

ABSTRACT

Zulifqar, Bisma A., Providers' Satisfaction with Provision of Prenatal Care during the COVID-19 Pandemic. Master of Science (Medical Sciences Research Track), March 31, 2021, 61 pp.; 7 figures, 10 tables, 1 survey, bibliography.

Introduction/Background: Pregnant women are among a high-risk patient population for contracting COVID-19, but they still require adequate prenatal care throughout pregnancy to ensure optimal health for both the fetus and mother. Many prenatal appointments have transitioned to telemedicine visits due to the contagious nature of COVID-19. Provider satisfaction is an important metric to study as there is an association between provider satisfaction, the quality of care they provide, and patient satisfaction. Thus, understanding provider satisfaction with providing prenatal care via various visit types and factors that determine this satisfaction is fundamental, especially as there are limited studies on provider satisfaction with prenatal care.

Methods: A survey questionnaire was disseminated to prenatal care providers through email and online methods. The questionnaire was developed from an adapted provider satisfaction theoretical framework to evaluate health care professionals' satisfaction with delivering prenatal care using telemedicine. The adapted model assesses five main components: Professionals' Demographics, Care Setting, Intrinsic Factors, Motivations, and Experiences.

Results: Twenty-six physicians completed the survey questionnaire. Demographics factors, such as provider age and providers years in practice, compared with categories of audio telehealth and

video telehealth satisfaction did not have statistically significant differences. 100% of providers reported being satisfied with their overall ability to provide prenatal care, and 92.3% reported being satisfied with the overall prenatal care provided after the onset of the COVID-19 pandemic. 63.6% of providers reported satisfaction with their ability to provide appropriate prenatal care via telehealth. 60% of providers reported being satisfied with video telehealth prenatal care provided compared to 36% being satisfied with audio telehealth prenatal care provided. 48% of providers reported that they will continue to use telehealth prenatal care visits after the COVID-19 pandemic. Statistical analysis used to compare continuation of telehealth use in the future to certain demographic factors, provider age and provider years in practice, found that neither provider age nor years of practice were statistically different.

Conclusion: Prenatal care provider demographics, experiences, motivations, and intrinsic factors were not associated with providers' satisfaction of provision of prenatal care, and providers reported differing satisfaction between prenatal care visit types.

PROVIDERS' SATISFACTION WITH PROVISION OF PRENATAL CARE DURING THE
COVID-19 PANDEMIC

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PRACTICUM REPORT

Presented to the Graduate Council of the
Graduate School of Biomedical Sciences
University of North Texas Health Science Center at Fort Worth

In Partial Fulfillment of the Requirements

for the Degree of

MASTER OF SCIENCE

By

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Fort Worth, TX

March 31, 2021

ACKNOWLEDGEMENTS

I thank Dr. Kimberly Fulda for allowing me to join the NorTex team and being my mentor during this unconventional year. Her support, patience, knowledge, and guidance have been instrumental to my learning and growth as both a student and a researcher. What I have gained from this past year is just as unique as the year itself. For that, I cannot thank Dr. Fulda enough. I also thank my advisory committee members, Drs. Susan Franks and Lisa Hodge, for their support and guidance. Their insight, feedback, and kindness are incredibly appreciated.

Thank you, North Texas Primary Care Practice – Based Research Network (NorTex) – especially Dr. Anna Espinoza and Omair Muzaffar, for all of their hard work, feedback, and assistance. This project would not have been possible without them. I thank Dr. Shanna Combs for her feedback and constant support. Her input was vital for this project, and I am so appreciative of the time she has taken out over the past year to help this project be the best it could be. I also thank Andrew Crim for his time and assistance.

Thank you, University of North Texas Health Science Center, for allowing this opportunity. My time at UNTHSC has been transformative, and I am sincerely thankful for every faculty, staff member, and peer that has been a part of this chapter in my academic career.

I also thank my family and loved ones for their constant stream of love and support that has allowed me to focus on my academic journey. I am nothing without your support, love, and care.

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CHAPTER I. BACKGROUND AND LITERATURE

COVID-19 and Public Health Response

In mid-March 2020, the United States began to experience an increasing number of severe acute respiratory syndrome coronavirus-2, or SARS-CoV-2, cases. SARS-CoV-2 causes the symptoms associated with coronavirus disease 2019 (COVID-19). COVID-19 is believed to have originated from a seafood market in Wuhan, Hubei Province, China.⁴ The most common symptoms among those who are infected include fever, fatigue, and dry cough. Most people infected with COVID-19 develop mild to moderate respiratory illness and recover without intensive treatment. However, those with underlying health conditions are much more vulnerable to the virus and may develop a more severe form of the illness. COVID-19 is also incredibly infectious and contagious in nature, as it spreads through the saliva droplets or nasal discharge of an infected person when they cough or sneeze.⁵

COVID-19 was declared a pandemic by the World Health Organization (WHO) on March 11, 2020.⁶ The WHO stated that detecting, isolating, and treating cases early, along with contact tracing and social distancing could prevent further spread of the virus, especially as little is known about this novel virus, and there is no current vaccine or particular treatment.^{4,7}

Public health officials around the world have encouraged practices of social isolating and quarantining, along with other strategies, to prevent the spread of the virus. Major measures implemented to control the spread include travel restrictions, quarantining those who have

traveled to epicenters, postponement or cancelation of crowded public events, encouragement or enforcement of lockdown and social distancing protocols, closing of non-essential businesses, preparing medical facilities for a surge of patients and cases, closure/online modality shift of schools and universities, and implementation of telemedicine to name a few. The United States followed suit as the number of COVID-19 cases began to rise by restricting air travel, locking down, and limiting the maximum capacity of enclosed spaces among other precautions. Due to the highly contagious nature of the virus, the healthcare system has also dramatically changed.⁶

Changes to the Healthcare System

Healthcare is something that has dramatically changed in form and fashion since the onset of the COVID-19 pandemic. The entire system has shifted and adjusted to keep providers, patients, and other healthcare workers as safe as possible by aiming to prevent the spread of COVID-19. Minimizing the spread of COVID-19 would also work in preventing medical facility saturation due to an overload of infected patients, depleted resources, and being unequipped to treat all infected patients properly.

Many strict healthcare measures were taken, such as suspension of non-urgent elective surgeries (especially in areas with a high COVID-19 caseload), limiting in-patient and outpatient services to critically ill patients, and increasing critical care capacity. Some governments have increased financial support to healthcare systems and increased personal protective equipment reserves. Medical education clinical rounds had been initially paused or canceled, medical schools moved instruction to online platforms, and residency examinations were delayed.⁸

At the start of the pandemic, many medical specialties were advised to only provide in-person care in emergency cases.^{8,9} However, many specialties serve vulnerable and high-risk patient populations, such as cancer patients, chronically ill patients, organ transplant patients, pregnant patients, and so on, that still need regular access to care – even during a pandemic. As a result, many appointments, that would have previously taken place in a provider’s setting, were transitioned to a telehealth platform, which a patient could access from home.¹⁰

Telehealth

Telemedicine and telehealth are approaches to provide medical care through virtual and/or audio modalities. They involve performing clinical examinations at a distance. Video conferencing is often used for these clinical examinations. Special medical devices, such as electronic stethoscopes, tele-ophthalmoscopes, and video-otoscopes, can be used to perform clinical tests. Many observation-based clinical examinations may be performed via telemedicine.

The modern era of telemedicine began at Massachusetts General Hospital in 1968, hit a hiatus during the 1980s, and had a resurgence in the 1990s. Teleradiology and telepsychiatry were among the first modalities of telehealth. This care modality has continued to grow and refine since then. The expansion of the internet, development of digital communication, and reduction in the cost of technology have helped drive telemedicine. Quite a few components of care have long shifted to telemedicine, such as online patient portals, which allow patients to make appointments, access lab results, and communicate with providers virtually and directly.¹¹

One model of telehealth is a direct-to-consumer model in which pharmacies or big supermarkets have in-store telehealth enabled-primary care services. Patients can visit these in-store centers and receive virtual primary services from a provider located elsewhere.¹¹

Dual-purpose outpatient telemedicine clinics were created in 1995 and have operated within rural hospitals, community health centers, and correctional facilities. These clinics are standard outpatient clinics that have been remodeled to a hybrid standard + telemedicine clinic with a video conferencing setup and added mobile telemedicine carts, which allow for comfortable face-to-face videoconferencing.¹¹

Since 2015, telemedicine has shifted away from dedicated telemedicine clinics to individual mobile health thanks to the widespread availability of the internet, evolving computer literacy in the population, and widespread usage of smartphones.¹¹ This allows patients to receive care from anywhere. Though providers are physically in a different location, they can guide and supervise patients as they conduct self-performed clinical examinations. There is a wide variety of telehealth, ranging from strictly audio capabilities to advanced telemedicine technology that allows for more thorough and accurate examinations. Many hospitals have a variety of ways of implanting telemedicine throughout specialties. Telehealth is especially beneficial for hospitals in rural areas. Many private practices are also transitioning to more hybrid systems, allowing patients to choose between an in-person visit or a telehealth visit.¹¹

Telehealth services can also be delivered directly to patients through the internet or mobile devices. These services deliver a defined set of primary care services directly to patients,

wherever they would like, at a low, fixed cost. Traditional in-person clinical exams and their telemedicine counterparts have similar performance characteristics. Integrating telemedicine components may even improve conventional examination data. However, there are limitations – such as specific clinical examinations that require there to physical proximity between the patient and provider cannot be done via telemedicine.¹¹

The per-episode cost of a telehealth visit is lower than a comparable in-person visit, which allows the visit to be more affordable for patients but less profitable for providers.¹² Prior to the pandemic, there was much variation in whether health insurers covered all, if any, telemedicine visits. As a result, telehealth was not well utilized. However, the COVID-19 pandemic has pushed both commercial insurers and federal programs to cover telehealth. Many provider restrictions have also been lifted by state governments to allow adequate telemedicine practice.¹³ These factors have helped boost the accessibility of telehealth for both patients and providers.

With the onset of the COVID-19 pandemic, many healthcare systems and practices shifted to mostly telehealth modalities of care. However, many essential procedures and visits are not able to be done via telehealth exclusively. Many specialties, such as obstetrics and gynecology, still need to conduct examinations in the clinic, which may pose a risk for their vulnerable patients.

OBGYN and Prenatal Care

Obstetrician/Gynecologists are primary care physicians who provide women's care concerning reproductive health, pregnancy, and childbirth.¹⁴ As the COVID-19 pandemic pressured much of everyday life to be confined to the home, prenatal care has been among the medical services that cannot be completely virtual. Many changes have occurred across the OBGYN specialty around the nation to adapt to the pandemic.

