



Eliminating COVID-19 Related Birth Disparities through Telehealth

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### Abstract

Out of 36 developed countries, the U.S. ranks 33 for infant mortality. In the U.S, the infant mortality rates occur at higher rates among African Americans. Black infants have a higher likelihood to die from low birth weights or other birth-related complications compared to White infants. Furthermore, some of these women reside in unsafe pregnancy areas also known as “materno toxic” zones which are characterized by the presence of crime, food insecurity etc. Though Black mothers are 2.3 times more likely to receive late or no prenatal care compared to White mothers, the COVID-19 pandemic exacerbated these issues by making it more difficult to seek prenatal care due to physical distancing. Telehealth, which is defined as the use of technology for healthcare delivery, has been adopted by midwives and OB/GYNs to provide prenatal care for pregnant women during the pandemic. A clinical protocol was used to deliver care to new and old patients using telehealth procedures due to the COVID-19 pandemic. A survey was used to evaluate the effectiveness in birth outcomes and patient satisfaction. Results demonstrate the use of telemedical yields positive birth outcomes and patient satisfaction.

### Keywords

COVID-19; health disparities; birth disparities; preterm birth; telehealth; maternal child health; low birth weight; Florida

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## **Eliminating COVID-19 Related Birth Disparities through Telehealth**

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### **ABSTRACT**

Out of 36 developed countries, the U.S. ranks 33 for infant mortality. In the U.S, the infant mortality rates occur at higher rates among African Americans. Black infants have a higher likelihood to die from low birth weights or other birth-related complications compared to White infants. Furthermore, some of these women reside in unsafe pregnancy areas also known as “materno toxic” zones which are characterized by the presence of crime, food insecurity etc. Though Black mothers are 2.3 times more likely to receive late or no prenatal care compared to White mothers, the COVID-19 pandemic exacerbated these issues by making it more difficult to seek prenatal care due to physical distancing. Telehealth, which is defined as the use of technology for healthcare delivery, has been adopted by midwives and OB/GYNs to provide prenatal care for pregnant women during the pandemic. A clinical protocol was used to deliver care to new and old patients using telehealth procedures due to the COVID-19 pandemic. A survey was used to evaluate the effectiveness in birth outcomes and patient satisfaction. Results demonstrate the use of telemedical yields positive birth outcomes and patient satisfaction.

**Keywords:** COVID-19, health disparities, birth disparities, preterm birth, telehealth, maternal child health, low birth weight, Florida

### **INTRODUCTION**

According to America’s Health Rankings Annual Report on International Comparison (2019), out of 36 developed countries in the world, the United States ranks 33rd for infant mortality due to having 5.8 deaths per 1,000 live infant births in 2017. Infant mortality occurs at higher rates among Blacks in the United States (CDC, 2020). For instance, the Black infant mortality rate for

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Florida is 11.26 per 1,000 live births as compared to White infant mortality rate of 4.29 in 2018 (Jean-Baptiste, 2020). More specifically, the Black infant mortality rate (IMR) for Orange County, Florida is 9.9 per 1,000 live births as compared to 3.8 for White infants, according to the Florida Department of Health (FDOH) of Orange County located in Central Florida (FDOH, 2020). Furthermore, some of these women reside in unsafe pregnancy areas also known as “materno toxic” zones, a term coined by Midwife Jennie Joseph. These areas are characterized by the presence of crime, food and housing insecurity, as well as other social determinants of health.

The most common causes of death cited by the Centers for Disease Control and Prevention (CDC) are birth defects, preterm and low birth weight, maternal pregnancy complications, sudden infant death syndrome, and injuries (FDOH, 2019). Florida’s Black infants were more likely to die due to gestation and low birth weight while White infants were more likely to die due to congenital malformations, deformations, and chromosomal abnormalities (FDOH, 2019). Moreover, prematurity is a leading cause of infant deaths in Florida and across the country and can lead to life-long health issues for infants that survive. There are also considerable racial disparities in premature birth – the preterm birth rate. In Florida, the preterm birth rate among Black women is 52% higher than the rate among all other women (FDOH, 2019).

