Impact of the COVID-19 pandemic on rural obstetrics practices in New Mexico

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Abstr Act
Context: During pregnancy, the immune system is altered, putting women at increased risk of complications from respiratory viruses. There is limited information about the effects of COVID-19 on pregnant women and obstetrics programs, particularly in rural regions. Aims: Most published reports have been from large urban hospitals. This study sought to gain insight into how the COVID-19 pandemic is impacting rural obstetrics programs. Materials and Methods: This qualitative study surveyed participants who worked in rural obstetrics programs in New Mexico using a free response questionnaire. Results: The pandemic has changed the obstetrics experience in rural New Mexico by impacting the relationship between patients and providers and altering the family-centered model of birth. Difficulties unique to rural obstetrics included lack of transportation, limited hospital rooms and limited staff, including OB providers, nurses and housekeeping. Wellness has been impacted for providers, manifested in increased anxiety, stress and burnout. Patients reported increased anxiety, decreased family support, and potential disruptions in maternal-infant bonding. Conclusions: Rural hospitals and clinics in New Mexico and across the United States operate with challenges at baseline, with many clinics across the nation closing, leading to increasing shortages of healthcare services in rural areas. This study showed that COVID-19 has increased the challenges that rural obstetrics providers face, altering the way they practice and creating uncertainty for the future due to potentially permanent changes to their practice. Future research will explore the lasting effects of the pandemic on rural obstetrics providers specifically, and rural hospitals generally.

Keywords: COVID-19, New Mexico, obstetrics, rural

Introduction
In rural areas, Family Medicine physicians often practice “full spectrum” care, including continuity clinic, outpatient care, emergency care and obstetric care. Rural areas are often underserved in many areas, especially in regards to health care, and providers often find themselves understaffed and overworked. However, rural medicine has many benefits, including a unique role as a community leader and the ability to develop close relationships with patients and their families. In this study, we explored the impact COVID-19 had on rural obstetric providers, focusing on how their obstetric practice has changed, how their relationships with patients have been altered, and identifying unique challenges for rural communities and rural providers as they cope with COVID-19.

Subjects and Methods
Setting
This study includes survey data provided by individuals who work in rural hospitals in New.
Mexico rural was defined as the United States Department of Agriculture's definition of fewer than 50,000 inhabitants per area not located adjacent to an urban area.

Participant recruitment

The approval for this study was obtained from the University of New Mexico Health Sciences Center Human Research Review Committee on 12/04/2020 (HRRC #20-203). The selection of participants was purposive. Individuals who were most likely to have information relevant to share were chosen. Participants were individuals who were physicians, advanced care providers, or administrators who worked with obstetrics in a rural hospital in New Mexico. Eight potential participants were contacted through email and asked to participate in the study. Contact information was obtained through public postings and personal and previous work connections of the researchers. Participants were asked to respond with an email evidencing leadership approval of their participation, or that approval was not needed. A link with the survey was then provided. The first part of the survey contained a consent letter. Participants provided their consent to participate in the study by submitting their survey.

Data collection

This study used an anonymous free-response survey delivered through RedCap (Survey questions in supplementary material available online). This method was selected because it allowed participants to provide their own opinions and views without leading answers to a specific response. Survey questions were designed to ask about policy and procedure changes due to the COVID-19 pandemic and perceived social impact on the staff and patients. Participants were not provided a word limit for their answers and were permitted to leave questions blank.

Data analysis

The free-response data were coded to determine common themes and concepts. An inductive approach with descriptive coding was used through the steps outlined in Braun and Clarke(2) (1) Overview of data; (2) Coding data; (3) gathering themes and main ideas; (4) reviewing themes and ideas; (5) naming and Grouping themes and ideas; and (6) reporting themes and main ideas.38 Coding for each survey was independently performed by two researchers. The team then met to review the codes and discuss overarching themes. The thematic analysis enabled the organization of responses and interpretation to determine common and differing perspectives among participants.