Social distancing policies implemented across healthcare have urged providers to employ telemedicine to provide care to patients. However, no clear guidelines exist on how to use telemedicine in many specialties across the medical field – including Obstetrics and Gynecology. Some appointments allow for a virtual interface, while others require modifications to telemedicine or may require an in-person visit – regardless of the patient's COVID status.¹⁵

New York City became the epicenter for the United States in March 2020. Though most of the metropolis was locked down, OBGYN practices were still at full capacity, and women's health needs did not stop with the surge of the pandemic.¹⁶ Many hospitals and clinics separated workers into in-patient and outpatient teams to prevent the spread of the virus throughout the department. In-person outpatient visits were limited. Women only came to the hospital twice during the first trimester for screenings, scans, and other tests. Other prenatal visit components were conducted via telehealth. Operating room procedures were limited and moved to in-office methods, if possible. Telehealth follow-ups were implemented for other visits to limit hospital contact. For an in-person visit, patients did have to come to non-labor/delivery appointments alone.¹⁶

Other novel methods of providing prenatal care during the pandemic include a drive-through model of prenatal care developed by the Department of Obstetrics and Gynecology at Baylor College of Medicine in Houston. These drive-through visits included key elements that cannot be done through telehealth, such as blood pressure monitoring, fetal heart rate assessments, and selected ultrasound measurements.¹⁷

These various methods of providing care are being implemented due to the importance of prenatal care. Pregnant women are considered to be a high-risk population for COVID-19 but must also be closely monitored throughout gestation by several appointments. Prenatal care is profoundly important to ensure a healthy pregnancy and childbirth. Prenatal services include monitoring for conditions such as gestational diabetes, maternal vaccinations, and monitoring fetal heartbeat and proper development to name a few.¹ Babies born to women who do not receive prenatal care are three times more likely to have low birth weight and five times more likely to die compared to those who were born to mothers who received prenatal care.² Prenatal care is also vital to reduce the chances of maternal mortality.³ National guidelines currently recommend between 12 to 14 in-person prenatal visits. However, this recommendation has not changed since the 1930s.¹ Typically, a patient is seen once a month during weeks 4 to 28, twice a month during weeks 28 – 36, and once a week during weeks 36 – 40.¹⁸ Studies have investigated other frequencies and modalities of prenatal visits. One study suggests a 4/1/4 prenatal plan: four in-person visits, one ultrasound visit, and four virtual visits. Concerning the COVID-19 pandemic, fewer in-person visits will limit the risk of transmission of the virus between providers and patients.¹

There are quite a few advantages and disadvantages to telehealth prenatal care. Audio only prenatal visits allow for an increase in accessibility to care, especially for vulnerable patients with limited resources, but do not allow for a comprehensive examination. Previous studies have determined patient satisfaction with changes in care modalities since many providers have shifted to telemedicine during the COVID-19 pandemic. A particular study found that 99% of surveyed patients receiving prenatal care said that their needs are met with audio-only prenatal visits, but most patients prefer a combination of in-person and virtual visits.¹⁹ However, there have been limited studies on provider satisfaction with the prenatal care they are providing during the COVID-19 pandemic.

Satisfaction

Provider satisfaction, especially OBGYN provider satisfaction, is an under-studied topic though it is a highly important metric in our healthcare system. Provider satisfaction is associated with the quality of care they provide, being more effective in their work, and patient satisfaction. Dissatisfaction may lead to job turnover, early retirement, and poor patient adherence, among other things which would generate unnecessary costs and decreased patient care continuity. Provider satisfaction may also impact the future supply of providers.² Therefore, provider satisfaction with prenatal care may be associated with better prenatal care, reduced maternal mortality, reduced infant mortality, and better health outcomes for both mother and infant.

There are limited definitions of provider satisfaction. However, satisfaction with care can be defined as “when an individual’s expectations of treatment and care are met”.²⁰ This study

uses a framework adapted from Law Et al. (2019), which was published in The Journal of the American Osteopathic Association, to further understand provider satisfaction with prenatal care during the COVID-19 pandemic by looking into provider demographics, care settings, intrinsic factors, motivations, and experiences.¹²

Theoretical Model

In 2019, faculty at the Ohio University in Athens developed a conceptual framework to evaluate health care professionals' satisfaction in delivering telemedicine services and determined factors that can contribute to their satisfaction. An initial framework was developed, validated by 12 physicians, and then further revised to a final framework with five main components: Professionals' Demographics, Care Setting, Motivations, Experiences, and Overall Satisfaction. These components can contribute to satisfaction and dissatisfaction when delivering telemedicine services. This framework model allows identification of areas that can be improved in order to improve telemedicine care quality.¹²

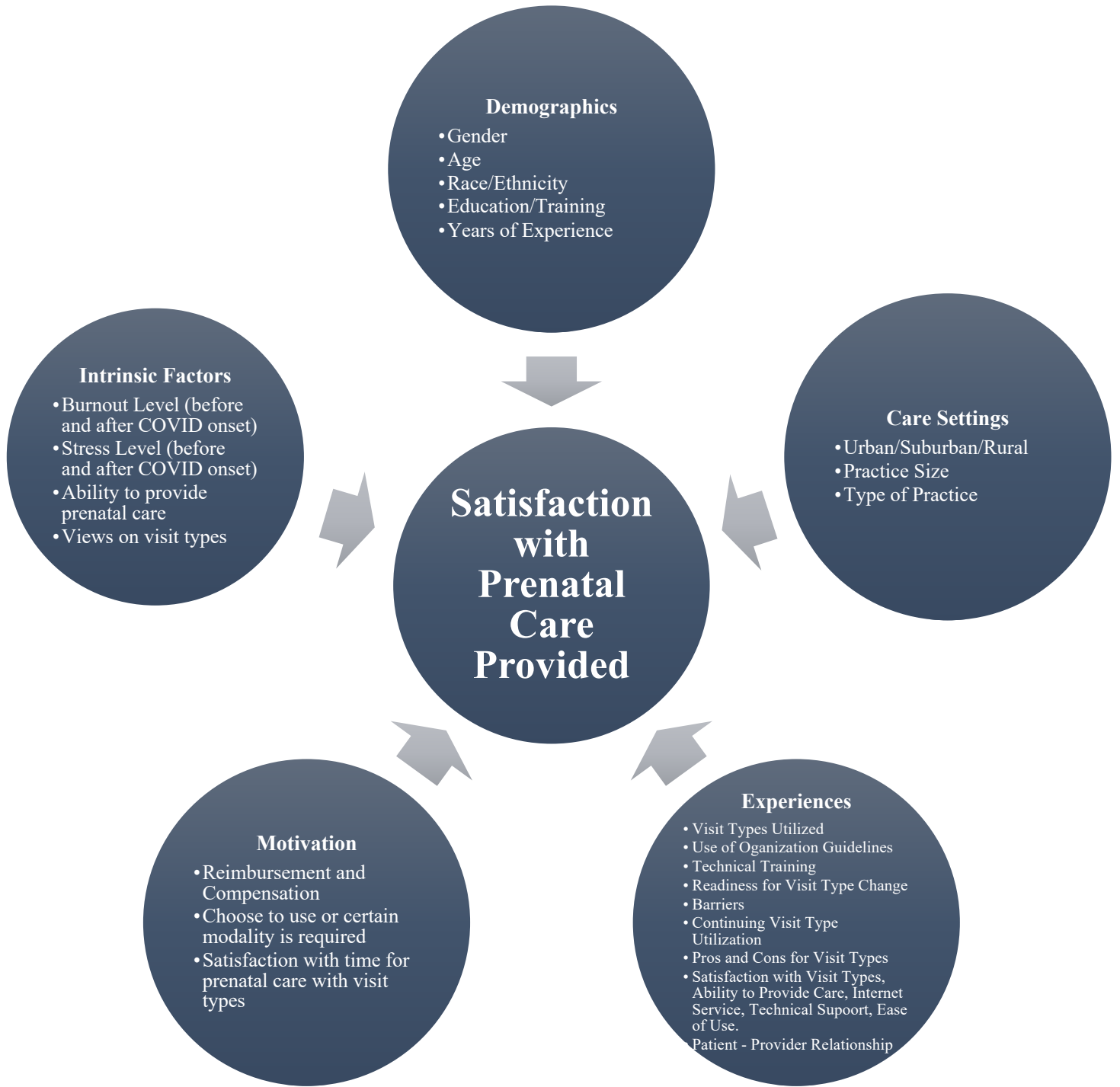


Figure 2: Model of Provider Satisfaction with Provided Prenatal Care during COVID-19 Pandemic.

CHAPTER II. RESEARCH PROJECT

Specific Aims

Patient satisfaction with prenatal care has been studied in various investigations. However, provider satisfaction with prenatal care and the factors which determine that satisfaction has been an understudied topic. Therefore, this investigation focused on prenatal care provider satisfaction with various prenatal visit types and factors that predict provider satisfaction with prenatal care by asking two questions. Research question 1: “What factors predict satisfaction with prenatal care provided during the COVID-19 pandemic as reported by OBGYN physicians and advanced practice providers?”. Hypothesis 1 asserted that physician and advanced practice provider demographics, care settings, intrinsic factors, motivations, and experiences predict satisfaction with prenatal care they provide during the COVID-19 pandemic. Research question 2: “Does satisfaction with prenatal care differ between visit types?”. Hypothesis 2 stated that physician and advanced practice provider reported satisfaction with provision of prenatal care does not differ by visit type (in-person, audio telehealth, video telehealth).

Significance

Pregnant women are among a high-risk patient population for contracting COVID-19. However, this population still requires adequate prenatal care throughout pregnancy in order to ensure optimal health for both the fetus and mother. Prenatal care is incredibly important as it encompasses monitoring for conditions (i.e. gestational diabetes), maternal vaccinations,

monitoring fetal heartbeat and development, and much more.¹ Babies born to women who did not receive prenatal care are three times more likely to have low birth weight and five times more likely to die compared to those born to mothers who did receive prenatal care.² Prenatal care is also imperative in reducing the chances of maternal mortality.³ National guidelines currently recommend between 12 to 14 in-person prenatal visits.¹ However, the contagious nature of COVID-19 has resulted in many prenatal appointments being transitioned to telemedicine visits. This allows patients to receive prenatal care while limiting virus transmission risk. Telemedicine also presents potential barriers for providers and patients, which may affect the prenatal care patients receive. Provider satisfaction is an important metric to study as there is an association between provider satisfaction, the quality of care they provide, and patient satisfaction.² Thus, understanding provider satisfaction with providing prenatal care via various visit types and factors that determine this satisfaction is fundamental, especially as there are limited studies on provider satisfaction with prenatal care. Assessing provider satisfaction with providing prenatal care may be associated with better prenatal care, reduced maternal mortality, reduced infant mortality, and better health outcomes for both mother and infant.

Materials and Methods

This study aimed to determine provider satisfaction with prenatal care they are providing during the COVID-19 pandemic. Due to minimal research in provider satisfaction with prenatal care, this study adapted a previously published provider satisfaction theoretical framework to evaluate health care professionals' satisfaction with delivering prenatal care using telemedicine. The adapted model assessed five main components: Professionals' Demographics, Care Setting,

Intrinsic Factors, Motivations, and Experiences. These five components and their relevant factors were then used to develop a survey questionnaire.

Professionals' demographics included providers' gender, age, race/ethnicity, education/training, and years of experiences. Care setting included practice location, size, and type. Intrinsic Factors included change in burnout levels, change in stress levels, ability to provide prenatal care, and views on visit. Reimbursement, compensation, choice of visit type, and satisfaction with prenatal care visit time accounted for motivations. Experiences included visit type utilized, technical training, pros and cons of visit types, satisfaction with various aspects of visit types, and patient-provider relationship. An OBGYN physician provided feedback on the prenatal provider satisfaction framework and survey questionnaire to ensure relevance.

