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Screening for Postpartum Depression in Mothers whose Newborns are Admitted to the NICU: A Quality Improvement Project

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Screening for Postpartum Depression in Mothers whose Newborns are Admitted to the NICU: A Quality Improvement Project

A DNP Project Presented to the Faculty of

The Department of Nursing

West Chester University

West Chester, Pennsylvania

In Partial Fulfillment of the Requirements for

the Degree of

Doctor of Nursing Practice

By

Megan E. Mustachio

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Dedication

I would like to dedicate this project to my husband, Tom, and our children, Tommy and Phoebe. Your strength and belief in me are my pillars of support. Together, as a family, we have shared countless memories, celebrated milestones, and overcome obstacles hand in hand. Your love and presence in my life are the greatest gifts I could ever ask for, and I am eternally grateful to you. This journey was a testament to the strength of our bond and the power of our love. I dedicate all my achievements and successes to you, my beloved family, for it is your love, support, and encouragement that drive me to be the best version of myself and to make a difference in the world.

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To my friends, and family, thank you for standing by me, cheering me on, and sharing in both the joys and struggles of this journey. Your friendship and support mean the world to me.

Last but certainly not least, to my beloved husband, Tom, and our children, Tommy and Phoebe, your love, patience, and understanding have been my anchor and source of strength. Your unwavering belief in me has fueled my determination to pursue my dreams and overcome challenges. Thank you for your unconditional love, encouragement, and belief in my abilities. Your support has been the foundation upon which I have built my dreams and aspirations. I could not have done any of this without you. You are my everything.

Abstract

Women whose newborns are admitted to the Neonatal Intensive Care Unit (NICU) are at an increased risk to experience feelings associated with Post-partum Depression (PPD) than women whose newborns are not. The screening of this population is imperative for early identification and dissemination of community resources as a source of early intervention. The purpose of this project is to increase the number of screenings performed on the new mothers at the bedside of their NICU admitted newborn and deliver the screen to the NICU Social Work department for early intervention, and resources. This quality improvement project used a six-week retrospective pre- and post-implementation design. The pre-intervention data demonstrated an incidence of 70% (n=14). An in-depth education session on PPD was conducted and laminated, and card-sized copies of the Edinburgh postnatal depression scale were disseminated to the NICU staff. Post-intervention data was collected over a 6-week period resulting in a decreased incidence of 44% (n=4).

Keywords: post-partum depression, Edinburgh postnatal depression scale, neonatal intensive care unit, maternal depression screening

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Chapter 1

Introduction

Postpartum depression (PPD) is a potentially life-threatening, and the most common, ailment after childbirth (Brownlee, 2021). This significant, but often overlooked, issue especially affects mothers whose babies are in the Neonatal Intensive Care Unit (NICU) (Berns & Drake, 2021). The high frequency of PPD among these mothers highlights the critical importance of early detection and timely intervention. PPD can lead to both immediate and lasting effects on both the mother and baby. Identifying and promptly referring these mothers, who are at risk, for early interventions are vital steps towards improvement of the overall well-being of mother and child. Therefore, this project aims to evaluate the feasibility of increasing early PPD screenings for this population of mothers at high risk for PPD.

Background

The Centers for Disease Control and Prevention (CDC) (2022) reported that PPD, recognized as a mental health condition, affects an estimated 1 in 8 women. When women have newborns that are admitted to the NICU, the risk of PPD increases by 50-75% (Chuffo Siewert, et al., 2015). This increased vulnerability stems from the challenging circumstances and stressors encountered when their newborns need specialized medical or surgical attention right after birth. A mother's emotional strain of having a newborn in the NICU, especially from seeing them in a critical condition or undergoing medical interventions, coupled with uncertainties regarding the outcome, can lead to heightened feelings of anxiety, guilt, and sadness, all factors closely linked to PPD (Berns & Drake, 2021; Lasheras, et al., 2022; Wyatt, et al., 2019). Consequently, the additional burden and stress

faced by mothers during their newborn's NICU journey necessitate heightened awareness and support to address their mental health needs. Understanding this, compounded, with proactive interventions that encompass emotional support, counseling, and education about coping strategies, is crucial in aiding these mothers through this challenging phase, thereby potentially mitigating the risk or severity of PPD.

Impact of PPD on Patient Care

PPD is a mental health condition that can detrimentally affect the relationship between mother and child. It can lead to unfavorable associations, impacting the emotional connection, attachment, and caregiving behaviors. PPD affects not only the relationship between a mother and her child but can result in social and behavioral hindrances for the child. This disruption in the mother-child bond may lead to difficulties in the child's social interactions, emotional regulation, and behavior, such circumstances can substantially hinder the mother/child relationship, influencing them throughout their lives (Earls, et al., 2019; CDC, 2022; Jo James, 2023).

Mothers whose newborns necessitate admission to the NICU confront an escalated susceptibility to experiencing PPD due to a multitude of stressors entwined with their infant's hospitalization. The distress arises from several factors, including the disruption of essential bonding moments due to separation, the uncertainty surrounding the newborn's prognosis or diagnosis, and the financial strain incurred from the NICU admission, these stressors contribute significantly to the risk of PPD among this particular group of mothers (Berns and Drake, 2021; Brownlee, 2022; Newton et al., 2022; Suhana-Yahya, et al., 2021). These circumstances often result in these mothers missing their postpartum follow-up appointments with their obstetricians (Berns and Drake, 2021; Brownlee, 2022; Cherry, et

al., 2016; Newton, et al. 2022). The preoccupation and emotional investment in the infant's medical journey in the NICU also, understandably, diverts the mother's attention, causing unintentional neglect of her own health needs.

Purpose

Early screening and intervention(s) hold utmost importance for this specific cohort of new mothers, as timely identification can facilitate the prompt dissemination of community resources during the early postpartum period. Therefore, the main objective of this project is to assess the feasibility of augmenting the frequency of PPD screenings for new mothers with infants admitted to the NICU at the bedside of their newborns. This project also seeks to evaluate the impact of educating NICU nurses about the Edinburgh Postnatal Depression Scale (EPDS) screening tool and signs of PPD, with the goal of fostering improved communication between the nursing staff and the NICU Social Work (SW) team. Additionally, this project will investigate if disseminating wallet-sized versions of the EPDS will enhance the number of screenings conducted. Finally, the envisaged collaboration between NICU nurses and the SW team is designed to streamline the process wherein the SW department can interpret the screening outcomes and provide timely interventions and necessary resources tailored to the specific needs of the mother.

Thus, overall, by integrating PPD screenings into the routine care provided at the bedside of NICU-admitted newborns and enhancing the knowledge base of nursing staff regarding PPD indicators, this project aims to establish a more comprehensive support system. This proactive approach intends to ensure that new mothers facing the stressors of NICU admission receive early identification, appropriate interventions, and access to crucial

resources, all contributing to better mental health outcomes for both the mothers and their newborns.

Clinical Question

In Mothers with newborns admitted to the NICU (P) how does the introduction of a post-partum depression screening tool, and education on its use (I), help NICU providers identify mothers with signs and symptoms of PPD and therefore increase referrals to SW (O) with-in a six-week time frame (T)?