According to the CDC (2020), Black mothers are 2.3 times more likely to receive late or no prenatal care compared to their White counterparts. This disparity places Black women at even greater risk due to a maternal mortality rate that is approximately 3 times higher than White women (CDC, 2020). While the causes of these disparities are multifactorial, the COVID-19 pandemic exacerbated these issues by making it more difficult to seek prenatal care due to physical distancing. COVID-19, also known as the Coronavirus disease 2019, is a novel respiratory disease that first emerged in Wuhan, China and spread to most countries throughout the world resulting in a global pandemic. According to the American Journal of Obstetrics and Gynecology (AJOG), fetal complications such as miscarriage, intrauterine growth, pre-term births and delivery arose because of testing positive of COVID-19 in the third trimester (Barbour et al. 2017). Additionally, half of all rural counties in the United States are designated maternity care deserts with more than 50% of women traveling more than 30 minutes to reach perinatal care and the disparity in outcomes remains. Commonwealth Fund Studies demonstrate that rural women can experience higher maternal mortality rates than those who live in urban areas (HRSA, 2020). Telehealth approaches have been promoted to pregnant women in rural areas to ensure positive birth outcomes.

The JJ Way® is a comprehensive maternity care model that was designed by midwife Jennie Joseph, owner and executive director of Commonsense Childbirth Inc., to address health and healthcare disparities in maternal and child health, and perinatal outcomes in Orange County, Florida. The JJ Way® is implemented through their Easy Access Clinic and The Birth Place, a birthing center in Central Florida, which provides high quality prenatal and postnatal care, birth services and support, as well as educational and social support services to women. Both clinics support families regardless of their choice of the delivery site or practitioner, or the ability to pay.

A program evaluation of these clinics in 2007 demonstrated the successes of the JJ Way®. The preterm birth rates for Black women in these clinics were actually lower (8.6%) than the rates of their White counterparts in Orange County (9%), the state of Florida (9%) and across the nation (9%). The percentage of Black women receiving services through The JJ Way® who had a low birth weight baby (8.6%) was only slightly higher than the percentage of White women giving birth to low birth weight babies in Orange County (7.1%) and the state of Florida (7.2%), thereby shrinking the disparity in birth weight outcomes. In fact, the rate for Black women who had low

birth weight babies as part of this program evaluation is lower than the Orange County average (8.9%) and equivalent to the State of Florida average (8.6%) (Day, 2013).

Commonsense Childbirth received a Fall 2015 Initiative Grant from the West Orange Healthcare District, with program implementation dates between February 2016 and February 2017. Evaluation of the JJ Way® methodology through this grant concluded that there were no low birth weight or premature infants born to African American or Hispanic women among the 100 women enrolled in the 2017 study. Additionally, 95% of the babies born during the study weighed an average of 7lbs 7ozs, and thus, were not low birth weight. Plus, 95% of the women delivered at 39 weeks, having full term deliveries (Joseph & Brown, 2017). In sum, this evaluation of The JJ Way® model of maternal care showed elimination of health disparities in preterm birth outcomes and reductions in low birth weight babies in at-risk populations in Central Florida. These findings are consistent with outcomes previously shown by the Health Council of East Central Florida evaluation of JJ Way® clinics conducted in 2007, and the positive birth outcomes of the 2017 study also demonstrated the effectiveness of the JJ Way® methodology.

As a result of COVID-19, a telehealth protocol was adopted by perinatal workforces utilizing the JJ Way® in Central Florida to provide the proper prenatal care to pregnant women while ensuring limited contact to maintain the safety, quality, and dignity of patients. Telehealth has been adopted by midwives and OB/GYNs to provide prenatal care amid the COVID-19 pandemic. Recent studies have revealed how technology-enhanced healthcare may enhance patient satisfaction and improve engagement (Dashraath et al. 2020).