Results

Data on demographics was provided by the participants via the survey. Thematic coding resulted in 5 major themes [Table 1]: (1) change in obstetric experience, (2) limitations of resources, (3) physician wellness, (4) decision making in practice, and (5) uncertainty. The themes and sub-topics are outlined below and summarized in Table 2.
Limitations of resources

This was defined as language surrounding limitations of personal protective equipment (PPE), cancellation of elective procedures (e.g., elective induction of labor), infrastructure shortages (personnel, rooms, equipment), and difficulties unique to rural medicine such as geographical challenges and transferring patients. The topic was mentioned 50 times across all respondents [Table 2]. Most concerning to providers was the limited capacity of their local hospital to sustain patients during the COVID-19 pandemic due to limited rooms and equipment (PPE, ventilators, negative pressure rooms) within the hospital. The providers mentioned concerns with appropriate staffing levels; having enough registered nurses and providers for obstetrics patients, for patients who were COVID-19 positive and also pregnant, and lastly, that each COVID-19 positive obstetrics patient could not have an individual nurse. There were also concerns regarding whether providers who rotate into the state could geographically translocate during the pandemic and were often stuck outside the state. The primary concern was being unable to provide for patients and thus limiting services and resources, as exemplified by this quote “Already one intermittent provider cannot get travel into the state. Likely that a second one will also not be able to get in to work.”

There were several concerns that the transfer of patients, induction of labor, and elective surgeries that were no longer being offered or conducted for the purpose of conserving PPE were changing the experience for some patients. This not only affected the limitations of resources for patients and providers but had implications for potential closure of entire departments within the local hospitals due to a lack of revenue generating procedures. One respondent highlighted this point, “The inability to perform elective surgical procedures as well as other revenue generating ancillary procedures will potentially cripple the hospital financially.”

Physician wellness

This was defined as any language referring to emotion or hardship on the part of the physician, especially as it pertained to concerns regarding patient care. Language around wellness was mentioned 17 times amongst only 3 respondents. These respondents weighed in on how this pandemic is currently impacting physicians’ stress levels, patient anxiety, and other issues surrounding well-being for providers, including domestic violence, substance misuse, depression, suicidality, early retirement and the potential overarching outcome of these issues, decreased patient safety. Subtopics within this theme were mental health (words such as anxiety, stress, burn-out), and grief. Grief was mentioned in the context of decreased breast feeding, maternal-infant bonding, restrictions in family

### Table 1: Participant Reported Characteristics of Practice

| Provider | Number of Obstetricians | Number of Family Practice with OB training | Number of Advance Care Practitioners | Reported Predominant Patient Demographics | Number of deliveries per month |
|----------|-------------------------|------------------------------------------|-------------------------------------|------------------------------------------|-----------------------------|
| 1        | 1 rotating MD at a time | -                                        | 1                                   | Hispanic, American Indian/Alaskan Native, Anglo-American | 10-15                       |
| 2        | 4                       | 2                                        | 1                                   | Hispanic, American Indian/Alaskan Native, Anglo-American | 10-20                       |
| 3        | 4-5                     | 2                                        | 1                                   | Hispanic, American Indian/Alaskan Native, Anglo-American | 10-15                       |
| 4        | 4                       | 2                                        | 1                                   | American Indian/Alaskan Native            | 10-20                       |
| 5        | 4                       | 1                                        | 1                                   | American Indian/Alaskan Native            | 10-15                       |

### Table 2: Thematic Analyses of Participants’ Responses

| Themes                                   | Total number of mentions | Number of respondents mentioning topic |
|------------------------------------------|--------------------------|---------------------------------------|
| 1) Change in obstetric experience        | 44                       | 5                                     |
| a. Provider-patient relationship         | 30                       | 5                                     |
| b. Changing from family centered model  | 11                       | 3                                     |
| 2) Limitations of resources              | 50                       | 5                                     |
| a. PPE                                   | 4                        | 3                                     |
| b. Cancellation of elective procedures  | 12                       | 4                                     |
| c. Personnel/rooms/equipment shortage    | 13                       | 5                                     |
| d. Difficulties unique to rural medicine practice | 14 | 5 |
| 3) Physician wellness                    | 17                       | 3                                     |
| a. Mental health                         | 9                        | 3                                     |
| b. Fear                                  | 4                        | 3                                     |
| 4) Decision making in practice           | 27                       | 5                                     |
| a. State/national/licensing body guidelines | 19 | 5 |
| b. Reevaluation based on cases           | 6                        | 3                                     |
| 5) Uncertainty                           | 16                       | 5                                     |
| a. Contingency plans                     | 10                       | 5                                     |
member visitation and presence during labor and delivery, and the anticipated negative outcomes of these circumstances. Another subtopic within this theme was providers responding with fear due to the unknowns in the COVID-19 pandemic. The fear due to a lack of precedence relates to potential poor health outcomes for patients and difficulties of adapting the field of obstetrics to telemedicine/virtual practice.

