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Formalizing an Obstetrical Program for High-Risk Patients: Focus—Diabetes During Pregnancy

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FORMALIZING AN OBSTETRICAL PROGRAM FOR HIGH-RISK PATIENTS:
FOCUS—DIABETES DURING PREGNANCY

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Valeria Jimenez

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Abstract

Within the last 10 years, the percentage of pregnant women with gestational diabetes increased 56%, and the percentage of women with Type 1 or Type 2 diabetes before pregnancy increased 37% (Centers for Disease Control and Prevention, 2018). The management of a pregnancy complicated by diabetes involves a multidisciplinary approach, medical nutrition therapy, glycemic control, and occasionally, pharmacological therapies (Nurain et al., 2019). In 2017, the total cost of diabetes in the United States was \$237 billion (Riddle & Herman, 2018). The purpose of this DNP project was to standardize a Federally Qualified Health Care's High-Risk Obstetrical Initiative, which attempted to provide in-person education and monitoring by a Registered Nurse (RN) in addition to regular OB visits. The project used a multidisciplinary approach to expand on the initiative by (a) instituting a standardized enrollment process, (b) implementing an electronic health record (EHR) dashboard to track enrollees, (c) gathering evidence-based patient education materials, (d) introducing a Social Determinants of Health assessment, (e) determining the follow-up interval for RN monitoring, and (f) developing an RN documentation template. This project focused on mothers at risk of diabetic complications during pregnancy. The results showed enrollment in the initiative increased from seven expecting mothers pre-implementation to 57 expecting mothers post-implementation, thereby increasing the knowledge and monitoring of diabetic mothers. Creating a standardized multidisciplinary process with weekly follow-up by an RN can help pregnant diabetic women identify signs and symptoms of maternal/fetal distress due to diabetic complications, resulting in the prevention of severe complications, improved pregnancy outcomes, and decreased costs.

Keywords: diabetes during pregnancy, high-risk pregnancy, diabetes monitoring program

Formalizing an Obstetrical Program for High-Risk Patients:

Focus—Diabetes During Pregnancy

Gestational diabetes mellitus (GDM) is a common complication in pregnancy. Being diagnosed with GDM during pregnancy increases the risk of cesarean section, fetal macrosomia, preterm labor, and neonatal hypoglycemia, and increases risk for maternal hypertensive disorders (Centers for Disease Control and Prevention [CDC], 2019). This paper will discuss the standardization of a High-Risk Obstetrical (OB) Initiative envisioned by an Obstetrics and Gynecology (Ob-Gyn) physician working at a Federally Qualified Health Care (FQHC) system in South Central Texas. The standardization of the initiative's processes undertaken by the author and her fellow doctoral of nursing practice student colleague included a standardized referral process, standardized enrollment process, dashboard, Registered Nurse (RN) assessment, patient education, and identification of any social determinants of health (SDoH). Creating standardization allowed the high-risk OB nurse and participating providers to see all participants enrolled in the program, track their outcomes, promote program sustainability, and determine areas for improvement.

Statement of the Problem

According to the Centers for Disease Control and Prevention (2021), expecting mothers who are overweight and live a sedentary lifestyle are at greater risk for developing GDM. The two FQHC clinics where this initiative was implemented serves many vulnerable people. The expecting mothers diagnosed with GDM would greatly benefit from increased education, resources, and routine follow-up. By assisting with the standardization of the initiative's processes, it was anticipated that providers would assist expecting mothers by identifying areas

for improvement and better track short-term pregnancy outcomes, with the ultimate goal of producing a healthy mother, healthy delivery, and healthy newborn.

Background and Significance

GDM has potentially life-threatening complications for both mother and child. Increased glucose levels are associated with birth weight above the 90th percentile, cesarean section, shoulder dystocia, and preterm labor (CDC, 2019). It is recommended that expecting mothers receive the proper treatment through pharmacotherapy, nutrition, and close monitoring of glucose levels (Jain et al., 2016). According to Jain et al. (2016), 6% of poor perinatal outcomes can be associated with poor glycemic control in mothers. Due to the increased risk of poor perinatal outcomes, pregnant diabetic women should have regular monitoring and strict metabolic control. In addition to poor fetal and newborn outcomes, mothers diagnosed with GDM have a tenfold increased risk of developing type 2 diabetes during the postpartum period, compared to those with a normoglycemic pregnancy (Vounzoulaki et al., 2020). The high prevalence of type 2 diabetes after GDM demonstrates the need for perinatal and postpartum monitoring to encourage women to adopt the dietary, lifestyle, and pharmacological interventions to prevent or delay the onset of type 2 diabetes (Vounzoulaki et al., 2020).

Organizational Assessment

This quality improvement project took place at two FQHC women's health clinics. Staff members included four Ob-Gyn providers, two registered nurses (RNs), six medical assistants, two licensed vocational nurses (LVNs), one receptionist, and one office manager. Not including the providers, staff members were female and fluent in Spanish and English.

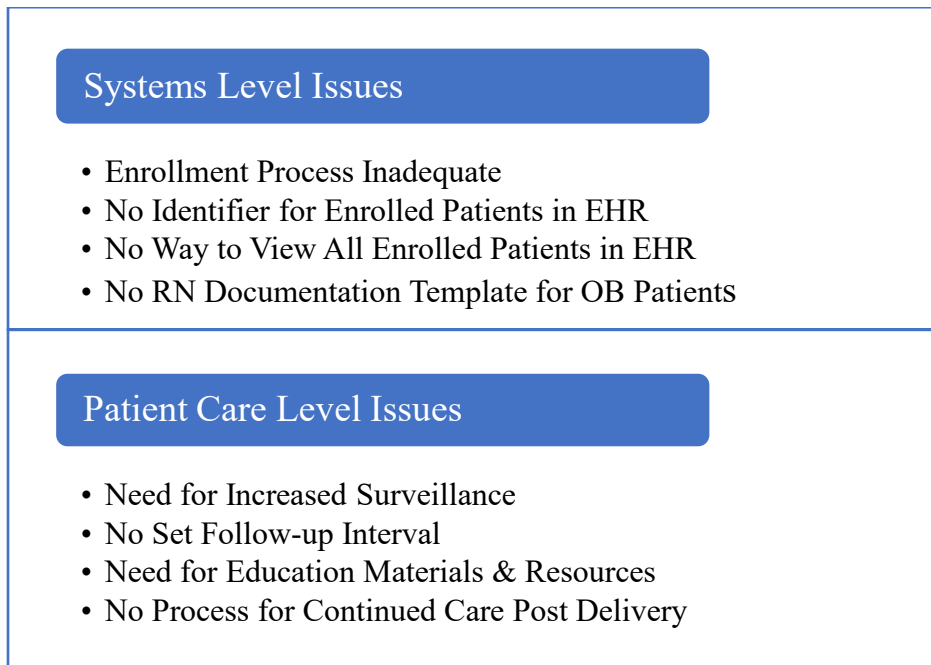
The previous process for monitoring high-risk mothers included word of mouth enrollment from providers to RNs, documentation in an Excel sheet, and minimal written

