Patient Experience of Obstetric Care During the COVID-19 Pandemic: Preliminary Results From a Recurring National Survey

Dani Bradley, MPH, MS1, Arianna Blaine, SM1, Neel Shah, MD, MPP, FACOG2, Ateev Mehrotra, MD, MPH2, Rahul Gupta, MD, MPH, MBA3, and Adam Wolfberg, MD, MPH4

Abstract
The experience of pregnant and postpartum patients continues to evolve during the COVID-19 pandemic. Limited clinical data and the unknown nature of the virus’ impact and transmission routes have forced constant changes to traditional care delivery. Dependence on telehealth technology such as telephonic and videoconferencing has surged, and patients’ willingness to visit traditional health care facilities has plummeted. We set out to create an ongoing surveillance system to monitor changes to prenatal and obstetric care and the patient experience during the COVID-19 pandemic.

Keywords
COVID-19, patient expectations, survey data, telehealth, women’s health

Introduction
The pandemic of the severe acute respiratory syndrome coronavirus (SARS-CoV-2) has forced a rapid and dramatic change to when, where, and how prenatal care and obstetric services are delivered in order to reduce the risk of viral transmission.

Preliminary findings from two New York City hospitals demonstrated that 88% of COVID-19 positive obstetric patients had no symptoms on labor presentation, leading some facilities to treat all patients as presumed positive until tested, and altering many patients’ delivery plans, including support persons in the room and choice of facility (1). Additionally, uncertainty about community prevalence has led to a reduction in support people allowed to attend prenatal visits, as well as labor and delivery.

COVID-19 is affecting areas of the United States in different ways and at different times, and there is no national pregnancy-related surveillance system allowing for the monitoring of COVID-19 transmission and impact on this population of patients. We hypothesize that pregnant patients are making health care decisions influenced by fear that they will contract COVID-19 within a healthcare setting, and concern that their support people will be prevented from accompanying them to both ambulatory and inpatient obstetric visits. We wanted to understand how the delivery of prenatal and obstetric care has changed over the course of the COVID-19 pandemic in the United States, and how pregnancy experiences and birth plans have changed as a result.

Methods
We designed an ongoing, national patient experience surveillance system, the initial results of which were collected between April 18, 2020, and April 22, 2020, and are presented here. An email invitation to complete a survey was sent to pregnant and recently postpartum people in the United States, among users of a free mobile application focused on pregnancy and postpartum care. The survey contained the Perceived Stress Scale 4 (PSS-4) (2) to measure

1 Ovia Health, Boston, MA, USA
2 Harvard School of Public Health, Beth Israel Deaconess Medical Center, Boston, MA, USA
3 March of Dimes, Washington, DC, USA
4 Ovia Health, Cambridge Hospital, Cambridge, MA, USA

Corresponding Author:
Dani Bradley, Ovia Health, 308 Congress Street, Boston, MA 02210, USA. Email: dani.bradley@oviahealth.com
stressed among participants and the Hunger Vital Sign 2-item screener, recommended by the American Academy of Pediatrics to assess food instability (3).

Results
A total of 2145 respondents completed the survey, at a completion rate of 74%. Among respondents, 85% reported being pregnant and 15% were 0 to 8 weeks postpartum. Pregnant respondents were evenly distributed across gestational weeks and all 50 US states and the District of Columbia were represented in the sample. See Table 1 for other demographic characteristics of the sample.

Birth Plans and Delivery
Less than 1% of respondents reported that they had been planning a home birth prior to the COVID-19 pandemic. At the time of the survey, the number of respondents planning a home birth had increased to 2.5%. Additionally, 24.5% of pregnant respondents reported that they had begun considering home birth as an option.

Prior to the pandemic, 59.2% of respondents planned to have family members and/or a doula present at delivery, in addition to their partner, which was reported nearly universally. At the time of the survey, only 14.4% planned to have a nonpartner attendant physically present at delivery. The number of respondents who were planning to teleconference support people into their delivery before the pandemic was just 0.4% and increased to 2% (Table 2).

Among postpartum respondents, 24.1% reported having to wear a mask during their deliveries, which occurred 0 to 8 weeks prior to the surveying period. Among these postpartum respondents, 31.3% were discharged early, and 6.6% reported delivering in a different location than they had planned to before the pandemic. A total of 4.1% reported being tested for COVID-19 at delivery.