- Does the use of visual guides increase identification of new mothers at risk for post-partum depression by the NICU nurse?

Project Objectives

- Mothers with newborns admitted to the NICU (planned or unplanned) will be administered the self-assessment EPDS by the NICU SW within 96 hours of their newborn's admission to the NICU.
- Mothers with newborns admitted to the NICU (planned or unplanned) who score ten or greater will be given community referrals within 96 hours of the completed self-assessment.
- NICU nurses will demonstrate an increase in understanding of PPD signs as evidenced by a change between pre/post survey results.
- NICU nurse alerts to unit-based social workers for subsequent PPD screening will increase from the identified baseline referral rate of zero.

Methodology

This project will use a six-week retrospective pre- and post-implementation quality improvement design. The data supplied by the NICU SW team will include the number of

times a nurse has alerted SW of a mother presenting with signs of PPD as well as the number of PPD screens done. Nurses will be given a pre-survey to assess knowledge of PPD recognition in NICU mothers, then will receive comprehensive education on PPD, its effects on mothers with newborns in the NICU, and the EPDS screening tool. Nurses will then be given a wallet sized, laminated EPDS as a visual tool. After the implementation of the project, the following de-identified data will be collected weekly by the DNP student: the number of nurse notifications to SW for a mother presenting with signs of PPD, the number of new admissions per day and the number of PPD screens done. Finally, the nurses will be re-surveyed after 6 weeks to assess knowledge of PPD recognition in the NICU mother.

Summary of Chapter

The nexus between PPD and the welfare of both mother and child emphasizes the critical need for early identification, intervention, and support for this group of mothers. Addressing the mental health challenges faced by these mothers not only benefits their own well-being but also plays a pivotal role in fostering healthier outcomes for the overall growth and development of the child. Early intervention and support contribute to a healthier family dynamic and set the foundation for the well-being of both the mother and the child.

Chapter 2

Introduction

Chapter two compiles both a theoretical framework and a literature review on Postpartum depression (PPD) in general and its effect on mothers with newborns admitted to the Neonatal Intensive Care Unit (NICU). This review is divided into the following sections: a.) Signs and Symptoms of PPD b.) PPD risk factors c.) The NICU risks associated with PPD d.) Physical and Mental Health consequences of PPD for both mother and baby e.) Use of the Edinburgh Postnatal Depression Scale, f.) Interdisciplinary Care Involvement, and g.) Timing of Screening and Interventions.

Term/Concept Definitions

For the purposes of this quality improvement project, Post-partum Depression is defined as depression symptoms which occur within the first 12 months following the delivery of an infant (Stotts, et al., 2019). Infant, as defined by the Centers for Disease Control [CDC], 2021, is the period of life from 0-12 months of age.

Theoretical Framework

The framework for this project is Kotter's Change Model. According to Finkleman (2022), this model can be used to create change as a part of a culture shift. Kotter's Change Model is a step-by-step process and includes urgency establishment, empowering action, the creation of short-term goals, and finally, procuring a shift in culture (Finkleman, 2022). Healthy People 2030 highlights the urgent need to increase the number of women who are screened for PPD and bases this goal on empirical evidence which shows risks to the mother, child, and family unit increase when PPD goes untreated. The action for this project is broad and includes screening every new mother whose child is admitted to the NICU, not

just those who meet criteria identifying them as high risk for PPD. The short-term goal of this project is to identify and direct those mothers whose risk is calculated to be higher based on the Edinburgh Postnatal Depression Scale (EPDS) to Social Work for early intervention and resources. This cultural shift in the NICU is essential for embracing family-centered care and moving away from the notion that the neonate is the sole focus of attention.

Review of the Literature

The search for literature for this Doctor of Nursing Practice (DNP) project began during the spring of 2023 and continued through the early fall of 2023. The literature for inclusion was in both the CINAHL and MEDLINE databases where the search produced 17 articles. To narrow to the most current literature, each article was published between 2017 and 2022, without country-of-origin limitations, but restricted to the English language. For the purpose of this literature review, articles with a focus on caregivers other than the biological mother were excluded. Search terms included: *Postpartum depression, NICU or neonatal intensive care unit or special care or baby unit or newborn intensive care, maternal depression, risk factors, PPD screening, and depression.* In addition to the literature review, guidelines from the Centers for Disease Control (CDC), American Academy for Pediatrics (AAP), and Office of Disease Prevention and Health Promotion (ODPHP) were reviewed for inclusion.

Signs and Symptoms of Postpartum Depression

To begin, PPD is defined as a prevalent mood disorder that is identified within 12 months of newborn delivery. Conversely, the more common postpartum “blues” have symptoms of worry and sadness after newborn delivery, however; will resolve within weeks

of the newborn's birth. Maternal feelings associated with PPD include anxiety, isolation, sadness, inadequacy, and guilt. Symptoms associated with these feelings can vary, but literature agrees that they can manifest in the form of interrupted sleep, decreased or increased appetite, disturbances in her personal hygiene routine, uncontrolled emotional outbursts, a persistent, often intense, concern for the wellness of the newborn, irritability, hostility, decreased engagement with the newborn or admitted thoughts of self-harm and suicidal ideation. (Berns & Drake, 2021; Brownlee, 2022; Kestler & Lavenda, 2021; Lasheras, et al., 2022; Leahy-Warren, et al., 2020; Newton, et al., 2022; Stotts, et al., 2019; Wyatt, et al., 2019). The AAP (2019) recommends early screening to identify those who are at an increased risk and, subsequently, provide interventions such as the provision of counseling, and community resources when such feelings are identified, to reduce the lasting effects of PPD.

PPD Risk Factors

The adjustment from pregnant woman to laboring woman is a time of swiftly shifting feelings of happiness, anticipation, and stress. PPD is one of the most common effects associated with delivery and affects an estimated 10-30% of new mothers. Age, demographics, a history of mental health disorder, a history of violence, a lack of social support, and the events surrounding childbirth increase the risk for PPD. Psychosocial stressors such as a diagnosis of PPD after a previous birth, a history of post-traumatic stress disorder (PTSD), and addiction can also trigger PPD (Earls, et al., 2019; Lasheras, et al., 2022; Wyatt, et al., 2019). Younger mothers are further identified to exhibit more depressive symptomology when they present with less income, education, and familial support.

Further, mothers who report a history of intimate partner violence are among those at most risk for PPD.

Neonatal Intensive Care Unit Risks Associated with PPD

Evidence indicates that PPD rates increase when a newborn is admitted to the NICU by 28-70% (Bonacquisti, et al., 2020; Berns & Drake, 2021; Chuffo Siewert, et al., 2015; Gateau, et al., 2021; Kestler-Peleg & Lavenda, 2021; Lasheras, et al., 2022; Stotts, et al., 2019) as a gap in the normal transition from intrauterine to extrauterine life is noted. Newborn infants are an inherently vulnerable population to all elements outside of the womb, in a normal transition, the newborn, after having gone through the normal stress of birth, is immediately handed to the mother for initiation of skin-to-skin contact for the first hour of life. This "golden hour" not only assists the newborn in regulating blood sugar and temperature but is the first physical contact between mother and child initiating a crucial time for bonding and also promotes breastfeeding. An interruption of the normal stress which results in a NICU admission markedly increases the risk for PPD in the new mother (Dickinson, et al, 2022; Lasheras, et al., 2022; Leahy-Warren, et al., 2020; Newton, et al., 2022; Stotts, et al., 2019), often due to unknown prognosis, and the consideration of the newborn's morbidity and mortality.