education for mothers. There was no consistency in follow-up intervals; patients were called/assessed on an as-needed basis.

The two FQHC clinics provide care to mothers at high risk of developing diabetes during pregnancy. The High-Risk OB Initiative was meant to assist women classified as high risk for several conditions during and after their pregnancy, including GDM, hypertension during pregnancy, preterm labor, and other chronic conditions. Upon assessing the initiative, however, it was evident that the program lacked standardization, a reliable enrollment process, and a way to track those enrolled in the program within the electronic health record (EHR). It also needed formalized evidence-based patient education, an SDoH assessment tool, and a set follow-up interval the RN could follow to closely monitor expecting mothers (see Figure 1).

Organizational Readiness for Change

The staff revealed its readiness for change early on. The Ob-Gyn who envisioned the High-risk OB Initiative expressed great interest in implementing a new process to create standardization and improve patient care. As a consequence of being a FQHC, the clinic strives to meet the needs of underserved populations and provide them with the care they need and deserve. The identified project stakeholders included four Ob-Gyn physicians who referred patients to the initiative, the RN who assessed and followed the expecting mothers weekly, and the expecting mothers themselves. All participants expressed a willingness to participate in the project plan to standardize and formalize the High-Risk OB Initiative.

Figure 1*Identified Issues***Project Identification**

This project was reviewed by the University of the Incarnate Word's Institutional Review Board and found not to meet federal regulatory requirements for human subject research and therefore did not require approval via the IRB process (see Appendix A).

Goal

This project aimed to decrease complications from diabetes during pregnancy and increase overall mother and newborn outcomes by standardizing the clinic's High-Risk OB Initiative that provides in-person and telehealth education and monitoring with an RN in addition to regular OB visits.

Purpose

The purpose of this DNP project was to standardize and formalize a FQHC's High-Risk OB Initiative, which attempted to provide in-person education and monitoring by an RN in addition to regular OB visits. The project used a multidisciplinary approach to expand on the in-place initiative by (a) instituting a standardized enrollment process, (b) implementing a dashboard within the EHR to track enrollees, (c) gathering formalized evidence-based patient education materials, (d) introducing an SDoH assessment tool, (e) determining the minimum follow-up interval for in-person and telehealth monitoring by the RN, and (f) developing an RN documentation template that can be efficiently mined for data. This project focused on the subgroup of patients at high risk of complications from diabetes during pregnancy.

Objectives

The objectives for this quality improvement project were as follows:

1. Educate 100% of providers, nurses, and medical assistants within the clinic regarding the High-Risk OB Initiative.
2. Enroll 95% of high-risk diabetic OB patients in the High-Risk OB Initiative during the project implementation period.
3. Closely monitor 95% of the high-risk diabetic OB patients during the project implementation period, per the American College of Obstetricians and Gynecologists (ACOG) guidelines. Criterion was met if patients were seen or contacted by the RN within 3 days of referral to the High-Risk OB Initiative and receive at least one follow-up telehealth call per week up until the patient's 6-week postpartum visit.
4. Educate 100% of patients enrolled in the High-Risk OB Initiative on gestational diabetes and hypoglycemic symptoms during the project implementation period.

5. Screen 100% of patients enrolled in the High-Risk OB Initiative using the ACOG SDoH tool to identify needs during the project implementation period.
6. Of those patients identified as having a positive SDoH screen, 95% will be provided resources and referral to social/community services, if needed.
7. Provide a 75g 2-hour glucose tolerance test at the 6-week postpartum visit, per ACOG guidelines, to 95% of patients enrolled in the High-Risk OB Initiative.
8. Refer 95% of patients enrolled in the High-Risk OB Initiative for continued care after the 6-week postpartum visit.

Anticipated Outcomes

By meeting these objectives, it was anticipated that all diabetic mothers enrolled in the High-Risk OB Initiative would experience fewer complications related to diabetes during pregnancy, and overall mother and newborn outcomes would increase. Weekly monitoring by the RN would provide expecting mothers with education and support throughout their entire pregnancy. Due to the established relationship between mother and RN, the patient would have the ability to identify early symptoms of diabetes, allowing for early intervention if needed.

Summary and Strength of the Evidence

The increase in the prevalence of GDM, aside from its adverse consequences for infants in the newborn period, might also reflect or contribute to the current patterns of increasing diabetes and obesity, especially in the offspring. According to Wang et al. (2020), perinatal intrauterine environment and exposures such as GDM play a significant role in childhood obesity. In 2018, it was determined that 14.4 million children 19 years of age and younger were affected by obesity (CDC, 2021). This supports the importance of public health efforts to educate expecting mothers on the impact that maternal diabetes during pregnancy may have on childhood

obesity (Wang et al., 2020). Currently, 34.9% of women with GDM are prescribed insulin or oral medications due to uncontrolled glucose levels (Wang et al., 2020). Wang et al. concluded that children of mothers with GDM who do not require medication treatment do not exhibit an increased BMI as they age, suggesting that children exposed to higher glucose levels while in utero have an increased risk of developing obesity. With proper monitoring and education, the percent of women on medications can be decreased, leading to decreased risk for childhood obesity.