Care Modification
A total of 10% of respondents reported using telehealth services prior to the COVID-19 pandemic. Among respondents who had a visit scheduled 4 weeks prior to or 4 weeks after the survey period, 30% of visits were modified, canceled, or rescheduled. Among visits that were modified, 37% were conducted by phone, and 39% were conducted by video (Table 2). Respondents reported being asked to take their own measurements or vital signs in 42.8% of remote visits, with 88.6% of respondents reporting at least some successful at-home measurements. About half (47.3%) of respondents with a remote visit felt that they received the same amount or more information and care compared to a traditional visit. Privacy concerns (4%) and logistical concerns, such as finding a quiet space to

| Table 1. Demographic Characteristics of a National Sample of Pregnant and Recently Postpartum Patients. a |
|--------------------------------------------------|
| Demographics | # | % |
| Pregnant | 1829 | 85.3 |
| Postpartum (0-8 weeks) | 316 | 14.7 |
| Race | | |
| White | 1695 | 79.0 |
| Black | 177 | 8.3 |
| Hispanic | 230 | 10.7 |
| Other | 43 | 2.0 |
| Relationship status | | |
| Married/committed | 2073 | 96.6 |
| Single | 56 | 2.6 |
| Other | 16 | 0.7 |
| Education | | |
| <High school | 22 | 1.0 |
| High school | 398 | 18.6 |
| Associates | 301 | 14.0 |
| Bachelors | 794 | 37.0 |
| Masters or above | 611 | 28.5 |
| Insurance | | |
| Employer based | 1796 | 83.7 |
| Public (Medicaid/Medicare) | 281 | 13.1 |
| Other | 269 | 12.5 |
| Essential worker | | |
| Self | 770 | 35.9 |
| Partner | 1059 | 49.4 |
| Someone in household | 112 | 5.2 |

* n = 2145.

| Table 2. Patient-Reported Changes to Birth Planning and Prenatal Care in April 2020, During the COVID-19 Pandemic. a |
|--------------------------------------------------|
| Birth plans | | |
| Before pandemic | During pandemic |
| Total pregnant respondents | n | 1829 |
| Delivery location | n | % | n | % |
| Hospital | 1747 | 95.5% | 1698 | 92.8% |
| Birth center | 69 | 3.8% | 86 | 4.7% |
| Home birth | 13 | 0.7% | 45 | 2.5% |
| Birth attendees | | |
| Doula attending | 150 | 8.2% | 66 | 3.6% |
| Partner attending | 1711 | 93.5% | 1757 | 96.1% |
| Family members attending | 933 | 51.0% | 197 | 10.8% |
| Teleconference support | 8 | 0.4% | 36 | 2.0% |
| Visit modifications during the pandemic | | |
| Total scheduled visit(s) | n | 3458 |
| Occurred as planned or is scheduled to occur as planned | 2487 | 71.9% |
| Rescheduled | 154 | 4.5% |
| Canceled | 145 | 4.2% |
| Modified | 729 | 21.1% |
| Video | 273 | 37.5% |
| Phone | 287 | 39.4% |
| Different physical location | 28 | 3.8% |
| Other | 141 | 19.3% |

* n = 1829, visits = 3458.
conduct their remote visit (10%), were reported impediments to virtual prenatal and postpartum care.

Concerns and Insecurities

Top reported concerns among pregnant respondents related to the COVID-19 pandemic include the risk to personal health or their newborn’s health (71%), fear that support people will be unable to attend delivery (72%), risk of contracting COVID-19 during a prenatal or obstetric appointment (43%), fear that support people will become sick with COVID-19 (36%), and concerns regarding financial or job security (29%).

The top concern among postpartum respondents was that their baby would become ill (75%), followed by concern about childcare access (40%), postpartum depression (34%), and access to well-child (35%) and postpartum (31%) visits.

A total of 15% of respondents indicated food insecurity based on responses to the Hunger Vital Sign 2-item screener, a validated measurement tool. This in comparison to the prepandemic average 11% of US households typically reporting food insecurity (4).

Respondents had a mean PSS-4 score of 6.4 of 16, with higher scores indicating higher stress, and no differences detected between pregnant and postpartum subgroups. This compares to a benchmark of 4.7 among women in the United States in 1988 and 6.38 among women in the United Kingdom in 2013 (5,6).

Discussion

This preliminary report is the first known national survey regarding changes to the patient experience of prenatal and obstetric care during the COVID-19 pandemic. This report shows that in mid-April 2020, a majority of prenatal and obstetric patients were receiving care in the usual way; however, traditional office visits were modified or disrupted and access to support people during the inpatient experience plummeted. Concern about postpartum depression is particularly high among postpartum patients, and pregnant and postpartum patients alike are experiencing stress at similar rates.