### Telehealth

Telehealth, the delivery of medical services via videoconferencing technology, has changed practice in both the medical and mental health fields (Krupinski & Weinstein 2014), while quickly becoming an important approach for improving the standard of care. Telehealth lifestyle interventions are gaining increasing popularity for use in pregnancy for management of complications (Xie et al. 2020).

The usage of telehealth for providing proper prenatal care to pregnant women while ensuring limited contact to maintain safety, quality, and dignity of patients serves as the centralized concept throughout this study. In addition, telehealth has also been used in trials in low-income and middle-income countries, particularly in rural communities where access to antenatal care is challenging (Modi et al. 2019). Therefore, since pregnant women can be identified as a vulnerable population, especially amidst the COVID-19 pandemic, the implementation of telehealth practices for uninsured and underinsured populations will help to increase pre/post-natal concerns, as well as enhance patient satisfaction and improve engagement among pregnant women. Due to the COVID-19 pandemic, the JJ Way® methodology had to shift from traditional methods to telehealth activities (Joseph, 2020).

## **METHODS**

The JJ Way® is a holistic intervention that empowers women throughout their pregnancy through education, group support, and access for uninsured or underinsured populations. The patient-centered model of care is implemented during the prenatal, labor, and postpartum stages of pregnancy. The JJ Way® consists of four tenets of care to provide quality and culturally competent care to pregnant women of marginalized populations, especially in Central Florida.

The four tenets of care of the JJ Way® are: Access, Connection, Knowledge, and Empowerment. The tenets, described in Table 1, are conducted by a network of Maternal Child

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Health professionals, which include medical assistants, lactation and health educators, nurses, doulas, and midwives, who work together to ensure a holistic, safe birthing experience and delivery. These procedures are in place to meet the specific physical, mental, emotional, and financial needs of each patient.

Table 1: Four Tenets of Care of the JJ Way®

|                          |  |
|--------------------------|--|
| <p><b>Access</b></p>     | <p>No person who needs services is ever turned away regardless of insurance or financial situation, citizenship, or perinatal risk status. The staff always provides linkages and collaboration with other public and private agencies to maintain continuity of care for those receiving services and facilitating additional access points through community partnerships. Access is the main cornerstone of the JJ Way® to high quality, culturally congruent, patient-centered, cost-efficient health care is a central tenet of the model.</p>  |
| <p><b>Connection</b></p> | <p>The connection of women to services and supports begin at the first visit and continues until delivery. Prenatal bonding not only between mother and baby, but also with the father, siblings, extended family, friends, and clinic team members is strongly promoted. The patient’s family or supporters are invited to participate in the prenatal care process and is viewed as essential to helping achieve the goal of a full-term, normal birth weight infant. Practitioners of The JJ Way®, ensure that all staff, including non-clinical staff such as members of the administrative team and health educators, are included in the care team for the patient. All staff play an important role in achieving healthy reproductive outcomes.</p> |
| <p><b>Knowledge</b></p>  | <p>Knowledge is provided in a few areas including on how lifestyle impacts babies. Information is delivered in a way that is culturally responsive to the patients’ needs and enables them to make decisions about their treatment at a pace that feels safe to them. Alternative approaches to teaching are utilized. This includes the use of peer educators and the use of time spent in the waiting room to provide informal yet thorough group-based education. Through a gap management and team approach, educational messages, delivery approaches, and post-partum education are provided and tailored to the client’s individual</p>   |

|                    |   |
|--------------------|---|
|                    | needs. This includes the provision of breastfeeding support, family planning and well-woman health education, and perinatal mood disorders information. Knowing that short inter-pregnancy intervals are associated with low birthweight and prematurity, letting their bodies rest between pregnancies is important to alleviate stress and establish an inter-conceptional health plan. |
| <b>Empowerment</b> | Empowerment results from having access to high-quality, cost-efficient services, and a connection with supportive culturally responsive services and natural supports which lead to an increase in knowledge, agency, and self-determination.   |