Numerous studies have been conducted to assess the contribution of underlying glucose intolerance in the development of GDM (Dabelea et al., 2005; Ishak & Petocz, 2003; Thorpe et al., 2005). The majority concluded that there is a need for more extensive epidemiological studies that assess pre-pregnancy and postpartum glucose tolerance status to evaluate to what extent underlying glucose intolerance plays in the development of GDM. Additional studies are also needed to assess pre-pregnancy obesity and possible GDM risk factors present before childbearing to understand the prevalence of GDM and plan prevention strategies (Ferrara, 2007). Even though the initiative created can provide essential assistance to high-risk mothers, no similar initiative has been created or implemented in high-risk OB expecting mothers.

Due to diabetes being a growing public concern, a few studies have tried to assess the most effective way to improve patient adherence. During the difficult times that were faced this past year due to COVID-19, many providers found themselves relying on telemedicine services to provide their patients with necessary care and surveillance. One study by Kotsani et al. (2018) evaluated the effect of telenursing on diabetic patient compliance with glucose self-monitoring and glycemic control. The randomized controlled study provided weekly telenursing services to their intervention group, promoting frequent blood glucose monitoring and adopting a healthy

lifestyle. The control group received standard diabetes advice and care in the clinic. The study concluded that the intervention group achieved better glucose control and more frequent self-monitoring than patients who received routine care in the clinic. The findings support the theory that telenursing services can motivate diabetic maternity patients to control their illness better.

According to the American Diabetes Association (2020), fasting and postprandial self-monitoring of blood glucose are recommended in GDM to achieve optimal glucose levels. During this project's implementation period, each high-risk expecting mother was contacted by an RN within 3 days of their diagnosis. Each mother received education from the RN regarding healthy foods to eat, physical activity, medications if needed, glucose monitoring, and signs and symptoms that would require immediate attention. The mother was advised to track her meals and monitor her glucose levels throughout the day to assess for hyper- or hypoglycemia. Daily self-monitoring of blood glucose allowed the providers to see a trend and adjust medication and treatment options as needed. The mothers enrolled in the High-Risk OB Initiative were followed weekly to evaluate healthy eating patterns, food diary, and glucose levels. Weekly monitoring was continued postpartum to ensure the mothers returned for their 6-week oral glucose tolerance test (OGTT). An OGTT is preferred over a Glycated hemoglobin (A1C) because an A1C can be impacted by the "increased red blood cell turnover related to pregnancy, by blood loss at delivery, or by the preceding 3-month glucose profile" (American Diabetes Association, 2020, p. 186).

Once a gestational diabetic mother delivers her newborn, it is essential that she be educated on the importance of the OGTT 6 weeks postpartum. Women diagnosed with gestational diabetes have an increased possibility of developing type 2 diabetes later in life. A study conducted by de Gennaro et al. (2020) illustrated that many gestational diabetic mothers do

not return for their postpartum OGTT. The results of that study indicated that only 41% of postpartum diabetic mothers received their postpartum OGTT. Out of the 41% of diabetic mothers who returned, 1.9% received a type 2 Diabetes Mellitus diagnosis (de Gennaro et al., 2020). After introducing a reminder/recommendation letter, screening adherence increased from 32% in 2016 to 47% in 2017, illustrating the importance of follow-up after hospital discharge. De Gennaro et al. (2020) also concluded that lower education levels and those less than 35 years old were independently associated with non-adherence.

Methods

Project Intervention

During the organizational assessment, it was identified that the High-Risk OB Initiative did not have a chart identifier to indicate who was enrolled in the program, a standardized enrollment process, or a centralized location for the patients to be viewed in the EHR. Therefore, this initiative included the following pre-implementation and inter-implementation interventions:

1. Pre-implementation

- a. Developed a screening questionnaire used by the medical assistants to identify patients who qualified for enrollment in the High-Risk OB Initiative (see Appendix B).
- b. Collaborated with the RN and Ob-Gyn physician director in consultation with the FQHC's IT professionals to streamline the enrollment process.
- c. Consulted with the FQHC's IT professionals to create dummy codes that could be used to identify and track high-risk OB diabetic patients (see Appendix F).
- d. Updated the existing RN documentation template to include high-risk OB patient information in the EHR.

- e. Created a High-Risk OB Initiative manual that outlines patient screening for the initiative, enrollment process, patient education, monitoring, documentation, and primary care referral processes.
- f. Educated providers, nurses, and medical assistance on the newly formalized High-Risk OB Initiative's standardized processes.