The NICU is a specialized nursery focused on the care of sick, complex, or premature newborn infants. This department employs specialized medical staff trained in sophisticated equipment that is used to treat medically or surgically fragile newborns in their care. This department exposes a new mother to unfamiliar language, and unexpected separation and jeopardizes a new mother's ability to perform basic maternal tasks, which can, in turn, increase the mother's level of stress. Due to the fragility of the NICU-admitted

newborn, specialized equipment is needed to promote and/or supplement the newborn growth and development. This unfamiliar environment, equipment, and strict clustering of hands-on care causes a disruption in maternal/newborn bonding time resulting in an overwhelming sensation for the new mother. Due to the frail physiology of the neonatal brain, the neonate requires a decrease in stimuli. External environmental factors like cold hands or loud noises necessitate a hands-off approach to care, disrupting the crucial bonding time between the mother and infant. This situation can leave the mother feeling helpless and questioning her role as the newborn's primary caregiver.

Along with the unknown prognosis of the newborn, factors that can increase the risk for PPD, external to the NICU, stem from the stress of the environment in which the neonate is being cared for. The complex medical procedures and interventions in the NICU, coupled with the necessity for constant vigilance, create an environment where mothers experience an overwhelming sense of powerlessness and anxiety. The cost associated with the neonate's intensive care admission, along with the time needed to dedicate to the visit, and the time spent away from the home environment compound to increase stress and contribute to increase the risk for PPD in the new mother (Berns, & Drake, 2021; Lasheras, et al., 2022; Newton, et al., 2022).

Physical and Mental Health Consequences of PPD for Mother and Baby

The American Academy of Pediatrics supports that maternal screening for PPD is a portion of the first four newborn pediatric well visits (Earls, et al., 2019). This routine screening is an opportunity for the pediatrician to assess how mother and baby are adjusting to life together. Extended hospitalizations for newborns can disrupt the regular schedule of these well visits. This interruption poses a challenge as it may lead to the omission of crucial

assessments for both the mother and the child, and put them both at risk for the acute and chronic effects of PPD.

Acute physical effects of PPD for mothers include disengagement or avoidance of the newborn, delayed or decreased milk production, weight fluctuation, and impaired recovery after childbirth. These physical effects can lead to increased maternal stress and anxiety which literature agrees can affect the newborn (Berns, & Drake, 2021; Bonacquisti, et al., 2020; Brownlee, 2022; Dickinson, et al., 2022; Gateau, et al., 2021; Jo James, 2023; Lasheras, et al., 2022; Leahy-Warren, et al., 2020; Newton, et al., 2022; Wyatt, et al., 2019). The mental health effects of the increased stress can lead to irregular or negative coping mechanisms.

These acute and chronic effects on the mother translate to the baby in the form of impaired attachment and bonding, leading to, mainly, neurodevelopmental concerns; although literature agrees that infants with an impaired bond at the newborn stage of life will be fussier, have poor sleep patterns, and, eventually, suffer behavioral, emotional, social and cognitive delays (Bonacquisti, et al., 2019; Burns and Drake, 2021; Lasheras, et al., 2022; Leahy-Warren, et al., 2020; Stotts, et al., 2019).

Use of the Edinburgh Postnatal Depression Scale

The Edinburgh Postnatal Depression Scale (EPDS), developed by Cox et al. (1987), is a widely utilized screening tool used to guide discussions about maternal mental health. The EPDS is not a diagnostic tool, rather, a 10-item self-reported questionnaire that explores feelings such as happiness and recent habits such as suicidal ideation within the past seven days. Scores are tallied based on the screening instructions, noting that a score greater than ten (maximum score of 30) indicates a potential for PPD. This tool does not address any

factors that increase a mother's risk for PPD, rather, it is a blanket screening that suggests that mothers who score ten points or greater be distributed referral resource options so that she may further explore her feelings. This tool does explicitly ask about suicidal ideation and a positive answer to this question should be immediately addressed. Literature does not indicate the use of this screening tool in consistent intervals; however, its use has been documented for up to one year after the birth of a child. The EPDS is self-explanatory; therefore, does not address the ability to assess competency with use or training on the delivery of this tool.

The EPDS has been validated in 2 separate research groups (Barassi & Grealish, 2022 and Park & Kim, 2023) both of which used the Cochrane Handbook for Systematic Reviews of Diagnostic Test Accuracy to create and implement the review. Each study concluded high levels of sensitivity when used to identify women at risk for PPD. Notably, the study by Barassi and Grealish had a focus on adolescents which theorized the use of a lower cutoff threshold for scoring adolescents. Many other studies have utilized this screening tool to identify PPD in the perinatal woman proving it is a reliable and valid screening tool. Permission to use this instrument is not required as stated on the original EPDS tool (Cox, et al., 1987).

Interdisciplinary Care Involvement

Maternal mental health, when it is negative, will affect the family as a unit. This is especially true for the infant in its mother's care. In some instances, the sick infant may not be the only stakeholder relying on the mother, there may be other children, a spouse, family pets, and work to which she may want to return to. The number of stakeholders relying on the mother will require multiple disciplines to be involved to ensure the best care for the

family unit. In the NICU, bedside nurses are afforded time to engage with the mother at the newborn's bedside, this time can be utilized for the nurse to assess how the mother is coping with her role. This interaction may identify signs or symptoms of PPD which the nurse can then communicate to the Social Work team or the other members of the newborn's medical team.

The Social Work team is a valuable member of the NICU care team. Social workers have access to resources and community referrals, such as specialized professionals, which can distribute interventional help unique to the needs of the mother. The Social Work team is also able to facilitate bedside interventions directed to the mother through various coping strategies such as journaling, listening, positive feedback, and affirmations, providing education regarding the environment of the NICU, and creating social support circles with mothers who are having similar experiences (Berns & Drake, 2021; Chuffo Siewert, et al., 2015; Kestler-Peleg & Lavenda, 2021; Lasheras, et al., 2022; Leahy-Warren, et al., 2020; Oyekunle, et al., 2021).

Timing of Screening and Interventions

The guidance from the American Academy of Pediatrics (AAP) supports early and routine PPD screening such as when the newborn visits their pediatrician at 1, 2, 4, and 6 months of life (Earls, et al., 2019). PPD screenings are also routinely performed at postpartum appointments with the obstetrician or midwife's office. Early screening gives care team members the ability to detect complications while the mother adjusts to life with a newborn. If necessary, early detection allows for the implementation of interventions to decrease any further risk of, or decrease lasting effects of PPD. Literature has shown that the translation of this model into the NICU by implementing, although not mandating, PPD

screening of the mother of the newborn can facilitate identification in an otherwise missed population, allowing swift initiation of interventions (Brownlee, 2022; Dickinson, et al., 2022; Gateau, et al., 2021; Kestler-Peleg, & Lavenda, 2021; Lasheras, et al., 2022; Leahy-Warren, et al., 2020; Newton, et al., 2022; Wyatt, et al., 2019).

