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Patient and Family Engagement and Empowerment through Prenatal Education

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DNP Project Final Write-up

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Abstract

Background: United States maternal mortality and morbidity rates continue to rise, and the rates in New Jersey are a public health issue that must be addressed to improve patient outcomes and lower healthcare costs. Current New Jersey mortality rates are 37.3 per 100,000. Access to quality childbirth education classes along with mindfulness training have been linked to better outcomes for both mother and infants and should be made available to all patients despite economic conditions. *Purpose:* This DNP project addressed these disparities by showing the need for quality prenatal education for all patients and families. Prenatal education and mindfulness training can decrease anxiety, alleviate fear and lead to better birth outcomes. *Methods:* Evidence-based childbirth education classes, along with added mindfulness training during the antenatal period were developed. The State-Trait Anxiety index (STAI) was used to assess anxiety both before and after the education, and Nulliparous, Term, Singleton, Vertex (NTSV) rates from the previous year were compared to participants in the prenatal and mindfulness classes. *Implementation Procedure:* Childbirth education classes to nulliparous patients and their significant others were provided through an online forum that consisted of four (120) minute classes held weekly. Each class ended with information and training in mindfulness exercises to promote relaxation and reduce anxiety. *Results:* The project resulted in a 20% and 16% decrease in both state and trait anxiety scores respectively, shown by pre- and post-course survey, and a 23% decrease in the NTSV rate. *Conclusion:* Providing cost efficient childbirth education to all patients can reduce anxiety and adverse birth outcomes including cesarean sections.

Keywords: childbirth education, poor maternal outcomes, maternal morbidity, mindfulness training

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Introduction

In the United States about 700 women die each year from pregnancy complications and three in every five maternal deaths are preventable (CDC, 2019). Not included in these numbers are approximately 50,000 women that suffer from maternal morbidities annually (Ellison & Martin, 2017). Many of these women are left wounded, weakened, and traumatized from their experience. Long term effects can be both physical and emotional and can adversely affect entire families.

Background

The U.S. has experienced a steady rise in maternal morbidity and mortality in the last three decades (Troiano & Witcher, 2018). These rates have more than doubled between 1990, and 2013 from 12 to 28 per 100,000 (Agrawal, 2015). These statistics starkly contrast the global trend in developed countries of declining numbers. Globally, there has been a 38% decline in maternal mortality and morbidity between 2000 to 2017 (UNICEF, 2019). In countries like Norway, New Zealand and the Netherlands the maternal mortality rates are 1.8, 1.7, and 3 per 100,000 respectively (Tikkanen, et al. 2020).

The cause of increased maternal morbidity and mortality can be linked to several rationales. O'Neill Hayes and McNeil (2019) suggests that one factor that may contribute to an increase in maternal morbidity is an increase in complications related to surgical deliveries. There has been a 500% increase in Cesarean section deliveries since the 1970's in the U.S (O'Neill Hayes & Mcneil, 2019). Delivery by Cesarean section carries an 80% increased risk of complications (O'Neill Hayes & Mcneil, 2019). These complications occur despite level of

education or social economic status (SES). Another major cause is access to quality care. Limited or poor pre-natal care is also linked to poor outcomes for both mother and neonate (O'Neill Hayes & Mcneil, 2019). It is recommended to have between 13-14 prenatal visits with an advanced healthcare professional, and poor prenatal care is considered four or fewer visits over the course of the pregnancy (Novoa, 2020; Moaddab et al. 2018). In New Jersey specifically, where this quality improvement project was implemented, the maternal mortality rate is almost doubled the national average at 37.3 per 100,000 (Occupational Health and Safety, 2019).

In response to the high mortality and morbidity rates, many states have implemented quality care collaboratives to monitor, review, and make recommendations based on data to address health concerns. A pioneer of this is the California Maternal Quality Care Collaborative (CMQCC). It was implemented in 2006, and the state of California was able to reduce their maternal mortality rate by half by 2013, when the national average had doubled (O'Neill Hayes & Mcneil, 2019). Among many of their recommendations for successfully decreasing maternal harm was cost effective quality childbirth education to improve awareness and promote cesarean reduction (CMQCC, 2016). Healthy People 2020 also includes the following goal: “Increase the proportion of pregnant women who attend a series of prepared childbirth classes” (Office of Disease Prevention and Health Promotion, 2018). There is also evidence that mindfulness training can be beneficial. A study showed that there was a significant difference in anxiety, along with an increase in self-control, and self-confidence after mindfulness and relaxation exercises were added to general birth classes (Ahmadi & Bagheri, 2017). The rate of cesarean section was also significantly lower in the group receiving mindfulness training as compared to

the other group that received childbirth education without added mindfulness training (Ahmadi & Bagheri, 2017).