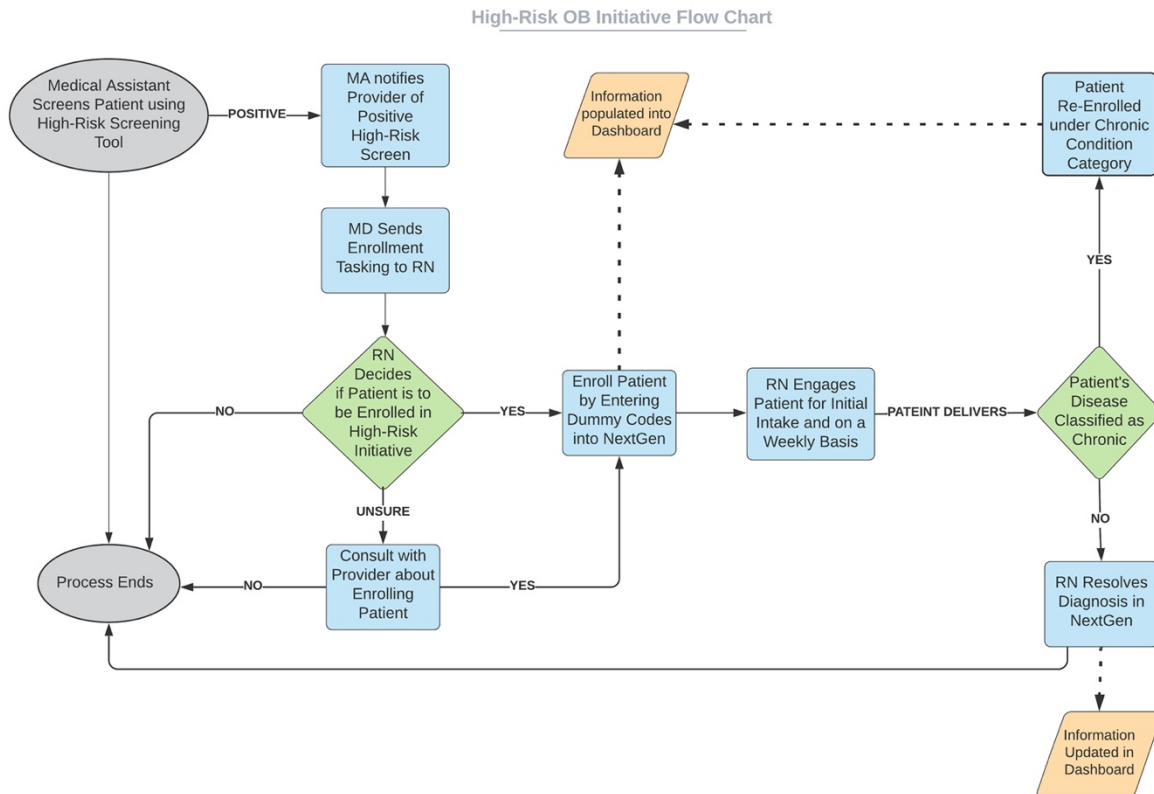
2. *Inter-implementation*

- a. RN conducted weekly calls to all diabetic OB patients enrolled in the program.
(Calls/monitoring were increased based on a patient's compliance, blood glucose levels, and symptoms.)
- b. RN screened all high-risk diabetic OB patients with the ACOG SDoH questionnaire (see Appendix C). (Resources and referrals to social/community services were provided, as indicated.)
- c. RN provided education with a pre-and post-knowledge assessment related to signs and symptoms of gestational diabetes (see Appendix D):
 - i. Hypoglycemia
 - ii. Hyperglycemia
- d. RN provided education on overall wellness, including a healthy diet, the importance of exercise, and stress management, based on ACOG guidelines.
- e. RN ensured that a 75g 2-hour glucose tolerance test was ordered and completed at the 6-week postpartum visit.
- f. RN ensured patients were offered continued care after pregnancy within the FQHC system or with a Healthy Texas Women provider.

To help consolidate the enrolled patients within the EHR, IT created standardized dummy codes that the RN entered into the patient's EHR when a patient was enrolled in the program. These dummy codes placed the patient in a dashboard that allowed quick access to all enrolled patients' information. The information included in the dashboard consisted of the patient's last visit, gestational age, last vital signs, recent labs, and their assigned provider. A manual was created to serve as a reference guide for the processes outlined above for current and future employees.

When a high-risk diabetic patient failed an OGTT, they were contacted within 3 days of their failed test to arrange an initial visit. This first visit included face-to-face education, the SDoH screening, and a pre-and post-education questionnaire. The purpose of the pre-and post-education questionnaire was to assess the patient's educational needs, and determine their understanding once the education was provided. After completing the initial face-to-face education, weekly follow-up calls were performed to assess further SDoH needs, glucose log, food diary, and maternal/fetal distress due to diabetic complications. The patients were followed weekly until delivery. At their 6-week appointment, an OGTT was performed. If the patient was no longer diabetic after delivery, she was discharged from the program. However, if the patient still had diabetes, avenues for continued care after pregnancy were provided. If the patient missed her 6-week postpartum visit, the RN completed a telephone follow-up to provide education and resources for primary care services (see Figure 2).

Figure 2



For the implementation of this project, the Plan-Do-Study-Act (PDSA) framework was utilized. The PDSA framework facilitates testing a recommended change by following a prescribed process of (a) planning a change, (b) implementing the proposed change, (c) observing the results brought about by the change and learning from those results, and (d) acting on what is learned. Using this theoretical framework allowed change to be tested incrementally instead of making significant modifications all at once. This step-wise approach allowed everyone participating in the High-Risk OB Initiative to adjust to the proposed change over time.

Setting/Population

This project took place within two FQHC women's health clinics. One clinic was located on the west side of a major metropolitan city, and the second was located on the city's eastside. Both locations serve disadvantaged populations. The population served by these FQHC women's health clinics was diverse, but all the mothers referred consisted of high-risk diabetic mothers. The demographics surrounding the west campus indicated that most female residents were Hispanic, with a median age of 30. It was discovered that 47.4% obtained less than a high school diploma and 37% were from single guardian households. It was estimated that, due to the pandemic, the current unemployment rate was 6.9%. Even though the demographics were similar in both clinics, there were differences. The east campus demographics indicated that most female residents were African American, with a median age of 40, with 52.1% having obtained a high school diploma and 34% coming from single guardian households. This information allowed for the tailoring of educational techniques.

Facilitators

One facilitator of this project was the Ob-Gyn, who envisioned the High-Risk OB Initiative. This Ob-Gyn's interest and dedication to the project contributed to the its sustainability. She allowed the RN and DNP student autonomy to develop and implement the project, and her open-door policy helped the development process. The second facilitator was the information technology (IT) department. Due to the interprofessional relationship built with IT, the creation and implementation of dummy codes, the patient dashboard, and the nursing template for nursing documentation were possible. The third facilitator was the UIW partnership with the FQHC, which allowed the DNP student access to the necessary resources to create and implement the project (see Appendix E).

Barriers

There were multiple barriers encountered during the project. Resistance to change due to time restrictions was an initial barrier. The providers did not have time to add the patient's visit codes and the additional dummy code needed to enroll the patient into the High-Risk OB Initiative. As a result, this task was left to the RN to perform.

The second barrier was due to a change in management. During the 1st week of implementation, a new RN was hired. The new RN was a recent graduate with no previous experience in women's health. She not only had to be oriented to the organization and educated on the care of expecting mothers, but she also had to be trained regarding the High-Risk OB Initiative.

The third barrier was encountered once the implementation process was established. The High-Risk OB Initiative grew rapidly; the patients enrolled in the program were from multiple clinics with the FQHC organization. For the RN to see all the enrolled patients, it was necessary for her to travel between clinics throughout the week. As a result, she found it difficult to see patients in person at their respective clinics, due to overlapping appointments.

The fourth and final barrier was the limited amount of time available to educate the patient. Routinely expecting mothers received their education in the exam room before or after seeing the provider. Due to other patients needing the exam room, education time was limited. This time limit resulted in the RN having to address all issues quickly, so that the exam room could be cleaned and prepped for the next patient. The time constraints were challenging, especially if the patient was diagnosed with multiple illnesses such as GDM and gestational hypertension (GHTN).