The survey questionnaire was disseminated to the target population of prenatal care providers through online methods, including the national OBGYN association networks American College of Osteopathic Obstetrics and Gynecology (ACOOG) and American College of Obstetrics and Gynecology (ACOG). Formal emails inviting prenatal care providers to complete the survey questionnaire were forwarded to providers by members of ACOG and ACOOG. Thirty survey responses were recorded in this study. Four responses were not valid as the respondents did not agree to the study cover letter and consent (N=1) or did not continue further with the survey (N=3). Data analysis was conducted on the remaining 26 valid responses.

Inclusion Criteria

The surveyed population included prenatal care providers (i.e. OBGYN physicians, physician assistants, nurse practitioners, and certified midwife nurses) who provided prenatal care during the COVID-19 pandemic.

Exclusion Criteria

Anyone who did not provide prenatal care during the COVID-19 pandemic and/or is a non-English speaker was not surveyed.

Recruitment

Survey participants were recruited through various online modalities such as email, other professional OBGYN affiliated member organizations (i.e. ACOOG and ACOG), and online platforms through NorTex. The North Texas Primary Care Practice-Based Research Network (NorTex) is a primary care-based research network (PBRN) which functions as a collaborative effort to conduct primary care research about North Texas primary care practices, including family medicine, general internal medicine, pediatrics, geriatrics, and obstetrics/gynecology clinics.

Consent was obtained by a study cover letter at the beginning of the survey. Respondents could only continue to the survey if they agreed to the consent statement in the study cover letter. If respondents did not agree, the survey was terminated, and they were thanked for their time.

Statistical Analysis

Descriptive statistics were included for all variables. For hypothesis 1, the primary dependent variable of interest was satisfaction with prenatal care, and the primary independent variable of interest was factors that predict satisfaction, which included demographics, care settings, intrinsic factors, motivations, and experiences. For hypothesis 2, the primary dependent variable of interest was satisfaction with prenatal care, and the primary independent variable of interest was visit type, which included in-person, audio, and video.

Age and years in practice were compared across groups for audio telehealth prenatal care satisfaction and video telehealth prenatal care satisfaction. Responses to these variables were collapsed into very/somewhat satisfied and very/somewhat dissatisfied due to small sample size. Responses of “not applicable” were considered missing for analysis. Nonparametric tests were used to compare median values of age and years in practice due to their non-normal distribution. A Mann-Whitney U Test was used to compare median age and years in practice across audio telehealth satisfaction and video telehealth satisfaction. Another nonparametric tests, a Kruskal-Wallis Test, was run on data with three levels of provider responses to continuation of telehealth visits after the COVID-19 pandemic due to a lack of normal distribution. Dependent variables “Yes – Audio Telehealth Only”, “Yes – Video Telehealth Only”, and “Yes – Both” were recoded to “Yes – Both/Audio Telehealth Only”. Dependent variable “Undecided/I do not know” was recoded to “I do not know”, while dependent variable “No” did not need to recoding and remained the same. Analyses were considered statistically significant at $\alpha = 0.05$.

Results

One question this study sought to answer was “what factors predict satisfaction with prenatal care provided during the COVID-19 pandemic as reported by OBGYN physicians and advanced practice providers?”. It was hypothesized that physician and advanced practice provider demographics, care settings, intrinsic factors, motivations, and experiences predict satisfaction with prenatal care they provide during the COVID-19 pandemic.

Demographics

Of the 26 survey respondents, 75% were female and 25% were male. The average age reported was 46.84 years old, and the average years in practice reported was 16.21 years. Most respondents were of White or Caucasian background (N=20). All 26 respondent were physicians, most of whom practice in single specialty practices (N=21) and in urban or suburban areas (N = 24). Most providers also reported seeing more than 61 patients a week (Table 1). Upon comparing the median age and years in practice across categories of audio telehealth satisfaction and video telehealth satisfaction, no statistically significant difference was found. The distribution of age was found to be the same across categories of audio telehealth satisfaction (p-value = 0.491) and video telehealth satisfaction (p-value = 0.391). The distribution of practice years was also found to be the same across categories of audio telehealth satisfaction (p-value = 0.445) and video telehealth satisfaction (p-value = 0.445). Statistical analysis used to compare continuation of telehealth use in the future to provider age and years in practice found that neither provider age nor practice years were statistically different (p-values = 0.596 and 0.554 respectively).

Experiences

Provider experiences were also surveyed in the questionnaire. 99.95% of providers had strictly in-person patient encounters prior to the COVID-19 pandemic. After the initial onset of the COVID-19 pandemic, providers reported patient encounters being in-person visits 65.7% of the time, audio telehealth visits 12.5% of the time, and video telehealth visits 21.6% of the time. At the time of the survey questionnaire, 86% of current patient encounters were reported to be in-person, 4.2% were reported to be audio telehealth visits, and 7.2% were reported to be video telehealth visits (Table 2). Providers may have used more than one visit type.

The most utilized visit type reported was in-person visits (N=25). 88% of practices used guidelines from an organization to change the provision of prenatal care after the onset of the COVID-19 pandemic (N=22). 84% of providers reported not using telehealth to provide prenatal care prior to the onset COVID-19 pandemic (N=21). 65% of providers reported being very satisfied or somewhat satisfied with the process of changing prenatal visit types over the COVID-19 pandemic. 56% of providers reported being provided telehealth training opportunities (N=14), and 92.8% reported being very to somewhat satisfied with the opportunities (N=13). 64% percent of providers reported that their practice was equipped to change prenatal care visit types. About 50% of providers also reported facing barriers with changing prenatal care visit types. Barriers faced by providers include technology barriers, financial barriers, education barriers, and administrative barriers among other (Table 2). Technology barriers included internet speed/connection, equipment accessibility and issues, and lack of compatibility with electronic medical records (EMR). Administrative issues included HIPPA and security concerns, limited administrative involvement to appointment with EMR, and scheduling in new capacities

(Table 4). 76% of providers reported that their patients also faced barriers with changing prenatal visit types (N=19) (Table 3). Patient barriers included equipment and technology barriers, such as being unable to connect with a secure platform or unable to correctly use a blood pressure cuff, language barriers, and patient specific barriers, such as patient preparation for telehealth encounters and patients being uncomfortable with the necessary downloads and instructions (Table 4). 32% of providers reported that they will continue only video telehealth prenatal care after the COVID-19 pandemic; while 16% of providers reported that they will continue both audio and video telehealth prenatal care after the COVID-19 pandemic. Twenty percent of providers were undecided (Table 3).

Providers also reported pros and cons for visit types. In-person visits allowed more data, clearer communication, and better assessment of the patient, but it was also a potentially unnecessary exposure risk for patients, providers and staff. Audio telehealth visits allowed easier access to care, allowed access to care to COVID positive patients, and was better than nothing at all. However, audio visits also made examining a patient difficult and made it difficult to have a good conversation and develop a rapport with the patient. Video telehealth was reported to be very convenient for patients, very convenient for providers for visits that do not require an exam and provided more flexibility on where the patient and provider had to physically be. Video telehealth visits were also reported to be disconnected at times, have IT issues that frustrate both patient and provider, and were not as good as in-person visits (Table 5).

Motivation

Though 69.6% of providers reported that compensation was not equal for visit types, provider use of prenatal care visit type was reported to not be affected by reimbursement rate for most providers (N=15). 91.3% of providers were not required to use a certain visit type (N=21). For those required to use a certain visit type (N=2), they were required to use all three visit types (N=1). Of the providers who chose to use a certain visit type (N=17), almost all of them chose to use in-person visit types (N=16). All providers reported having enough time to provide prenatal care to patients via in-person visits either all or almost all of the time (N=12) or most of the time (N=13). 10 providers reported not utilizing audio telehealth prenatal care visits. Of those who did report of using audio telehealth visits (N=15), 60% of providers reported having enough time to provide prenatal care to patients either some of the time (N=7) or none of the time (N=2). 5 providers reported not utilizing video telehealth prenatal care visits. Of those who did report of using video telehealth visits (N=20), 65% providers reported having enough time to provide prenatal care to patients either all or almost all of the time (N=7) or most of the time (N=6) (Table 6).

Intrinsic Factors

Fifty-eight percent of providers (N=14) reported the same perception of burnout as compared to the perception of burnout before the onset of the COVID-19 pandemic, while 62.5% of providers (N=15) reported more stress as compared to the perception of stress before the onset of the COVID-19 pandemic. 79.2% of providers (N=19) perceived their ability to provide prenatal care since the onset of the COVID-19 pandemic had stayed the same; 4 providers perceived their ability to have decreased. All providers reported to have somewhat favorable

(N=2) to very favorable views (N=22) on in-person visits. 54.2% of providers reported to have somewhat unfavorable (N=4) to very unfavorable views (N=9) on audio telehealth visits, while 58.4% of providers reported to have somewhat favorable (N=10) to very favorable views (N=4) on video telehealth visits (Table 7.)

The second question this study sought to answer was “does satisfaction with prenatal care differ between visit types?” It was hypothesized that physician and advanced practice provider reported satisfaction with provision of prenatal care does not differ by visit type.

Provider General/Overall Satisfaction

All providers reported being somewhat satisfied (N=3) to very satisfied (N=23) with their patient-provider relationships for in-person visits. 50% of respondent reported being somewhat satisfied (N=5) to very satisfied (N=3) with their patient-provider relationships in audio telehealth visits, and 50% of respondent reported being somewhat dissatisfied (N=5) to very dissatisfied (N=3). 53.8% of providers reported being satisfied (N=14) with their patient-provider relationships in video visits. All providers (N=26) reported being satisfied with their overall ability to provide prenatal care, and 80.7% providers (N=24) reported being satisfied with the overall prenatal care provided after the onset of the COVID-19 pandemic (Table 8).

Provider Telehealth Modality Satisfaction

Thirty-six percent of providers reported being somewhat satisfied (N=6) to very satisfied (N=3) with the audio telehealth prenatal care they provided. 60% of providers were also somewhat satisfied (N=7) to very satisfied (N=8) with the video telehealth prenatal care they

provided. 64% of providers reported being able to provide appropriate prenatal care via telehealth (Table 9). Provider satisfaction from the median age group was also statistically analyzed. 60% of providers in the group who reported audio telehealth usage reported to be somewhat to very satisfied with audio telehealth, while 75% of providers in the group who reported video telehealth usage reported to be somewhat to very satisfied with video telehealth.

Provider Compensation Satisfaction

Almost all providers (N=25) reported that they were satisfied with in-person prenatal care visit compensation, while 70.6% of providers (N=13) who used audio telehealth for prenatal care visits reported they were dissatisfied. 57% of providers (N=12) who used video telehealth for prenatal care visits reported that they were satisfied with compensation (Table 10).

Discussion

This study aimed to assess what factors predict provider satisfaction with provision of prenatal care and if prenatal care provider satisfaction differed between various prenatal visit types during the COVID-19 pandemic. The main findings of this study are: 1) provider factors are not associated with provider satisfaction with provision of prenatal care and 2) provider satisfaction does differ with between various prenatal care visit types.