Review of the Literature

Description of Search Method

The DNP student used the University of Massachusetts (UMASS) library databases as the main source of research for the project. Databases searched included, CINAHL complete, PubMed, and Academic Search Premier advanced settings. The search parameters included publications within the last five years written in English. Key terms included were *childbirth education, poor maternal outcomes, maternal morbidity and mortality and mindfulness training*. This yielded over 1000 results, which were then narrowed the search to articles that utilized childbirth education and mindfulness training to improve birth outcomes and affect patient perceptions of birth experience.

The inclusion criteria for this were broader and included studies that discussed childbirth preparedness, childbirth classes and delivery outcomes, along with mindfulness training during pregnancy and antenatal education. Twelve studies were selected that highlighted first, the need for the project and then, interventions that have had success in different environments. The studies were focused on low-risk nulliparous women of multiple ethnic backgrounds and all socioeconomic backgrounds to represent the participant population of the project. The studies included three clinical trials, two retrospective studies, two meta-analysis, two observational studies, a cross sectional survey, a qualitative and a quantitative study.

Risk Factors and Disparities

The increasing maternal mortality and morbidity rates can be attributed to multiple sources. The increased cesarean rate is a risk factor for increased morbidity and mortality due to the increase in subsequent complications (O'Neill Hayes & Mcneil, 2019). Increased stress during pregnancy can also lead to poor birth outcomes (Felder et al., 2018). In one study increased maternal stress was associated with low birth-weight in newborns (Ae-Ngibise et al., 2019). While another specifically linked an 81% increase in cesarean rates for high anxiety mothers, as compared to mothers with good mental health (Moameri et al., 2019). A nationwide survey was given to mothers and concluded that: Most mothers trust their caregivers to give good care, yet caregivers often give incomplete and inaccurate information. This leads to women being generally poorly informed (Simpkin, 2017). The combination of collaborative prenatal education, paired with quality prenatal care was studied in Kansas and resulted in positive knowledge outcomes (Woods & Chessar, 2015). Six sessions of group prenatal education were added to patients already receiving prenatal care. This led to significant increases in knowledge on the topics of pre-term labor (85% vs 95%), and safe sleep (84% vs 99%) (Woods & Chessar, 2015). The utilization of mindfulness training has also been linked to decreased anxiety and stress in mothers. Kiseleva and Kiselev. (2019) enrolled 23 pregnant women that were experiencing high levels of perceived stress or pregnancy-specific anxiety, as indicated from a percieved stress scale into a mindfulness training group. The results showed that mindfulness training can effectively reduce pregnancy-related anxiety (Kiseleva & Kiselev., 2019). This further confirms that antenatal education, childbirth education, and mindfulness training can all have significant impact on decreasing the cesarean section rate along with anxiety and stress related to pregnancy.

Evidence Based Interventions

Prenatal Care and Social Support

Access to prenatal care is the first step in decreasing negative birth outcomes. Many studies and statistics highlight the link between four or fewer prenatal visits and higher maternal morbidity (Moaddab et al., 2018). Prenatal patient education is an essential component of the standards of care for regular prenatal visits. The pregnant patient is provided with information relevant to the stage of pregnancy, their questions are answered, and anticipatory guidance is given for upcoming visits, stages of pregnancy and birth plans. If desired by the patient, family members according to patient choice should be included in any prenatal education according to the patient's personal and cultural preferences. A study in Tanzania focused on both patient and family involvement in birth preparedness (Shimpuku et al., 2019). Culturally women have less decision-making power in Tanzania, so family involvement was important for the success of any education process. The implications of this in the U.S. are the large immigrant population in which family involvement in birth process is part of the culture. Also, this encourages including family social support in childbirth education and planning. Educating and preparing patient and families for possible labor complications, was also discussed (Shimpuku et al., 2019). This allowed families to be calm and prepared in emergency situations and to have plans in place for where to go and who to contact in emergency situations, along with childcare for current children and transportation to nearest healthcare center. This type of preparation improved birth outcomes in a sample population in rural Tanzania. Izudi et al. (2019) mirrored the results, and showed the education and birth preparedness lead to an increased number of skilled birth attendance. It is important to note that in both above mentioned studies birth preparedness consisted of antenatal education during scheduled prenatal visits and not additional childbirth classes and included