Conclusion

Despite knowing that PPD is a prevalent and serious public health issue with a deficiency in screening per the US Department of Health and Human Services, mothers whose newborns are admitted to a NICU following birth are not screened at the newborn's bedside. Mothers with newborns admitted to the NICU experience increased emotions and stressors which can trigger symptoms associated with PPD. Evidence indicates these mothers are preoccupied with their hospitalized newborn leading to an increased risk for missed opportunity for screening at routine post-partum medical provider visits (Berns & Drake, 2021). Mothers must be screened for PPD routinely when their newborn is admitted to the NICU so that early interventions to increase social support are initiated. The EPDS is a reliable tool to screen for PPD, the questions are easy to read, and the results can be swiftly interpreted. The results of the screen can be shared with interdisciplinary staff to introduce or reinforce family-centered care to increase engagement with the newborn, as well as resources outside of the hospital to alleviate additional stressors.

Level of Evidence

The literature reviewed for the purpose of this project was evidence levels one, three, four, six, and seven. These levels include systematic reviews, RCTs, controlled trials without randomization, cohort studies, EBP and QI projects as well as expert reports. Due to

the higher levels of evidence, there is enough evidence to support screening new mothers in the NICU as a practice change.

Gaps in the Literature

Few gaps were identified throughout this review of literature. No studies were found which did not support screening mothers with newborns admitted to the NICU. Some studies argued that mothers in the NICU do not experience increased incidence of PPD. This project offers to increase NICU nurse knowledge of PPD and reliable screening tools to use to assess the mother's perspective.

Chapter 3

Introduction

Chapter 3 focuses on a thorough breakdown of the research design, data collection methods and the analytical tools used for this project. The rationale behind the chosen methodology and its alignment with project objectives will be discussed. Additionally, this chapter will provide details of actual and potential threats to the project and risk adjustments proposed as well as the project budget design.

Project Design

This quality improvement project with quantitative pre/post surveying of nurses was conducted in a 39-bed level IV Neonatal Intensive Care Unit (NICU) at a small, yet established, Magnet designated hospital in Philadelphia. This nationally recognized urban teaching hospital has a total of 188 beds and numerous outpatient clinics. The hospital was established with the idea of providing healthcare that is easily accessible, affordable, and centered around families, and these principles are evident in its mission, vision, and core values. The hospital partnered in this DNP project after necessary onboarding including confidentiality agreements and providing access to the nurses for education and instruction for this project. This method of using QI helped to implement improvement in current practice where many studies have shown a great need for change.

Sample

The convenience sampling was of mothers who experienced a NICU admission, whether planned or unplanned. Inclusion criteria was that of women with biological newborns admitted to the NICU for treatment(s). Exclusion criteria was that of mothers

whose newborn was discharged or transferred from the NICU in 96 hours or less, and if the newborn expired in less than 96 hours. The final sample size was n=29.

Information Delivery

Information regarding this QI project was delivered in-person to the dedicated nursing team in the NICU. An asynchronous online option was available for those nurses who were unable to attend the live in-person sessions. The primary focus of this project was to evaluate the proficiency of the nursing staff in identifying signs of Postpartum Depression (PPD) and, subsequently, their effectiveness in promptly notifying Social Work (SW) when necessary. To establish a starting point, a baseline pre-survey was conducted, and post-surveys were used to track the project's progress over the time it was implemented.

The survey seen in Appendix A is a nine item Likert scale based on common signs of PPD such as loss of sleep, poor hygiene, emotional outbursts such as irritability and hostility, and decreased engagement with the newborn. (Berns & Drake, 2021; Brownlee, 2022; Kestler & Lavenda, 2021; Lasheras, et al., 2022; Leahy-Warren, et al., 2020; Newton, et al., 2022; Stotts, et al., 2019 and Wyatt, et al., 2019). This survey is rooted in Kotter's theoretical framework to increase interdisciplinary care by evidence of recognizing the signs of PPD and reporting them to SW rather than dismissing the evidence. After completion of the pre-survey, nurses were facilitated through concise education on signs of PPD, the use of the Edinburgh Perinatal Depression Screen (EPDS), and given a card-sized, laminated copy of the EPDS. The rate by which nurses alert SW of mothers showing signs of PPD was trended pre and post project implementation. A repeated survey after project completion was used to identify nurse-led alerts of mothers showing signs of PPD to SW.

Planning Activities

The key stakeholders in this project are the nurses, social workers, mothers, and their children. In planning this project, the family-centered approach to care is paramount. While tending to their NICU babies, the NICU staff had a valuable opportunity to evaluate mothers at risk for PPD. For this to occur, and for the best outcomes, the project needed to be an interdisciplinary effort.

At first, the NICU nurse educator was queried for interest in this project. The NICU SW team was then invited into the conversations as they had begun to administer the EPDS unbeknownst to the nursing staff. Buy-in from the hospital and unit organization was obtained through a modified project proposal with information tying this project to a Healthy People 2030 goal. Figure 1 illustrates the timeline of the project.

Educational Interventions

Information delivered to the NICU nursing staff included statistics from the AAP, CDC, and the ODPHP. This education also covered the commonalities identified in the literature as reasons for an increased risk for PPD in the NICU mother, common signs of PPD, and the process to inform SW of mothers showing signs of PPD. It was explained that the EPDS is a ten-item screening tool used to identify patients at risk for postpartum depression and is not a diagnostic tool. This information was synchronously delivered in person with an alternate method of asynchronous delivery for those nurses who could not attend the in-person education session. The education sessions were approximately 30 minutes each and held several times over the course of 3 days, with times that overlapped so that day shift and night shift nurses could have the opportunity to attend. Nurses were asked to attend only one session. Pre and post surveys of nursing referral rates to SW, written at an elementary level, were disseminated to nurses as they came in to attend an education

session. The surveys were distributed again after the completion of the project in person and online. Appendix B links to the PowerPoint that was shared with the NICU nursing staff.

Measures

This project's metrics focused on augmenting the quantity of PPD screenings conducted within the NICU. This was done in several steps, starting with a six-week retrospective assessment of de-identified data including the number of times a nurse has alerted SW of a mother presenting with signs of PPD as well as the number of PPD screens done; this data was supplied by SW. Nurses, who attended the education sessions, were given a pre-survey to assess knowledge of PPD recognition in the NICU mothers. Following the survey, nurses were educated on PPD, signs of PPD, its effects on mothers with newborns in the NICU, and the EPDS screening tool. Nurses were then given a card sized, laminated EPDS as a visual tool. After the implementation of the project, the following de-identified data was collected weekly by the DNP student: the number of nurse notifications to SW for a mother presenting with signs of PPD, and the number of PPD screens done. Finally, the nurses were re-surveyed to assess knowledge of PPD recognition in the NICU mother.

