Improving Postpartum Depression Screening and Education for Postpartum Women in an Obstetrics and Gynecology Clinic

Submitted by

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May 18, 2021

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Abstract

Postpartum depression (PPD) untreated can be associated with poor health outcomes for the mother, infant, family, and the community. At the project clinic, PPD screenings were not consistently performed despite the evidence-based screening tools available. The purpose of this quantitative, quasi-experimental quality improvement project was to determine if the implementation of the Edinburgh Postpartum Depression Scale (EPDS) screening tool impacts the number of PPD screenings and behavioral health referrals when compared to the current practice among postpartum women in an obstetrics and gynecology clinic in urban California over four weeks. Lewin's change theory and Pender's Health Care model were the theoretical and conceptual frameworks of the project. Data was collected from electronic health records among childbearing women (N=80) between 18-50 years of age at the clinic with n=40 in the comparative and n=40 in the implementation groups. Data analysis was conducted using a chi-square test for screenings which indicated no statistically significant difference $X^2(1, N=80) = 2.13$, $p = 0.144$. There is clinical significance in improving screening rates by 30%. A chi-square was run for referrals indicating a clinical and statistically significant improvement $X^2(1, N=80)= 5.170$, $p = .023$. The results indicate that the implementation of the EPDS screening tool may improve PPD screenings and behavioral health referrals in this population and setting. Recommendations are to sustain the project and disseminate these results to increase awareness.

Keywords: Edinburgh Postnatal Depression Scale (EPDS), postpartum depression (PPD), Lewin's change theory, Pender's health care model, depression, behavioral health.

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Dedication

This project is dedicated to my husband, Anthony Floyd, and my children. I am thankful to God that he made you my lifetime partner. Through many tears and long sleepless nights, you have been there by my side to push me on and encourage me through this process of becoming Dr. Georgina Floyd. This project, as well as my nursing career, is dedicated to my family. I also wish to dedicate this project to my family, my parents, George Sims, Ruth Sims, and Georgia Sims. My daughter, Gianni, my sons, Dearious Floyd, Dashawn Floyd, Giovanni Sims, Kai Floyd, my siblings Tanji, Brittney, Justin, and all my loving extended family that continued to cheer me on throughout this process. To all of my sisters who have always and continually prayed for me, with me, and stood in the gap, Dr. Sharma Henderson, Dr. Kathleen Hawkins, Thank you for the prayers and continued support. Thank You, Jesus, for your abundant blessings!

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Chapter 1: Introduction to the Project

Postpartum depression (PPD) is a significant public health issue affecting up to 12.5% of women in the United States (Centers for Disease Control and Prevention [CDC], 2020). Postpartum depression is the most common medical complication associated with childbirth (Shitu et al., 2019). The prevalence of PPD is influenced by race, ethnicity, and age (CDC, 2020). Also, the prevalence of PPD may vary by state of residence, with some incidences going as high as 20% (CDC, 2020). The problem of PPD is significant because it affects women in their most vulnerable period. It is believed that the actual prevalence of the condition could be higher because not all women of childbearing age undergo screening regularly during the postpartum period despite existing evidence-based guidelines (Premji et al., 2019). The American Academy of Pediatrics, the U.S. Preventive Services Task Force, and the American College of Obstetricians and Gynecologists have provided various guidelines for screening for PPD among women of childbearing age (Rafferty et al., 2019).

Routine screening for PPD is essential because its symptoms can appear up to six weeks postpartum (Clevesy et al., 2019). At the project site, no structured screening was performed routinely or consistently. The recommendation for performing these screenings is to be scheduled at least a two-week interval from delivery to one year postpartum (Knights et al., 2016). Previous studies indicate that screening and educational interventions for healthcare workers are feasible and can significantly minimize the risk of PPD by screening for it at routine visits (Ahlqvist-Björkroth et al., 2019; Premji et al., 2019; Wilkinson et al., 2017). This project improves the practice of PPD screening by clinicians receiving focused education on using a valid and reliable

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screening instrument. Screening could increase the likelihood of positive PPD diagnosis, thus, facilitating referral including pharmacological and non-pharmacological interventions compared to those who do not get screened (Premji et al., 2019).

Additionally, PPD screening is cost-effective and should be adopted in usual postnatal care (Wilkinson et al., 2017). An evaluation of the intervention's impact on the frequency of PPD screenings and referrals to behavioral health services was conducted in this project. The project focused on introducing the EPDS to clinicians at the obstetrics and gynecology (OB/GYN) clinic and educating them on its use and the importance of screening postnatal women.

In this chapter, the project background, problem statement, and purpose of the project are discussed. The clinical question and the project's significance and role in advancing scientific knowledge are also presented. Additionally, the methodology and design used to conduct the project are briefly discussed, and the project's assumptions and limitations. Lastly, the terms used in the project are defined, and the chapter is summarized.

Background of the Project

Pregnancy and childbirth are critical events in women's lives that may have significant short- and long-term implications for mothers and infants (Clevesy et al., 2019). Childbirth involves multiple hormonal changes and increases women's roles and responsibilities, exposing mothers to an increased risk of depression during the postpartum period (Nuriel-Ohayon et al., 2016). The pathophysiology of PPD indicates that hormonal changes increase the risk of depression among perinatal women and that

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challenges involved with pregnancy may further increase PPD (Nuriel-Ohayon et al., 2016).

The postpartum period begins from birth and extends to six weeks post-delivery (Clevesy et al., 2019). Various sequelae in mothers occurring up to one year after birth have been associated with PPD. According to Magdalena and Tamara (2020), approximately 13-20% of new mothers experience PPD within the initial year of giving birth. Given the low screening numbers and stigma associated with the condition, the prevalence of PPD in women aged 15-50 years could be higher (Latendresse et al., 2017). Early symptoms of PPD are evident within four to six weeks after giving birth (Ghaedrahmati et al., 2017). The condition is categorized as a mood disorder characterized by various symptoms, including agitation, sleep disturbance, suicidal thoughts, self-depreciation, fatigue, decreased appetite, impaired concentration, and loss of interest (CDC, 2020). Women with PPD experience four or more of these symptoms and isolate themselves without knowing that they suffer from the condition (Cordes et al., 2017). As a result, most women with PPD fail to seek medical assistance. Their health deteriorates, spiraling further into depression and exposing the child and family to various adverse effects.

Postpartum depression was the most common medical complication associated with childbirth at the project site, and no structured assessment for PPD was used at the site. Most OB/GYN clinics lack a standardized process for screening women in the postpartum period. The need to implement a standard process for clinicians at the target facility was based on gaps in knowledge about screening during the postpartum period. There was a gap in standardized screening for PPD among women aged 18-50 years at

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the target facility. There is also a gap in how to translate evidence on the PPD screening into practice. The knowledge gap is associated with an inconsistent screening approach for childbearing women at the visiting facility based on the verbal conversation with the Department Administrator (Personal Communication, 2020). This project helped solve the problem by educating healthcare providers on conducting an educational intervention on the Edinburgh Postnatal Depression Scale to eliminate adverse outcomes with postpartum depression. Early identification can deter the need for invasive procedures as well as other issues related to postpartum depression.

Problem Statement

It was not known if or to what degree the implementation of the Edinburgh Postpartum Depression Scale (EPDS) screening tool impacts the number of PPD screenings and behavioral health referrals when compared to the current practice for postpartum women in an obstetrics and gynecology clinic. Postpartum depression is associated with various adverse effects on infants and their mothers, such as inappropriate nutrition, inhibited growth, weak mother-infant bond, and neurodevelopmental issues in children, among others (Slomian et al., 2019). Research has supported the role of universal PPD screening in pregnant and postpartum women to provide the maximum likelihood of prompt identification of the condition (BenDavid et al., 2016). Therefore, routine screening is feasible and the best-recommended strategy for minimizing the effects of PPD through early identification prompting the implementation of interventions for managing and treating the condition (Wilkinson et al., 2017).

In an OB/GYN clinic in Southern California that serves 40 to 60 women of childbearing women age every day, the number of screenings performed for PPD was 27

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out of 40 women, which was 67.5 % before the intervention. Low PPD screening numbers are attributed to varying knowledge regarding evidence-based screening tools to use and manage patients with PPD (Byatt et al., 2019). The Patient Health Questionnaire (PHQ-9) is commonly used to assess for depression and PPD, although the Edinburgh Postnatal Depression Scale (EPDS) is the best suited for the latter (Byatt et al., 2019).

The project aimed to address screening for PPD by introducing a standard instrument known as the Edinburgh Postpartum Depression Scale (EPDS) used by clinicians treating women aged 18-50 years visiting the facility. The primary investigator implemented an educational program to improve the clinicians' knowledge levels and introduce the EPDS, thereby increasing screening frequency and behavioral referrals due to the identification of PPD. Moraes et al. (2017) indicated that regular PPD screening increases the likelihood of positive diagnosis, facilitating timely intervention and treatment. Research suggests that PPD responds best to treatment when identified earlier, preventing negative sequelae for the mothers, infants, and family members (Simhi et al., 2019). Effective management of PPD significantly improves the mother-infant bond, reducing the likelihood of cognitive deficits and insecurity among children (Slomian et al., 2019). Also, reduced cases of PPD can significantly reduce the cost of healthcare for mothers, their families, and hospitals (Anokye et al., 2018). Improved awareness and adequate screening could also enhance the mothers' quality of life and prevent the development of long-term cognitive deficiencies in infants (Ahlqvist-Björkroth et al., 2019).

Purpose of the Project

The purpose of this quantitative, quasi-experimental quality improvement project

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was to determine to what degree the implementation of the Edinburgh Postpartum Depression Scale (EPDS) screening tool impacts the number of PPD screenings and behavioral health referrals when compared to the current practice for postpartum women in an obstetrics and gynecology clinic in urban California over four weeks. The targeted group was women in the postpartum period who visit an OB/GYN clinic in Southern California. The Census Bureau (United States Census Bureau, n.d.) indicates that 50% of California's population are women between the ages of 16-50. Therefore, the quality improvement project was important for educating clinicians about the need for postpartum screenings and referrals for treatment. Postpartum women were targeted because they are rarely screening before discharge, in addition to the benefits of early identification of PPD for both the mother and the baby.

The project variables were the educational intervention and EPDS screening tool as the independent variable and the number of PPD screenings and behavioral health referrals as the dependent variables. The education focused on introducing the EPDS as the standard PPD screening tool and highlighting the importance of screening and referring patients for behavioral health. The clinicians were also educated about the available resources for postpartum women who return a positive PPD screen test. The dependent variables were measured before and after the intervention to determine if a causality relationship existed. The number of PPD screenings and referrals to behavioral health services was assessed at the clinic to determine if the intervention led to any changes in screening and referral numbers. The project added evidence to the existing field on the benefits of using a valid and reliable screening tool for PPD.

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Clinical Question

The clinical question highlights the aim and relates to the problem statement by indicating the relationship between the independent and dependent variables. The following clinical question guided the project: To what degree does the implementation of the Edinburgh Postpartum Depression Scale (EPDS) screening tool impacts the number of PPD screenings and behavioral health referrals when compared to current practice for postpartum women in an obstetrics and gynecology clinic in urban California? Addressing the clinical question was facilitated by the quasi-experimental design adopted for the project. The clinical question presented the relationship between the EPDS intervention and the numbers of PPD screening and behavioral health referrals for the screened patients. The dependent variables were measured by comparing the number of postpartum women who came for a checkup at the OB/GYN clinic, were screened for PPD using the EPDS and were referred/not referred for behavioral health for treatment.

The project variables were the education intervention and the EPDS as the independent variable and the rates of PPD screening and behavioral health referrals as the dependent variables. The education focused on introducing the EPDS as the standard PPD screening tool and highlighting the importance of screening and referring patients for behavioral health. The clinicians were also educated about the available resources for postpartum women who return a positive PPD screen test. The dependent variables were measured before and after the intervention to determine if a causality relationship existed with the improved screening tool (EPDS). The rates of PPD screening and referral to

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behavioral health services were assessed at the clinic to determine if the intervention led to any changes.