discussions of a plan for place of delivery, recognizing warning signs of complications, and designated decision makers in emergency situations (Izudi et al., 2019; Shimpuku et al., 2019). In the US, New York Department of Health and Mental Hygiene implemented the "By My Side Birth Support Program". The purpose is to provide pregnnat women with a doula support during labor and delivery, along with prenatal care (Thomas et al., 2017). This program resulted in a slight decrease in cesarean rates to 33.5% vs 36.9% ($p = 0.122$) among those who participated in the program after implementation (Thomas et al., 2017). Many states have also started to implement group prenatal classes as a way to improve patient education and increase social support. These models are supported by the American College for Obstertricians and Gynecologists (ACOG) (Novoa. 2020).

Childbirth Education

There were several studies that highlighted a positive relationship between childbirth (CB) preparedness and good birth outcomes both mental and physical. In one review medical records were reviewed of 318 women, half of which had attended CB classes and half whom did not (Gluck et al., 2019). After controlling for variables like education and SES, patients that attended CB classes experienced fewer labor interventions, and instrumental births: 7.5% vs 22.6% in the group that did not attend classes (Gluck et al., 2019). The authors did mention that the participants of CB classes had higher levels of education and were of higher SES than those who did not, which highlights the question of access to quality childbirth education. Similar results were found with nulliparous low- risk women in Jordan. In a study of 133 women assigned to two groups, one group received regular prenatal care while the other was also given CB classes (Hatamleh et al., 2019). This resulted in the women who had participated in the CB classes coming into the hospital for delivery in spontaneous labor vs false labor (89% vs 70.3%

in the control group), leading researchers to speculate increased confidence in determining true labor.

Mindfulness Training

The incorporation of mindfulness training into childbirth classes further decreases anxiety and provides the childbearing woman and their families tools to enhance relaxation and prepare to effectively cope with the stress of labor and birth. Ahmadi and Bagheri. (2017) focused on mindfulness and reducing anxiety in first time mothers and created a mindful child birthing education class in addition to general child-birth classes that lasted 8 weeks. Mothers were randomly placed in two groups with the control group only receiving general birth classes, while the experimental group received both birth classes and the extra mindfulness education. The results showed a significant difference in both anxiety and cesarean rates between the groups (Ahmadi, & Bagheri, 2017). Of the 34 participants only four in the intervention group were delivered via cesarean section, compared to 15 in the group without mindfulness training (Ahmadi, & Bagheri, 2017). The women reported less fear of the pain involved in labor and an increase in self-control and self-confidence. A highlight discussed is that the classes were given after patients had signed an informed consent form provided by their physicians, and the class still resulted in a decrease in anxiety for the participants. This shows that extra education is needed for patients to be truly confident, and feel fully informed.

A systematic mixed-studies review on mindfulness-based childbirth education yielded the same results. A review of eight peer-reviewed studies concluded that mindfulness training is beneficial and should be added to CB classes (Shorey et al., 2019). Both qualitative and quantitative studies found significant improvement in participant psychological outcomes, including stress, and anxiety, with one participant sharing that she felt “empowered” by the

mindfulness training (Shorey et al., 2019). McCants and Greiner (2016) further looked at prenatal education, which highlighted the positive effects of thorough pre-birth education. Women who underwent this course felt more confident and comfortable with the birthing experience, and more aware and involved in the decision-making process (McCants & Greiner, 2016). These results, like the previous results signifies the importance of good education to decreasing anxiety, fear, increasing confidence, and allowing patients to feel adequately informed and involved of health care decisions. Mindfulness training can be linked to other health benefits during pregnancy. Examples include a decrease in overeating (Vieten et al., 2018) and overall stress reduction (Dhillon et al., 2017).