Patient satisfaction and continued engagement of perinatal care utilizing the JJ Way® through telehealth approaches were the focus of this study. Patients were transitioned from traditional prenatal care to a telehealth protocol. Several telehealth activities were implemented due to the COVID-19 pandemic. Patient engagement occurred through HIPAA-compliant phone and video calls to ensure education on risk factors, such as obesity and high blood pressure. Digital communications platforms facilitated the immediate transfer of HIPAA-compliant data to patients and their designees. Such systems greatly improve the level of communication between physicians, patients, and patients’ families and caregivers (Gordon et al. 2015).

Text messaging was employed by JJ Way® providers during the pandemic to increase touchpoints per patient. Using an asynchronous text messaging first workflow can have doctors ready to care for as many as five patients at a time, which expands information availability to the doctor so they can effectively get to the right decision sooner. These telehealth approaches deliver care while realizing savings by removing the intermediaries (Altorfer & McKinney 2016). Telehealth overcomes many barriers that contribute to physical and mental healthcare disparities, including physical distance, cost, and time efficiencies (Brazell, 2015; Townley & Yalowich, 2015). Thus, JJ Way® providers delivered and/or patients picked up equipment for home use with virtual monitoring, such as dopplers, blood pressure monitors, and urine strips, were distributed to patients.

There was an increase of ultrasounds per patient through remote monitoring. Remote monitoring reduces emergency department/urgent in-office visits and results in increased efficiency for healthcare providers and improved quality of care for patients (Landolina et al 2012). The implementation of these telehealth strategies ensured the clients being served by the JJ Way® clinics continued to receive quality perinatal care during the COVID-19 pandemic.

Patient Satisfaction Survey (PPS)

Patient satisfaction is defined as patient-reported outcome measure while the structures and processes of care can be measured by patient-reported experiences (Oyvind et al. 2011). Patient satisfaction surveys (PSS) help provide important feedback to ensure patients experience a level of trust and security. Over the past 20 years, PSS have gained increasing attention as essential sources for identifying gaps and developing effective action plans for quality improvement in healthcare organizations (Al-Abri & Al-Balushi, 2014). In addition, patient satisfaction is an important indicator of the quality of health and healthcare services provided (Ware, 1995), which

is a major consideration in developing interventions for improving healthcare services (Farzadi & Maftoun, 2002), such as the JJ Way®. The utilization of PSS within this study identified whether telehealth approaches was effective based upon patient responses.

## RESULTS

By March 2020, 150 patients were transitioned from traditional perinatal care to telehealth activities, such as virtual visits. During that timeframe, 88 deliveries occurred with 86 of the births being healthy birth weights and at term deliveries. Of the two deliveries with below average health outcomes, one was a low birth weight of 5.1 lb, and one was born premature at 34 weeks. The transition to telehealth practices has increased the number of ultrasounds offered during the trimester to a minimum of at least three per patient through remote monitoring. The incorporation of text messaging has also increased the number of patient interactions and allowed for additional opportunities to ensure areas of health beyond physical were also discussed with midwives, including emotional and mental wellness.

To assess the satisfaction of patients who experienced telehealth activities between March 2020 and September 2020, including patients who had yet to deliver, an online patient satisfaction survey was administered through the Perinatal Service Team of the JJ Way® clinics. The survey consistent of 18 questions, including eight patient satisfaction questions modeled after the University of California-San Francisco Client Satisfaction Questionnaire-8 (CSQ Scales), four questions assessing the JJ Way® methodology, and six demographic questions. The CSQ-8 Scales are one of two consumer satisfaction scales developed through research at the University of California San Francisco used in primary care medical, mental health treatment, and a wide range of human services settings (Attkisson & Greenfield, 2004). Two midwives and two JJ Way® clients reviewed the survey for competency and literacy.