Advancing Scientific Knowledge

Postpartum depression affects the well-being of childbearing women and their children and, to an extent, the whole family (Hajimiri et al., 2018). Postpartum depression may occur as early as a week or two or as late as over twelve months after delivery, necessitating adequate screening for all women of childbearing age (BenDavid et al., 2016). About 11.5% of women with children under the age of one year have PPD, affecting their long-term health and future pregnancies (Hajimiri et al., 2018; Ko et al., 2017). Magdalena and Tamara (2020) associated the low PPD screening numbers with a lack of knowledge among clinicians. This quality improvement project contributed to the current body of knowledge on PPD screening and its usage in the OB/GYN setting, its impact on mothers and infants, and its associated preventive interventions. The project contributed to the literature on strategies used for improving PPD screening. The theoretical foundations guiding this project improved knowledge for promoting this health-promoting practice. A knowledge gap existed among healthcare providers at the site on the best way to screen for PPD. Including clinicians in the intervention using the EPDS was the main improvement being implemented in this project. A standardized PPD screening tool like the EPDS was implemented with women who have PPD through an educational intervention with the OB/GYN clinicians to directly improve PPD screening and impact behavioral health referral rates compared to the current practice. Addressing the problem was crucial in that PPD negatively affects the mother-infant relationship and increases symptoms of depression and stress (Śliwerski et al., 2020). Implementation of

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this project added a successful clinical approach for improving PPD screening at the site and, once published, will contribute to the existing literature.

This quality improvement project contributed to the current body of knowledge on PPD screening and its usage in the OB/GYN setting, its impacts on mothers and infants, and associated preventive interventions. The project significantly adds to the existing literature on the importance of routine screening interventions to increase the rate of professional referral for PPD among childbearing women in varied healthcare settings. The project advances women's health by developing new strategies related to PPD screenings used in various clinical or hospital settings.

Theoretical foundations guided the project, including Pender's health promotion model (Pender et al., 1992, 2011) and Kurt Lewin's change theory (1951). Pender et al.'s health promotion model (1992) focused on all the health factors that affected an individual's well-being and guided the project. In the seminal study of the theory, *Health Promotion and Disease Prevention: Towards Excellence in Nursing Practice in Education*, the health promotion model identifies each individual's unique personal characteristics and experiences that affect their subsequent actions, making it appropriate for the project (Pender et al., 2011). The health promotion model focuses on three constructs: the individual characteristics and experiences, the behavior-specific cognitions and their effect, and behavioral outcomes (Pender et al., 2011). Being knowledgeable on the factors affecting individuals' health facilitates addressing the specific concerns that have negative consequences. The well-being of women with PPD, and that of the child or children, is affected as a result of the condition, with the severity increasing with either late diagnosis or the lack of (Hajimiri et al., 2018). Improving early

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diagnosis is a health promotion strategy for the overall management of the health of women of childbearing age and their children.

The seminal study, *Field Theory in Social Science* by Lewin (1951), postulates that change occurs in three stages: unfreezing, changing, refreezing. The *unfreezing* stage involves creating awareness of the target problem, enabling people to abandon old methods, and altering the current equilibrium (Lewin, 1951). *Changing* involves seeking alternatives and minimizing the barriers to change, while *unfreezing* involves incorporating and stabilizing a new equilibrium to become a habit (Cummings et al., 2016; Lewin, 1951). The change theory stages involve education to challenge the status quo and learn and implement new strategies (Cummings et al., 2016). Lewin's theory facilitates unlearning the old practices and learning and implementing the new evidence-based strategies, which is the project's focus. The project significantly adds to the existing literature on standardized PPD screening tools, which improves health and promotes health as guided by Pender et al.'s health promotion model (Clevesy et al., 2019; Knights et al., 2016; Moraes et al., 2017; Wilkinson et al., 2017). The project advances women's health by implementing evidence-based strategies for PPD screening and changing the management of PPD in the OB/GYN clinic by increasing referral to behavioral health through the influence of Lewin's change theory.

Significance of the Project

Addressing the problem of PPD was crucial, considering its broad effects. Though mothers are the bearers of the symptoms, PPD can affect infants and family members indirectly. Research indicates that PPD negatively affects the mother-infant relationship by weakening maternal and bonding responsiveness (Śliwerski et al., 2020). Thus, infants

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of mothers who develop PPD are more likely to experience insecurity and behavioral issues (Hazell Raine et al., 2020). Also, children of mothers who experienced PPD have a high likelihood of dismal performance in cognitive examinations (Ongeri et al., 2018). Poor bonding also increases the infants' risk of developing adverse behavioral and emotional outcomes (Śliwerski et al., 2020). Postpartum depression also affects mothers' ability to engage in and adhere to critical preventive practices such as the careful covering of electrical outlets and appropriate utilization of car seats (Rafferty et al., 2019).

The project fits within the current literature in emphasizing the need for PPD screening in different OB/GYN settings (American Academy of Pediatrics, 2016). The project also fits into other research areas because it improves PPD screening in childbearing women, decreases poor mental health outcomes, and enhances family relationships. Studies such as Śliwerski et al. (2020) emphasized increased insecure attachment and anti-social behavior among children of mothers experiencing PPD as early as one year after birth. Postpartum screening could minimize the long-term risks associated with families and children (Rafferty et al., 2019). In the review of literature conducted by Rafferty et al., discussion of postpartum depression left untreated adversely affects the well-being of children and families. The risk for costly complications during birth and lead to deterioration of core supports, including partner relationships and social networks. PPD contributes to long-lasting, and even permanent, consequences for the physical and mental health of parents and children, including poor family functioning, increased risk of child abuse and neglect, delayed infant development, perinatal obstetric complications, challenges with breastfeeding, and costly increases in health care use

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(Rafferty et al., 2019). According to Rafferty et al., the U. S. Preventative Service Task Force determined that there is not sufficient evidence to support the use of the PHQ-2, yet many practices continue to use it as an initial screen. Use of the PHQ-2 was recommended to be followed up with a more comprehensive screening tool like the EPDS. Fortunately, perinatal depression is identifiable and treatable (Rafferty et al., 2019).

This project adds value to the women's population and community by exploring the need for routine screening mothers for PPD in OB-GYN clinics. Evidence suggests that screening and educational interventions significantly reduce PPDs risks and encourage more women to seek necessary psychological help (Ahlqvist-Björkroth et al., 2019; Clevesy et al., 2019). Clinicians would encourage women to be screened for depression within the first weeks of giving birth to minimize the risk of PPD. A culture of routine screening improves the health of women and the whole community. Screening would also improve women's productivity, well-being, and reproductive health (Ahlqvist-Björkroth et al., 2019). PPD screening is a cost-effective approach that aligns with the USPSTF recommendations and can reduce the costs of treating advanced cases of depression.

The first potential implication includes improving infant attachment and development while optimizing their mental and physical health (Orringer et al., 2019). The second possible implication is the effective screening for the risk of PPD among childbearing-aged women, who can help prevent long-term consequences for families and children. The third implication is that effective screening can significantly minimize the risk of psychiatric disorders among children and mothers. Finally, the project

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contributed to the existing literature regarding health and health practices by postpartum patients using technology, consistent performance, and a reliable, evidence-based assessment.

The project contributed to advancing current literature regarding the importance of educating clinicians to conduct screenings on women of childbearing age. Studies showed that developing and sustaining a standardized method for PPD screening could increase the identification of patients at risk for postpartum (Byatt et al., 2019). The project's findings can be generalized to other OB/GYN clinics and practitioners utilizing similar methods to increase and remind them to perform PPD screening. Furthermore, the project contributed to increasing the clinic's providers' knowledge and education related to the EPDS and its importance (Byatt et al., 2019). In this project, the providers verbalized the barriers in conducting consistent PPD screenings, and the clinic's management is addressing the issues with a team (physicians, nurse practitioners, certified nurse midwives, licensed vocational nurses, medical assistants, and clerks).

Rationale for Methodology

A quantitative method of inquiry involves objective measurements of relationships between dependent and independent variables using statistical, numerical, or computational approaches (Christenson & Gutierrez, 2016). Quantitative methods like those used in Alhasanat-Khalil et al. (2018), Cirik et al. (2016), Fan et al. (2020), and others emphasize numerical data collection, analysis, and generalization across different populations or settings (Rutberg & Bouikidis, 2018). The rationale for using this methodology was to ensure objective analysis of numerical data to get reliable findings (Rutberg & Bouikidis, 2018). The quantitative methodology was suitable for

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the proposed project because it helps determine relationships between dependent and independent numerical variables (Christenson & Gutierrez, 2016). The main benefit of using a quantitative method is objectivity and appropriateness in measuring quantifiable data from larger samples (Rutberg & Bouikidis, 2018). The quantitative methodology also utilizes structured sampling, data collection, and analysis procedures that enhance objectivity, validity, and reliability (Christenson & Gutierrez, 2016).

The benefit of using quantitative methodology is that it facilitates data analysis using statistical techniques and software such as Statistical Package for Social Sciences (SPSS) that enhance the accuracy and reliability of findings (Rutberg & Bouikidis, 2018). A quantitative methodology facilitated evaluating the relationship between the intervention, the EPDS screening tool education, and the outcome variables: the number of PPD screenings and behavioral health referrals. The methodology, therefore, facilitated addressing the problem statement and the clinical question through the collection of data useful for evaluating the effect of the intervention on the numbers of PPD screening and referrals for behavioral health services.

Nature of the Project Design

The quality improvement project employed the quasi-experimental design to determine the relationship between the educational intervention and the EPDS screening practice improvement and a potential increase in the number of PPD screenings and behavioral health referrals among women aged 18-50 years postpartum. A quasi-experimental design does not involve experimental research procedures such as randomizing participants into groups and sampling during random selection (Wargo,

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2015). The quasi-experimental design facilitates measuring the dependent variables before and after a treatment to establish a causal-effect relationship (Butsic et al., 2017).

The rationale for using the quasi-experimental design was feasibility because it facilitated collecting data before and after the intervention conveniently. Hence an evaluation of the causality relationship can be conducted (Butsic et al., 2017). The quasi-experimental design is suitable for testing the effectiveness of health interventions and treatments (Butsic et al., 2017). The benefit of using a quasi-experimental design is the high internal validity and control over confounding variables (Schweizer et al., 2016). The design's ability to facilitate the evaluation of the causality relationship between the intervention and the number of PPD screenings and behavioral health referrals was appropriate for addressing the clinical question. The design was also appropriate because it matched the convenience sampling technique used in the project.

A convenience sample of 80 women was included in the project, and data was collected from the electronic health record on PPD screening and referral to behavioral health. Forty women (*n = 40)* were included in the comparison group, who had been seen previously by the clinic providers before implementing the intervention. Another forty women were included in the post-intervention group (n=40) after the intervention with the EPDS was implemented for the project. The rationale for using a convenience sample was the ease, accessibility, location of the project participants, and the cost-effectiveness and time-saving aspects of the sampling procedure (Rutberg & Bouikidis, 2018). The convenience sampling strategy enabled collecting useful information that could have been impossible in probability sampling, such as data from restricted populations (Jager et al., 2017). The data collection strategies involved a data specialist reviewing patient

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records to identify the number of patients who had been screened for PPD before and after the intervention. The frequency of patients who had been screened and referred for behavioral health before and after implementing the intervention was also recorded. The analysis procedures involved comparisons of the PPD screenings and behavioral health referral numbers before and after the intervention to establish the cause-effect relationship between the two variables and the intervention using the Chi-square test.

Definitions of Terms

This section defines the project constructs and provides a common understanding of the technical terms, exclusive jargon, variables, phenomena, concepts, and sundry terminology used within the project's scope. Terms are defined in lay terms and in the context in which they are used within the project.

Edinburgh Postnatal Depression Scale (EPDS)

The EPDS is a tool used to identify patients at risk for perinatal depression (Byatt et al., 2019; Cox et al., 1987). The EPDS is a 10-item self-report scale (EPDS) used to screen for PPD. It was developed after extensive pilot interviews within "a validation study was carried out on 84 mothers using the Research Diagnostic Criteria for depressive illness obtained from Goldberg's Standardised Psychiatric Interview" (Cox et al., 1987). The EPDS was found to have satisfactory sensitivity (81%) and specificity (88%) and was also sensitive to change in the severity of depression over time. Scoring is performed by adding together the scores for each of the ten items. Women scoring above 12 or 13 are likely to be suffering from depression and should seek medical attention. Implementation and use of this instrument is the direct practice improvement or quality improvement (independent variable).