Like all Americans, pregnant and postpartum patients are fearful that they, their children, and their loved ones will become sick with COVID-19. To the extent that health care providers can mitigate these concerns, provide resources to reduce risk and exposure, and plan for potentially increased levels of postpartum depression in the coming weeks and months, their patients will be better served. It is worth noting that as interest in home births increases, it warrants the attention of health care providers and medical societies to ensure patients are making choices that will result in optimal outcomes for themselves and their babies. Health care systems have an opportunity to adapt workflows and visitor policies, and particularly to leverage teleconferencing technology, to safely support patients through childbirth at a time when tradition in-person care increases risk of transmission. Technology-enabled modifications to care during delivery were reported to be satisfactory by nearly half of respondents who experienced these changes, though there is more work to be done to enhance these services to best serve our patients. Support for freestanding birth centers that could, appropriately managed, provide a welcoming alternative to in-hospital obstetric services could also cater to a patient population less inclined to receive their care in a traditional health care setting.

Limitations

Limitations of this report include sampling bias related to sampling those with access to a mobile application, Ovia Pregnancy, which is available in English and Spanish and requires the use of a smartphone. According to research conducted by Deloitte in 2018, Medicaid beneficiaries own smartphones at similar rates to the general US adult population (7). Additional limitations include the presentation of the same survey items to respondents living in different regions of the country, impacted by the pandemic at different times. The demographic makeup of respondents is not representative of the US population, making the results only generalizable to patients with similar profiles to respondents. However, all 50 states and all gestational ages were adequately represented in the sample.

Authors’ Note

This study was deemed exempt from review by the Advarra IRB, and the need for informed consent was waived.

Declaration of Conflicting Interests

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ORCID iD

Dani Bradley, MPH, MS  https://orcid.org/0000-0002-4010-9401

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Author Biographies

Dani Bradley, MS, MPH, completed her education at Tufts University School of Medicine and Tufts’ Friedman School of Nutrition science and Policy. After her graduate studies she joined Ovia Health, a women’s health technology company where she leads the Clinical and Research teams. She creates clinical programs, conducts research, and uses her knowledge of behavior science to inform user experience and design. She is passionate about applying technology and innovation to improve health and patient experience.

Arianna Blaine is a clinical solutions manager at Ovia Health, where she focuses on clinical efficacy and innovations for Ovia’s suite of women’s digital health products. These tools aim to be women’s daily companion throughout their fertility, pregnancy, and parenting journey, helping to empower them and improve outcomes. She has an SM from the Harvard School of Public Health, focusing on maternal and child health.

Neel Shah, MD, MPP, FACOG, is an assistant professor of Obstetrics, Gynecology and Reproductive Biology at Harvard Medical School, and director of the Delivery Decisions Initiative at Harvard’s Ariadne Labs. As an obstetrician-gynecologist at Beth Israel Deaconess Medical Center in Boston, Dr Shah cares for patients at critical life moments that range from childbirth to primary care to surgery. As a scientist and social entrepreneur, he is a globally recognized expert in designing solutions that improve health care.

Ateev Mehrotra, MD, MPH, is an associate professor of health care policy and medicine at Harvard Medical School and a hospitalist at Beth Israel Deaconess Medical Center. Dr Mehrotra received his BS from the Massachusetts Institute of Technology, his MD from the University of California, San Francisco, and his residency in internal medicine and pediatrics at the Massachusetts General Hospital and Children’s Hospital of Boston. His clinical work has been both as a primary care physician and as an adult and pediatric hospitalist. He also has received formal research training with a Master of Public Health from the University of California, Berkeley and a Master of Science in Epidemiology from the Harvard School of Public Health. In 2013, he received the Alice S. Hersh New Investigator Award from AcademyHealth for health services researchers early in their careers who show exceptional promise.

Rahul Gupta, MD, MPH, MBA, FACP, is the senior vice president and chief medical and health officer at March of Dimes. In his role, Dr Gupta provides strategic oversight for March of Dimes medical and public health efforts to improve the health of all moms and babies. Before joining the March of Dimes, Dr Gupta served under two Governors as the West Virginia’s Health Commissioner. As the chief health officer, he led the state’s opioid crisis response efforts and launched a number of pioneering public health initiatives such as the Neonatal Abstinence Syndrome Birthscore program to identify high-risk infants. Dr Gupta, a specialist in internal medicine and preventive medicine, served as an academic faculty in Tennessee and Alabama before moving to West Virginia originally in 2009 to lead the Kanawha-Charleston Health Department. He is also adjunct professor in the Department of Health Policy, Management and Leadership in the School of Public Health at West Virginia University and visiting faculty at TH Chan Harvard School of Public Health.

Adam Wolfberg, MD, MPH, is an obstetrician, physician-in-chief at Ovia Health, and chief medical officer at Current Health. Previously, he held leadership roles in medical affairs at athenaHealth and Ariosa Diagnostics and is also a founder and chief medical officer of Mindchild Medical. Before going into industry, he was on the academic faculty at Tufts Medical Center, where his research on fetal EKG was funded by the NICHD. He went to medical school at Johns Hopkins, did his residency at Brigham and Women’s Hospital, and did his maternal-fetal medicine fellowship at Tufts.