The survey served as program evaluation, and patients were notified that the survey was voluntary and optional. The survey was sent to 238 patients. A raffle of three gift cards was used as an incentive for patients to complete the survey before certain date. Patients interested in being in the raffle were asked to provide their phone number and/or email address, and patients not interested in being in the raffle gave anonymous responses.

Of the 238 patients who received the online survey, 79 patients completed the survey to assess their satisfaction of the telehealth perinatal services, which is a 33% response rate. The results from the patient satisfaction survey were analyzed using frequency tables and cross-tabulation on SPSS. The results show that 75.9% of the participants were satisfied with the telehealth services received since March 2020. The results also show that Black or African American women, women with only a High School or GED and women with Medicaid reported having the highest level of satisfaction by 90%, 58.6% and 67.2% respectively. The largest age group of respondents are 25 to 34 years old (49 respondents) and the second largest age group was 18 to 24 years old (20 respondents). The top three race categories for survey respondents were African American at 37.97%, White at 40.51%, and Other at 17.72%, and the majority did not identify as Hispanic (73.42%). And 54.43% of respondents only have a high school degree or GED.

Nearly 80% of respondents had almost all my needs met through telehealth services. Many of the respondents, 83%, stated that if a friend were in need of similar prenatal and postpartum care services, they would recommend the JJ Way® program to her. Sixty-four respondents or 81% stated that had the services they received helped them to deal more effectively with their pregnancy

and/or delivery. Almost 85% of the respondents would return to the JJ Way® clinics if seeking perinatal services again.

Regarding the tenets of care associated with the JJ Way®, survey respondents answered four questions to assess their satisfaction with the program. See Table 2 for results.

Table 2: Patient Satisfaction Survey Questions Related to JJ Way® Tenets of Care

| <i>JJ Way® Tenets of Care</i> | <i>Survey Question Results</i>  | <i>Majority Response</i>                        |
|-------------------------------|---|---|
| <b>Access</b>                 | Do you feel you had easy access to prenatal and postpartum care services?   | 82.28% or 65 respondents stated Yes, definitely |
| <b>Connection</b>             | Do you feel that our team encouraged a connection between you, your baby, and your supporters?                    | 75.95% or 60 respondents stated Yes, definitely |
| <b>Knowledge</b>              | Do you feel that our team provided your information relative to improving your prenatal and postpartum knowledge? | 78.48% or 62 respondents stated Yes, definitely |
| <b>Empowerment</b>            | Do you feel that our team empowered you to play an essential role in your own prenatal and/or postpartum care?    | 83.54% or 66 respondents stated Yes, definitely |

### Limitations

The emergence of telehealth among pregnant women has proved to be more suitable in ensuring a continuous decrease in COVID-19-related pregnancy complications. However, there are identified limitations that need to be considered to advance future related research.

Such limitations include the sample size of this project. The main problem with small studies is interpretation of results (Hackshaw, 2008), which speaks to the generalizability of the findings. The survey results only included 79 responses and only 238 patients were invited to participate in the survey. Thus, the sample size being small makes it difficult to make inferences to general maternal and infant populations. Another limitation or project challenge was the small staffing size of the JJ Way® clinics. Though most of these patients were existing clients, a few new clients were signed on after implementing telehealth approaches which included an increase in remote ultrasounds and text messaging. Difficulties also arose in data collection and follow-up visits because of not having adequate administrative support during postpartum.

The patient satisfaction survey was implemented to enhance the programming of the JJ Way® clinics and assess the satisfaction of patients who were transitioned to telehealth services due to the COVID-19 pandemic. Since the survey is considered program evaluation, an Institutional Review Board (IRB) process was not utilized for this project. Yet, a community review board of midwives and patients were engaged to guide the development and implementation of this project. If this project was expanded beyond the JJ Way® clinics, IRB would be pursued through academic partners. Silberman and Kahn (2011) mention Federal

regulations mandate independent review and approval by an IRB before studies that involve human research subjects may begin.