Data Collection

The data collected was gathered in the form of an Excel flowchart. The flowchart identified the number of nurse-based alerts to SW of mothers showing signs of PPD for six weeks prior to project interventions, then per week during the project as well as any follow-up or screenings completed. A separate flowchart trended the nurses survey results pre and post the project interventions. This approach was selected because it offers a straightforward means of gathering data and serves as a visual tool for monitoring the project's

advancement. The use of a flowchart also minimized interruption to the nurse's planned day by decreasing the amount of time needed to dedicate to this project as the infants in the NICU require high level care. Appendix C is a link to the Excel spreadsheet used for data collection. Appendix D is a link to the Excel spreadsheet used to trend the pre and post survey results.

Implementation

The DNP student provided the baseline referral survey and education to nurses. The unlicensed assistive staff ensured that the paper EPDS was available for each new admission. Social workers were responsible for delivering the EPDS to the new mothers and collecting and interpreting the screening tool. This DNP student tracked the use of EPDS through the weekly meetings with the SW team in which we discussed nursing alerts of mothers showing signs of PPD. No patient identifiers nor demographic data were collected. The SW data was accessed for confirmation of the EPDS administration, scoring and noted of any resources which were disseminated. All data will be destroyed five months after project completion or earlier unless the hospital or unit requests to keep it.

Analytic Plan

Analysis of this data was done through a thorough analysis. This project required multidisciplinary staff to work together for optimal change to occur. The histogram incorporated PPD screenings done and reflected any change in the number of nurses actively alerting the SW department of needed interventions. The data analysis revealed whether the project achieved its intended objectives, which involved boosting the count of PPD screenings for new mothers and notifying social workers about mothers displaying signs of PPD.

Type of Statistical Analysis

For the analysis of the survey responses provided by the nurses, the R Programing System was used to for conduct statistical assessments. The dataset encompassed the results of the nurse survey, specifically focusing on the Likert scale. It's important to note that the Likert scale does not contain negatively worded items. This scale consists of variables such as the number of years served as a NICU nurse, the type of PPD education attended, and a set of survey statements rated on a scale from "very untrue of me" to "very true of me," with seven possible scores, including a neutral rating.

Anticipated/Actual Barriers

Potential threats to this project included low admission census for the NICU, complacency with the role of the NICU nurse, resistance to participating in the project, poor interdisciplinary rapport, and obstructed communication among the outside project coordinator, the nurses working in the NICU, the NICU medical team, and the Social Work department. As Finkelman (2022) points out, barriers to a project occur when trust is not established. Potential threats can be avoided when trust in the project coordinator is established, staff feel empowered to participate and all questions have been answered. Additional threats to this project include the potential for the lack of maternal participation in the screening, misunderstanding of the questionnaire, or (intended or unintended) dishonesty in answers provided.

Actual obstacles that needed addressing involved a communication delay between the DNP student and the facility. The hospital had a scheduled Magnet visit in early January, and this process demanded significant time for project coordination. The Magnet evaluation is a rigorous assessment that necessitates dedicated time from hospital administrators and

educators for planning. Following the 3-day evaluation, the DNP student's mentor was unavailable due to vacation, leading to a delay in implementation by 2 weeks compared to the initial timeline.

Risk Adjustments

Factors that could impact this potential QI project include demographic variabilities of the participating mothers as well as individual participants who are experiencing negative social determinants of health or comorbidities. In these scenarios, the mother may already be experiencing levels of depression, anxiety, or stress in everyday life, perhaps accepting their feelings as normal. To mitigate this risk, education should be given to the participating mother on the signs and symptoms which define PPD. In the instances of demographic variations, for mothers who are unable to read the self-assessment, individual accommodations can be assigned such as language interpreters or having the assessment questions read out loud to them.

Strategic Plan/Budget

The project's budget encompasses expenses related to the nursing surveys and educational materials, which comprised of laminated, card sized EPDS samples for the nurses, and paper copies of the nurse pre and post surveys. I was responsible for funding these items, while the hospital covered the nurses' time spent attending educational sessions during their regular working shifts.

Summary

Chapter 3 served to outline the research design, data collection techniques, and analytical tools used in this project. It delved into the rationale behind the chosen methodology and its alignment with project objectives. This chapter provided a systematic

account of data analysis processes and reinforced the validity and reliability of the EPDS. Lastly, this chapter introduced a histogram which will be used to illustrate the anticipated increase in PPD screenings in the NICU to correlate with an increase in the number of nurses alerting SW of mothers in need.

Chapter 4

Introduction

This chapter will discuss the outcomes from the data collection process, as well as describe the quantitative survey results. It will highlight any notable trends or patterns identified through the analysis, providing valuable insights for further investigation. Overall, this chapter aims to articulate the results with the goal of understanding the quantitative data gathered and its implications for this quality improvement (QI) project.

Data Collection

This project used a retrospective pre- and post- implementation QI design to determine if the introduction and education to the Neonatal Intensive Care Unit (NICU) nurses on the Edinburgh Postnatal depression scale (EPDS) led to an increase in communication to the NICU Social Work (SW) team regarding mothers suspected of experiencing symptoms associated with postpartum depression. Pre-intervention results were gathered between December 2023 and January 2024. There were 20 mothers in the pre-intervention group. Post-intervention results were gathered between January and March of 2024. There were 9 mothers in the post-intervention group. Weekly collection of data occurred on Fridays through the implementation phase of this project.

The pre and post-intervention sample consisted of all mothers who had a newborn(s) admitted to the neonatal intensive care unit between December 11, 2023 and March 1, 2024. Of the pre-intervention group, 14/20 (70%) mothers completed the EPDS. (Figure 2). For the post-intervention group, 4/9 (44.5%) mothers completed the EPDS. (Figure 3). Additionally, the pre-intervention group consisted of 42.8% of mothers who completed the EPDS and received additional resources based on their screening score while the post intervention group

saw 50% of mothers who completed the EPDS and received additional resources based on their screening score.

At the execution of the project implementation, 46 nurses, with an average length of 11.2 years practicing as a NICU nurse, participated in the pre-intervention survey and education. There were 25 nurse participants in the post-intervention group with an average length of 9.5 years as a NICU nurse. A self-identified understanding of PPD was measured with a 7- point Likert scale with a range from 1= very untrue of me to 7 = very true of me, including 4 = neutral. Nurses in the pre-intervention group averaged a 4.5/7 understanding of the signs and symptoms of post-partum depression. Nurses reported an average of 5.3/7 that they had encountered a mother experiencing symptoms associated with PPD and an average of 4.4/7 of reporting these symptoms to the Social Work department. Nurses in the post-intervention group averaged 5.5/7 understanding of the signs and symptoms of post-partum depression. Nurses reported an average of 5.3/7 that they had encountered a mother experiencing symptoms associated with PPD and an average of 4.8/7 of reporting these symptoms to the Social Work department. A correlation heat map was run to test for any statistical significance between length of years as a NICU nurse and the survey results, and it suggested that this is no correlation. (Figure 4).