Summary of Literature Review

All the studies reviewed above conclude that appropriate education and preparation can lead to less anxiety and better outcomes for both mothers and infants. The motto of "healthy mom, healthy baby" includes not just physical health, but mental health. The decrease in anxiety and increased confidence noted in the literature can lead to less percieved fear of childbirth. There is also the advantage of preparing parents for the childbirth experience. A better prepared family can avoid unnecessary hospital admissions and extra interventions that can be linked to more labor interventions that can result in an increased rate of complications including cesearean section (Gluck et al., 2020). On the other hand prenatal education can alert a mother to a potential problem tht may need prompt intervention. Examples include education on signs and symptoms of hypertension in pregnancy, which can be life threatening, along with identifying when to notify her provider of concerns, such as decreased fetal movement. Overall there are numerous positive effects from appropriate education and preparation for labor and birth.

Theoretical Framework

The patient centered care model is the act of making patient and families partners in their care with physician and other healthcare providers (Rawson & Moretz, 2016). Eight principles of patient centered care were developed that encompass all aspects of the project:

- Respect for patient values, preferences, and expressed needs
- Coordination and integration of care
- Information, communication and education
- Physical comfort
- Emotional support and alleviation of fear and anxiety
- Involvement of family and friends
- Transition and continuity
- Access to care (Rawson & Moretz, 2016).

The ACOG Committee Opinion 492 *Effective Patient Physician Communication* states that shared decision making promotes patient engagement, treatment adherence, and improved outcomes while reducing risk (CMQCC, 2016). Each of the principles were utilized during the implementation of the DNP project. The childbirth education classes utilized the principle of information and education. The classes also focused on alleviating fear through preparation. Participants were educated on comfort measures, and positions during pregnancy, labor, and childbirth. The inclusion of significant others in the education process highlights the principle of family involvement, this is especially necessary during the pandemic as visitation during hospital stays are limited at this time. Participants and their significant others were also educated on what to expect when bringing home a new baby and coping techniques for the transition. The purpose

of the project is to build patient confidence, which allows them to express their wishes and subsequently be more involved with their care plan. Patient centered care should be practiced not only after hospital admission, but throughout the pregnancy and prenatal process.

During the DNP project each patient received a generic birth plan, and were educated on all their birth options, to prepare them to ask the right questions and be confident in their abilities to weigh in on important decisions regarding their health and the health of their child. The DNP student coordinated with the primary physician to identify patients that were in need of childbirth education. There was the coordination of care between the childbirth educator and the primary physician, as well as access to childbirth education for all patients within the practice.

Methods

This DNP project was an education quality improvement project that took place using the patient population of an OB-GYN office in New Jersey. It consisted of free online childbirth education class series for both patients and their support persons, allowing all members of the community access to evidence-based childbirth education regardless of income. The project was originally offered as an in-person 6-week course, consisting of (6) 90-minute classes, however due to the pandemic and time constraints experienced by the DNP student it was offered online via live video chat weekly.

It consisted of four (4) CB classes over the course of four weeks offered to patients via zoom and their support persons. Class sizes had no more than seven to ten participants, and each class was two hours long. Participation was voluntary, and patients and families were made aware that they could drop out at any time with no change to their care. Inclusion criteria for the

study were nulliparous, term, singleton, vertex (NTSV) women. Factors that excluded participation were previous birth, or twin gestation.

Two sessions consisted of eight classes held over the course of seven weeks with the first session beginning on January 10, 2021, and the second session beginning on January 31, 2021 after the conclusion of the first session. Both courses had a total of ten participants, six of which attended with their significant others, and four that attended alone. Initial STAI surveys were completed by participants before their initial class. Each week covered a different topic. Week one focused and changes in pregnancy, preparation for baby, signs of labor, and each class ended with breathing techniques and mindfulness training that progressively got more intricate. Week two focused on labor and birth overview, stages of labor, comfort measures, and pandemic related changes (i.e., some hospitals weren't allowing doulas, and significant others in the labor room). Week three focused on labor interventions, medical interventions, cesarean sections, what to expect in the hospital, setting goals, and birth outcomes. And the last week focused on right after birth, breastfeeding, and taking home baby. Each week built on the previous class and ended with more training on mindfulness meditation, coping, and calming breathing. Class one ended with one minute of meditation after education and progressed to seven minutes by week four. All participants were given resources that could be utilized at home during the week, and were encouraged to continue mindfulness breathing and meditation between sessions to strengthen their ability to focus. The follow-up surveys were then sent to participants at the end of the last class. All participants were sent a reminder email about the survey within two weeks if it was not completed. Birth outcomes were reported by the Obstetrician to the DNP student.