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Patient Health Questionnaire (PHQ-9)

The PHQ-9 is a tool used to assess mental illness severity (Byatt et al., 2019).

Postpartum Depression (PPD)

A chronic psychiatric disorder occurs between four to six weeks after birth in the form of sleep disturbance, loss of appetite, low energy levels, depressive symptoms, irritability, and suicidal ideation (Ghaedrahmati et al., 2017).

Referral for Behavioral Health

Involves the process of directing patients for more specialized care due to emergency or deterioration of their conditions (Swanson et al., 2018). This process is the outcome or dependent variable measured in this project. It is a nominal level variable coded as 0 = not referred or 1 = referred for behavioral health.

Screening

The systematic application of a test or inquiry to identify individuals at sufficient risk of a specific disorder to benefit from further investigation or direct preventive action (BenDavid et al., 2016). In this project, Postpartum depression screening was the practice being improved improvement using the Edinburgh Postnatal Depression Screening as the intervention.

Statistical Significance

Statistical significance is the inference or result from data that a finding is attributable to a specific cause. Statistical significance is set in this project at $p < .05$ (Creswell & Creswell, 2018).

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Women of Childbearing Age

A description of women who can become pregnant, typically between 16 and 49, and which represented the population explored in this project (CDC, 2017).

Assumptions, Limitations, and Delimitations

Assumptions are defined as a statement presumed to be accurate for a temporary or specific purpose (Wargo, 2015). Three assumptions were made in the development of this quality improvement project. It was assumed that the participants' knowledge and behavioral referral numbers, was impacted by the educational intervention. Although behavioral referrals and providers' knowledge could increase due to other factors, such as self-learning and the use of technologies, any changes in the current project were attributed to the intervention.

It was also assumed that the intervention timeline (four weeks) was adequate to elicit a detectable change in the participants' knowledge, PPD diagnosis, and behavioral referral numbers. Concerning the proposed project, four weeks was not adequate to report changes in knowledge and behavioral referral numbers. However, the investigator acknowledges that a longer timeframe might yield more significant results.

The last assumption made was that the educational session provided to the clinicians would improve their understanding of PPD. With the short timeline of the project, it is unlikely that the clinicians could have learned about the use of the EPDS as the standardized tool for PPD screening, the need for screening, and the available resources for referring patients who test positive. With the assumed needs for new mothers, it may have been necessary for the clinicians performing the screening to be

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knowledgeable on how to manage and interact with patients based on their screening results. Such knowledge was assumed to be gained from the education intervention.

Limitations are defined as a potential weakness in the project beyond the primary investigator's control (Wargo, 2015). Three limitations of this project were the generalization of the results and time. This project's results cannot be fully generalized or applied to a larger population or different sites. The results can only suggest a causal relationship related to using a convenience sample and not a random one (Wargo, 2015). The sample used in the project was recruited based on their characteristics. Therefore, the effects of the project may not be similar for populations with different characteristics.

The second limitation is the interval of time the project was conducted (cross-sectional) (four weeks). A four-week timeframe provided a snapshot of the conditions that occurred during the project. The Coronavirus pandemic (COVID-19) is a possible threat to the project and participants because of movement restrictions. However, the risks were minimized by following stipulated guidelines provided by the GCU nursing school administration. Delimitations are characteristics that limit the scope and describe the boundaries in the project, which are in the primary investigator's control (Wargo, 2015). Two delimitations noted in this project were the chosen population to be investigated and the chosen topic. The primary targeted population was also delimited to those who give birth and are in the postpartum period during the project were female participants aged between 18 and 50 years in the postpartum period. The EPDS tool is used in that period post-delivery; therefore, it was only used in this project for those women who fit that criterion.

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The participants were also delimited to those who give birth and are in the postpartum period during the project. It is known that PPD can last up to 12 months postpartum. Therefore, recruiting only the women who had delivered within the project period or who were discharged postpartum delimited the project. The women who may have had PPD but did not deliver within the specified project time may have been left out. The project results indicating PPD screenings that were referred for behavioral healthcare may, therefore, be under-represented. The subjects (patients) were also limited to those who give birth and are in the postpartum period during the project. It is known that PPD can last up to 12 months postpartum. Therefore, only the women who had delivered within the project period or were discharged postpartum delimited the project. The women who may have had PPD but did not deliver within the specified project time may have been left out.

Further, the gap between implementing evidence-based interventions like using an improved screening tool for PPD and research involving it has impacted the degree and speed of change (BenDavid et al., 2016). This project provides another example of effectively bridging the gap between existing research and clinical practice (Clevesy et al., 2019; Knights et al., 2016; Moraes et al., 2017; Wilkinson et al., 2017). By bridging this gap, this project's outcomes can accelerate effective approaches and strengthen the work of local clinicians who are seeking improvement. This quality improvement project successfully bridges the gap between implementation and research and is generalizable to other OB/GYN settings whose professionals serve childbearing women.

Summary and Organization of the Remainder of the Project

Postpartum depression (PPD) affects approximately five to 25 % of new mothers

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(Vasta et al., 2018). It can range from “postpartum baby blues” to depression or psychosis (Vasta et al., 2018). Despite existing guidelines, there is still a low number of screenings for pregnant women during postpartum due to gaps in knowledge and standardized screening tool. It is believed that the actual prevalence of the condition could be higher because not all women of childbearing age undergo screening regularly during the postpartum period despite existing evidence-based guidelines (Premji et al., 2019).

The purpose of this quantitative, quasi-experimental quality improvement project was to determine to what degree the implementation of the Edinburgh Postpartum Depression Scale (EPDS) screening tool impacts the number of PPD screenings and behavioral health referrals when compared to the current practice for postpartum women in an obstetrics and gynecology clinic in an urban city in southern California over four weeks. Chapter 1 offered an introduction to the project, background, purpose, significance, methodology, and reason for the chosen design. Convenience sampling and power analysis were used to select 40 participants. After the educational intervention, the clinician participants’ behavioral referral frequency was measured through a chart review by the data specialist. The mothers’ medical records were reviewed before and after the intervention to determine if there is a difference in the behavioral referral numbers by the data specialist. The educational program was administered in 20 -minute session in the first week of the project. Statistical analysis was conducted using the SPSS 27 software to compare the behavioral referral numbers pre and post intervention.

Chapter 1 offered an introduction to the project, background, purpose, significance, methodology, and reason for the chosen design. Convenience sampling and

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power analysis were used to select 80 participants. After the educational intervention, the clinician participants' behavioral referral numbers were measured through a chart review. The aggregate data were reviewed before and after the intervention to determine if there is a difference in the behavioral referral numbers. The educational program was administered in 20 -minute session in the first week of the project. Statistical analysis was conducted using the SPSS 27 software to compare the behavioral referral rates.

Chapter 2 provides a comprehensive literature review on current and previous literature regarding PPD. The chapter offers the theoretical foundation and evidence-based strategies about PPD screening and its effectiveness in reducing behavioral referral numbers. Chapter 3 delivers methodological procedures that were used during the proposed project. Chapter 4 offers the project findings based on the statistical analysis results. Chapter 5 presents the summary, conclusions, implications, and recommendations for future projects based on the findings. The project was completed within four weeks.

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Chapter 2: Literature Review

The purpose of this quantitative, quasi-experimental quality improvement project was to determine to what degree the implementation of the Edinburgh Postpartum Depression Scale (EPDS) screening tool impacts the number of PPD screenings and behavioral health referrals when compared to the current practice for postpartum women in an obstetrics and gynecology clinic in an urban city in southern California over four weeks. Postpartum Depression is a debilitating psychiatric disorder that affects women during the first 12 months after giving birth (Dadi et al., 2020). The various adverse effects of PPD on infants and their mothers include inappropriate nutrition, inhibited growth, weak mother-infant bond, and neurodevelopmental issues (Slomian et al., 2019). Universal screening provides the maximum likelihood of prompt identification of the condition (BenDavid et al., 2016). The timeline for PPD occurrence varies among women, and therefore, adequate screening protocols should be implemented in the OB/GYN setting to identify possible depression among these individuals (BenDavid et al., 2016). Proper support, resources, and follow-up care should be offered to mothers who screen positive. The literature review first addresses the background of the problem related to PPD, followed by the project's theoretical foundation. Lewin's change theory (1951) and Pender's model of health promotion (Pender et al., 1992, 2011) are explored and aligned with the purpose of this quantitative, quasi-experimental quality improvement project.

A comprehensive search was used to conduct a literature review of sources related to PPD. The databases searched were PubMed, Google Scholar, ProQuest, Cumulative Index of Nursing and Allied Health (CINAHL), Ovid, Cochrane, Medline, and Grand

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Canyon University online library. The search terms included childbearing women, postpartum depression, EPDS screening impact, behavioral health referral, and education. The Boolean operator AND was included when searching to filter the outcomes. The inclusion criteria comprises of all articles (i) within the last five years, (ii) are scholarly and peer-reviewed studies, (iii) in the English language, (iv) on PPD in primary clinic settings, and (v) written in full text, and (vi) conducted in the US. All articles older than five years, not peer-reviewed and scholarly, not published in the English language, and not in the full text, not published in the US were excluded from the list. The review generated 200 articles. However, only fifty articles met the inclusion and exclusion criteria. The articles were synthesized and evaluated to provide evidence to address the clinical question.

Background of the Problem

There was a rising need for healthcare providers to offer PPD screenings among women of childbearing age. Bergink et al. (2016) emphasized that PPD is a significant problem for women of childbearing age for over 100 years. There is a need to implement PPD screening programs for women in OB/GYN care clinics to reduce depression and related complications. The global prevalence of PPD has significantly increased over the past decade by approximately 18.4% (Dadi et al., 2020). The World Health Organization suggests that PPD affects nearly 300 million women worldwide, and the symptoms of PPD start appearing four weeks postpartum (Dadi et al., 2020). PPD-related symptoms include obsessive thoughts, anxiety, disappointment, irrational fear, and feelings of deficiency, among other signs (McCarter-Spaulding & Shea, 2016). Statistics from the United States indicate that PPD affects approximately 12.5% of women (CDC, 2020);

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however, the prevalence varies from state to state, with others having PPD numbers as high as 20% (CDC, 2020). The rate of PPD is higher among socially disadvantaged populations than those with higher socioeconomic statuses (Dadi et al., 2020). The high rate of PPD among women of childbearing age in the United States has been associated with the lack of adequate screening and knowledge of PPD (Magdalena & Tamara, 2020). Failure to screen for PPD increases the risk of adverse effects, including weak mother-child bonds and long-term neurodevelopmental implications for the infants.

After reviewing the theoretical foundations, the remaining section is comprised of the literature organized using themes and subthemes specific to this project. The identified themes are the epidemiology of PPD, Prevalence of PPD screening tools and assessment, and interventions and treatment (see Table 1).

Table 1

Themes and Sub-themes Organized by Theme

Theme	Sub-theme
Epidemiology of PPD	Prenatal anxiety, previous history of depression, low self-esteem, poor marital relationships
Prevalence of PPD	Risk Factors of Postpartum Depression
PPD screening tools and assessment	Guidelines to screening for postpartum depression, Impact of Screening and Education on Health Outcomes, Barriers to screening, cultural obstacles, lack of knowledge,
Interventions and treatment for PPD	Pharmacological, psychological, psychosocial

Theoretical Foundation

This quality improvement project's theoretical foundation was Lewin's change theory (1951) and Pender et al.'s health promotion model (1992). Pender's model focuses on three main areas: behavior-specific cognitions and affect, individual characteristics

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and experiences and behavioral outcomes (Danyuthasilpe, 2018). Pender et al.'s HPM (1992) contends that each individual has unique personal characteristics and experiences that impact on subsequent actions and behaviors. The change was implemented using Lewin's change theory (1951). The theory is based on the concept that change occurs in three stages: unfreezing, changing, and refreezing. According to Lewin (1951), the change involves unlearning prior knowledge and replacing it with new ones. The change is also influenced by three factors: equilibrium, driving, and restraining forces (Burnes, 2017).