Provider age and years in practice were not associated with provider satisfaction with telehealth; both variables are the same across the various categories of continuation of telehealth visit use after the COVID-19 pandemic.

Providers reported more stress in comparison to before the COVID-19 pandemic. The effect of provider stress on provider satisfaction and provider performance may be worthwhile to examine in future studies. Providers reported having only favorable views for in-person visits while having mostly favorable views for video telehealth views and mostly unfavorable views for audio telehealth visits. Providers also reported utilizing in-person visits the most prior to the pandemic, after stay-at-home orders, and currently. A trend of in-person visit utilization > video telehealth visit utilization > audio telehealth visit utilization is observed to occur after the onset of the COVID-19 pandemic. This trend of visit utilization and view on visits provides insight into which visit types are preferred by providers. It would be worthwhile to compare provider views (and satisfaction) on visit types with provider utilization of visit types in future studies. Provider use of prenatal care visit type was reported to not be affected by reimbursement rate even though compensation was not equal for all visit types. Prior to the COVID-19 pandemic, there was much variation in whether health insurances covered telemedicine, and telehealth was not well utilized as a result. After the onset of the COVID-19 pandemic, many more commercial insurers and federal programs covered telehealth.¹³ However, there is still a large discrepancy as most providers reported a lack of equal compensation across all visit types. It would be worthwhile to investigate if a variety of prenatal care providers other than physicians also experience unequal compensation across visit types, if reimbursement rate affects their usage of prenatal care visit type, and which visit types are used or not used due to compensation or reimbursement rate.

Though most providers were equipped to change prenatal care visit type, providers reported that both their practice and their patients faced barriers with changing prenatal care visit

type. Providers reported to predominantly face technology related barriers, though it would be worthwhile to investigate what barriers are faced in comparison to different provider levels, practice locations, and patient populations. In a pediatric application of telemedicine, Burke et al. found that personal barriers to telemedicine use related to provider acceptance, patient acceptance, and personnel training. Though providers are found to be generally accepting of telemedicine, provider acceptance is the most difficult hurdle as providers are more cautious due to the technical problems and inadequate training that is associated with telehealth platforms.²¹ Providers reported that many of the barriers experienced by patients were also technology or equipment related barriers. It would be incredibly important to investigate what barriers patients face in comparison to their socioeconomic status (SES), education/literacy, technology literacy, location, age, and so on. Nonetheless, Holcomb et al. found that 99% of surveyed patients receiving prenatal care said that their needs are met with audio-only prenatal visits, but most patients prefer a combination of in-person and video telehealth visits.¹⁹ Most providers reported that they will continue to use some modality of telehealth to provide prenatal care after the COVID-19 pandemic. According to Contreras et al., telehealth utility after the COVID-19 pandemic is dependent on permanent regulatory solutions, including permanently expanding improvements in Medicare Advantage and private payer coverage in order to allow telemedicine reimbursement rates to be comparable to in-person visits.²² It would be worthwhile to investigate provider telehealth usage to provide prenatal care and the factors that contribute to telehealth use or no use to provide prenatal care after the COVID-19 pandemic.

Providers reported that they were overall most satisfied with in-person visits, followed by video telehealth, and then audio visits. In a study conducted by Bashshur et al., telehealth has

been found to be more accepted by patients than healthcare providers.²³ In regard to telehealth, more providers reported to be satisfied with video telehealth than audio telehealth. Providers reported benefits and drawbacks for each visit type. In-person visits allow providers to better assess the patient while also allowing a better patient-provider relationship. However, in-person visits also create a potential unnecessary exposure risk for patients, providers, and staff. This is especially a concern due to pregnant women being a part of the high-risk population for COVID-19.¹⁰ Providers also reported that some prenatal care visits do not necessitate an entire in-person visit. Though many patients feel reassured with frequent in-person visits to check blood pressure and fetal heart tones, these services are not evidence based. National guidelines currently recommend between 12 to 14 in-person prenatal visits. However, this recommendation has not changed since the 1930s. Peahl et al. suggest a 4/1/4 prenatal care plan: four in-person visits, one ultrasound visit, and four virtual visits. The four in-person visits include prenatal services that cannot be completed remotely: physical examinations, laboratory testing, vaccinations, and ultrasounds, while the four virtual visits include charting of pregnancy symptoms, vitals, and fetal heart rate with home monitoring tools.¹ Providers may currently be following a similar model; therefore, it would be worthwhile for national guidelines to consider these studies and incidences and adopt more appropriate and up-to-date guidelines. Providers reported that both audio and video telehealth visits allow for patients to make appointments if they cannot come into the office, allow easier access to care, and reduce the social risk of patient exposures. However, as Weinstein et al. also found in their study, telehealth visits are also limited by the inability to provide a physical examination when necessary.¹¹ Other specialties have also reported a lack of confidence in examinations conducted via telehealth. Hincapié et al. found that 92% of surveyed psychiatrists reported a reduction in diagnostic confidence due to inability to

evaluate patient nonverbal cues.²⁴ While video telehealth visits often have technical issues that lead to both provider and patient frustration, audio visits do not allow for the provider to see the patient which leads to the loss of visual cues and ability to see what might be ailing the patient. Nonetheless, most providers reported being satisfied with the prenatal care they provided after the onset of the pandemic and with their ability to provide prenatal care via telehealth. Most providers also reported being satisfied with various facets of telehealth (i.e., internet service, equipment, technical support, ease of use). It would be worthwhile to explore if providers practicing from urban locations reported a higher satisfaction than those practicing in rural locations due to difference in resources between the two. It would also be worthwhile to explore what specific telehealth services and companies providers report to be more satisfied with in hopes of allowing all providers a level playing field for providing telehealth. Providers reported to be most satisfied with prenatal care visit compensation in regard to in-person visits followed by video telehealth visits. Most providers were not satisfied with audio telehealth prenatal care visit compensation. Compensation discrepancies between visit type are not unique to prenatal care or the OBGYN specialty. Within surgical specialties, audio telehealth visits had a three times smaller reimbursement rate compared to video telehealth visits of the same caliber.²² It would be worthwhile to investigate how satisfaction with visit type compensation compares to provider reporting of whether reimbursement rates affect the use of prenatal care visit type.

As this was a pilot study that utilized a survey questionnaire, there are some methodological considerations. First, the small sample size of the study may have led to less representative results, voluntary response bias, and uncoverage bias. Despite the small sample size, these results provide interesting preliminary information on prenatal provider satisfaction.

Second, self-reporting bias may have led to results that are not completely accurate. However, self-reporting does allow the study to gather the respondents' perspectives and opinion. Third, though this study aimed to minimize selection bias by disseminating the survey via the internet, use of the NorTex provider list may have contributed to some degree of selection bias. Fourth, time was a limitation as this was a pilot study. More time would probably allow for more provider responses and data. Fifth, the survey questionnaire did not assess provider satisfaction with in-person prenatal care provided. These data would be valuable, especially to compare to other visit types. Sixth, all participating providers were physicians. Results may have been different if other prenatal care providers had participated in the survey. Lastly, this study did not have enough data to compare telehealth satisfaction and practice locations. Few providers reported to practice in a rural location. As a result, there was not enough data to determine if provider location has an effect on provider satisfaction. Rural areas often have less reliable internet and cellular connection so this may be a worthwhile factor to examine in future studies. Future considerations could also analyze the two variables in order to assess any difference in telehealth satisfaction between practice locations.

SUMMARY AND CONCLUSIONS

The onset of the coronavirus-19 pandemic dramatically changed everyday life. The healthcare system had to quickly adapt in order to keep both patients and healthcare workers safe. Changing visit types from in-person to telemedicine was among the numerous changes that occurred. Telemedicine allowed healthcare providers to provide care to a patient located virtually anywhere. This shift in visit type was especially important for specialties with high-risk patient populations, such as pregnant women, who need consistent access to care. Prenatal care is a vital component in maintaining a healthy pregnancy and requires frequent obstetrics visits over the period of gestation. The rapid change in visit type established the need to assess provider satisfaction with the care they provide. Provider satisfaction is an important measure for quality assurance of healthcare services because it is associated with the quality of provided care, more effective work, and patient satisfaction. This study aimed to assess if prenatal care provider satisfaction differed between various prenatal visit types and what factors predicted provider satisfaction with provision of prenatal care during the COVID-19 pandemic. It was hypothesized that OBGYN provider satisfaction with prenatal care did not differ between visit types, and OBGYN providers were satisfied with the prenatal care they were providing during the COVID-19 pandemic. These aims were accomplished by disseminating surveys to healthcare professionals who provided prenatal care.

In conclusion, prenatal care provider factors were not associated with providers' satisfaction of provision of prenatal care, and providers reported differing satisfaction between prenatal care visit types. These findings indicate that provider demographics, experiences,

motivations, and intrinsic factors are not associated with predicting satisfaction with prenatal care provided. Future studies include examining: 1) if providers practicing from urban locations reported a higher satisfaction than those practicing in rural locations due to difference in resources between the two, 2) what specific telehealth services and companies providers report to be more satisfied with in hopes of allowing all providers a level playing field for providing telehealth, 3) if a variety of prenatal care providers other than physicians also experience unequal compensation across visit types, if reimbursement rate affects their usage of prenatal care visit type, and which visit types are used or not used due to compensation or reimbursement rate, 4) the effect of provider stress on provider satisfaction and provider performance, 5) what telehealth related barriers are faced in comparison to different provider levels, practice locations, and patient populations, 6) what barriers patients face in comparison with their socioeconomic status (SES), education/literacy, technology literacy, location, age, and so on, and 7) investigate provider telehealth usage to provide prenatal care and the factors that contribute to telehealth use or no use to provide prenatal care after the COVID-19 pandemic. This study contributed to our understanding of prenatal care provider satisfaction.