Goals, Objectives, and Expected Outcomes

The long-term goal of this Quality Improvement (QI) Project was to engage patients and families and empower them to take an active role in their childbirth and healthcare decisions. The immediate goal of this QI was to recruit a minimum of ten low-risk, nulliparous participants to attend the childbirth education classes. This was done through flyers and pamphlets being placed in the OB-GYN office, along with the OB-GYN recommending the CB class to all patients that fit the inclusion criteria. Another goal was to show healthcare providers definitively the positive impact quality childbirth education can provide and the need to provide quality childbirth education to all patients. The objectives included:

- Providing quality childbirth education to patients utilizing four two-hour educational classes, meeting weekly and consisting of instruction-led, power point presentations, videos, demonstration, and practice covering the topics of:
    - Pregnancy complications
    - Process of Labor
    - Labor during a pandemic
    - Breathing techniques and relaxation
    - Management of pain
    - Emotional issues
    - Early breastfeeding
    - Postpartum period
    - Mindfulness training was added and practiced at the end of every class and patients were encouraged to continue training.

- Provide and template for continued childbirth education in the future CB educators to utilize
- Create a curriculum for quality CB education along with mindfulness training

Expected Outcomes included:

- 15% decrease in primary Nulliparous Term Singleton Vertex cesarean section rate as compared to NTSV deliveries in the same practice for the previous two months to project implementation.
- 50% decrease of fear or anxiety related to birth (as measured by State/Trait Anxiety Index)

Actual Outcomes of this project:

- 14.8% NTSV cesarean section rate in childbirth education group compared to 38% NTSV cesarean section rate for patients in the OB-Gyn practice.
- 20.83% reduction in state anxiety and 16.8% reduction in trait anxiety in the childbirth education group as measured by the State/Trait Anxiety Index.

Project Site and Population

This office delivers approximately 240 patients annually at the local hospital. The patient population is mainly from a county in the Northern New Jersey area. The county has a population of approximately 900,000 with a population that's comprised of 21% Hispanic or Latino, 55% White alone, and 7.4% Black or African American (US Department of Commerce, 2019). There are currently two office locations, one provider, and two staff nurses employed. There are currently no childbirth education classes offered by the office and patients are encouraged to attend the class provided by the local hospital at full cost when they are available.

The office currently has a an NTSV Cesarean rate of 38% which closely mirrors that of the state. Since the beginning of shutdowns associated with the pandemic, many patients were transitioned to mainly tele-heath visits, and for in office visits significant others are not allowed to accompany them. The project was open to all patients in the practice, however for the purposes of the study only low risk nulliparous were included.

Implementation Procedure

The project was implemented via zoom sessions to patients recruited from a private OB-GYN office. Sessions were held over the course of 4 weeks by the DNP student. Presentations were developed using standards set by Lamaze.org. Lamaze is recognized by the International Childbirth Education Association (ICEA) for childbirth education, and developed an education research initiative in 2017 to facilitate and promote evidence-based education to the population. Following their six healthy birth practices initiatives, the curriculum for the childbirth education classes was developed. The Patients were recruited through flyers placed in the OB-GYN office and through recommendation by the Obstetrician. All potential participants were given an email address to contact if interested in class. All patients were allowed to attend the classes, however only those that met the inclusion criteria were utilized for the quality improvement study. All education and training materials was left with office staff for future use. This included PowerPoint presentation materials, video recordings made of each class, along with video resources emailed to participants after the class. Only a childbirth educator or staff member is required to continue childbirth classes.