Statistical Results

A single-tailed t-test was used to identify a change in the self-reported understanding of PPD, p-value = 0.0009351. The mean in the pre-intervention group is 4.56 (SD = 1.0125) and the mean in the post-intervention group is 5.50 (SD = 1.1795). This demonstrated a 1-point shift in confidence pre vs post and the p-value suggests a statistically significant difference in pre vs post confidence in identifying PPD.

The pre-intervention group consisted of 6 of the 14 (42.9%) mothers who completed the EPDS and received additional resources based on their screening score. The post intervention group consisted of 2/4 (50%) mothers who completed the EPDS and subsequently received additional resources based on their screening score. This equates to an approximate 15% increase in resources provided to those who were identified as having an increased risk for PPD.

Summary of Chapter

This chapter presented the outcomes derived from the data collection process and detailed the findings from the quantitative survey. The analysis identified significant trends to offer valuable insight for future projects and investigation. This chapter presented findings, enhanced comprehension of the data gathered and gave significance for this QI project.

Chapter 5

Introduction

Post-partum depression (PPD) causes complications such as interruptions in bonding, which can result in challenges for the child's social interactions, emotional regulation, and behavior. Such disruptions can significantly impede the mother-child relationship, impacting both parties throughout their lives (Earls, et al., 2019; CDC, 2022; Jo James, 2023). Mothers who have their newborns admitted to the Neonatal Intensive Care Unit (NICU) have been identified as having an increased risk of developing PPD. By implementing this project to increase PPD risk assessments for mothers with neonates admitted to the NICU, the identification of mothers in need of resources may be increased.

Review of the Key Findings

The purpose of this quality improvement project was to increase the number of PPD screenings completed on mothers during the length of stay while their newborn(s) is admitted to the NICU. The main results of this project were satisfactory. Despite a small sample size and a non-variance in communication with the SW team, the rate of PPD screens did increase from 42.9% to 50%.

This quality improvement project did identify a significant need to implement continuing education for nurses regarding this important topic. The independent variables of length of years as a nurse and the degree in which nurses report confidence in identifying PPD showed no significant correlation with reporting identified symptoms to SW despite their reporting as having more confidence in identifying these symptoms. Furthermore, “encountered” is a significant predictor of “alerted” variables. For example, if a nurse reported on the Likert scale that they “encountered” any signs of PPD, then they were significantly more likely to alert SW of that sign.

The use of the card-sized Edinburgh Postnatal Depression Scale (EPDS) as a tool to remind nursing staff was difficult to assess because the post-intervention group was not asked about its use. All nursing staff in the pre-intervention group had received the card sized EPDS, but due to the randomization of nursing staff surveyed, this item was not addressed.

Application of Theoretical Framework

This project correlates with Kotter's Change Model to create change as a part of a culture shift. By surveying the NICU nurses before implementing the education, including the risk factors faced by the mothers who are clients in the project implemented NICU, a sense of urgency was established. During the conversation after the presentation, action by the nurses was empowered, and short-term goals were established. A shift in culture was perceived by the SW team as they were able to add the mother's EPDS score to the nursing hand-off documentation.

Limitations of the Project

The most notable limitation of this quality improvement project was the small sample size. The census of the department and the admission rate were both low at the time of pre and post data collection. The nurses who were surveyed were not labeled, and this would have been beneficial to do a more in-depth analysis of the survey results.

Another limitation that was noted with this quality improvement project included the inconsistency of communication to the social workers of PPD identification. Nurses in the NICU verbalized to the primary investigator of mothers who were showing signs of PPD, but it was not noted that this information was communicated to the Social Workers.

Implications for Nursing Practice, Education and Research

This quality improvement project led to implications for both practice and policy changes. Nursing education and possible changes to curriculum were evaluated, though implications for changes were not indicated. Implications for practice include increased communication between nursing and social workers. The SW team now communicates with high-risk mothers (scores of 8 or greater) to the bedside nurse and charge nurse. Additionally, the nurses now include the communication of the EDPS score in the bedside hand-off.

Possible changes in hospital policy could include implementing the use of EPDS throughout the hospital facility for any mother at the bedside of their child 12 months or younger. Further, this tool can be used to screen any primary caregiver as long as the child is less than one year old. Nursing staff in the hospital for children should be required to complete annual training on the identification of PPD and the use of the EPDS since this hospital cares for acute as well as chronic diseases which can affect any child less than one year of age. This will allow for an increase in family-centered care and possibly client satisfaction.

Finally, a policy can be implemented to allow for documentation of the EPDS for all mothers or caregivers in the child's electronic health record. By instituting this into policy, the documentation can occur and be available if the child is readmitted to the hospital, allowing other departments to know, educate and supply resources to the mother of the sick infant.

A recommendation for future quality improvement projects is to replicate this project with a larger sample size to maximize distribution of resources to caregivers in need. The primary investigator should screen all primary caregivers for infants who are less than one-year of age and admitted to any department, not just mothers with newborns in the NICU. An

increase in sample size would allow for the identification of those who are struggling to cope with the role of the primary caregiver and provide resources so that the child is not susceptible to the potential detriments associated with being exposed to caregivers with PPD.

All hospital nursing staff can have a role in a future project by being regularly educated on signs and symptoms of PPD, understanding the use of the EPDS and documenting the risk score that the caregiver receives in the electronic health record. Nursing can advocate for family-centered care by alerting social workers of a need for resources and communicating this need to both in-patient and out-patient departments in a smooth transition.

Conclusion

Post-partum depression is an ongoing complication following childbirth. With the implementation of annual education on a risk assessment tool, at risk caregivers can be identified and resources can be disseminated. The outcomes of this project reinforced the need for interdisciplinary education and care. By educating staff nurses on the risks for and signs of PPD, those who need to be monitored can receive needed resources.

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Appendix A

NICU Nurse Pre-Demographic Survey Length of years as a NICU Nurse _____

(Circle) Attended **in-person** education or **asynchronous** education

Please answer on a scale 1-7 which response best reflects your encounters **in the past 6 weeks**.

I am confident in my ability to recognize PPD in a NICU mom

1.- Very Untrue of Me 2.- Untrue of Me 3.- Somewhat Untrue of Me 4.- Neutral 5.- Somewhat True of Me 6. -True of Me 7. -Very True of Me

I had encountered a NICU mom who appeared emotionally distressed at her child's bedside

1.- Very Untrue of Me 2.- Untrue of Me 3.- Somewhat Untrue of Me 4.- Neutral 5.- Somewhat True of Me 6. -True of Me 7. -Very True of Me

I had alerted SW of a NICU mom who appeared emotionally distressed at her child's bedside

1.- Very Untrue of Me 2.- Untrue of Me 3.- Somewhat Untrue of Me 4.- Neutral 5.- Somewhat True of Me 6. -True of Me 7. -Very True of Me

I had encountered a NICU mom who appeared physically distressed/exhausted

1.- Very Untrue of Me 2.- Untrue of Me 3.- Somewhat Untrue of Me 4.- Neutral 5.- Somewhat True of Me 6. -True of Me 7. -Very True of Me