Table 1. Demographic Characteristics of Prenatal Care Providers

| | | <i>Mean</i> | <i>Std. Dev.</i> |
|--|--|-------------|------------------|
| <i>Age</i> | | 46.84 | 8.994 |
| <i>Years in Practice</i> | | 16.21 | 9.040 |
| | | <i>N</i> | <i>%</i> |
| <i>Gender</i> | | | |
| | <i>Female</i> | 18 | 75 |
| | <i>Male</i> | 6 | 25 |
| <i>Racial Background</i> | | | |
| | <i>American Indian or Alaskan Native</i> | 1 | 3.8 |
| | <i>Asian</i> | 1 | 3.8 |
| | <i>Black or African American</i> | 1 | 3.8 |
| | <i>Hispanic</i> | 0 | 0 |
| | <i>Latinx</i> | 1 | 3.8 |
| | <i>Native Hawaiian or Pacific Islander</i> | 0 | 0 |
| | <i>White or Caucasian</i> | 20 | 80.8 |
| | <i>Other</i> | 1 | 3.8 |
| <i>Provider Status</i> | | | |
| | <i>Certified Nurse Midwife (CNM)</i> | 0 | 0 |
| | <i>Nurse Practitioner (NP)</i> | 0 | 0 |
| | <i>Physician’s Assistant (PA)</i> | 0 | 0 |
| | <i>Physician</i> | 26 | 100 |
| <i>Board Certification</i> | | | |
| | <i>Yes</i> | 25 | 96.2 |
| | <i>No</i> | 0 | 0 |
| | <i>Not Applicable</i> | 1 | 3.8 |
| <i>Practice Location</i> | | | |
| | <i>Urban</i> | 14 | 53.8 |
| | <i>Suburban</i> | 10 | 38.5 |
| | <i>Rural</i> | 2 | 7.7 |
| <i>Number of Patient Seen in a Week</i> | | | |
| | <i>0 – 15</i> | 0 | 0 |
| | <i>16 – 30</i> | 0 | 0 |
| | <i>31 – 60</i> | 6 | 23.1 |
| | <i>> 61</i> | 20 | 76.9 |
| <i>Practice Setting/Type</i> | | | |
| | <i>Single Specialty</i> | 21 | 80.8 |
| | <i>Multi-Specialty</i> | 5 | 19.2 |

Table 2. Visit type for patient encounters prior to COVID-19 pandemic, immediately following stay-at-home orders, and currently.

| | <i>N</i> | <i>Minimum</i> | <i>Maximum</i> | <i>Mean</i> | <i>Std. Dev.</i> |
|---|----------|----------------|----------------|-------------|------------------|
| <i>In-Person Patient Encounters</i> | | | | | |
| <i>Pre-COVID</i> | 24 | 100 | 100 | 100 | ± 0 |
| <i>Immediately following Stay-at-Home Orders</i> | 24 | 0 | 100 | 65.7 | ± 29.368 |
| <i>Currently</i> | 24 | 1 | 100 | 86 | ± 22.890 |
| <i>Audio Telehealth Patient Encounters</i> | | | | | |
| <i>Pre-COVID</i> | 20 | 0 | 1 | .05 | ± 0.224 |
| <i>Immediately following Stay-at-Home Orders</i> | 21 | 0 | 75 | 12.5 | ± 19.190 |
| <i>Currently</i> | 20 | 0 | 25 | 4.2 | ± 7.638 |
| <i>Video Telehealth Patient Encounters</i> | | | | | |
| <i>Pre-COVID</i> | 20 | 0 | 0 | 0 | ± 0 |
| <i>Immediately following Stay-at-Home Orders</i> | 22 | 0 | 60 | 21.6 | ± 21.187 |
| <i>Currently</i> | 21 | 0 | 30 | 7.2 | ± 10.386 |

Note: Total responses may not equal to 26 due to missing values.

Table 3. Provider Experiences

| | N | % |
|--|----|------|
| <i>Overall Most Utilized Visit Type</i> | | |
| <i>In-Person</i> | 25 | 100 |
| <i>Audio Telehealth</i> | 0 | 0 |
| <i>Video Telehealth</i> | 0 | 0 |
| <i>Practice Used Guidelines from an Organization to Change Provision of Prenatal Care after COVID-19 Pandemic Onset</i> | | |
| <i>Yes</i> | 22 | 88 |
| <i>No</i> | 3 | 12 |
| <i>Telehealth Used to Provide Prenatal Care prior to COVID-19 Pandemic Onset</i> | | |
| <i>Yes</i> | 4 | 16 |
| <i>No</i> | 21 | 84 |
| <i>Satisfaction with the Process of Changing Prenatal Visit Type over COVID-19 Pandemic</i> | | |
| <i>Very Satisfied</i> | 4 | 20 |
| <i>Somewhat Satisfied</i> | 9 | 45 |
| <i>Somewhat Dissatisfied</i> | 6 | 30 |
| <i>Very Dissatisfied</i> | 1 | 5 |
| <i>Provided Telehealth Training Opportunities</i> | | |
| <i>Yes</i> | 14 | 56 |
| <i>No</i> | 11 | 44 |
| <i>Satisfaction with Telehealth Training Opportunities</i> | | |
| <i>Very Satisfied</i> | 4 | 28.6 |
| <i>Somewhat Satisfied</i> | 9 | 64.2 |
| <i>Somewhat Dissatisfied</i> | 1 | 7.2 |
| <i>Very Dissatisfied</i> | 0 | 0 |
| <i>Practice was Equipped to Change Prenatal Care Visit Type</i> | | |
| <i>Yes</i> | 16 | 64 |
| <i>No</i> | 9 | 36 |
| <i>Practice Faced Barriers with Changing Prenatal Visit Type</i> | | |
| <i>Yes</i> | 13 | 52 |
| <i>No</i> | 12 | 48 |
| <i>Patients Faced Barriers with Changing Prenatal Visit Type</i> | | |
| <i>Yes</i> | 19 | 76 |
| <i>No</i> | 6 | 24 |
| <i>Continuation of Telehealth Prenatal Care Visits after COVID-19 pandemic</i> | | |
| <i>Yes – Audio Telehealth Only</i> | 0 | 0 |
| <i>Yes – Video Telehealth Only</i> | 8 | 32 |
| <i>Yes – Both</i> | 4 | 16 |
| <i>No</i> | 8 | 32 |
| <i>Undecided/Do not know</i> | 5 | 20 |

Note: Total responses may not equal to 26 due to missing values.

Table 4. Provider Reported Barriers

Barriers Faced by Practice

- **Technology Barriers**
 - Acquiring and setting cameras and appropriate technology to perform video calls
 - Equipment issues
 - Lack of video cameras; limited to audio telehealth
 - Technology flaws
 - Technology slowing things down
 - Occasional audio and/or video difficulties
 - Internet speeds/connection
 - Not standardized and not easily compatible with electronic medical records (EMR)
- **Financial Barriers**
 - Reimbursement
- **Education Related Barriers**
 - For providers and patients on use
 - Knowledge deficit
 - Figuring out platforms
- **Administrative Barriers**
 - HIPPA; security
 - Enlisting infrastructure for privacy-approved video conferencing
 - Scheduling in new capacities
 - Administrative involvement to appointments was limited with EMR
- **Patient Related Barriers**
 - Patients unable to connect
 - Video visits are often too burdensome for patients to set up
- **Other Barriers**
 - Care provider attitudes

Barriers Faced by Patients

- **Equipment/Technology Barriers**
 - Ability to get blood pressure cuff
 - Access to compatible phones or computer
 - Access to internet/internet speed
 - Connectivity
 - Not able to connect with a secure platform
 - IT issues/technical difficulties
- **Language Barriers**
 - Language
- **Patient Specific Barriers**
 - Patient preparation for telehealth encounters
 - Uncomfortable with necessary downloads and instructions

Table 5. Provided Reported Pros and Cons of Visit Types

| <i>Pros</i> | |
|--------------------------------|--|
| <i>In-Person Visits</i> | <ul style="list-style-type: none"> • Able to better assess patient; allows for hands on assessment; Better for hearing heartbeat, measuring vitals, and other physical assessments • Patients feel better cared for • Better building of rapport; allows for better patient and provider connection • Clearer communication • Faster visit • More data |
| <i>Audio Telehealth Visits</i> | <ul style="list-style-type: none"> • Ability to reduce social risk of patient exposure • Allows patients to make an appointment if they cannot come into the office • Allow easier access to care • Allow access to care to COVID-19 positive patients • More convenient for visits that do not require an exam • Better than nothing at all • Convenient for postpartum moms during cold winter months when it is not easy to get out of the house with a newborn. |
| <i>Video Telehealth Visits</i> | <ul style="list-style-type: none"> • Ability to reduce social risk of patient exposure; safe way to avoid exposure • Allows patients to make an appointment if they cannot come into the office • Very convenient for patients • Allow easier access to care • No commute • More convenient for visits that do not require an exam • Superior to audio • Provided more flexibility on where the patient and provider had to physically be. |
| <i>Cons</i> | |
| <i>In-Person Visits</i> | <ul style="list-style-type: none"> • Potential unnecessary exposure risk for patients, providers, and staff • Seems overkill for routine OBs • Patients running late and causing a snowball effect of delaying visits • Mask wearing requires getting used to in respect to facial expression cues |
| <i>Audio Telehealth Visits</i> | <ul style="list-style-type: none"> • Difficult to have good conversation and develop rapport. • Limit the ability to provide physical exam when necessary; cannot examine patients physically or hear heart tones; difficult to “examine” patient |

Video Telehealth Visits

- Unable to see patient; loss of visual cues and ability to see what might be ailing a patient
- Sometimes patient NEEDS to be in the office and this is only discovered during the telehealth visit (i.e. concern of decreased fetal movement)
- Seems disconnected at times; not as personal or reassuring
- Limit the ability to provide physical exam when necessary; unable to perform a physical exam or hear FHT; difficult to “examine” patient
- Less data communication
- Not as good as in person visits
- Sometimes patient NEEDS to be in the office and this is only discovered during the telehealth visit (i.e. concern of decreased fetal movement)
- Patient and provider frustrated with IT issues

Table 6. Provider Motivation

| | N | % |
|--|----|------|
| <i>Reimbursement Rate affected Use of Prenatal Care Visit Type</i> | | |
| Yes | 9 | 37.5 |
| No | 15 | 62.5 |
| <i>Equal Compensation for Visit Types</i> | | |
| Yes | 7 | 30.4 |
| No | 16 | 69.6 |
| <i>Required to Use Certain Visit Types</i> | | |
| Yes | 2 | 8.7 |
| No | 21 | 91.3 |
| <i>Visit Types Required to Used</i> | | |
| In-Person Visits | 0 | 0 |
| Audio Visits | 0 | 0 |
| Video Visits | 0 | 0 |
| Multiple Visit Types | 1 | 100 |
| Not Applicable | 0 | 0 |
| <i>Choose to Use Certain Visit Types</i> | | |
| Yes | 17 | 70.8 |
| No | 7 | 29.2 |
| <i>Visit Types Chosen to Use</i> | | |
| In-Person Visits | 16 | 100 |
| Audio Visits | 0 | 0 |
| Video Visits | 0 | 0 |
| Not Applicable | 0 | 0 |
| <i>Enough Time to Provide Prenatal Care to Patients via In-Person Visits</i> | | |
| All or Almost All of the Time | 12 | 48 |
| Most of the Time | 13 | 52 |
| Some of the Time | 0 | 0 |
| None or almost none of the time | 0 | 0 |
| Visit Type not Utilized | 0 | 0 |
| <i>Enough Time to Provide Prenatal Care to Patients via Audio Telehealth Visits</i> | | |
| All or Almost All of the Time | 3 | 12 |
| Most of the Time | 3 | 12 |
| Some of the Time | 7 | 28 |
| None or almost none of the time | 2 | 8 |
| Visit Type not Utilized | 10 | 40 |
| <i>Enough Time to Provide Prenatal Care to Patients via Video Telehealth Visits</i> | | |
| All or Almost All of the Time | 7 | 28 |
| Most of the Time | 6 | 24 |
| Some of the Time | 4 | 16 |
| None or almost none of the time | 3 | 12 |
| Visit Type not Utilized | 5 | 20 |

Note: Total responses may not equal to 26 due to missing values.