Ethical Considerations

The ethical considerations for this project included confidentiality, voluntary participation, and care delay.

The patient's confidentiality was protected by controlling who had access to the data. Only the referring providers and the registered nurse in charge of the High-Risk OB Initiative had access to the patient's information. All paper data was disposed of in a HIPAA-compliant manner when no longer needed. The providers were only able to access a patient's EHR through work computers. The six providers and the RN had a confidential password to log onto the system and knew not to leave computers logged in or give out their passwords.

Voluntary participation meant the expecting mother's participation was not coerced. Voluntary participation was ensured by informing the expecting mothers that they were free to withdraw their participation at any time without negatively impacting their current or future prenatal care.

Delay of care could occur if the expecting mother developed signs and symptoms of maternal/fetal distress due to diabetic complications because the RN communicated with the patient over the telephone and care was not escalated promptly. However, there were protocols in place to ensure that care was provided as soon as possible.

Results

The implementation period occurred between March 19, 2021 and June 14, 2021.

The first objective was to educate 100% of providers, nurses, and medical assistants within the clinics regarding the High-Risk OB Initiative. The DNP student provided education to 100% of staff members at each participating clinic, meeting this objective. Education was provided during the morning huddle 1 week before the project implementation start date. Also,

one-on-one in-person education was provided to staff as needed. Each provider and the RN received an educational email providing information on enrollment codes and program processes in combination with face-to-face education. All providers and staff acknowledged the education email.

The second objective was that 95% of high-risk diabetic OB patients would be enrolled in the High-Risk OB Initiative during the project implementation period. A total of 88% of eligible patients were enrolled in the program without difficulties (see Figure 3). The results were determined through a code comparison search, which allowed the DNP student to determine how many patients had a code for diabetes during pregnancy versus how many patients were enrolled in the initiative. This objective was unsuccessful due to the rapid growth of the initiative and insufficient staffing to ensure all positively screened patients were appropriately enrolled. It was quickly determined that to ensure proper enrollment, another RN would need to be hired to assist in the enrolling process.

The third objective was to have 95% of the high-risk diabetic OB patients contacted by the RN within 3 days of referral to the High-Risk OB Initiative, and receive at least one follow-up telehealth call per week up until the patient's 6-week postpartum visit. Results indicated that only 68% of diabetic mothers were contacted within 3 days of enrollment into the program (see Figure 4). This result was determined via the nursing documentation template, which allowed the DNP student to see when and how often the RN contacted each patient. The RN created a new encounter, leaving a timestamp in the patient's EHR. Once again, this objective was not met due to the rapid growth in the program, multiple referring physicians, and multiple locations.

The fourth objective stated that 100% of patients enrolled in the High-Risk OB Initiative would be educated on gestational diabetes and hypoglycemic symptoms during the project

implementation period. Based on chart audits and the nursing template, it was determined that 100% of the patients enrolled in the High-Risk OB Initiative were educated on when to seek healthcare, how to contact hospital personal, warning signs of hyper/hypoglycemia, proper nutrition, and abnormal fetal counts (see Figure 4). Also, through the implementation period, it was determined that some diabetic mothers, especially those newly diagnosed, needed more help understanding proper nutrition. This knowledge deficit was determined by pre/post questionnaire. It was determined via charts audits that 16% of expecting mothers received both a pre and post questionnaire. The small percentage of pre/post questionnaire can be correlated to the large influx of patients and the limited staff. A health and wellness coach joined the team to assist with further education. Expecting mothers were receptive to the education, and it was determined via glucose logs that the mothers understood and benefited from additional education.

The fifth objective stated that 100% of patients enrolled in the High-Risk OB Initiative would be screened to identify needs during the project implementation period, using the ACOG SDoH tool. While this questionnaire was one of the last interventions to be implemented, 81% of high-risk mothers were screened (see Figure 4). This objective result was determined via chart audits. Once the RN performed the SDoH questionnaire, it was added to the patient's chart. Once again, this objective was not met due to the rapid growth in the program, multiple referring physicians, and multiple locations.

The sixth objective stated that, of those patients identified as having a positive SDoH screen, 95% would be provided resources and referral to social/community services. Out of the 80% of high-risk mothers screened, a total of eight mothers required community resources (see Figure 4). All eight of the mothers needed referrals to WIC, and one mother required a referral to

SNAP. This objective was met because 100% of patients identified as having a positive SDoH screen were provided with the necessary services. To assist the RN with this objective, she was provided with a manual that included up-to-date community resources with telephone numbers, addresses, and websites.

The seventh objective stated that 95% of patients enrolled in the High-Risk OB Initiative would receive a 75g 2-hour glucose tolerance test at the 6-week postpartum visit, per ACOG guidelines. Based on chart audits, it was determined that, out of the 20 patients who delivered within the implementation period, only 10% returned for their 6-week postpartum GTT (see Figure 4). On consultation with providers, it was determined that the majority of patients did not return to their 6-week postpartum visit unless they were returning for other reasons, such as contraception. At the end of the implementation period, it was determined that this objective was not met due to the large number of pregnant mothers enrolled. The RN found herself focusing on pregnant mothers since they required weekly education and monitoring, instead of those who had already delivered. Every mother who delivered was contacted via phone by the RN or LVN to remind them of their upcoming appointment. If the patient did not answer, a voicemail was left with the information required; no further actions were taken.

The final objective was that 95% of patients enrolled in the High-Risk OB Initiative would be referred for continued care after the 6-week postpartum visit. Sadly, this objective was neglected. Due to patients not returning for their postpartum visit and the large influx of patients, the RN could not focus on patients who had already delivered. In order to sustain this project, it was determined that an additional RN team member was needed. The primary Ob-Gyn was informed of this finding, and a new RN was added once the implementation period had concluded for project sustainability.