Pender's Health Promotion Model

Pender's health promotion theory provided a conceptual framework for this quantitative, quasi-experimental quality improvement project. In the seminal study of the theory, *Health Promotion and Disease Prevention: Towards Excellence in Nursing Practice in Education*, the health promotion model identifies each individual's unique personal characteristics and experiences that affect their subsequent actions, making it appropriate for the project (Pender et al., 2011). The *Health Promotion in Nursing* theory, further developed by Pender et al. (2011), explains and promotes health-promoting behaviors. The major conceptual components of Pender's HPM include i) individual characteristics and experiences, ii) behavior-specific cognitions and affect, and iii) behavioral outcomes (Danyuthasilpe, 2018). Components one and two are related to an impact on the behavioral outcomes of people. Behavioral outcomes are the last element of Pender's HPM and define the expected change for the person's healthcare decision.

The model is made up of four assumptions. First, people seek to regulate their behaviors (Pender et al., 2011). Second, individuals interact with their environment,

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gradually transforming it and becoming transformed over time. The third assumption is that health professionals, including nurses, are part of the interpersonal environment responsible for influencing persons through their life span (Pender et al., 2011). Fourth, self-initiated change of the individual-environment interactive patterns is important to changing behavior. Pender et al. (2011) believed that persons could change cognitions, affect, and the physical and interpersonal environment to develop incentives for healthy actions.

The model was selected because the nursing roles in the HPM influence behavioral change in individuals by raising their consciousness related to health-promoting behaviors. The model also promotes self-efficacy, enhances benefits of behavior change, modifies the environment to support health promotion practices, and manages any barriers to behavior change (Danyuthasilpe, 2018; Pender et al., 2011). Pender's HPM is a high middle range theory applicable in nursing practice and research and aims at predicting health-promoting lifestyles and specific behaviors.

Pender's HPM's concept of perceived self-efficacy was used to assess depression in patients and level of screening. According to Pender et al. (2011), behavior-specific cognitions identify both direct and indirect influences of behavior change through perceived barriers. Pender's HPM was applied in this project to influence the practitioners who care for women at this project site. It was applied to help understand individual characteristics and experiences of women, behavior-specific cognitions and affect and behavioral outcomes after implementing an educational program to improve the clinicians' knowledge levels and introducing the EPDS (Danyuthasilpe, 2018). After using Pender's HPM with the healthcare providers, the expected outcome was that self-

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efficacy would be improved to increase health promotion efforts, including screening frequency and behavioral referrals to reduce PPD symptoms. Health promotion relates to the DPI project in multiple ways because the goal of the DPI project was to improve the frequency of PPD screening, increase behavioral health referral frequency and promote health in childbearing women through direct practice improvement. Health promotion is promoted in the DPI project by promoting screening, early intervention, and referral to behavioral health specialist.

Lewin's Change Theory. Lewin's three-step model formed the theoretical framework for this project. According to Lewin's *Field Theory in Social Science* (1951), behavioral change occurs in three phases, unfreezing, moving, and refreezing. The assumption linked with Lewin's theory is that change follows three steps of unfreezing, moving, and refreezing (Cummings et al., 2016). The model is also based on the assumption that two forces are responsible for influencing the change process. Hussain et al. (2018) contended that unfreezing can be attained using three strategies. The theory is founded on driving and restraining forces that describe the change in behavior following the implementation of an evidence-based intervention (Hussain et al., 2018).

The unfreezing stage represents the alteration of the status quo, which is the equilibrium (Lewin, 1951). This stage is essential because it facilitates eliminating restraining forces in the individuals' behaviors and improves conformity (Wojciechowski et al., 2016). The first method involves increasing the driving forces that direct behaviors away from the point of equilibrium or status quo (Wojciechowski et al., 2016). The second approach consists of decreasing the restraining forces negatively impacting movement from the status quo. The third strategy involves a combination of the first two

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approaches. Cummings et al. (2016) highlighted various strategies to help during the unfreezing stage, including the participants' motivation through adequate preparation, identifying problems, and building trust. In this project, the unfreezing stage involved educating nurses on screening to reduce the symptoms of PPD. The driving forces comprise of educating staff members about the potential benefits of screening to increase patient's frequency of PPD examination and followings. Effective communication was essential in preparing the involved nurses for change during the unfreezing stage (Cummings et al., 2016). According to Lewin (1951), people embrace change when proper communication is applied, and they are involved in the process. During this stage, the clinicians embraced the change and were willing to work toward positive patient outcomes.

The second stage of Lewin's theory (1951) involves changing or movement. In this stage, the target system needs to be moved into a new equilibrium level. Three strategies can be applied in this stage (Cummings et al., 2016). First, individuals need to be encouraged to abandon the status quo and view the target problem from a new perspective. Second, collaboration is needed to gather new and relevant information. The third activity involves incorporating views from respectable leaders and supporting the change (Hussain et al., 2018). In this project, the changing stage entailed implementing an educational and screening program to improve mothers' knowledge and behavioral referral numbers. The stage was strengthened by encouraging individuals to abandon the status quo and recognize the problem's significance (Cummings et al., 2016).

The final stage of Lewin's change theory involves refreezing, which occurs after implementing change (Lewin, 1951). Refreezing aims to ensure that the implemented

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change is sustained at the organization for a prolonged period (Hussain et al., 2018). Failure to conduct refreezing increases individuals' risk of reverting to their original behaviors and undoing the benefits resulting from the change (Wojciechowski et al., 2016). Thus, refreezing is essential to stabilize the newly acquired equilibrium by ensuring a manageable balance between the restraining and driving forces (Cummings et al., 2016). One strategy that can be applied during refreezing is the reinforcement and institutionalizing of new behaviors and patterns through standard procedures and policies (Hussain et al., 2018). Driving forces support the implemented change, while re-training forces inhibit or oppose change (Wojciechowski et al., 2016). Thus, change only occurs when one of the forces is greater than the other. In this project, the primary investigator encouraged the facility to adopt the educational and screening intervention to yield positive results. The primary investigator promoted the clinical staff to use practical standardized screening tools to ensure the early identification of PPD in pregnant women.

Lewin's change theory is valid and applicable in nursing care practice. Lewin's theory of planned change can be used to sustain a positive change. The model promotes knowledge sharing among the involved stakeholders and encourages communication. According to Hussain et al. (2018), the model allows the transfer the expertise and knowledge from knowledgeable experts to the novice. Overall, Lewin's change theory demonstrates how restraining and driving forces hinder or support change in an organization (Cummings et al., 2016). There is adequate evidence to support the

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reliability of Lewin's change theory; hence, its authenticity and applicability for the implementation of PPD screening programs for women in OB/GYN care clinics

Review of the Literature

This section discusses current and previous literature related to postpartum depression in childbearing women. The section focuses on themes and subthemes of the chosen topic, along with risk factors for PPD Screening, and intervention. The identified themes are the epidemiology of PPD, prevalence of PPD screening tools and assessment, and interventions and treatment. The supporting subthemes for the epidemiology of PPD are prenatal anxiety, previous history of depression, low self-esteem, and poor marital relationships. The supporting subthemes for the prevalence of PPD include the risk factor for PPD screening. The supporting subthemes for PPD screening and assessment include guidelines for screening for PPD, the impact of screening and education on health outcomes, barriers to screening, cultural obstacles, and lack of knowledge. Lastly, the subthemes for intervention and treatment for PPD including pharmacological, psychological and psychosocial components.

Nurses play an important role in disease prevention to improve the health of people in different communities. By promoting preventative health care, nurses encourage people to participate in screenings, maintain healthy lifestyle behaviors, and take precautionary medications. The emphasis on preventive care is important in helping communities reduce the prevalence of various diseases and improve the quality of peoples' life. Nurses should have adequate knowledge in epidemiology to effectively promote disease prevention initiatives.

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Epidemiology of Postpartum Depression

Epidemiology involves the study of the determinants and distribution of health-related events or states including diseases (Centers for Disease Control and Prevention, 2017). Epidemiology and its relationship, application, and role in nursing science is presented. Epidemiology is an important discipline in public health because it contributes to the prevention of diseases and the promotion of health. There are several instances where descriptive epidemiology has been applied in public health nursing.

Moraes et al. (2017) emphasized that untreated or unscreened PPD may result in retarded growth in infants, frequent diarrhea, and reduced quality of life. The authors conducted a systematic literature review of the evidence on primary instruments used to screen and diagnose PPD. The most frequent PPD instrument was the EPDS, but other scales were also used. The systemic review of literature involved a review of $n = 22$ articles relating to PPD screening and diagnosis. The results indicated that the EPDS (68%) and the Beck Depression Inventory (BDI-II) (27%) were the most common instruments used for screening PPD. The Patient Health Questionnaire-9 (PHQ-9) was also used in 18% of the articles. The screening time in 43% of the articles ranged between 0-3 months after birth, six months (19%), and at least 12 months (38%) (Moraes et al., 2017). The Edinburgh Postnatal Depression Scale (EPDS) was the most common screening tool, used in 68% of the sample (15 articles), followed by the Beck Depression Inventory (BDI-II) (27%, six articles), and the Patient Health Questionnaire-9 (PHQ-9) (18%, four articles). Moraes et al. (2017) highlighted the need for standardization of screening parameters to improve the detection of PPD. The three subthemes addressed are prevalence, risk factors of PPD, and barriers.

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A recent systematic review and meta-analysis by Dadi et al. (2020) evaluated the epidemiology of PPD and its associated factors using a population from Africa. The systematic review was conducted using the PsychINFO, CINAHL, Psychiatry online, SCOPES, MEDLINE, and Emcare online databases (Dadi et al., 2020). Nineteen studies involving 40,953 postnatal mothers were included in this systematic review and meta-analysis. The overall pooled prevalence of postnatal depression was 16.84% (95% CI: 14.49% –19.19%). The prevalence of PPD is dependent on various factors, including low household income, age, race, unwanted pregnancies, gestational diabetes mellitus, low self-esteem, and delivery by caesarian section (Dadi et al., 2020).

Additionally, the prevalence of PPD is affected by having emesis during pregnancy, prematurity, smoking, social factors, anemia, and mental health issues during pregnancy (Dadi et al., 2020). Despite the high prevalence of PPD in childbearing mothers, the condition is still underdiagnosed and undertreated in the United States; thus, it is essential to identify effective interventions and strategies to minimize PPD among women of childbearing age to reduce the associated adverse effects. Dadi et al. (2020) concluded that the prevalence of PPD among women of childbearing age is high, and there is an urgent need to identify effective strategies to minimize its burden.

A population-based study using a comparative design by Fan et al. (2020) evaluated the prevalence and risk factors of PPD among 1349 women in Sri Lanka. This study's main goal was to estimate the incidence of PPD between 10 days to four weeks after birth and evaluate its correlation with various risk factors. The EPDS was used to predict the participants' PPD risk, where a score over nine points indicated a positive diagnosis (Fan et al., 2020). The authors also evaluated PPD outcomes based on the

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participants' responses to the scale. The risk factors were derived from the participants' paper-based medical records that were documented routinely. The authors utilized multiple and multivariate logistic regression to determine the relationships between the variables. The findings indicated that the PPD prevalence ranged between 7.8% and 15.5% among mothers during the first four and ten days postpartum, respectively (Fan et al., 2020). The study revealed a positive association between mothers' delivery age and EPDS total scores. In addition, PPD was linked to mothers' diseases, having over four living children and a delivery age of over 35 years (Fan et al., 2020). Participants who had employed partners and attended prenatal sessions had a lower likelihood of reporting PPD. Fan et al. (2020) concluded by highlighting the need for further research on the impact of time on PPD screening outcomes.

Prenatal Anxiety. Cirik et al. (2016) conducted a quasi-experimental study to determine whether prenatal depression and anxiety, and obstetric complications influence the risk of PPD among mothers with late-term pregnancies. The study included 149 women under antenatal fetal surveillance. Data was collected using the Hospital Anxiety and Depression Scale at admission and EPDS at discharge. The findings indicated that the mothers' mode of delivery was linked to PPD. High scores for prenatal anxiety, depression, and PPD were detected in 17.4%, 12.8%, and 23.5% of the participants, respectively. In addition, prenatal depression was significantly associated with PPD among mothers. Also, prenatal anxiety and suspicion of fetal distress significantly predicted PPD. Cirik et al. (2016) concluded that women with prenatal depression or anxiety have a higher risk of developing PPD.