I had alerted SW of a NICU mom who appeared physically distressed/exhausted

1.- Very Untrue of Me 2.- Untrue of Me 3.- Somewhat Untrue of Me 4.- Neutral 5.- Somewhat True of Me 6. -True of Me 7. -Very True of Me

I had encountered a NICU mom who appeared frustrated/angry at her child's bedside

1.- Very Untrue of Me 2.- Untrue of Me 3.- Somewhat Untrue of Me 4.- Neutral 5.- Somewhat True of Me 6. -True of Me 7. -Very True of Me

I had alerted SW of a NICU mom who appeared frustrated/angry at her child's bedside

1.- Very Untrue of Me 2.- Untrue of Me 3.- Somewhat Untrue of Me 4.- Neutral 5.- Somewhat True of Me 6. -True of Me 7. -Very True of Me

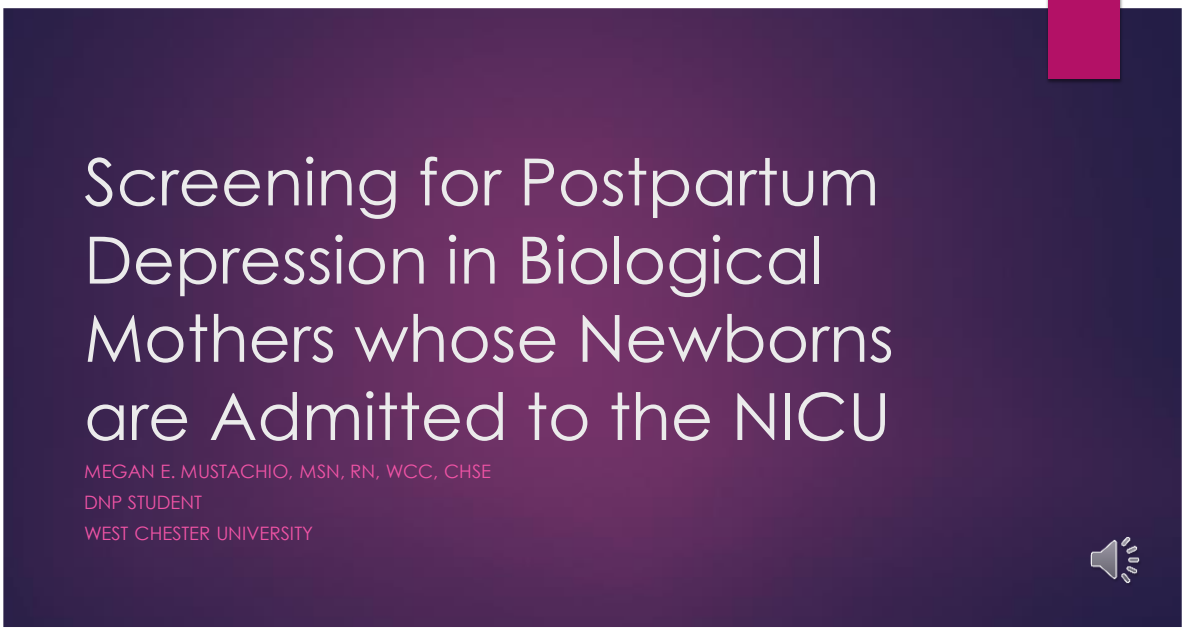
I interacted with a NICU mom who hesitated/refused to provide care to her infant

1.- Very Untrue of Me 2.- Untrue of Me 3.- Somewhat Untrue of Me 4.- Neutral 5.- Somewhat True of Me 6. -True of Me 7. -Very True of Me

I had alerted SW of a NICU mom who hesitated/refused to provide care to her infant

1.- Very Untrue of Me 2.- Untrue of Me 3.- Somewhat Untrue of Me 4.- Neutral 5.- Somewhat True of Me 6. -True of Me 7. -Very True of Me

Appendix B


Screening for Postpartum Depression in Biological Mothers whose Newborns are Admitted to the NICU
MEGAN E. MUSTACHIO, MSN, RN, WCC, CHSE
DNP STUDENT
WEST CHESTER UNIVERSITY

IRB Determination – Drexel

DREXEL UNIVERSITY
Office of
Research &
Innovation

Office of Research & Innovation
Human Research Protection Program
Drexel University
Bellet Building
1505 Race Street, 7th Floor
Philadelphia, PA 19102

Institutional Review Board
Phone: (267) 359-2471
Fax: (215) 762-6258
E-mail: HRPP@drexel.edu

Not Human Research Determination

Date: November 7, 2023

Protocol Number:	2311010182
Principal Investigator:	Heather Perkins, DrPH, MSN, RN
Review Date:	November 7, 2023
Committee:	IRB 3
Sponsor:	Pediatrics (6301)
Project Title:	Screening for Postpartum Depression in Mothers whose Newborns are Admitted to the NICU: A Quality Improvement Project.

The proposed activity is not human subjects research as defined by DHHS or FDA regulations. Consequently, **Drexel IRB review and approval are not applicable**. You are welcome to pursue the activity, obtaining any applicable administrative or departmental (non-IRB) approvals.

This determination applies only to the activities described in this IRB submission and does not apply should any changes be made. Changes could affect this determination. Please contact the IRB for guidance.

IRB Oversight Not Required

DHHS Definitions:

Research – a systematic investigation, including research development, testing, and evaluation, designed to develop or contribute to generalizable knowledge.

Human subject – a living individual about whom an investigator (whether professional or student) conducting research:

1. Obtains information or biospecimens through intervention or interaction with the individual, and uses, studies, or analyzes the information or biospecimens; or

2. Obtains, uses, studies, analyzes, or generates identifiable private information or identifiable biospecimens.

FDA Definitions:

Research – any experiment that involves a test article and one or more human subjects, and that either: a) must meet the requirements for prior submission to the Food and Drug Administration; or b) the results of which are intended to be later submitted to, or held for inspection by, the FDA as part of an application for research or marketing permit.

Human subject – an individual who is or becomes a participant in research, either as a recipient of the test article or as a control. A subject may be either a healthy individual or a patient.

Please contact the IRB at (267) 359-2471 or HRPP@drexel.edu if you have any questions.

IRB Determination- West Chester University

Office of Research and Sponsored Programs | West Chester University | Ehinger Annex
West Chester, PA 19383 | 610-436-3557 | www.wcupa.edu

Dec 6, 2023 8:26:27 AM EST

To: Cheryl Schlamb
Department: Nursing

Re: Exempt - Initial - IRB-FY2024-114 Screening for Postpartum Depression in Mothers whose Newborns are Admitted to the NICU: A Quality Improvement Project

Dear Cheryl Schlamb:

Thank you for your submitted application to the West Chester University Institutional Review Board. We have had the opportunity to review your application and have rendered the decision below for Screening for Postpartum Depression in Mothers whose Newborns are Admitted to the NICU: A Quality Improvement Project.