Figure 3

Enrolled Patients Pre- and Post-Intervention

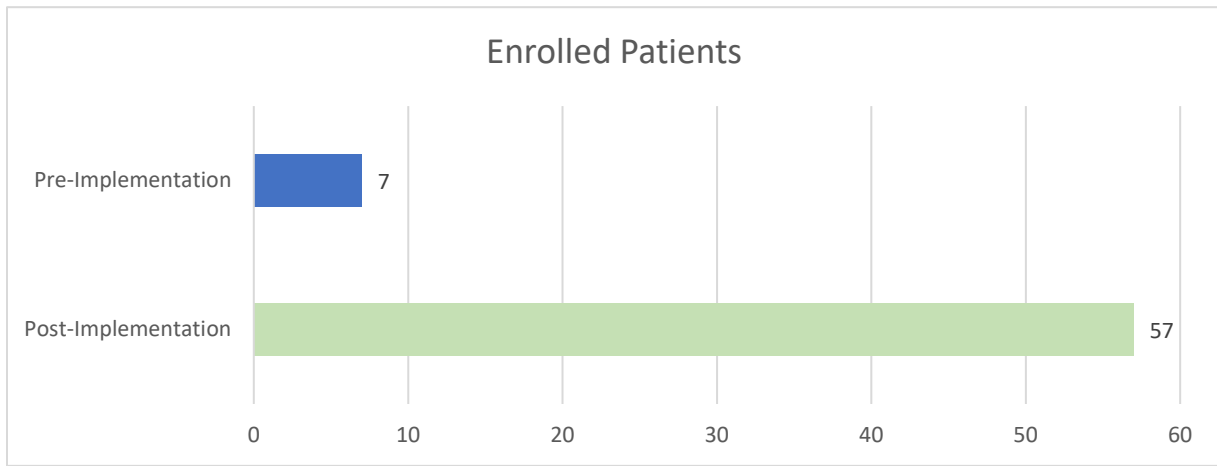
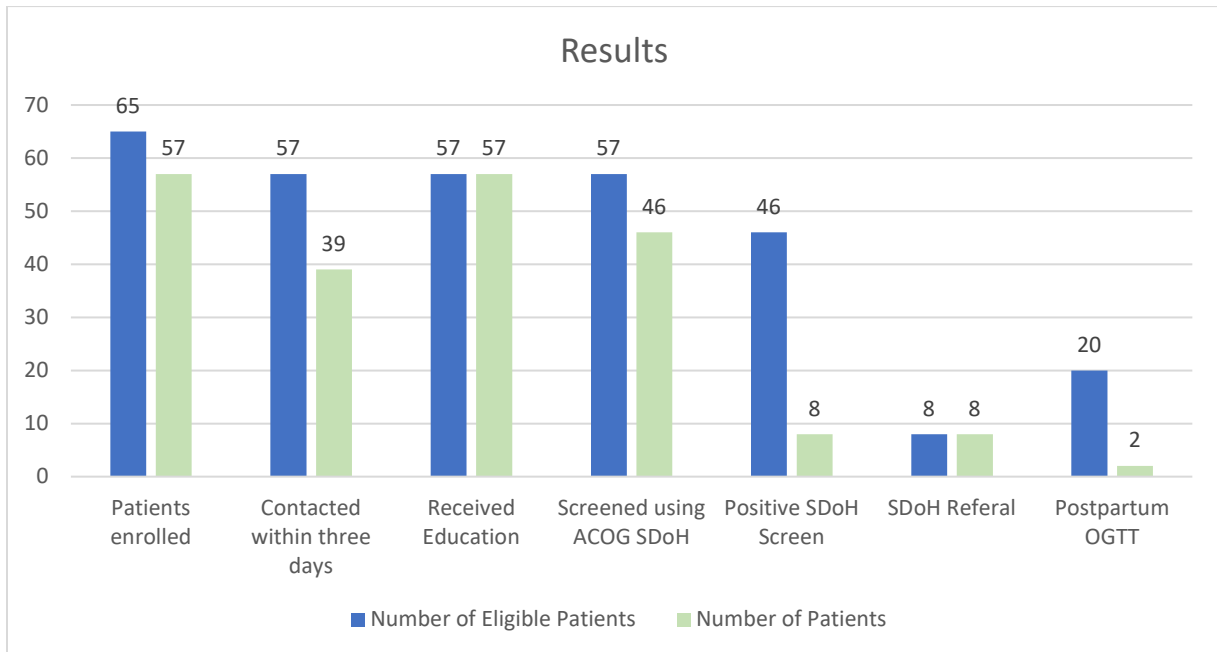


Figure 4

Intervention Results



Discussion

Overall, this project was a success. It succeeded in providing patient education and improving the health of high-risk diabetic expecting mothers by providing them with the necessary tools to achieve a safe pregnancy and delivery. The implementation of this project allowed the director of obstetric services for the FQHC to see where additional education was needed regarding diabetes during pregnancy. It was determined that the majority of the patients needed extra guidance regarding their diet. Knowing this created an opportunity for a dietician/lifestyle coach to join the team and provide specific dietary education for diabetic mothers. The most significant change seen due to this project was patient contribution and adherence. The team-based approach allowed the patients to take charge of their care. Once adequately educated, the patients verbalized how much better they felt and that they would continue this change for themselves and their unborn child.

The main obstacle encountered during the implementation process was the rapid growth of the project. Within the first 2 weeks of implementation, the number of patients enrolled in the program doubled. Such rapid growth was not anticipated. The initial plan included two RNs who would provide education to the patient, but only one RN was able to participate during the implementation period. The RN providing education quickly found herself overwhelmed due to her having to manage two clinics. In order to provide the best patient care possible, she divided her work-week appropriately. Although the RN attempted to meet face-to-face with every patient while they were in the clinic, some appointments were missed due to overlapping appointments at different locations.

The second difficulty encountered was patient availability via telephone. When encountered face-to-face, all patients were very receptive and actively participated in their

education. Although patients were receptive via telephone also, most patients had a limited time to speak due to other responsibilities, such as work or caring for other children. The RN mentioned that several patients were only able to be reached at certain times of the day. In order to ameliorate this difficulty, during the initial visit the RN would coordinate with the patient accordingly for future telenursing calls. If the patient was unavailable, she would leave a voicemail and provide a follow-up call.

The main changes observed during the implementation of this project were patient participation and adherence. Pre-implementation patients were not bringing in their glucose logs or actively participating in their care. Once implementation occurred, patients routinely brought their glucose logs to appointments so that the RN could assess them. The patients would also communicate with the RN regarding proper diet. Many patients stated that the verbal and written education the RN provided was beneficial and allowed them to understand how eating properly benefited themselves and their unborn child. One patient mentioned how the education and guidance provided by the RN motivated her to continue a healthy lifestyle postpartum. She stated that, once she applied the education and tools provided, she physically began to feel better and more energized. With this patient in particular, the provider was able to track her fasting and postprandial glucose levels throughout her pregnancy and see how her compliance assisted in well-controlled glucose levels.