Measurement Instrument

To measure the outcomes of this DNP project the following instruments was used. To measure patient anxiety the State Trait Anxiety Inventory (STAI) was administered online to participants before and after completion of the education classes (Appendix A). The STAI was developed in 1983 (Spielberger, 1983). It has been tested for both reliability and validity and has been deemed appropriate to determine anxiety and to distinguish it from depression symptoms (Greene et al., 2017). Internal consistency coefficients have ranged .86 to .95; test re-test reliability coefficients have ranged from .65 to .75 over a 2-month interval (Spielberger, 1983). Test-retest coefficients for this measure in the present study ranged from .69 to.89. This is considerable evidence to attest to the construct and concurrent validity of the scale (Spielberger, 1989). The questionnaire consists of 40 questions measured on a 4-point Likert scale. Scores for the questionnaire range from 20-80 with low scores indicating mild anxiety, while high scores indicate high anxiety. A suggested cut-off point for significant anxiety is 39-40 (Spielberger, 1983). The questionnaire measures both current anxiety (state), and proneness to anxiety (trait). State anxiety is defined as fear, nervousness, discomfort etc. and refers to how a person is feeling at the time. Trait is defined as feelings of stress and worry and refers to how a person is feeling over a period of time. The STAI is copyrighted and licensed through mindgarden.com. Purchase of the questionnaire came with a scoring key and permission to administer.

Data Collection

A pre/posttest one group study design was utilized (Issel & Wells, 2018). Patients were recruited through flyers and recommendation from the OB-GYN and given a pre-test to determine anxiety/fear of labor and delivery. After the completion of the childbirth classes participants were given the same post-test to determine current level of anxiety/fear. This was

used to assess if quality childbirth education decreased fear and anxiety related to childbirth. Both the pre and posttest were completed online. Participants were given access to individual surveys via the Mindgarden website at no charge to them.

The only patient data listed on the site is their email addresses used to give access to the survey, and access to is password protected and used only by the DNP student. There was also an assessment of the NTSV cesarean section rates of the OB-GYN office prior to childbirth education compared to determine if there is a decrease in patients that utilize CB classes (Issel & Wells, 2018). Cesarean rate data was gathered through office data recording the monthly (NTSV) cesarean rates. This is currently tracked in the OB-GYN office for statistics.

Data Analysis

For the analysis of the STAI questionnaire descriptive statistics (median, mode, and mean) were utilized to compare pre and post results and determine if there was a decrease in anxiety related to childbirth education. For cesarean rate statistics, NTSV cesarean rates for the OB-GYN office were compared to the average rates as tracked by the office manager. The purpose of this project was be to determine if quality prenatal education during pregnancy along with prenatal care can decrease anxiety and fear of labor and delivery, and improve labor/birth experience, and outcomes.

Ethical Considerations/ Protection of Human Subjects

The University of Massachusetts, Amherst (UMASS) Internal Review Board (IRB) waiver was obtained prior to initiating the DNP project (Appendix B). All participants were given adequate informed consent and their privacy and confidentiality was protected. Participants were identified by numbers and not names on their pre/posttest, and maximum

efforts were made to maintain anonymity. No patient data was removed from the OB-GYN office and information utilized for data analysis were assigned numbers instead of names to protect patient privacy. Pre/Posttest was completed online and no names or email addresses were listed on data. Access to results is password protected. Patients participating in CB classes have continued to receive the same level of prenatal care as patients not involved. There were no risks to the participants and possible benefits includes access to quality childbirth education.

Results

Two childbirth education courses were offered to patients of the OB-GYN practice covering all the listed objectives over the 4-week period. A total of 10 participants were recruited over the course of 4 weeks. Participants gestational age ranged from 26-34 weeks. All 10 participants completed the initial pre-test survey. After completion of the course 7 (70%) participants have completed their post-test surveys, one participant delivered before completing all 4 classes and the other surveys are outstanding at the time of this report. Table 1 below presents the results of the pre and post test scores of the participants of the State Trait Anxiety Inventory.