One of the providers addressed this concern “Uncertainty, fear is affecting mental health of healthcare providers. Am concerned re: patient safety as a result of this. Also concerned re: potential long term effects to healthcare providers (many of whom are already burned out) of pandemic on incidence of depression, suicide, substance abuse, domestic violence, early retirement, medical errors, etc.”

Decision making in practice
This was defined as language about changing guidelines from various bodies of medical practitioners and at the state and federal government levels as one subtopic. It also pertained to the separate subtopic of reevaluation of daily practice based on numbers of COVID-19 cases. This topic was mentioned 27 times amongst all respondents. The daily changes in practice guidelines seemed to not only be a topic of frustration for providers, but also one that they anticipate will not disappear quickly. Resources such as the American College of Obstetrics and Gynecology guidelines, New Mexico Department of Health guidelines, and reports from the New Mexico governor, seemed to be resources that were used universally by these providers.

Uncertainty
This theme included keywords such as: if, depends, unsure, don't know, and contingency plans. Uncertainty as a theme was mentioned 16 times amongst all respondents. The statements made by physicians regarding uncertainty about their practice and their ability to care for patients demonstrated that this was a prominent concern “Uncertainty of what will happen if/and when a surge of patients comes, daily readjustment to plans, confusion for staff and leadership as well as providers and families.”

Discussion
“Social determinants of health” and “health inequities” are now becoming part of the vernacular as the national media draws its attention to the Navajo Nation and the disproportionate impact COVID-19 has had on underserved, disenfranchised populations. Of the 174,000 people living on the Navajo Nation, approximately 30% lack running water, 30% lack electricity and 60% lack access to the internet. When, at its baseline, rural hospitals and clinics serve populations with enormous social inequities and health disparities, the further constraints created by COVID-19 can be a significant source of concern for physicians, patients and administrators. The worries and changes brought forward by the providers in this study showed that the baseline difficulties of rural medicine, resource shortages and social determinants of health that rural obstetrics practices face are enhanced and changed due to the COVID-19 pandemic.

Of the physicians surveyed for this study, all reported concerns of worsening resource limitations and increasing need to transfer patients to surrounding hospitals when beds or other equipment run out. For providers already struggling on a daily basis to provide the best, most equitable care for their patients, the new limitations brought on by COVID-19 are more than just challenging, they are devastating. Many providers feel their relationships with their patients are suffering as they have to move away from family-centered models and birthing practices and towards a much more separated, sterile-feeling environment. Many physicians are also feeling a great sense of loss and grief for their patients whose birthing experiences have changed drastically from what they had imagined. For physicians already practicing in difficult rural environments, these rapid changes and enormous uncertainty may lead to increasing moral injury and worsening overall physician wellness.

In the time of COVID-19, providers are forced to deal with resource shortages, changing relationships with patients, issues of their own well-being and much more. In order to protect themselves and their patients, they must abide by national, state, and institutional guidelines regarding the use of PPE, cancellation of elective procedures and limitation of visitors. While many physicians may feel that their hands are tied at this point in time, it is imperative that providers both in rural and non-rural settings, as well as the general public, become involved in patient advocacy to improve the health status of many New Mexicans. One way to do this is by advocating for increased funding for health services for New Mexicans. A large number of New Mexicans receive their medical care through the Indian Health Service (IHS), an organization that receives per capita health expenditure of $2,834 as compared $9,404 for Veterans’ Affairs (VA) and $12,744 for Medicaid.

Overall this study has shown that rural obstetrics providers are facing increased challenges during the COVID-19 pandemic. There has been changes in the way they work and their relationships with their patients. They have increased uncertainty about the future and there are concerns that rural obstetrics practices may be permanently altered. Primary care physicians should be aware of these current and potential changes as they take care of the health needs of obstetric and pediatric patients that give birth and are born in these rural hospitals.

The small sample size in this study is a major limitation and makes it difficult to draw general conclusions for the majority of New Mexico obstetrics providers, as well as those outside of New Mexico. In order to further our understanding of the difficulties of rural practice as well as the challenges brought on by COVID-19 in regards to rural OB providers, future studies should increase the sample size by interviewing additional rural providers across the state and nation. While all providers in this
study described similar practice settings, it is important that wide representation of smaller clinics and smaller hospitals that provide obstetrics care be included in a future survey. Expanding the study to include providers across the Navajo Nation (including Utah and Arizona) may provide additional information about how obstetrics practice is changing in rural areas due to COVID-19.

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Key Messages

COVID-19 has increased the challenges that rural obstetrics providers face, creating uncertainty and potentially creating permanent changes to their practice.

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Conflicts of interest

There are no conflicts of interest.

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