The main project strength was team-based care. In order for this project to be successful, all staff members were essential. Everyone had a significant role in improving patient health, including the medical assistant who performed the screening, the RN who enrolled patients and provided education, and the providers who referred patients to the program and escalating care when needed. In team-based care, it is also imperative to remember the patient, who is also a

vital team member. The patient was an active member, making decisions regarding their health and treatment options. When everyone collaborates effectively, the probability of success is more significant.

Another strength during this project was the interprofessional relationship created with IT. With the assistance of IT, the DNP student was able to develop dummy codes and a dashboard, and implement a nursing charting template. All the tools developed assisted the nurse with tracking high-risk mothers and seeing their progress, allowing for early intervention when needed.

The third strength of this project was the director of obstetrics. Her dedication was invaluable. She provided continuous guidance and support, not only for the DNP student but for the entire staff. Her open-door policy allowed for questions to be openly discussed and barriers to be assessed and overcome. Weekly meetings were introduced that included the RN, the DNP student, and staff members, to ensure questions were addressed and discussed. She believes that all mothers, regardless of their social-economic background, deserve the best care possible before, during, and after pregnancy. Allowing for early intervention when needed increased the probability of a healthy mother and newborn.

Comparing and contrasting these results with other studies may be challenging, since no similar High-Risk OB Initiatives are available. Kotsani et al. (2018) took a similar approach by evaluating the effect of telenursing on diabetic patient compliance with glucose self-monitoring and glycemic control. Their results indicated that the intervention group who received weekly monitoring achieved better glucose control and more frequent self-monitoring than patients who received routine care in the clinic. This supports the theory that weekly monitoring can motivate diabetic patients to achieve better glucose control and early intervention when needed.

Limitations

Multiple limitations were present in this quality improvement project.

The first limitation was limited staff. Due to only having one RN available during the implementation period, educating every patient became a challenge. The RN who was providing the education was responsible for two clinics. Every week she would have to divide her time and travel between clinics. Even though she attempted to provide education to all enrolled members of the High-Risk OB Initiative, she could not accomplish this because of overlapping schedules.

Another limitation present during this project was limited space to provide patient education. The RN provided patient education in the exam room. She would have to track the patient in the clinic and intervene before or after the physician. Due to having to maintain the flow of the clinic, the medical assistants would discharge the patient before education was provided. The RN had to frequently remind staff not to discharge patients after the physician was done.

A final limitation was the time constraint when educating patients. Face-to-face education was provided after the physician had completed his/her patient assessment in the exam room, giving the RN limited time to converse with the patient regarding their illness. This became a challenge when mothers had multiple illnesses such as diabetes, hypertension, and risk for preterm labor. Additionally, a patient with multiple risk factors sometimes found herself overwhelmed with the abundance of information in such a short period.

Recommendations

There are three recommendations based on the results of this project:

1. A new RN should be added to the team. By adding a second RN, patient education could be increased. The RNs would not have to worry about dividing their time

- between two clinics because they could focus on a single clinic. Overlapping patient schedules would no longer be a barrier due to a nurse being present at both clinics. Also, the RNs would have the opportunity to rely on one another when needed, especially if a patient presents with multiple high-risk factors, providing support to one another.
2. The RN should have a space of her own where education can be provided. Providing the RN with her own space will increase patient comfort, education time and not disturb the clinic's flow. Each high-risk patient will receive adequate time to discuss their concerns regardless of how many patients are being seen in the clinic that day or multiple risk factors.
 3. Communication with IT should be maintained to adapt dummy codes, the dashboard, and the nursing documentation template. Due to the program's rapid growth, new dummy codes should be implemented to facilitate tracking, enrollment, and disenrollment of patients when they graduate from the program. Adaptation of codes will allow the RN to adequately track the needed patient without any confusion of who is still enrolled and who have officially graduated.

Sustainability

This project had many strengths that assisted in sustainability, but the main factor was the dedication provided by the director of obstetrics. Her passion for assisting high-risk mothers during their pregnancy was incredible. Her passion and dedication allowed the DNP student to believe that, once the implementation period was completed, the project would not only continue, but would succeed. The director of obstetrics has expressed her wish to continue to

expand this project to the other OB clinics within the FQHC. Her plans include hiring more nurses, to have one at each clinic.

Implications for Practice

The implications for practice of this project include the importance of increased surveillance of high-risk OB diabetic mothers. This initiative provided mothers with increased surveillance, education, and support, and gave them security during their pregnancy. Pregnancy can be a stressful time for women who encounter diabetes for the first time. They worry if they are overeating, not enough, or eating the right things. This program provided them with the support they needed for their entire pregnancy. It also enabled them to make educated decisions regarding their health.

Another implication for practice is the necessity for an effective screening method and enrollment process. Before implementation, 13 patients were enrolled in the program, with seven of them having diabetes. As a result of the standardization of the enrollment process, enrollment of high-risk diabetic mothers increased by 714%. The standardization of the program allowed more at-risk mothers to receive patient-centered care, giving them the courage to participate in their care during pregnancy and thereby decreasing adverse effects.

Lastly is the implication of a patient-center framework. Kuipers et al. (2019) found that patient-centered care was associated with greater satisfaction with care and with physical and social well-being. A patient-centered framework encouraged providers and patients to collaborate. Providers could deliver personalized care while giving patients a say in that care. This high-quality collaborative care improved the healthcare system's efficiency and effectiveness.

This project directly correlates with DNP Essential II: Organizational and Systems Leadership. Organizational system leadership, quality improvement, and safety are critical to promoting high-quality patient care. Doctorally prepared providers should always look for future innovations and opportunities that provide patients with the best care possible. Formalizing a High-Risk OB Initiative for women with diabetes during pregnancy will assist high-risk expecting mothers throughout their entire pregnancy. Providing these expecting high-risk mothers with weekly monitoring will encourage a healthy pregnancy, delivery, and newborn.