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Nakić Radoš et al. (2018) conducted a descriptive study to examine the comorbidity, course, and predictors of pre-and postpartum anxiety with PPD. The authors examined the course of high anxiety levels among mothers during pregnancy and after childbirth. Nakić Radoš et al. (2018) then determined the comorbidity of anxiety and postpartum depression. The study employed a sample of 272 women who were categorized below the threshold for clinical depression. The findings indicated that the comorbidity of anxiety and PPD was 75%. Nakić Radoš et al. (2018) also indicated that prenatal anxiety is an independent predictor of PPD among women.

Alhasanat-Khalil et al. (2018) conducted a cross-sectional study to evaluate the relationship between social support and acculturative stress and PPD. The study included 115 Arabic women within 1 and 12 months after childbirth. Multiple linear regression and correlation analyses indicated that high antenatal anxiety, among other factors such as acculturative stress, education level, and social support, predicted PPD symptoms among the women. Alhasanat-Khalil et al. (2018) predicted that antenatal anxiety, lack of social support, and acculturative stress are independent predictors of PPD among women.

Previous History of Depression. Das et al. (2019) conducted a prospective survey questionnaire-based study to evaluate the association between a history of depression and increased risk of PPD and stress-related disorders among mothers. The study included 118 mothers who had babies admitted to a neonatal intensive care unit (NICU) for seven to 29 days. The results indicated that previous and current history of depression was significantly associated with PPD, anxiety, and stress among mothers in a NICU ($p < .05$). Das et al. (2019) concluded that a history of depression exposes postpartum women to higher risks of PPD, stress, and anxiety.

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A recent study by Soffer et al. (2019) demonstrated various risk factors for PPD. The authors employed a retrospective cohort design to evaluate the risk factors for PPD among 1,237 (N=1237) women with private health insurance and access to care around the clock. The participants were tested using the EPDS after six weeks of giving birth. A positive diagnosis of PPD was defined by scores of at least 10 points (Soffer et al., 2019). An analysis was conducted using logistic regression to investigate the risk factors for PPD between women with and without positive diagnoses (Soffer et al., 2019). The findings indicated that 7.3% of the women screened using the EPDS had a positive diagnosis (Soffer et al., 2019). Regression analysis demonstrated that a positive diagnosis of PPD was associated with cesarean delivery, nulliparity, non-white race, and history of anxiety or depression (Soffer et al., 2019). The authors concluded that the incidence of positive PPD diagnosis among mothers with private health insurance is about 7%; thus, there is a need to screen all women of childbearing age using a standardized tool.

Suhitharan et al. (2016) conducted a case-control study to evaluate the analgesic and psychological predictors of PPD. The study included 62 PPD cases, and 417 controls four to eight weeks postpartum. The findings showed that a previous history of depression and a family history of depression were significant predictors of PPD among mothers. Suhitharan et al. (2016) concluded that there is a strong correlation between a history of depression or PPD and a family history of depression with a high risk of PPD among women.

Low Self-esteem. Franck et al. (2016) conducted a prospective cohort study to evaluate how self-esteem instability influences the development of PPD among women without a history of depression. The descriptive study involved 114 healthy women

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without a history of depression in their late seco[nd] and thi[rd] trimesters (Franck et al., 2016). The findings indicated that changes in women's day-to-day self-esteem levels significantly influenced their depressed mood states. Women with higher prenatal self-esteem reactivity reported higher risks of PPD. Franck et al. (2016) concluded that self-esteem instability plays a central role in the development of PPD.

Denis and Luminet (2018) conducted a pilot study followed by the main study using a quasi-experimental design. The pilot study evaluated the effect of cognitive factors on PPD symptoms. The pilot study included 63 women who completed the EPDS, the Ruminative Responses Scale, the revised Eysenck Personality Questionnaire, and the Maternal Self-Report Inventory. The main study included 124 women evaluated using the Toronto Alexithymia Scale (Denis & Luminet, 2018). The findings demonstrated that low maternal self-esteem, brooding rumination, and neuroticism are significant predictors of PPD symptoms among women ($p < .05$).

Matinnia et al. (2018) conducted a prospective cohort study to evaluate the association between PPD and risk factors for women from low socioeconomic backgrounds. The descriptive study included 451 low-income pregnant women who completed the EPDS and demographic questionnaire. Most of them had low perceived social support (67.6%), low self-esteem (63.2%), moderate perceived stress (61%), and low quality of marital relationships (43.5%). Fear related to childbirth was high in more than half of respondents (50.8%). Of them, 58.9% had prenatal depression, and postnatal depression was 39% in participants. The findings indicated that low self-esteem was associated with high risks of PPD. Also, fear associated with childbirth and prenatal depression are common among women.

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Poor Marital Relationship. Małus et al. (2016) conducted a comparative designed study to evaluate how postpartum women's marital relationship satisfaction influenced the development of PPD symptoms among new mothers. The study employed a sample of 100 women who were in their first month postpartum. Data was collected using the Postpartum Depression Screening Scale and Marital Compatibility Questionnaire. The findings indicated a statistically significant correlation ($p < .05$) between PPD and relationship quality (Małus et al., 2016). Women who were deeply satisfied with their marital relationships had a higher sense of well-being than their counterparts who were not satisfied with their marriages. Małus et al. (2016) concluded that women who were dissatisfied with their marriages experienced more severe PPD symptoms.

Kim and So (2017) conducted a quasi-experimental study to evaluate how the development of PPD is influenced by puerperium maternal anxiety, postpartum blues, and the quality of the marital relationship. The study included 130 women who had healthy infants. Data was collected using the EPDS-K, Quality of Marital Relationships, and Spielberger's State Anxiety Inventory at delivery and 4-6 weeks postpartum (Kim & So, 2017). Data analysis was conducted using ANOVA, t-test, correlation, and hierarchical regression. The findings indicated that PPD was predicted by early postpartum depression ($\beta = 0.86$), gaps in maternal relationships ($\beta = -0.13$), and anxiety ($\beta = 0.19$) ($F = 70.52$, $p < 0.001$). The authors recommended the establishment of a maternal management system for screening mothers for anxiety and depression risks.

Clout and Brown (2016) conducted a two-phase longitudinal study to investigate the relationship between marital relationship quality, anxiety, attachment avoidance, and

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PPD. The study included 155 women who were in their third trimester of pregnancy. The findings indicated that marital relationship quality significantly predicted PPD among women. The authors suggested that marital relationship quality can influence affective symptoms among new mothers (Clout & Brown, 2016). Thus, clinicians should focus on partner relationships when screening women for PPD risk.

In summary, the findings yield numerous risk factors for PPD among adult women, including prenatal anxiety (Alhasanat-Khalil et al., 2018; Cirik et al., 2016; Nakić Radoš et al., 2018), previous history of depression (Das et al., 2019; Soffer et al., 2019; Suhitharan et al., 2016), low self-esteem (Franck et al., 2016), and poor marital relationship (Clout & Brown, 2016). The results showed improving the knowledge of risk factors that can be targeted when screening and educating women on PPD. The findings recommend a focus on these factors when screening for PPD among pregnant and postpartum women.

Prevalence of PPD

Postpartum depression is the most prevalent condition affecting women, which is associated with childbirth (CDC, 2020). Postpartum depression affects women at their most vulnerable period, and when left untreated causes significant adverse effects such as cognitive defects, sleep disorders, suicidal tendencies, and both maternal and infant mortality (Slomian et al., 2019). The condition is treatable, and early diagnosis of PPD has been associated with significant improvements in healthcare outcomes and quality of life for the mother, infant, and family members (Premji et al., 2019; Wilkinson et al., 2017). Nurses have an essential role to play in promoting the health outcomes of at-risk populations. Educational interventions provide

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an avenue to promote patient health literacy leading to positive outcomes (Abdollahpour et al., 2018).

A systematic review and meta-analysis by Dadi et al. (2020) evaluated the epidemiology of PPD and its associated factors using a population from Africa. The study was conducted using the PsychINFO, CINAHL, Psychiatry online, SCOPES, MEDLINE, and Emcare online databases (Dadi et al., 2020). The prevalence of PPD was dependent on various factors, including low household income, age, race, unwanted pregnancies, gestational diabetes mellitus, low self-esteem, and delivery by caesarian section (Dadi et al., 2020). Additionally, the prevalence of PPD is affected by emesis during pregnancy, prematurity, smoking, social factors, anemia, and mental health issues (Dadi et al., 2020). Despite the high prevalence of PPD in childbearing mothers, the condition is still underdiagnosed and undertreated in the United States; thus, it is essential to identify effective interventions and strategies to minimize PPD among women of childbearing age to reduce the associated adverse effects. Dadi et al. (2020) concluded that the prevalence of PPD among women of childbearing age is high**,** and there is an urgent need to identify effective strategies to minimize its burden.

Similarly, Fan et al. (2020) evaluated the prevalence and risk factors of PPD among women in Sri Lanka. The findings indicated that the PPD prevalence ranged between 7.8% and 15.5% among mothers during the first four and ten days postpartum, respectively (Fan et al., 2020). There exists a positive association between mothers' delivery age and EPDS total scores. Postpartum depressions were linked to mothers' diseases, having over four living children, and a delivery age of over 35 years (Fan et al., 2020). Participants who had employed partners and attended prenatal sessions had a

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lower likelihood of reporting PPD. Fan et al. (2020) concluded by highlighting the need for further research on the impact of time on PPD screening outcomes.

The similarities of the studies mentioned above were the recommendations for standardized PPD screening to improve the detection and decrease the prevalence. The contrasts in the studies were the utilization of different study designs: systematic reviews (Dadi et al., 2020; Moraes et al., 2017) and quantitative (Fan et al., 2020). In summary, this topic is important to this project because it highlights the extent of the need for PPD screening among women of childbearing age. The evidence supports the need for PPD screening among new mothers to reduce the symptoms of depression (Dadi et al., 2020; Fan et al., 2020; Moraes et al., 2017).

Risk Factors of PPD. Ghaedrahmati et al. (2017) conducted a systematic review of the literature. Two hundred articles were identified, with 74 determined to be appropriate. Women's risk of developing PPD is influenced by various factors, including risky pregnancy, lack of social support, glucose metabolism disorders, and a history of depression and anxiety (Ghaedrahmati et al., 2017).

Sampson et al. (2017) conducted a descriptive study using secondary data analysis to evaluate if elevated PPD symptoms can influence mothers' interactions within the home environment. The sample included 4,979 (N=4979) participants from the Healthy Families America program (Sampson et al., 2017). The analysis was conducted using linear regression models to evaluate the effects of high PPD levels in the home environment. Elevated PPD symptoms at three months postpartum were predicted by elevated depressive symptoms prenatally (OR = 4.34, 95% CI [3.46, 5.45]) and being unemployed (OR = 1.37, 95% CI [1.18, 1.58]). Elevated PPD symptoms were associated

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with decreased overall home environment functioning at 12 months ($\beta = -.87$, 95% CI [−1.48, −.26]), particularly in the domains of maternal acceptance ($\beta = -.19$, 95% CI [−.36, −.03]) and involvement ($\beta = -.24$, 95% CI [−.39, −.08]). Being African American (OR = .83, 95% CI [.69, .99]) or not having English as a first language (OR = .51, 95% CI [.32, .83]) were associated with decreased odds of elevated PPD symptoms. This study's main strength was using a large sample size, a reliable instrument, and a reliable data source, which enhanced the findings' reliability and validity. However, the study was limited by using secondary data analysis, which introduced the likelihood of errors and bias. Sampson et al. (2017) concluded that elevated PPD symptoms could have various long-term implications on mothers' acceptance and involvement with their infants. Thus, it is important to conduct early screening of PPD to facilitate prompt treatment and prevention.