The usage of patient satisfaction surveys is considered a major benefit for appropriate feedback. Generally, people respond to survey requests for three reasons: (1) they want to be helpful; (2) they are interested in the survey topic; or (3) they have a tangible benefit (Singer & Ye, 2013). In this study, patients were provided the opportunity to obtain gift cards upon completion of survey. However, whether participants took the survey to be helpful or for tangible benefit may pose limitations on authentic responses from patients. Lipps et al. (2019) further suggests while incentives are an effective way to increase response rates, high response rates do not mean less bias (Groves, 2006). Furthermore, the impact of incentives can vary a lot, depending on the situation. Hence, several aspects need to be considered when introducing incentives.

## DISCUSSION

Study results imply that telehealth approaches were effective in delivering prenatal care to eliminate racial birth disparities during the COVID-19 pandemic. Though systemic racism and other forms of discrimination within the healthcare system have led to the inequities in pregnancy care outcomes evident today, the JJ Way® tenets of care in conjunction with telehealth approaches, including increased patient contact through text messaging, ensured culturally competent and appropriate care occurred during the pandemic. Therefore, telehealth has emerged as a promising modality to improve access to care across underrepresented populations (Ukoha et al. 2021), including birthing women of color.

Social determinants of health impact pregnancy outcomes, especially for minority women. There is an extensive literature that supports the premise that social determinants may mediate or modify observed racial/ethnic differences in perinatal outcomes (Lorch & Enlow, 2016). Infectious diseases pose a bigger threat on vulnerable populations including pregnant women. Jamieson et al. (2006) explains how several issues are relevant to infectious disease threats during pregnancy. First, changes in immunity and physiology during pregnancy may make pregnant women more susceptible to or more severely affected by infectious diseases. Lastly, the effects of infectious diseases on the fetus may be unknown and difficult to predict, and diagnosis of infection in the fetus or infant can be challenging. As stated earlier, fetal complications, such as miscarriages and pre-term births arose as a result of testing positive of COVID-19 in the third trimester (Barbour et al. 2017). The risk of these pregnancy-related complications due to infectious diseases were minimized due to the implementation of the JJ Way® methodology and the implementation of telehealth approaches, including virtual monitoring through dopplers.

Several studies demonstrate that technological advances to provide support of continuing perinatal care at a safe distance is effective and patients are satisfied with these approaches. For example, one study reported mothers-to-be are aware of technological advances' positive impact on perinatal care. They feel satisfied with healthcare technology and view it as a source of security (Goberna-Tricas et al. 2010). In a pilot program providing care via telehealth, 95 % of all participants who completed a satisfaction survey were highly satisfied with the quality of the care they received, the ease with which telehealth technology was integrated into the visit, and the timeliness and convenience of their care (Polinski et al. 2016). This is consistent with the survey

results in this study, where 75.9% of the participants were satisfied with the telehealth services received through the clinics implementing the JJ Way®. Next steps for this project are to assess patient satisfaction on telehealth procedures compared to the traditional JJ Way® methodology.

## CONCLUSION

Preterm birth and low birth weight babies are critical Maternal and Child Health (MCH) indicators that have demonstrated long-standing disparate outcomes in the United States (Deichen Hansen, 2021). Women of color and those living in poverty are disproportionately impacted by poor birth outcomes, such as preterm births and low birth weights (Petersen et al. 2019). Previous evaluation of The JJ Way® model of maternal care showed elimination of health disparities in preterm birth outcomes and reductions in low birth weight babies in underserved populations in Central Florida (Day, 2013; Joseph, 2019; Joseph, 2020; Josephs, 2017). These findings demonstrated the effectiveness of the JJ Way® methodology. Given these findings, attempts should be made to manualize this program to broaden the reach of the JJ Way® beyond Central Florida and in perinatal workforces serving underserved birthing populations. The transition from traditional perinatal practices to telehealth strategies, which increased patient engagement while ensuring safety during the COVID-19 pandemic, was effective and fulfilled the expectations of birthing clients of the JJ Way® clinics in Central Florida.

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