Table 7. Intrinsic Factors

| | <i>N</i> | <i>%</i> |
|---|----------|----------|
| <i>Current Perception of Burnout Compared to Perception before COVID-19 Pandemic</i> | | |
| <i>More</i> | 10 | 41.7 |
| <i>Same</i> | 14 | 58.3 |
| <i>Less</i> | 0 | 0 |
| <i>Current Perception of Stress Compared to Perception before COVID-19 Pandemic</i> | | |
| <i>More</i> | 15 | 62.5 |
| <i>Same</i> | 8 | 33.3 |
| <i>Less</i> | 1 | 4.2 |
| <i>Perceived Ability to Provide Prenatal Care since COVID-19 Pandemic Onset</i> | | |
| <i>Improved</i> | 1 | 4.2 |
| <i>Stayed the Same</i> | 19 | 79.2 |
| <i>Decreased</i> | 4 | 16.7 |
| <i>Views on In-Person Visits</i> | | |
| <i>Very Favorable</i> | 22 | 91.7 |
| <i>Somewhat Favorable</i> | 2 | 8.3 |
| <i>Somewhat Unfavorable</i> | 0 | 0 |
| <i>Very Unfavorable</i> | 0 | 0 |
| <i>Unsure</i> | 0 | 0 |
| <i>Views on Audio Telehealth Visits</i> | | |
| <i>Very Favorable</i> | 2 | 8.3 |
| <i>Somewhat Favorable</i> | 5 | 20.8 |
| <i>Somewhat Unfavorable</i> | 4 | 16.7 |
| <i>Very Unfavorable</i> | 9 | 37.5 |
| <i>Unsure</i> | 4 | 16.7 |
| <i>Views on Video Telehealth Visits</i> | | |
| <i>Very Favorable</i> | 4 | 16.7 |
| <i>Somewhat Favorable</i> | 10 | 41.7 |
| <i>Somewhat Unfavorable</i> | 3 | 12.5 |
| <i>Very Unfavorable</i> | 6 | 25 |
| <i>Unsure</i> | 1 | 4.2 |

Note: Total responses may not equal to 26 due to missing values.

Table 8. Provider General/Overall Satisfaction

| | <i>N</i> | <i>%</i> |
|---|----------|----------|
| <i>Patient-Provider Relationship (In-Person)</i> | | |
| <i>Very Satisfied</i> | 23 | 88.5 |
| <i>Somewhat Satisfied</i> | 3 | 11.5 |
| <i>Somewhat Dissatisfied</i> | 0 | 0 |
| <i>Very Dissatisfied</i> | 0 | 0 |
| <i>Not Applicable</i> | 0 | 0 |
| <i>Patient-Provider Relationship (Audio Telehealth)</i> | | |
| <i>Very Satisfied</i> | 3 | 11.5 |
| <i>Somewhat Satisfied</i> | 5 | 19.2 |
| <i>Somewhat Dissatisfied</i> | 5 | 19.2 |
| <i>Very Dissatisfied</i> | 3 | 11.5 |
| <i>Not Applicable</i> | 10 | 38.5 |
| <i>Patient-Provider Relationship (Video Telehealth)</i> | | |
| <i>Very Satisfied</i> | 7 | 26.9 |
| <i>Somewhat Satisfied</i> | 7 | 26.9 |
| <i>Somewhat Dissatisfied</i> | 4 | 15.4 |
| <i>Very Dissatisfied</i> | 2 | 7.7 |
| <i>Not Applicable</i> | 6 | 23.1 |
| <i>Overall Ability to Provide Prenatal Care</i> | | |
| <i>Very Satisfied</i> | 21 | 80.8 |
| <i>Somewhat Satisfied</i> | 5 | 19.2 |
| <i>Somewhat Dissatisfied</i> | 0 | 0 |
| <i>Very Dissatisfied</i> | 0 | 0 |
| <i>Not Applicable</i> | 0 | 0 |
| <i>Overall Prenatal Care Provided after onset of COVID-19 Pandemic</i> | | |
| <i>Very Satisfied</i> | 16 | 61.5 |
| <i>Somewhat Satisfied</i> | 8 | 30.8 |
| <i>Somewhat Dissatisfied</i> | 2 | 7.7 |
| <i>Very Dissatisfied</i> | 0 | 0 |
| <i>Not Applicable</i> | 0 | 0 |

Table 9. Provider Telehealth Modality Satisfaction

| | N | % |
|---|----|------|
| <i>Audio Telehealth Prenatal Care Provided</i> | | |
| <i>Very Satisfied</i> | 3 | 12 |
| <i>Somewhat Satisfied</i> | 6 | 24 |
| <i>Somewhat Dissatisfied</i> | 3 | 12 |
| <i>Very Dissatisfied</i> | 3 | 12 |
| <i>Not Applicable</i> | 10 | 40 |
| <i>Video Telehealth Prenatal Care Provided</i> | | |
| <i>Very Satisfied</i> | 8 | 32 |
| <i>Somewhat Satisfied</i> | 7 | 28 |
| <i>Somewhat Dissatisfied</i> | 3 | 12 |
| <i>Very Dissatisfied</i> | 2 | 8 |
| <i>Not Applicable</i> | 5 | 20 |
| <i>Ability to Provide Appropriate Prenatal Care via Telehealth</i> | | |
| <i>Very Satisfied</i> | 3 | 13.6 |
| <i>Somewhat Satisfied</i> | 11 | 50 |
| <i>Somewhat Dissatisfied</i> | 6 | 27.3 |
| <i>Very Dissatisfied</i> | 2 | 9.1 |
| <i>Not Applicable</i> | 0 | 0 |
| <i>Telehealth Internet Service</i> | | |
| <i>Very Satisfied</i> | 7 | 31.8 |
| <i>Somewhat Satisfied</i> | 12 | 54.5 |
| <i>Somewhat Dissatisfied</i> | 3 | 13.6 |
| <i>Very Dissatisfied</i> | 0 | 0 |
| <i>Not Applicable</i> | 0 | 0 |
| <i>Telehealth Equipment</i> | | |
| <i>Very Satisfied</i> | 7 | 33.3 |
| <i>Somewhat Satisfied</i> | 8 | 38.1 |
| <i>Somewhat Dissatisfied</i> | 5 | 23.8 |
| <i>Very Dissatisfied</i> | 1 | 4.8 |
| <i>Not Applicable</i> | 0 | 0 |
| <i>Telehealth Technical Support</i> | | |
| <i>Very Satisfied</i> | 5 | 25 |
| <i>Somewhat Satisfied</i> | 5 | 25 |
| <i>Somewhat Dissatisfied</i> | 8 | 32 |
| <i>Very Dissatisfied</i> | 2 | 8 |
| <i>Not Applicable</i> | 0 | 0 |
| <i>Telehealth Each of Use</i> | | |
| <i>Very Satisfied</i> | 5 | 22.7 |
| <i>Somewhat Satisfied</i> | 10 | 45.5 |
| <i>Somewhat Dissatisfied</i> | 5 | 22.7 |
| <i>Very Dissatisfied</i> | 2 | 9.1 |
| <i>Not Applicable</i> | 0 | 0 |

Note: Total responses may not equal to 26 due to missing values.

Table 10. Provider Compensation Satisfaction

| | <i>N</i> | <i>%</i> |
|---|----------|----------|
| <i>In-Person Prenatal Care Visit Compensation</i> | | |
| <i>Very Satisfied</i> | 6 | 23.1 |
| <i>Somewhat Satisfied</i> | 19 | 73.1 |
| <i>Somewhat Dissatisfied</i> | 1 | 3.8 |
| <i>Very Dissatisfied</i> | 0 | 0 |
| <i>Not Applicable</i> | 0 | 0 |
| <i>Audio Telehealth Prenatal Care Visit Compensation</i> | | |
| <i>Very Satisfied</i> | 2 | 7.7 |
| <i>Somewhat Satisfied</i> | 3 | 11.5 |
| <i>Somewhat Dissatisfied</i> | 7 | 26.9 |
| <i>Very Dissatisfied</i> | 5 | 19.2 |
| <i>Not Applicable/Visit Type not Utilized</i> | 9 | 34.6 |
| <i>Video Telehealth Prenatal Care Visit Compensation</i> | | |
| <i>Very Satisfied</i> | 5 | 19.2 |
| <i>Somewhat Satisfied</i> | 7 | 26.9 |
| <i>Somewhat Dissatisfied</i> | 8 | 30.8 |
| <i>Very Dissatisfied</i> | 1 | 3.8 |
| <i>Not Applicable/Visit Type not Utilized</i> | 5 | 19.2 |

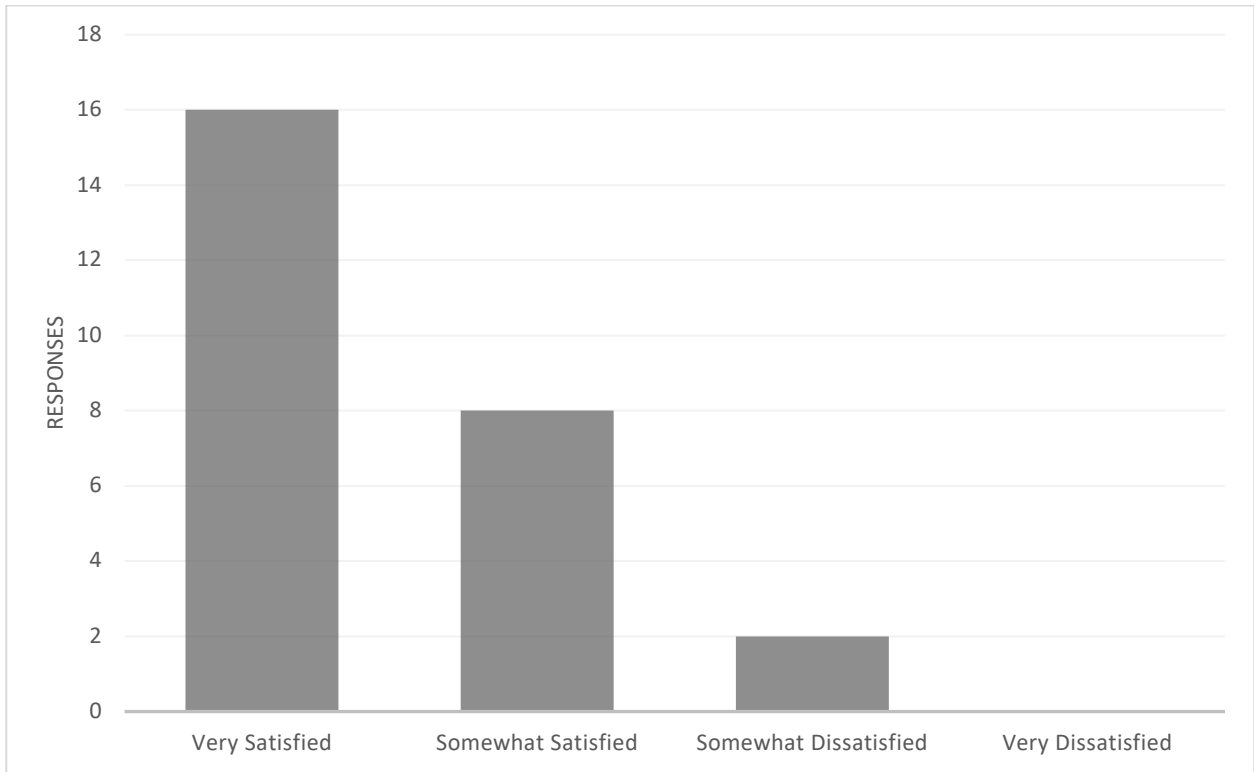


Figure 2. Prenatal Care Provider Satisfaction with Overall Prenatal Care Provided after onset of COVID-19 Pandemic.