PPD Screening Tools and Assessment

Universal screening provides the maximum likelihood of prompt identification of the condition (BenDavid et al., 2016). BenDavid et al. (2016) conducted a quasi-experimental study involving postpartum women and used the EPDS. Fifty-two percent of women screened positive. Sixty-four percent accepted both provider and support referrals, with 89% follow-through with provider referrals and 78% follow-through with support referrals. Typically, obstetricians and gynecologists assess postpartum women for six weeks post-birth and are in strong positions to identify the condition. Unfortunately, PPD can occur as early as two weeks or as late as three or more months after childbirth (BenDavid et al., 2016). Empirical research suggests that since the timeline for PPD occurrence varies in everyone, adequate screening protocols should be implemented in

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the OB/GYN setting to identify possible depression among these individuals (BenDavid et al., 2016). Proper support, resources, and follow-up care should be offered to mothers who screen positive on the EPDS (Cox et al., 1987).

Guidelines for Screening for Postpartum Depression. Curry et al. (2019) performed an evidence review of 59 articles to evaluate the interventions used to prevent PPD based on the U.S. Preventive Services Task Force (USPSTF) guidelines. This literature review's main objective was to present a new USPSTF recommendation on interventions for preventing PPD. The review involved contextual information about the accuracy of instruments used to test women with high risks of PPD. The United States Preventive Task Force (2019) found that counseling strategies such as interpersonal and cognitive-behavioral therapies effectively prevent PPD. Curry et al. (2019) indicated that women with a history of depressive symptoms and socioeconomic factors could significantly benefit from counseling interventions.

Venkatesh et al. (2017) conducted an observational cohort study to evaluate new strategies for improving the EPDS' ability to stratify the risk of PPD, including the incorporation of new putative risk factors, cut-off points, and the addition of a continuous variable. The study included 4939 women (N= 4939) screened during their postpartum and antepartum periods using the EPDS (Venkatesh et al., 2017). The outcome of interest was EPDS $\geq$ 10. The findings indicated that the EPDS was useful in identifying women with a low risk of PPD with a 97.6% negative predictive value. The instrument's specificity and sensitivity were 53.8% and 78.7%, while its overall discrimination was modest (Venkatesh et al., 2017). As shown by the findings, the negative predictive values were consistent in all the cut-off values. Venkatesh et al. (2017) highlighted that the

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EPDS could not evaluate the severity of PPD, which was a major limitation for the study. Overall, Venkatesh et al. (2017) concluded that the EPDS alone could not be used as a substitute for PPD screening.

A recent quasi-experimental study by Russomagno and Waldrop (2019) evaluated the effectiveness of improving PPD screening in identifying more depression cases among mothers in a pediatric OB/GYN setting. The study employed a quality improvement approach involving the standardization of a PPD screening schedule and establishing a new referral algorithm adopted in the pediatric OB/GYN clinic. The results indicated a significant increase in PPD screening at the setting by 47%, while the referral numbers improved from 66% to 79% (Russomagno & Waldrop, 2019). The authors concluded that introducing a referral algorithm and standardization of PPD screening facilitates the identification of more cases, further assessment, and effective treatment to enhance infant and maternal health outcomes.

The studies yielded similar findings supporting the importance of screening tools such as the EPDS. However, the studies employed different designs and methodologies. All studies recommended the adoption of a standardized tool for screening PPD among women of childbearing age. This topic is significant to the project because it highlights existing guidelines for screening for PPD that can be applied in the current project. Venkatesh et al. (2017) conducted an observational cohort study by evaluating the strategies for promoting EPDS use. There is an agreement in the studies to adopt a standardized tool for screening PPD among women of childbearing age (Curry et al., 2019; Russomagno & Waldrop, 2019; Venkatesh et al., 2017).

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Impact of Screening and Education on Health Outcomes. Postpartum depression left untreated and undiagnosed can lead to sequelae that may negatively impact the infant, the mother, the hospital, and the community (Moraes et al., 2017). Thus, it is essential to conduct frequent screening for pregnant mothers, preferably after every two-month interval until 12 months after birth. Various studies have demonstrated the impacts of screening and education on health outcomes among women with PPD (Moraes et al., 2017; Premji et al., 2019; Wilkinson et al., 2017).

Wilkinson et al. (2017) conducted an observational study using a cost-effectiveness analysis of screening for PPD and psychosis among pregnant women. The authors modeled the cost-effectiveness of psychosis and PPD screening by physicians in collaboration with a psychiatrist. The study involved 1,000 (N=1000) pregnant women who experienced one birth over two years. The authors employed a decision tree model to collect screening results for psychosis and PPD using the EPDS. Wilkinson et al. (2017) used the Medicaid payer perspective because they offer insurance coverage to about half of the births in the country. The cost-effective measures examined in the study were cost per quality-adjusted life-year, and cost per remission attained, which were computed through probabilistic and deterministic sensitivity analyses (Wilkinson et al., 2017). The findings indicated that 29 additional healthy women were screened and treated at $943 per patient. The savings in cost per remission ($10,182) and cost per QALY ($13,857) were achieved (Wilkinson et al., 2017). The authors concluded that PPD screening and treatment is cost-effective and should be adopted as usual care during the postpartum period, as recommended by the U.S. Preventive Services Task Force.

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Premji et al. (2019) conducted a prospective cohort study to examine PPD screening's effectiveness in identifying, diagnosing, and treating depression among women and well-child clinics during the first year after birth. In this study, the authors linked the All Our Families prospective pregnancy cohort with pharmaceutical, inpatient, public health, outpatient, and physician claims data for 12 months after birth. An evaluation was conducted by comparing the descriptive and bivariate analysis of participants' characteristics and the utilization of screening technology. Based on the results, 3% out of 87% who were screened had a high risk of PPD. The screened participants had a higher likelihood of being diagnosed with PPD than their unscreened counterparts. The results also indicated that high-risk women have a higher likelihood of medication utilization and a positive diagnosis of PPD than those who are not screened. Premji et al. (2019) concluded that screening for PPD is essential in streamlining resources for mothers' treatment during the postpartum period.

Trost et al. (2016) conducted a prospective observational study to evaluate PPD during infant hospitalization and the risk factors in this population. The authors recruited 310 Spanish- and English-speaking women who had infants aged between two and 12 months. The EPDS, demographic survey, and a maternal-infant bonding scale were administered to the participants. Mothers who scored at least 10 points on the EPDS were offered mental health and counseling referrals (Trost et al., 2016). The authors also evaluated resource utilization and EPDS scores. The analysis was conducted through multivariate logistic regression to investigate the relationships between positive diagnoses and risk factors. About 28% of the participants had positive scores for EPDS, while only 14.6% had received appropriate screening for PPD before (Trost et al., 2016).

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There was a positive association between EPDS+ and a history of mental health diagnoses and poor social support. Positive EPDS screens were also associated with having infants with neurodevelopmental comorbidities (Trost et al., 2016).

The findings indicated 38% of the participants used referral resources or their physicians, resulting in lower risks of PPD compared to those who do not seek assistance. Trost et al. (2016) concluded that PPD screening during infant hospitalization is essential because it allows clinicians to diagnose previously unscreened women. A lack of social and family support, previous history of mental health issues, and having an infant with neurodevelopmental issues can increase the risk of PPD. The theme is significant for this project because it demonstrates numbers on the importance of PPD screening and its effectiveness in improving women's health outcomes.

McCarter-Spaulding and Shea's (2016) study utilized a quasi-experimental design to evaluate the effectiveness of an educational intervention in preventing or minimizing symptoms of PPD among adult English-speaking women. The 240 (n = 240) participants were aged at least 18 years and had a singleton healthy newborn. Half of the participants received the educational intervention, which included administration of sessions on the management, prevention, predictors, and symptoms of PPD. The control group (n = 120) received usual care. McCarter-Spaulding and Shea (2016) measured the participants' symptoms of depression using the EPDS, while the current risk factors were evaluated using the Postpartum Depression Predictors Inventory-Revised (PDPI-R-R). The tests were conducted in intervals of one and a half, three, and six months after birth, respectively (McCarter-Spaulding & Shea, 2016). The analysis was conducted using z-

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tests to determine whether the educational intervention had significantly influenced the participants' EPDS scores.

The findings of McCarter-Spaulding and Shea's (2016) research showed that there was no significant difference in the participants' depression symptoms based on the EPDS at each interval; however, the authors highlighted the study's consistency with previous evidence about the positive influence of anxiety or depression history and low socioeconomic status on PPD (McCarter-Spaulding & Shea, 2016). Despite not eliciting a significant change in participants' symptoms, McCarter-Spaulding and Shea (2016) indicated that different outcomes would be achieved if the intervention were implemented prenatally and reinforced during the postpartum period and post-discharge.

In summary, the findings support the effectiveness of screening and education on health outcomes, particularly PPD among women. However, the studies employ different research designs and approaches. The studies employed large sample sizes and primary data. All the studies (McCarter-Spaulding & Shea, 2016; Premji et al., 2019; Trost et al., 2016; Wilkinson et al., 2017) recommend implementing educational and screening interventions to improve the management of PPD. Evidence from the reviewed studies recommended implementing educational and screening interventions to improve the management of PPD in the prenatal clinics (McCarter-Spaulding & Shea, 2016; Premji et al., 2019; Trost et al., 2016).

Multiple studies evaluated indicated that there exist several risk factors for the PPD screening. Sampson et al. (2017) concluded that elevated PPD symptoms could have various long-term implications on mothers' acceptance and involvement with their infants. Thus, it is important to conduct early screening of PPD to facilitate prompt

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treatment and prevention. Three studies suggested that women with prenatal depression or anxiety have a higher risk of developing PPD (Cirik et al., 2016; Das et al., 2019; Nakić Radoš et al., 2018). Prenatal anxiety is an independent predictor of PPD among women. Das et al. (2019) concluded that a history of depression exposes postpartum women to higher risks of PPD, stress, and anxiety. Evidence suggests that women with a history of depression have a high risk of PPD (Franck et al., 2016; Suhitharan et al., 2016). Suhitharan et al. (2016) established a strong correlation between a history of depression and risk of PPD among women. Also, self-esteem plays a central role in developing PPD (Franck et al., 2016).

Barriers to Screening. Various studies have demonstrated the barriers to the effective screening of postpartum depression among mothers of childbearing age (Hansotte et al., 2017; Martínez et al., 2016; Ransing et al., 2020). Martínez et al. (2016) conducted a prospective study to develop a predictive model for assessing factors that influence access to PPD treatment among mothers in primary healthcare settings. An initial assessment was conducted in three months, mainly focusing on obstetric and gynecological data, depressive symptoms, and information about services provided. Depressive symptoms were based on the EPDS, while the quality of life was evaluated using the Short Form-36 Health Status Questionnaire (SF-36) (Martínez et al., 2016). After diagnosis with depression, the participants had follow-up encounters. The results revealed various barriers to PPD screening, including the previous history of depression, anhedonia, and panic or fear (Martínez et al., 2016). The authors concluded that it is important to implement a simple, standardized profile guiding nurses to closely monitor mothers with PPD with signs of anhedonia, fear, panic, and depression history.

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Cultural Obstacles. Di Florio et al. (2017) evaluated the EPDS tool's use in participants from various cultural groups. The study employed a sample of 8209 new mothers from the United States and Europe. The findings indicated that race or ethnicity influenced the participants' PPD reporting. However, the EPDS structure differed between the United States and Europe. The authors concluded that clinicians and investigators should have adequate awareness of the differences in PPD expression that women from different backgrounds show. Pham et al. (2018) also conducted a prospective cohort study to determine the prevalence of PPD among mothers within four weeks after childbirth using the EPDS. The study included 539 women who were interviewed and received the EPDS. The findings suggested that culture is among the factors that can influence PPD screening among women.

Chi et al. (2016) conducted a cross-sectional survey to examine the cultural, socio-demographic, and psychological factors associated with the screening of PPD among Chinese women. The study employed a sample of 506 mothers aged 23 years and above through an online questionnaire. The study indicated that high PPD risk was significantly associated with education level, time spent with husbands, parents, reparation for pregnancy, family income, parents-in-law, history of depression, and relationships with husbands (Chi et al., 2016). The authors concluded that addressing cultural factors, including family relationships, can be essential in preventing PPD.