Decision: No Human Subjects Research

Selected Category:

If there are any questions, please don't hesitate to reach out to irb@wcupa.edu

Sincerely,
West Chester University Institutional Review Board

IORG#: IORG0004242
IRB#: IRB00005030
FWA#: FWA00014155

Figure 1

Completion Date	Planning	Pre-implementation	Implementation	Evaluation
10/9	Met with key stakeholders to gain support, and receive revision requests of project			
10/12		Submitted application for site rotation		
10/13		Received approval for site rotation		
10/16		Submitted project revisions to site		
10/27		Received approval from site stakeholders		
11/2		Project submitted for site IRB		
12/6		Final IRB Approval		
12/11			Pre-data Collection begins	
1/23/24			Project implemented	
3/11/24			Post-data Collection	
2/27/24				First meeting with Statistician for data evaluation

Figure 2

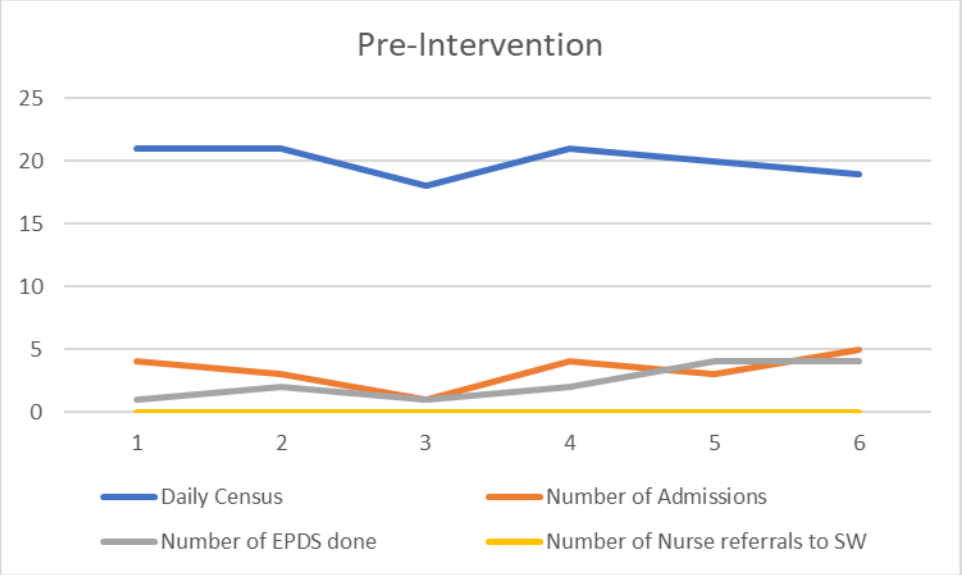

Pre-Intervention
25
20
15
10
5
0
1
2
3
4
5
6
Daily Census
Number of Admissions
Number of EPDS done
Number of Nurse referrals to SW

Figure 3

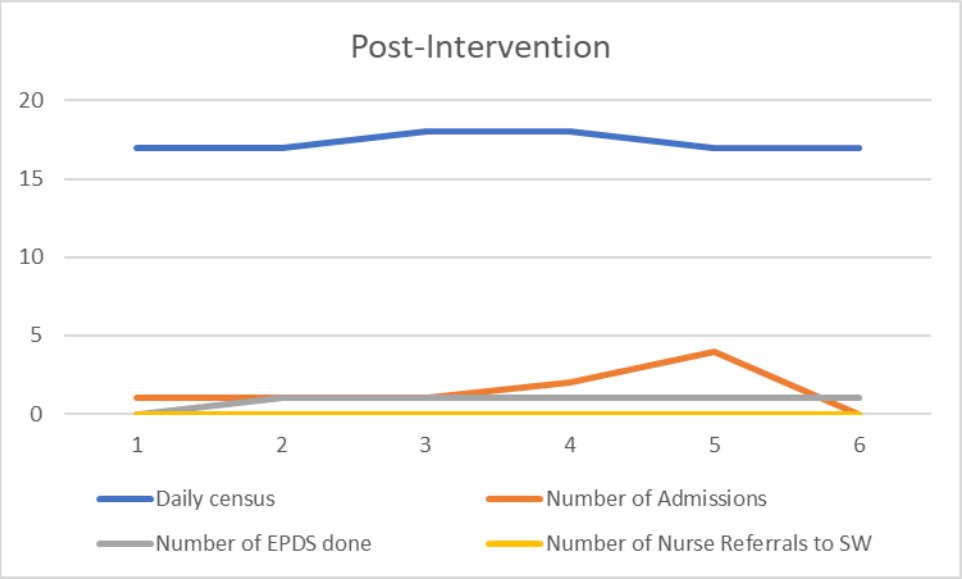
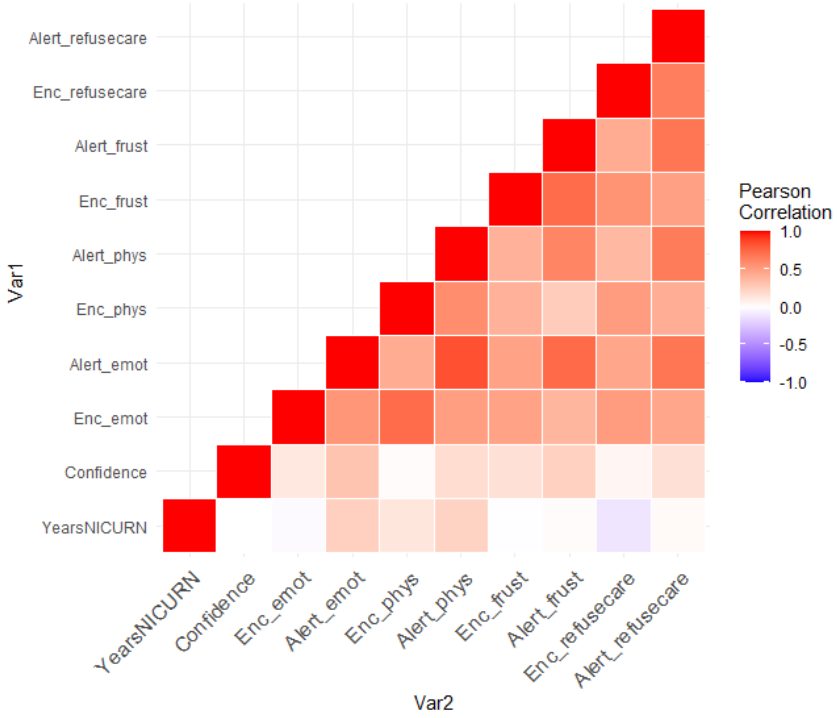

Post-Intervention
20
15
10
5
0
1
2
3
4
5
6
Daily census
Number of Admissions
Number of EPDS done
Number of Nurse Referrals to SW

Figure 4


Alert_refusecare
Enc_refusecare
Alert_frust
Enc_frust
Alert_phys
Enc_phys
Alert_emot
Enc_emot
Confidence
YearsNICURN
Var1
YearsNICURN
Confidence
Enc_emot
Alert_emot
Enc_phys
Alert_phys
Enc_frust
Alert_frust
Enc_refusecare
Alert_refusecare
Var2
Pearson Correlation
1.0
0.5
0.0
-0.5
-1.0