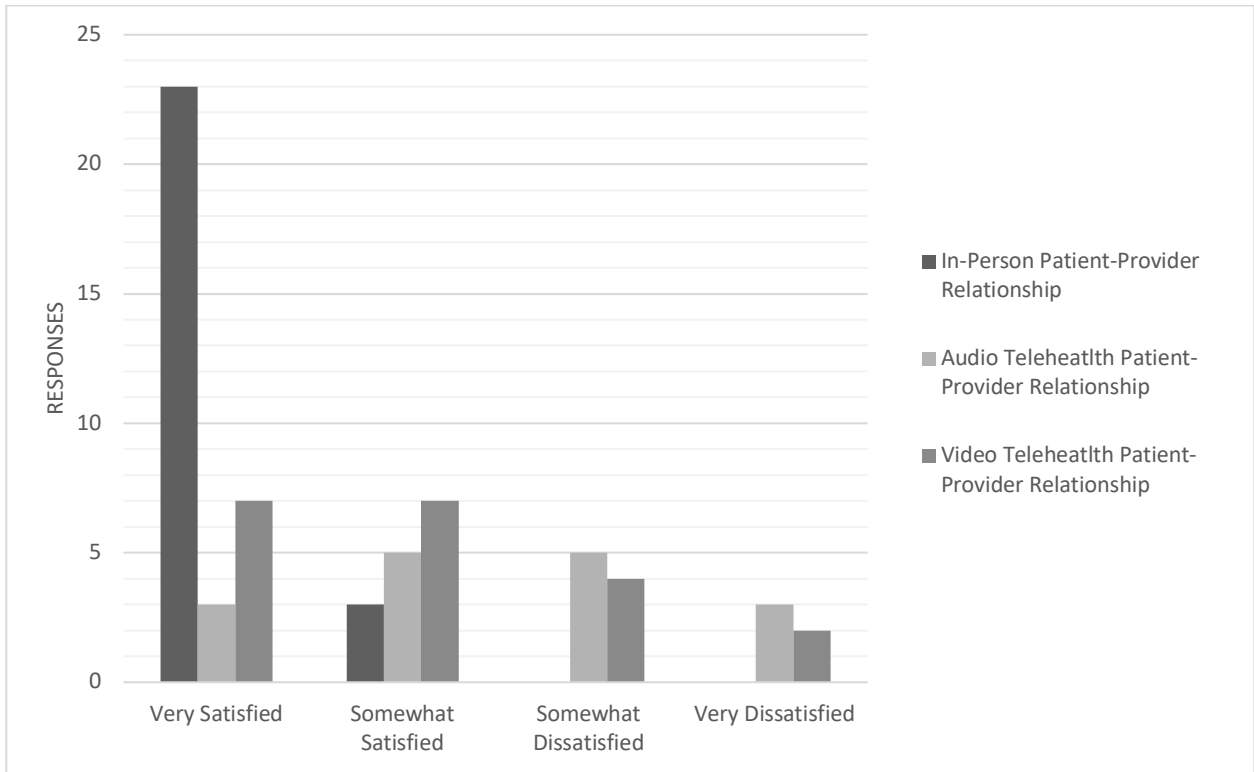


Figure 3. Prenatal Care Provider Satisfaction with Patient-Provider Relationship.

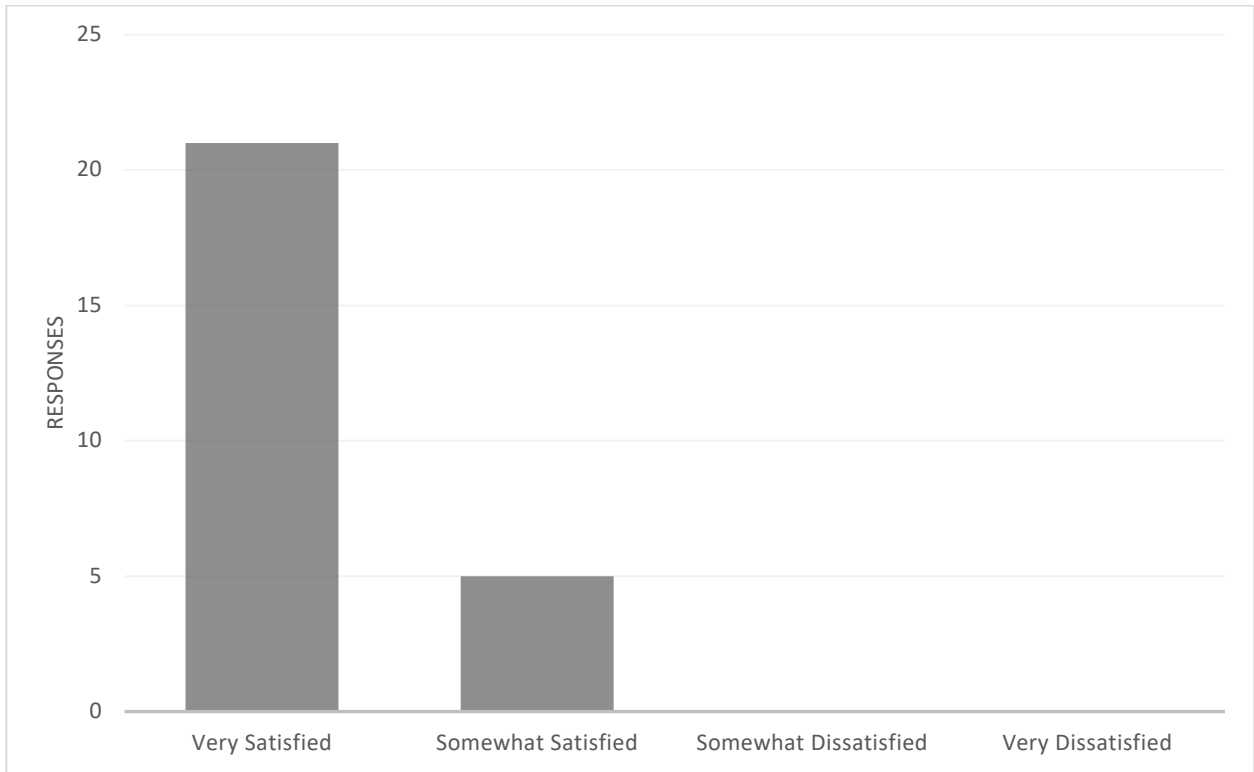


Figure 4. Prenatal Care Provider Satisfaction with Overall Ability to Provide Prenatal Care.

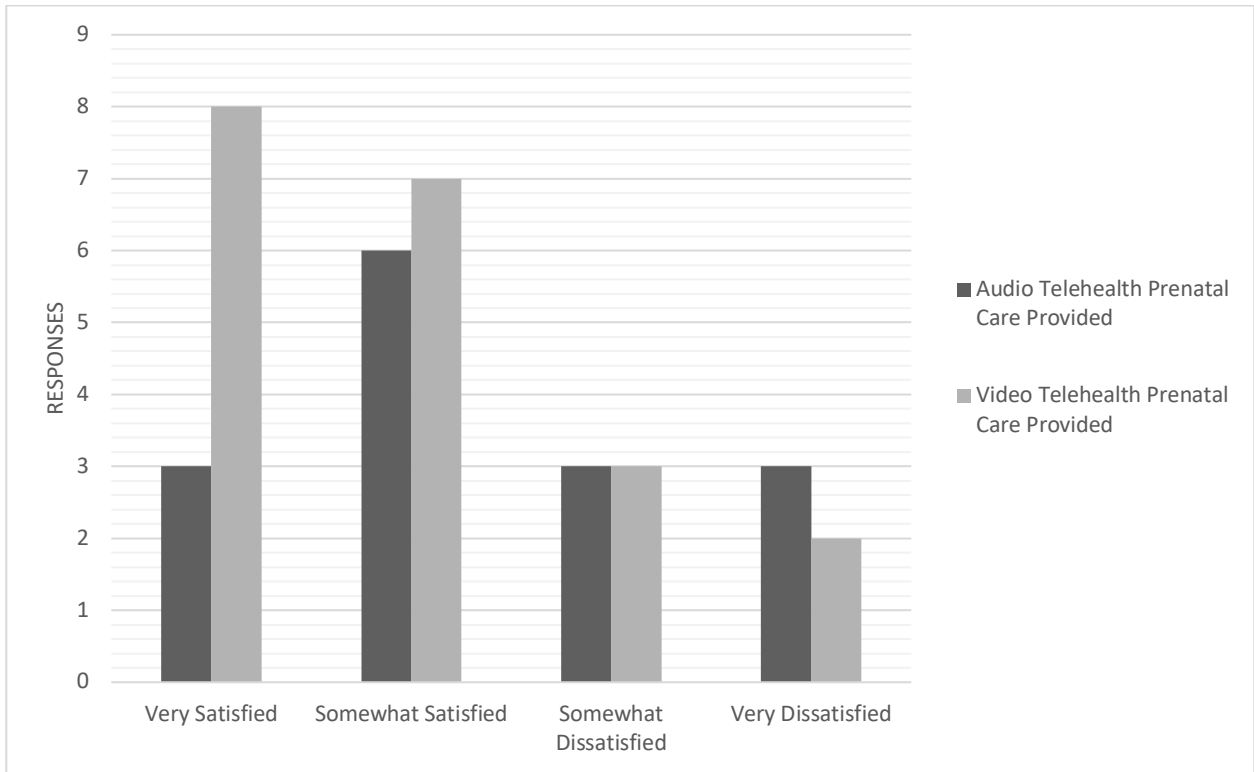


Figure 5. Provider Satisfaction with Provision of Telehealth Prenatal Care.

