationship between obstetrician cognitive traits and delivery outcomes for nulliparas, finding decreased risk of operative vaginal

From the Division of Maternal-Fetal Medicine, Department of Obstetrics and Gynecology, Feinberg School of Medicine, Northwestern University, Chicago, IL.

Received March 7, 2015; revised April 13, 2015; accepted May 10, 2015.

The authors report no conflict of interest.

Presented in poster format at the 35th annual meeting of the Society for Maternal-Fetal Medicine, San Diego, CA, Feb. 2-7, 2015.

Corresponding author: Lynn M. Yee, MD, MPH. lynn.yee@northwestern.edu

0002-9378/$36.00

http://dx.doi.org/10.1016/j.ajog.2015.05.023

TABLE 1
Cognitive and affective scales used to assess physician traits

Instrument	Construct	No. of items
Reflective Coping scale of Proactive Coping Inventory[16,17]	• Coping in setting of stress and distress • Self-efficacy • Affect and proactive attitude	11
Proactive Coping scale of Proactive Coping Inventory[16,17]	• Proactive goal attainment/orientation • Self-confidence • Self-regulatory cognition and behavior	14
Multiple Stimulus Types Ambiguity Tolerance-II[13,18,19]	• Tolerance for ambiguity • Degree of comfort with uncertainty and/or complexity • Receptiveness to change	13
Need for Cognition[13,20]	• Learner motivation • Tendency to engage in and enjoy cognitive efforts • Affect in processing cognitive information • Positive self-esteem, successful adaptive decision making • Low Need for Cognition indicates social anxiety and difficulty with decision making	18
State-Trait Anxiety Inventory-trait component[21]	• Stable individual tendencies toward anxiety in range of threatening situations • Measure of affect	20

Yee. Obstetrician cognition and VBAC. Am J Obstet Gynecol 2015.

delivery for patients delivered by providers who evidenced more adaptive decision making.[14] Such findings suggest physician cognitive traits may influence outcomes in situations, such as intrapartum care, that are unpredictable. Yet, the role of provider factors, and physicians' cognitive traits specifically, in the availability and management of TOLAC is not well understood, and remains a critical evidence gap.[15]

Thus, we designed this study to investigate the association between physician cognitive and affective traits and patient delivery outcomes among women with 1 prior CD who were eligible to undergo TOLAC. We hypothesized that providers scoring in the highest quartile of cognitive and affective assessments, representing the most adaptive cognitive and affective traits, would have higher frequency of TOLAC and VBAC among their patients.

Materials and Methods

This was an observational study examining the relationship between obstetricians' cognitive and affective traits and their patients' delivery outcomes among women with 1 prior CD. Methods for assessment of cognitive and affective traits have been described previously.[14] In brief, providers of obstetric care at a single academic institution were surveyed using 5 standardized psychometric measures. Their patient outcomes were then retrospectively reviewed to identify differences in delivery outcomes associated with provider cognitive characteristics. Institutional review board approval from Northwestern University was obtained prior to initiation of the study.

Eligible participants included all attending obstetricians practicing at a single institution and their eligible patients. General obstetricians and maternal-fetal medicine specialists were included. Trainees and midlevel providers were not surveyed in this study, as all delivery decisions are ultimately the responsibility of the attending physician. Attending physicians directly participate in all births, including those of patients who received prenatal care in the hospital-based clinic staffed by residents with faculty supervision. From 2012 through 2013, obstetricians completed a written survey that included demographic characteristics and 5 established, validated scales: Reflective Coping (RC),[16,17] Proactive Coping (PC),[16,17] Multiple Stimulus Types Ambiguity Tolerance (MSTAT)-II,[18,19] Need for Cognition (NFC),[20] and the trait component of the State-Trait Anxiety Inventory (STAI).[21] The RC, PC, MSTAT, and NFC largely measure cognitive traits, whereas the STAI is a measure of an affective trait. These scales were chosen on the basis of use in prior work, their high construct validity, and the theoretical basis of these traits' relationships to medical decision making.[13,14] Details of each instrument can be found in Table 1.

Patients eligible for study inclusion were primiparas age $\geq$18 years with 1 prior low transverse CD and a term, cephalic singleton who were delivered by a physician who completed the survey. All deliveries meeting criteria from January 2008 through June 2013 were reviewed to provide a final population for analysis that would allow for adequate power (see below). The population was limited to women with 1 prior CD (and no prior vaginal deliveries) to limit the possibility that provider decisions would have been influenced by prior vaginal birth(s) or the number of prior CD. Women with fetuses with major anomalies, who had a fetal demise, or who were otherwise ineligible for vaginal birth (placenta previa, prior classical CD, prior cavity-entering myomectomy) were excluded.

Sample size was determined based on the number of patients needed to demonstrate a difference in TOLAC rate between patients delivered by providers scoring in the highest quartile compared to providers scoring in the lower 3 quartiles. Prior work has suggested that women delivered by providers with coping scores in the highest quartile had a 30% lower risk of operative vaginal delivery.[14] If approximately 30% of women undergo TOLAC when cared for by physicians with cognitive trait scores in the highest quartile of cognitive scores, to have 80% power at an alpha = 0.05 to detect a 30% difference in the proportion of women undergoing TOLAC among providers with scores in