Table 1

Mean State Trait Anxiety Inventory scores

STAI	Pre-education Survey	Post-education Survey	Mean difference (Percentage decrease)
State Anxiety	38.4	30.4	8 (20.83%)

Trait Anxiety	36.3	30.2	6.1 (16.8%)

Results of the pre-test ranged from 20-66 on the STAI scale with an average of 37 across both state and trait anxiety scales. This is just slightly under the cut-off for significant anxiety of 39-40. The average was also close to the median and mode which both were 38. The average post-test STAI scale was lowered to 30 for both the state and trait anxiety with an also lowered median of 33 and a mode of 35. These results show a decrease in both state and trait anxiety levels for participants of the childbirth education course, although not the 50% decrease that was listed in the expected outcomes. At the time of writing, six participants have delivered vaginally, and one was a primary cesarean. This correlates to a 14.3% NTSV cesarean rate which is significantly lower than the current rate of 38% in the OB-GYN office and exceeds the expected outcome of an 15% decrease in the NTSV cesarean rate. This is also significantly below the current NTSV cesarean rates in New Jersey. All other participants have not yet delivered.

Participant Feedback

Also, participants were encouraged to give anecdotal feedback on the childbirth education experience, and many expressed appreciations for the course, specifically referring the classes as “useful” and “very valuable”. Feedback to the obstetrician was also positive and participants remarked that they felt “better prepared” for labor and childbirth. No negative responses were given by any of the participants. A remarks/ suggestions area should be offered in post-survey after future projects to collect more data of participant satisfaction.

Discussion

This Quality Improvement project was utilized to decrease anxiety and fear leading to better outcomes as measured by cesarean section rates in a group of patients by providing prenatal education classes that also incorporated mindfulness exercises. The primary physician in the office was very receptive to the project and facilitated the progress. Flyers promoting the class were allowed in the office, and the OB-GYN provided information about the classes to all patients at their 28-week visit.

The feedback from the participants shows that the classes along with the mindfulness training had a positive impact with many sharing their appreciation for the education to both the DNP and the OB-GYN in follow up visits. Participants reported via e-mail that they felt “better prepared”, and some reported verbally that they would continue to practice mindful meditation and breathing in their day to day lives after childbirth. The Obstetrician expressed an interest in continuing the childbirth education classes with future patients due to the success. In future projects a remarks section should be added to the post-test survey, or a post course interview should be held to get more qualitative data regarding patient satisfaction of the childbirth education and the added mindfulness training. A barrier to the project was the change from in-person education to online education. The online format limited the hands-on training that was planned to show comfort measures, and positions during pregnancy and labor. Videos were shown to give examples and participants were sent links to class videos, and other video resources that they could use to practice these positions at home. Many of the participants would keep their camera off during the course, so it was impossible to know if they were paying attention to the entirety of the class. Also, as the major hospital usually offers a class for profit, they did not allow any recruitment on campus or in the clinic, which limited the potential reach

of the DNP project. Low participation numbers also were a barrier, as it limited the data available.

The biggest barrier was the time constraints on the project. The time from approval to final data analysis was 3 months. This limited the time for recruitment and data retrieval leading to not all the participants delivering at the time of this write-up. In the future larger projects that can effectively determine if there is a direct correlation between childbirth education and cesarean rates.

Conclusion

This quality improvement project determined a decrease in anxiety related to childbirth after patients participated in childbirth education classes with added mindfulness training. The addition of mindfulness training has been shown to decrease anxiety in past studies, however, without a control group of participants without the mindfulness training it is difficult to determine if it played a significant role in the decrease in anxiety. Both immediate anxiety and proneness for anxiety, which is a longstanding trait and less responsive to change, was reduced in all participants. Participant feedback were all positive indicating that childbirth classes are both useful and wanted by women and families during the prenatal period. No negative responses were reported to the DNP student or the Obstetrician by any participants. The quality improvement project, however, cannot determine if the addition of mindfulness education made a significant difference in anxiety levels. Another project involving some participants receiving childbirth classes with mindfulness training, and some without would better determine the effectiveness of mindfulness training with childbirth education. Another possibility includes collaborating with the major hospital to determine if their classes, which do not include mindfulness training, yielded the same or similar results to that of the quality improvement

project. There is also a significant decrease in the primary cesarean rates of 50%, however, without the data of all the participant deliveries the DNP student is unable to determine the full effects on the NTSV cesarean rates. Also, demographic data was not collected on participants which makes it impossible to determine if the project participants were representative of the community demographic or possibly identify barriers for a specific population.

Weaknesses of the quality improvement project include the small number of participants. In future studies, more patients should be included to give better data. There is also no way of determining if the impersonal use of zoom classes vs in person education made a difference in patient participation and retainment of information. The DNP student had limited time to recruit participants and this can be seen in the limited sample size. In future studies demographic data should also be utilized to determine the possibility of other barriers that may exist.