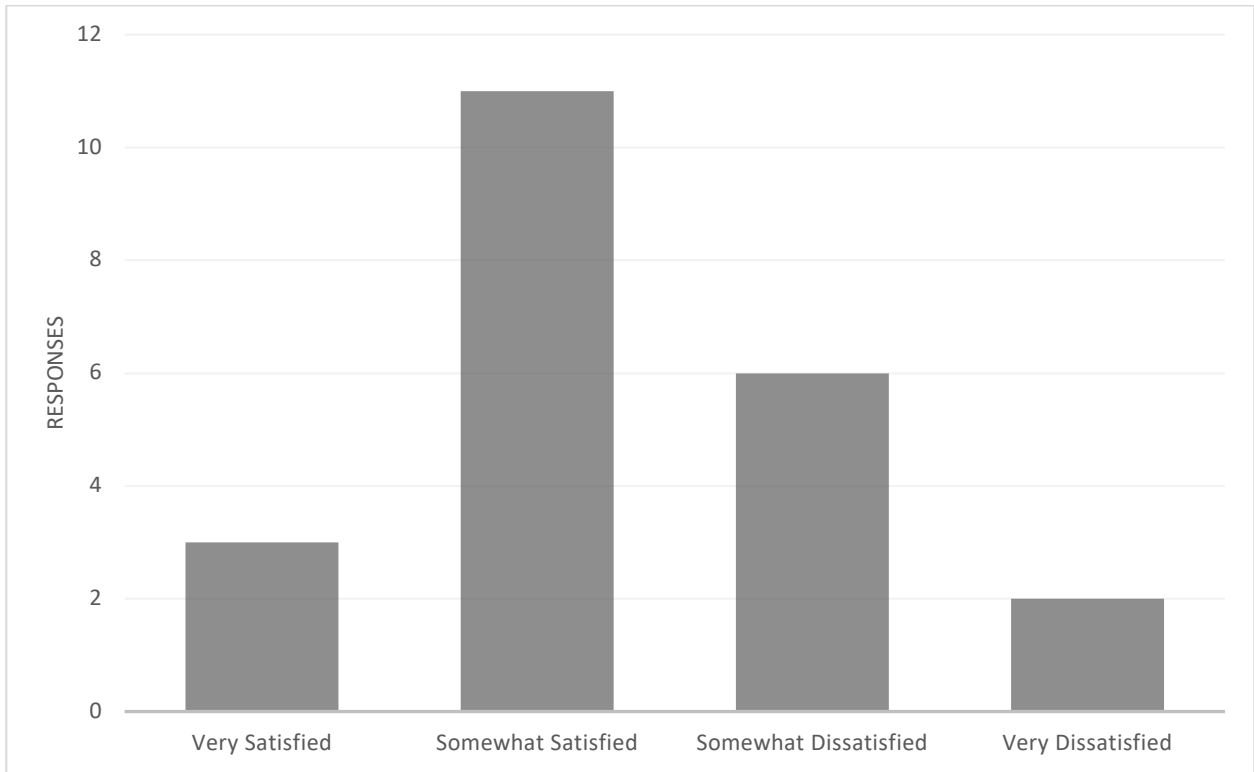


Figure 6. Provider Satisfaction with Ability to Provide Appropriate Prenatal Care via Telehealth.

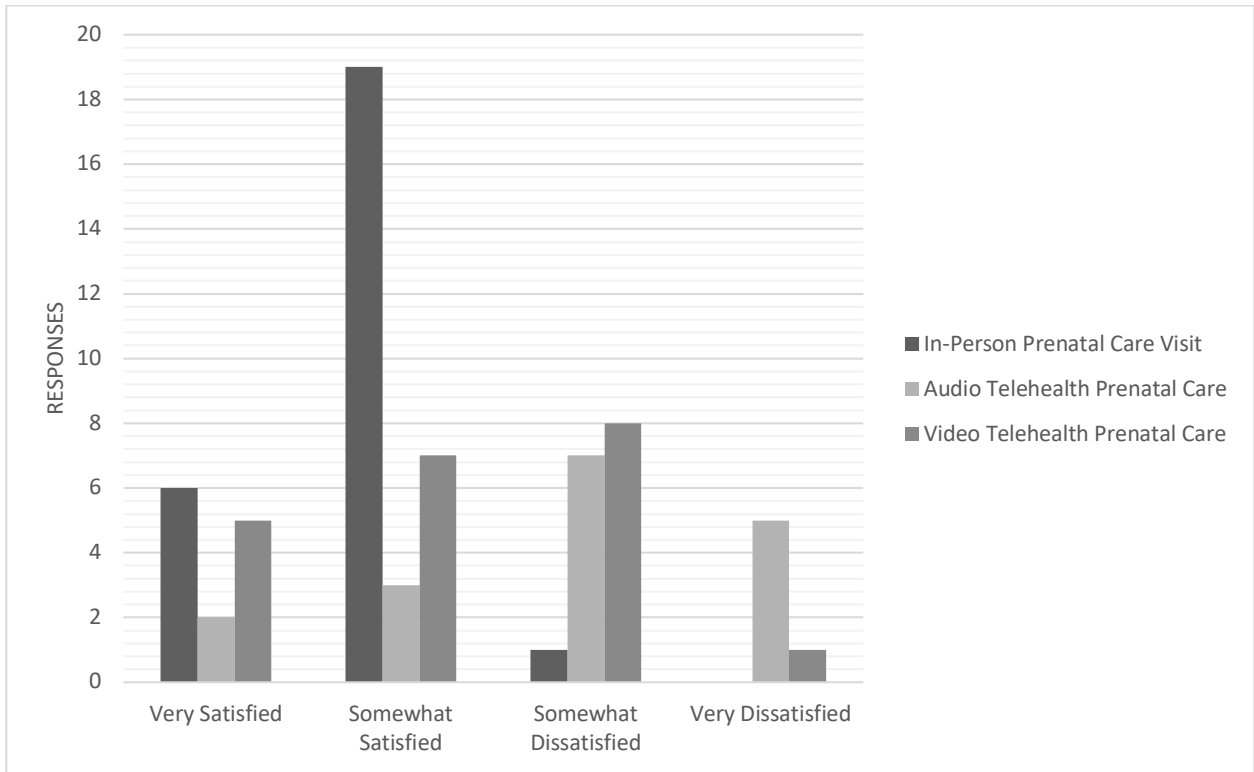


Figure 7. Prenatal Care Provider Satisfaction with Compensation.

APPENDIX

Provider’s Satisfaction with Provision of Prenatal Care during the COVID-19

Pandemic Survey

Demographics and Care Setting

Gender

- Female
- Male

What is your age? _____

Regarding your racial/ethnic background, which group do you consider yourself to be in? (Check all that apply.)

- White
- Black or African American
- American Indian or Alaska Native
- Asian
- Hispanic
- Latinx
- Native Hawaiian or Pacific Islander
- White or Caucasian
- Other

Which of the following best describes you?

- Certified Nurse Midwife (CNM)
- Nurse Practitioner (NP)
- Physician’s Assistant (PA)
- Physician

Are you board certified?

- Yes
- No
- Not Applicable

How many years have you been in practice since graduation? _____

How would you classify the location of the clinic you practice in?

- Urban
- Suburban
- Rural

How many patients do you see in a week?

- 0 - 15
- 16 - 30
- 31 - 60
- > 60

Is your practice a single specialty or multi-specialty setting?

- Single specialty
- Multi-specialty

Satisfaction

| How satisfied are you with the following?: | Very Satisfied | Somewhat Satisfied | Somewhat Dissatisfied | Very Dissatisfied | Not Applicable |
|---|----------------|--------------------|-----------------------|-------------------|----------------|
| 1. Your patient-provider relationship with in-person prenatal visits? | | | | | |
| 2. Your patient-provider relationship with audio prenatal visits? | | | | | |
| 3. Your patient-provider relationship with video prenatal visits? | | | | | |
| 4. Your overall ability to provide prenatal care? | | | | | |
| 5. The overall prenatal care you provided since the onset of the COVID-19 pandemic? | | | | | |

| How satisfied are you with the following?: | Very Satisfied | Somewhat Satisfied | Somewhat Dissatisfied | Very Dissatisfied | Not Applicable |
|--|----------------|--------------------|-----------------------|-------------------|----------------|
| 1. The audio telehealth prenatal care you provide? | | | | | |
| 2. The virtual telehealth prenatal care you provide? | | | | | |
| 3. Your ability to provide appropriate prenatal care via telehealth? | | | | | |
| 4. The internet service for telehealth care? | | | | | |
| 5. The telehealth equipment? | | | | | |
| 6. The telehealth technical support? | | | | | |
| 7. Ease of use with telehealth? | | | | | |

| How satisfied are you with the amount you are compensated for: | Very Satisfied | Somewhat Satisfied | Somewhat Dissatisfied | Very Dissatisfied | I do not use this visit type. |
|--|----------------|--------------------|-----------------------|-------------------|-------------------------------|
| In-person visits? | | | | | |
| Audio visits? | | | | | |
| Video visits? | | | | | |

Experiences

| During the listed time periods, what percentage of your patient encounters have occurred as the following visit types: | Pre-COVID (Prior to March 2020) | Immediately following Stay-At-Home Orders (March 2020 – May 2020) | Currently |
|--|---------------------------------|---|-----------|
| In-person visits? | | | |
| Audio visits? | | | |
| Video visits? | | | |

Overall, what visit type is utilized most often to provide prenatal care at your practice?

- In-person Visits
- Audio Visits
- Video Visits

Did your practice use guidelines from an organization (i.e. CDC, ACOG, ACOOG, etc.) to change how you provided prenatal care after the onset of the COVID-19 pandemic?

- Yes
- No

Did you use telehealth to provide prenatal care prior to the onset of the COVID-19 pandemic?

- Yes
- No

If no, how satisfied are you with process of changing prenatal visit type over the pandemic?

- Very Dissatisfied
- Somewhat Dissatisfied
- Somewhat Satisfied
- Very Satisfied

Were you provided telehealth training opportunities?

- Yes
- No

If yes, how satisfied were you with the training opportunities?

- Very Dissatisfied
- Somewhat Dissatisfied
- Somewhat Satisfied
- Very Satisfied

Was your practice equipped for changing from in-person to virtual prenatal visit type?

- Yes
- No
- N/A

Has your practice faced barriers with changing prenatal visit type?

- No
- Yes

If yes, what barriers? _____

Have your patients faced barriers with changing prenatal visit type?

- No
- Yes

If yes, what barriers? _____

Will you continue to use audio/video/both telehealth to provide prenatal care after the COVID-19 pandemic?

- Yes – audio telehealth only
- Yes – video telehealth only
- Yes – both
- No
- I don't know

Motivation

Does reimbursement rate affect your use of visit type for prenatal care (in-person, audio, video)?

- Yes
- No

Are you compensated equally for in-person, audio, and video prenatal care visits?

- Yes
- No

Are you required to use certain visit types over others for prenatal care visits?

- No
- Yes

If yes, which types are you required to use? (Check all that apply.)

- In-person Visits
- Audio Visits
- Video Visits

Do you choose to use certain visit types over others for prenatal care visits?

- No
- Yes

If yes, which types do you choose to use? (Check all that apply.)

- In-person Visits
- Audio Visits
- Video Visit

| Do you feel you have enough time to provide prenatal care to your patients with the following visit types? | All or almost all of the time. | Most of the time. | Some of the time. | None or almost none of the time. | I do not use this visit type. |
|---|---------------------------------------|--------------------------|--------------------------|---|--------------------------------------|
| In-person visits? | | | | | |
| Audio visits? | | | | | |
| Video visits? | | | | | |

Intrinsic Factors

Do you feel more, less, or the same burnout now as you did before the COVID-19 pandemic?

- More
- Same
- Less

Do you feel more, less, or the same amount of stress now as you did before the COVID-19 pandemic?

- More
- Same
- Less

How would you describe your ability to provide prenatal care since the onset of the pandemic?

- Improved
- Stayed the same
- Decreased

| | Very Favorable | Somewhat Favorable | Somewhat Unfavorable | Very Unfavorable | Unsure |
|---|-----------------------|---------------------------|-----------------------------|-------------------------|---------------|
| What are your views on in-person prenatal visits? | | | | | |
| What are your views on audio telehealth prenatal visits? | | | | | |
| What are your views on video telehealth prenatal visits? | | | | | |

What do you like about the following visit types?

In-person visits? _____

Audio visits? _____

Video visits? _____

What do you not like about the following visit types?

In-person visits? _____

Audio visits? _____

Video visits? _____

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