Lack of Knowledge. Ransing et al. (2020) conducted a cross-sectional study to examine the knowledge gap of PPD among healthcare providers. The authors focused on nurse providers, service utilizers, service providers, and medical practitioners. The healthcare providers were evaluated for knowledge regarding PPD using a proforma and

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Perinatal Depression Monitor (Ransing et al., 2020). The results indicated that only 8.51% of the perinatal women had adequate knowledge of PPD, while 91.49% did not know about depression (Ransing et al., 2020). There was a tremendous knowledge discrepancy among the healthcare providers about PPD being normal during pregnancy, its biological causes, and the use of antidepressants to manage the condition. Many of the participants supported the screening of depression during pregnancy and postpartum. Ransing et al. (2020) concluded that low literacy on PPD, its management, and misconception about etiology among healthcare providers could inhibit the utilization of healthcare services on PPD. The authors also highlighted the need for improving awareness of PPD among nurse practitioners and perinatal women.

Elshatarat et al. (2018) conducted a descriptive cross-sectional study to evaluate the lack of knowledge of PPD management among midwives and perinatal nurses. The study employed a sample of 143 midwives and 181 nurses who completed a self-reported questionnaire. The findings indicated that nurses and midwives had inadequate knowledge of PPD aspects such as symptoms, prevalence, definition, screening tools, risk factors, and treatment. One-third of the nurses and midwives had adequate confidence in educating women on PPD (Elshatarat et al., 2018). The authors recommended the continuous education of nurses and midwives on PPD to improve their ability to manage women with the condition.

In summary, Curry et al. (2019) indicated that a history of depressive symptoms and socioeconomic status could benefit from counseling interventions**.** Venkatesh et al. (2017) found that the EPDS alone cannot be used to effectively screen for PPD among women of childbearing age. Wilkinson et al. (2017) indicated that PPD screening is cost-

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effective and should be considered usual care during the postpartum period. Premji et al. (2019) found that screening for PPD can improve the streamlined resources for treating mothers after giving birth. Moraes et al. (2017) indicated that it is important to standardize current screening parameters to enhance the detection of PPD.

Trost et al. (2016) found that PPD screening is vital as it allows nurses to diagnose previously unscreened women. McCarter-Spaulding and Shea (2016) found that educational interventions would be more effective if implemented prenatally and reinforced during the postpartum period and post-discharge. Russomagno and Waldrop (2019) demonstrated that a referral algorithm and standardization of PPD screening could improve the identification of more PPD cases. Martínez et al. (2016) found that a history of anhedonia, panic/fear, and depression can inhibit PPD screening and treatment access. Hansotte et al. (2017) also found that mothers' access to PPD treatment can be inhibited by multiple social, physical, cultural, and systemic healthcare challenges. Chi et al. (2016), Di Florio et al. (2017), and Pham et al. (2018) found that various cultural factors, such as family relationships, can affect the screening of PPD among postpartum women.

A recent study by Ransing et al. (2020) indicated that PPD screening could be inhibited by low literacy, management, and misconception about the etiology of PPD. Elshatarat et al. (2018) also added that low knowledge of PPD factors among midwives and nurses negatively influences screening. These studies are relevant to the current project because they improve the understanding of the importance of screening in managing PPD and existing barriers. In summary, providers need to be aware of the different effects that literacy levels and low knowledge levels in providers affect the

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screening and diagnosis of PPD. Providers need to be educated on the screening process, frequency, and treatment of PPD in order for positive patient outcomes

Interventions and Treatment for Postpartum Depression

The main solutions for PPD screening in OB/GYN settings can be categorized into hormonal, pharmacological, psychosocial, and psychological (Haim et al., 2016). Multiple studies have investigated the use of various interventions in addressing PPD among women of childbearing age (Gould et al., 2017; Poyatos-León et al., 2017). The three sub-themes addressed are pharmacological, psychological, and psychosocial interventions for addressing PPD.

Pharmacological. Komori et al. (2018) conducted a qualitative review of literature from Korean, English, Japanese, and Chinese databases to compare the effectiveness of antidepressants and acupuncture in managing PPD among mothers. The findings indicated no significant difference in the effectiveness of fluoxetine and acupuncture in the treatment of PPD. The authors concluded that antidepressants are as effective as acupuncture in the management of PPD. Fard et al. (2017) also conducted a randomized controlled clinical trial to evaluate magnesium and zinc supplements' effectiveness in managing PPD and anxiety. The study included 99 participants who were assigned to magnesium sulfate, zinc sulfate, and placebo groups. The intervention participants were provided with daily 27-mg zinc sulfate or 320-mg magnesium sulfate tablets for eight weeks (Fard et al., 2017). Data was collected using the EPDS and Spielberger State-Trait Anxiety Inventory. The findings indicated no significant differences in trait anxiety, depression, and state anxiety between the three groups. The

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authors concluded that zinc and magnesium are not effective in reducing PPD and anxiety among women.

Uguz et al. (2019) conducted a study to investigate the effectiveness of prophylactic treatment using antidepressants to prevent postpartum deterioration of depression and anxiety. The authors employed a sample of 33 women monitored from pregnancy to the postpartum period (Uguz et al., 2019). Data was collected using the Hamilton Rating Scale for Anxiety and Hamilton Rating Scale for Depression scales. The results indicated that antidepressants are effective in the prevention of PPD exacerbation of depression and anxiety disorders among admitted women.

Psychological. Abdollahpour et al. (2018) conducted a clinical trial to investigate the effects of Cognitive Behavioral Therapy (CBT) in managing PPD among women who experience traumatic childbirth. The study included 179 women who had experienced traumatic childbirth. The participants were categorized into control and intervention groups. Those in the intervention group received counseling for 40-60 minutes within the first two days after childbirth (Abdollahpour et al., 2018). Data was collected using the EPDS. The findings indicated no statistical significance in the depression numbers among the two groups within 4-6 weeks after childbirth. After three months, the intervention group participants had lower depression scores than the control group.

Haseli and Mohammadi (2019) conducted a systematic review and meta-analysis to evaluate the effectiveness of cognitive-behavioral therapy (CBT) in managing PPD among women after childbirth. The study was conducted using Scopus, Google Scholar, Iran Medex, Magiran & SID, and Web of Sciences databases. The results indicated a statistically significant beneficial effect of CBT in managing PPD among childbearing

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women. The authors concluded that CBT is effective as a psychological intervention in managing PPD. Huang et al. (2018) conducted a systematic review and meta-analysis to explore CBT's combined effectiveness in managing PPD. Two independent reviewers evaluated 20 randomized controlled trials involving 3623 women. The findings indicated that CBT is associated with higher EPDS scores than the control group in the short- and long-term (Huang et al., 2018). Cognitive-behavioral therapy was associated with short- and long-term depression scores based on the Beck Depression Inventory. The authors established that CBT is effective in managing the symptoms and progression of PPD.

Psychological A recent study by Poyatos-León et al. (2017) investigated the effects of exercise-based interventions on PPD among women of childbearing age during pregnancy and the postpartum period. The study employed a meta-analysis approach using the CINAHL, EMBASE, Scopus, PubMed, Science Direct, Cochrane Library Plus, and Web of Science (Poyatos-León et al., 2017). The authors utilized the inverse variance-weighted approach to calculate the effect size estimates for physical activity on PPD. Sensitivity analysis and meta-regression were also performed to assess heterogeneity. Based on the findings, the effect size of the association between physical activity interventions and PPD during pregnancy and the postpartum period was 0.41. Poyatos-León et al. (2017) concluded that physical exercise is an effective and safe intervention for reducing PPD symptoms and improving psychological health.

Gould et al. (2017) investigated the use of perinatal nutrition interventions to reduce the symptoms of PPD. The study also involved meta-analyses of randomized controlled trials involving nutritional strategies during the perinatal period. The authors focused on PPD as an outcome and assessed whether any studies followed the meta-

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analyses (Gould et al., 2017). The findings indicated that fish oil supplements had positive impacts on PPD symptoms. In addition, dietary advice interventions during pregnancy positively influenced PPD symptoms (Gould et al., 2017). The limitation of this study is that only a few RCTs involving nutritional strategies during pregnancy evaluates PPD. Gould et al. (2017) concluded that additional research is required to evaluate how nutritional interventions can protect women from PPD during pregnancy.

Gürkan and Ekşi (2017) conducted a nonrandomized, post-test control group study to determine the effects of an antenatal educational intervention in improving women's functional status and PPD symptoms on the sixth month postpartum. The participants included pregnant women who had applied to visit a prenatal unit of a hospital. The intervention group (n = 31) received antenatal educational sessions, while those in the control group (n = 34) were provided with the usual antenatal care (Gürkan & Ekşi, 2017). Data collection was conducted using the Inventory of Functional Status after Childbirth, a demographic survey, the 6th Week Assessment Form, and EPDS (Gürkan & Ekşi, 2017). The findings indicated no significant difference in the questionnaire scores between the two groups at six weeks and six months ($p < 0.05$). The authors concluded that antenatal training or education might not be an effective strategy for decreasing PPD and improving women's postpartum functionality.

In summary, Dadi et al. (2020) found that the prevalence of PPD among women of childbearing age is still high. Significant positive associations are found between PPD risk and mothers' delivery age, diseases, and having over four living children (Fan et al., 2020). PPD is associated with an increased risk of suicide, maternal morbidity, and social issues (McCarter-Spaulding & Shea, 2016). High PPD risk is associated with cesarean

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delivery, non-white race, nulliparity, and a history of anxiety or depression (Soffer et al., 2019). Elevated PPD symptoms can significantly influence mothers' acceptance and involvement with their children (Sampson et al., 2017). Ghaedrahmati et al. (2017) added that PPD risk among women could be influenced by various factors, including metabolic disorders, risky pregnancy, glucose metabolism disorders, and previous history of depression and anxiety.

Fish oil supplements and dietary interventions positively influenced PPD symptoms among pregnant women (Gould et al., 2017). Poyatos-León et al. (2017) also found that physical exercise can effectively reduce PPD symptoms and improve mothers' psychological well-being; however, training or education may not be suitable for decreasing PPD symptoms and improving functionality among women after birth (Gürkan & Ekşi, 2017). The studies also yielded various pharmacological (Fard et al., 2017; Komori et al., 2018; Uguz et al., 2019) and psychological (Abdollahpour et al., 2018; Haseli & Mohammadi, 2019; Huang et al., 2018) interventions for managing PPD. The findings are relevant to the project because they indicate the prevalence of PPD and the key risk factors to consider when developing interventions to address the problem.

Summary

This chapter presented a comprehensive review of past and current literature on PPD and the effectiveness of screening and educational interventions in reducing its symptoms. The section examined Pender's health promotion model (Pender et al., 1992) and the intentional promotion of health through improved screening and referral of childbearing women for PPD. This theoretical foundation and Lewin's change theory guided the implementation of the educational preparation and subsequent screening

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intervention. The project's methods were supported through a critical appraisal of studies involving PPD, and the effectiveness of educational and screening interventions in addressing this problem is provided. The synthesized literature indicated the prevalence of PPD among women of childbearing age is high due to the gap in screening and healthcare providers' knowledge of the disease (Latendresse et al., 2017). The literature also illuminated that women's risk of PPD was also influenced by various factors, including the history of mental health issues, delivery age, mothers' diseases, having over four living children, caesarian delivery, non-white race, and nulliparity (McCarter-Spaulding & Shea, 2016; Soffer et al., 2019).

Screening and educational interventions effectively reduce the prevalence of PPD and associated symptoms among women during the postpartum period (McCarter-Spaulding & Shea, 2016). However, there are multiple barriers to the effective screening of PPD, including low literacy and various social, cultural, physical, and systemic healthcare challenges which will continue to impact health promotion (Hansotte et al., 2017; Martínez et al., 2016; Ransing et al., 2020). The literature indicates a gap in screening women for PPD during the postpartum period (Hansotte et al., 2017; Martínez et al., 2016; Ransing et al., 2020), and this project can address this gap. The themes discussed included the epidemiology of PPD, the prevalence of PPD, PPD screening tools and assessment and interventions and treatments for PPD. Further synthesis into the subthemes demonstrated the existing evidence used to prepare this project.