This project also directly correlates with DNP Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice. Doctorally prepared providers should be able to design evidence-based interventions and implement best evidence into practice, similar to the interventions created for this project that decreased the complications from diabetes during pregnancy and increased overall mother and baby outcomes.

Lastly, DNP Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care directly correlates with this project. This DNP Essential allowed continued communication with IT to create and use the electronic dashboard and nursing template. Due to the creation of these tools, the nurse was able to track high-risk mothers, see their progress, and allow for early intervention when needed.

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Appendix A



1/6/2021

Project Lead: Valeria Jimenez

Project title: Formalizing an Obstetrical Program for High- Risk Patients: Focus- Diabetes in Pregnancy

Valeria:

Your project titled Formalizing an Obstetrical Program for High- Risk Patients: Focus- Diabetes in Pregnancy was deemed to be **Not Regulated Research**.

Your proposed project was reviewed and found to not meet federal regulatory requirements for human subject research and does not require approval via the IRB process. Please use the IRB number **NRR [21-002]** when inquiring about or referencing this determination.

No further review of the project as proposed is required. Should you determine at any point you wish to add additional elements to the project, please contact us before initiating those components, as this may impact the determination.

For information regarding the IRB or the review process, please contact me at (210) 805-5885.

Sincerely,

Ana Hagendorf, PhD, CPRA

Ana Hagendorf, PhD, CPRA
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Appendix B**Enrollment Screening Questionnaire****High-Risk OB Screening Questionnaire**

Have you ever been told you have diabetes by a doctor?	Yes	No
Have you ever been told you have high blood pressure?	Yes	No
Have you ever had a baby before 20weeks or used Makena injections or a cerclage?	Yes	No
Was pre-pregnancy BMI greater or equal to 30?	Yes	No

Appendix C

ACOG SDoH Questionnaire

Table 1. Sample Screening Tool for Social Determinants of Health ↵

Domain	Question
Food	In the last 12 months, did you ever eat less than you felt you should because there was not enough money for food?
Utility	In the last 12 months, has your utility company shut off your service for not paying your bills?
Housing	Are you worried that in the next 2 months, you may not have stable housing?
Child care	Do problems getting childcare make it difficult for you to work, study, or get to health care appointments?
Financial resources	In the last 12 months, have you needed to see a doctor but could not because of cost?
Transportation	In the last 12 months, have you ever had to go without health care because you did not have a way to get there?
Exposure to violence	Are you afraid you might be hurt in your apartment building, home, or neighborhood?
Education/health literacy	Do you ever need help reading materials you get from your doctor, clinic, or the hospital?
Legal status	Are you scared of getting in trouble because of your legal status? Have you ever been arrested or incarcerated?
Next steps	If you answered yes to any of these questions, would you like to receive assistance with any of those needs?

Modified from Health Leads. [Social needs screening toolkit](#). Boston (MA): Health Leads; 2016; and Bourgois P, Holmes SM, Sue K, Quesada J. Structural vulnerability: operationalizing the concept to address health disparities in clinical care. [Acad Med](#) 2017;92:299–307.

Appendix D**Pre and Post Knowledge Assessment****Diabetes During Pregnancy
Pre/Post Questionnaire**

1. Signs and symptoms of low blood sugar include sweating, irritability, lack of color, and sleepiness.

True False
2. Signs and symptoms of high blood sugar include headache, dry mouth, and increased thirst.

True False
3. Exercise helps keep blood sugar levels in the normal range.

True False
4. You do not need to wash your hands before testing your glucose.

True False
5. You should use the same site to administer insulin every time.

True False

Appendix E
Letter of Support

To whom it may concern,

This letter is to provide notification and confirmation of our support for Valeria Jimenez and Elena Vulgamott's Doctor of Nursing Practice (DNP) project. The providers and support staff of Communicare grant permission to Valeria Jimenez and Elena Vulgamott to complete their DNP project within the clinic. The purpose of the project is to implement a standardized enrollment process, follow-up monitoring, education, and documentation process for the OB high risk program initiative for gestational diabetes and pregnancy induced hypertension. The goal is to decrease the complication from gestation diabetes and hypertension and increase overall mother and baby outcomes by standardizing the clinic's high-risk OB initiative and provide telehealth monitoring and education in addition to regular OB visits. We give Valeria Jimenez and Elena Vulgamott access to patient charts through completion of the DNP project. Obstetrician-gynecologist, Dr. Nicole Van De Putte has approved and is aware of the project purpose. Patricia Gutierrez, BSN, RN is overseeing the project in which the components have been discussed and agreed upon.

Sincerely,



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Appendix F

Enrollment Codes

The screenshot shows the 'Problems' tab in a medical software interface. The patient information at the top includes: LATOYA TEST D. FEMALE (F), DOB: 06/27/1984 (36 years), Weight: 130.00 lb (58.97 Kg), Address: 123 CHANGED ON USTART SAN ANTONIO, TX 78244, Pt. Insurance: Ambetter Exchange Plan, Estimated Due Date: 20181108, Referring: Health Centers, Co., Referring: CommuniCare, Clinical. The 'Problems' tab is active, showing a list of problems. The 'Add ICD' button is highlighted with a red box and a green circle with the number 2. The 'Accept' button is highlighted with a red box and a green circle with the number 4. The 'Diagnoses' dropdown menu is open, showing 'O24.xxx Diabetes During Pregnancy, TRACKING ONLY' selected, with a green circle and the number 3 next to it. The 'Onset Date' is set to 02/11/2021.

AVAILABLE CODES

- Diabetes During Pregnancy:
 O24.XXX Nonbillable Dx, Diabetes During Pregnancy, TRACKING ONLY
- Hypertension Disorders During Pregnancy:
 O10.XXX Nonbillable Dx, Hypertension During Pregnancy, TRACKING ONLY
- Risk for Pre-Term Labor:
 O09.21X Nonbillable Dx, Risk For Pre-Term Labor, TRACKING ONLY
- Management of Chronic Health Conditions- Interpregnancy Interval:
 O90.XXX Nonbillable Dx, Mgmt Chronic Health Cond, Interpregnancy TRACKING ONLY

HOW TO ADD THE CODES?

1. In the patient's chart select Diagnoses.
2. Click Add ICD. A search box will popup, input the ICD code to search and select.
3. Add the diagnosed date.
4. Click Accept.