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Appendix A

Self-Evaluation Questionnaire STAI Form

Directions

A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right* now, that is *at this moment*. There is no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

Key: 1- Almost never

2- Sometimes

3- Often

4- Almost always

1. I feel calm ..... 1 2 3 4.
2. I feel secure..... 1 2 3 4
3. I am tense 1 2 3 4
4. I feel strained 1 2 3 4
5. I feel at ease 1 2 3 4
6. I feel upset..... 1 2 3 4
7. I am presently worrying over possible misfortunes..... 1 2 3 4
8. I feel satisfied..... 1 2 3 4
9. I feel frightened..... 1 2 3 4

10. I feel comfortable..... 1 2 3 4

11. I feel self-confident..... 1 2 3 4

12. I feel nervous 1 2 3 4

13. I am jittery..... 1 2 3 4

14. I feel indecisive..... 1 2 3 4

15. I am relaxed..... 1 2 3 4

16. I feel content 1 2 3 4

17. I am worried..... 1 2 3 4

18. I feel confused..... 1 2 3 4

19. I feel steady..... 1 2 3 4

20. I feel pleasant..... 1 2 3 4

21. I feel pleasant.....1 2 3 4

22. I feel nervous and restless..... 1 2 3 4

23. I feel satisfied with myself..... 1 2 3 4

24. I wish I could be as happy as others seem to be 1 2 3 4

25. I feel like a failure..... 1 2 3 4

26. I feel rested..... 1 2 3 4

27. I am “calm, cool, and collected”..... 1 2 3 4

28. I feel that difficulties are piling up so that I cannot overcome them..... 1 2 3 4

29. I worry too much over something that really doesn’t matter..... 1 2 3 4

30. I am happy..... 1 2 3 4

31. I have disturbing thoughts..... 1 2 3 4

32. I lack self-confidence..... 1 2 3 4

33. I feel secure..... 1 2 3 4

34. I make decisions easily 1 2 3 4

35. I feel inadequate..... 1 2 3 4

36. I am content..... 1 2 3 4

37. Some unimportant thought runs through my mind and bothers me..... 1 2 3 4

38. I take disappointments so keenly that I can't put them out of my mind 1 2 3 4

39. I am a steady person..... 1 2 3 4

40. I get in a state of tension or turmoil as I think over my recent concerns and interests 1 2 3 4

Appendix B

UMASS Letter of Approval

UMassAmherst

Human Research Protection Office

Mass Venture Center
100 Venture Way, Suite 116
Hadley, MA 01035

Memorandum – Not Human Subjects Research Determination

Date: December 22, 2020

To: Nicole Lewis, College of Nursing

Project Title: *Patient and Family Engagement and Empowerment Through Prenatal Education*

HRPO Determination Number: 20-273

The Human Research Protection Office (HRPO) has evaluated the above named project and has made the following determination based on the information provided to our office:

☐ The proposed project does not involve research that obtains information about living individuals

[45 CFR 46.102(f)].

☐ The proposed project does not involve intervention or interaction with individuals OR does not use identifiable private information [45 CFR 46.102(f)(1), (2)].

☒ The proposed project does not meet the definition of human subject research under federal regulations [45 CFR 46.102(d)].

Submission of an Application to UMass Amherst IRB is not required.

Note: This determination applies only to the activities described in the submission. If there are changes to the activities described in this submission, please submit a new determination form

to the HRPO prior to initiating any changes. ***Researchers should NOT include contact information for the UMass Amherst IRB on any project materials.***

A project determined as "Not Human Subjects Research," must still be conducted ethically. The UMass Amherst HRPO strongly expects project personnel to:

- treat participants with respect at all times
- ensure project participation is voluntary and confidentiality is maintained (when applicable)
- minimize any risks associated with participation in the project
- conduct the project in compliance with all applicable federal, state, and local regulations as well as UMass Amherst Policies and procedures which may include obtaining approval of your activities from other institutions or entities.

Please do not hesitate to call us at 413-545-3428 or email humansubjects@ora.umass.edu if you have any questions.

Iris L. Jenkins, Assistant Director
Human Research Protection Office