To address a knowledge gap of healthcare providers on PPD and its symptoms, a direct practice improvement developed through this literature review was conducted to promote the health of women of childbearing age (Elshatarat et al., 2018; Ransing et al.,

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2020). These gaps represent opportunities for effective screening and educational interventions to improve screening and awareness of PPD among mothers during pregnancy and post-partum. Thus, the proposed project is designed to implement an educational program on PPD screening using the EPDS to improve nurses' and other clinicians' knowledge, which, in turn, would improve behavioral referral numbers among childbearing women. A knowledge gap on PPD and its symptoms was also identified in clinicians to women of childbearing age (Elshatarat et al., 2018; Ransing et al., 2020). These gaps support the need for effective screening and educational interventions to improve screening and awareness of PPD among mothers during pregnancy and post-partum. Thus, the project implemented an educational program on PPD screening to improve nurses' and other clinicians' knowledge, which, in turn, would improve behavioral referral rates among women.

This chapter presented a comprehensive review of past and current literature on PPD and the effectiveness of screening and educational interventions in reducing its symptoms. The section provides the theoretical foundation, Lewin's change theory, which will be used to guide the implementation of the educational and screening intervention. In addition, a critical appraisal of studies involving PPD and the effectiveness of educational and screening interventions in addressing this problem is provided. The synthesized literature indicated the prevalence of PPD among women of childbearing age is high due to the lack of screening and knowledge of the disease (Latendresse et al., 2017). The literature also illuminated that women's risk of PPD is also influenced by various factors, including the history of mental health issues, delivery age, mothers' diseases, having over four living children, caesarian delivery, non-white race, and nulliparity (McCarter-

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Spaulding & Shea, 2016; Soffer et al., 2019). Screening and educational interventions effectively reduce the prevalence of PPD and associated symptoms among women during the postpartum period (McCarter-Spaulding & Shea, 2016). However, there are multiple barriers to the effective screening of PPD, including various social, cultural, physical, and systemic healthcare challenges (Hansotte et al., 2017; Martínez et al., 2016; Ransing et al., 2020). The literature indicates a gap in the screening of women for PPD during the postpartum period (Hansotte et al., 2017; Martínez et al., 2016; Ransing et al., 2020). These gaps support the need for effective screening and educational interventions to improve screening and awareness of PPD among mother's post-partum. The project was designed to implement an educational program on the importance of PPD screening, which, in turn, would improve behavioral referral rates among women. Chapter 3 presents a discussion of the problem statement, clinical question, methodology, design, population, sample, and instruments used in the project. Chapter 3 includes the instruments' validity and reliability, data collection and analysis procedures, ethical considerations, and limitations of the project.

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Chapter 3: Methodology

Postpartum depression (PPD) is the most prevalent healthcare problem associated with childbirth (CDC, 2020). Up to 12.5% of American women experience PPD at their most vulnerable state (CDC, 2020; Shitu et al., 2019). The purpose of this quantitative, quasi-experimental quality improvement project was to determine to what degree the implementation of the Edinburgh Postpartum Depression Scale (EPDS) screening tool impacts the number of PPD screenings and behavioral health referrals when compared to the current practice for postpartum women in an obstetrics and gynecology clinic in an urban city in southern California over four weeks. This chapter includes a summary of the project's topic, problem, and clinical question. A discussion of the methodology, design, population, and selected sample size is also presented in the chapter. Additionally, the chapter includes a description of the instrumentation, validity, and reliability related to the project. The last sections of the chapter are data collection, analysis procedures, ethical considerations, and limitations. A brief overview of Chapter 4 is included in the latter sentences.

Statement of the Problem

It was not known if or to what degree the implementation of the Edinburgh Postpartum Depression Scale (EPDS) screening tool impacts the number of PPD screenings and behavioral health referrals when compared to the current practice for postpartum women in an obstetrics and gynecology clinic. Postpartum depression adversely affects the lives of childbearing women and their children if left untreated (Slomian et al., 2019). Early diagnosis is essential to facilitate treatment and aversion of the adverse effects of PPD (Wilkinson et al., 2017).

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However, the numbers of PPD screenings are low, and where practiced, there often lacks a standardized screening tool (Byatt et al., 2019). For this quality improvement project, there was a gap in the standardized screening process for PPD among women aged 18-50 years at an OB/GYN clinic, as evidenced by a lack of standard protocols in the clinic. Based on the verbal conversation with the Department Administrator of the department (DA), there are also knowledge gaps among the clinicians regarding the importance of PPD screening, reliability of the EPDS instrument, and available resources for the management of the condition in the practice setting. This validates current studies suggesting that most clinicians have positive beliefs regarding PPD screening, but they cannot provide continuity in care regarding this topic because of time and tasks.

Clinical Question

The project's focus was to educate clinicians working in the OB/GYN clinic in Southern California on the use of a standardized tool for PPD screening and the available resources for referral for treatment. The following clinical question guided the project:

Q1: To what degree does the implementation of the Edinburgh Postpartum Depression Scale (EPDS) screening tool impacts the number of PPD screenings and behavioral health referrals when compared to the current practice for postpartum women in an obstetrics and gynecology clinic in urban California?

The project has two dependent variables: the number of PPD screenings and behavioral health referrals. The number of referrals for specialist care was a nominal level variable obtained from abstracting aggregate patient information from the EHR charts. The number of PPD screenings, also a nominal level variable, was retrieved from

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patient records for each participating clinician. Addressing the clinical question requires comparing the dependent variables before and after the implementation of the intervention. The dependent variables were, therefore, measured before and after the intervention.

The independent variable was the educational intervention and the EPDS screening tool to screen for depression and increase patient referrals for appropriate care. The implementation data were compared to comparison data to enable the primary investigator to measure the EPDS's impact on the screenings and referral numbers. Any observed changes were assumed to be associated with the intervention allowing an assessment of the causal effect between the independent and dependent variables.

Project Methodology

A quantitative methodology was used to assess the effectiveness of the educational intervention, screening, and behavioral referrals among women of childbearing age. The quantitative method of inquiry involves objective measurements of relationships between dependent and independent variables using statistical, numerical, or computational approaches (Christenson & Gutierrez, 2016). Quantitative methods emphasize numerical data collection, analysis, and generalization across different populations or settings (Rutberg & Bouikidis, 2018).

A qualitative method was not chosen because it explores concepts, phenomena, and lived experiences of the participants (Bressan et al., 2017). The qualitative method explains the meanings of the participants' lived and emotional experiences (Leedy & Ormrod, 2013). A qualitative study cannot measure the association or strength of the relationship between independent and dependent variables. Instead, a quantitative method

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allowed the primary investigator to measure the pre and implementation measures with the EDPS instrument at varied points.

The quantitative method was the most appropriate approach for this project because it permits the primary investigator to use deductive reasoning (Leedy & Ormrod, 2013). In a quantitative project, the concepts, variables, and methods remain the same throughout the implementation process (Leedy & Ormrod, 2013). The primary investigator's goal was to validate the relationships noted in the project and develop generalizations that promote the chosen theory (Leedy & Ormrod, 2013). Furthermore, in nursing, quantitative studies increase nursing knowledge through planning and implementing evidence-based practices.

Project Design

A quasi-experimental design was utilized in evaluating the project. The quasi-experimental design is characterized by the lack of experimental research procedures such as randomization of participants to groups and sampling during recruitment (Wargo, 2015). A quasi-experimental design involves measuring the dependent variables both before and after a treatment to establish a causal-effect relationship (Butsic et al., 2017). The design, therefore, facilitated the evaluation of the causal effect relationship between the intervention and the dependent variables. The rationale for using the pretest-posttest design was to facilitate the collection and evaluation of data before and after the education program for promoting PPD screening in childbearing women during the postpartum period. The design facilitated the establishment of the relationship between the education intervention and their practices regarding PPD screening and referral for behavioral health.

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The quasi-experimental design guided the procedure for data collection by establishing comparison groups of data collected before and after implementing the intervention (Creswell & Creswell, 2018). A quasi-experiment does not involve random sampling of participants or the random allocation into treatment groups but permits comparison of existing groups by design.

Participant recruitment was conducted based on participant availability, entry criteria, and willingness to participate. All the recruited participants received the intervention; thus, similar approaches to data collection were used for all. The numbers of PPD screenings and behavioral health referrals were obtained from the patient records. Comparison of the data collected before and after the intervention was conducted to determine the existence of a relationship between the dependent variables and the intervention, hence answering the clinical question.

The main advantage of using quasi-experimental designs is that they are cost-effective and time-saving, based on the sampling and evaluation procedures (Rutberg & Bouikidis, 2018). Also, the design facilitated the collection of useful information that could be impossible to obtain in probability sampling, for example, data from restricted populations (Jager et al., 2017). The design is also easy to replicate if large-scale research is desired (Butsic et al., 2017). The quasi-experimental design is appropriate for the project because its characteristics align with the quality improvement project features, such as limited timeline, resources for randomizing participants, among others.

The quasi-experimental design is limited by the lack of randomization that limits the ability to determine causality (Rutberg & Bouikidis, 2018). The lack of randomizing participants to control and treatment groups may lead to confounding factors affecting the

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results. The convenience sampling technique used in the quasi-experimental design is also limited by the high likelihood of bias because the selection of participants is dependent on the researchers' judgment. In addition, convenience samples are unlikely to be representative of the population; thus, they have low external validity (Rutberg & Bouikidis, 2018). Despite the challenges, a quasi-experimental design is the best suited for the project.

A quasi-experimental design was chosen over a descriptive or correlational design for this project (Alhasanat-Khalil et al., 2018; Cirik et al., 2016; Nakić Radoš et al., 2018). A descriptive or observational design would be useful to describe the differences in screening between different tools but would not permit a causal inference from the results (Creswell & Creswell, 2018; Franck et al., 2016). Likewise, a correlational design could identify the association between different variables associated with the sample but again is not designed for statistical inferences (Malus et al., 2016). Ideally, a randomized controlled trial would be the most powerful and rigorous approach, but randomizing a group of women to not receive the quality improvement would not be acceptable or ethical (Fard et al., 2017) The quasi-experimental design was the best choice.

Population and Sample Selection

The project's geographic location was Southern California, where more than 50% of the population comprises women 18 to 50 years of age (United States Census Bureau, n.d.). The project setting was an OB/GYN clinic in an urban city in southern California. The project's population was women of child-bearing age, 18 to 50. The targeted sample was women in the postpartum period who were completing their postpartum visit in the OB/GYN practice setting. The OB/GYN center has a maternal and childcare services

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department where women seek prenatal and antenatal services before referrals for specialist care if required. About 40 to 60 women seek care at the clinic every day.

The facility was selected because of the lack of protocols for PPD screening despite its prevalence in women of child-bearing age (CDC, 2020). The facility, being an OB/GYN center, can reduce a highly prevalent healthcare problem such as PPD. The project sample was childbearing women between 18 and 50 years visiting the maternal and childcare services facility. A data specialist collected the data for the sample from the electronic records. Therefore, the primary investigator did not interact with the patients. A convenience sampling procedure was used to collect data on patients from the primary population. The rationale was based on the availability of this targeted population. The total population of childbearing women receiving postnatal services at the clinic during the four weeks before and four weeks after implementation was used to determine the PPD referral numbers.

An a priori power analysis indicated that a minimum of 30 patients was required for an independent sample comparison of frequencies at a .05 level of significance, a power of 80%, and a large effect size (.50). If a sample of 30 participants was not attained, the available number of those who met the criteria was recruited. The quasi-experimental design allowed for convenience sampling; thus, recruitment was based on availability and entry criteria of postpartum women. The staff who participated were recruited by a flyer approved by the facilities' institutional review board (IRB) that was placed in the clinic on the wall. The staff contacted the primary investigator to participate in the educational intervention.

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The project's direct practice improvement was implemented by the clinicians who interacted and provided care services to childbearing women, both pre and postpartum. Twenty clinicians (n=20) who work in maternal and child healthcare services were the providers targeted by the education intervention program. The project was implemented by 20 clinicians (*n*=20) working at the facility's maternal and childcare departments. The primary participants included healthcare workers with three or more years of work experience and were licensed vocational nurses (LVN), registered nurses (RN), nurse practitioners (NP), or physicians who had direct contact with prenatal and postnatal patients.

The primary investigator sought permission to conduct the project from the site and the GCU IRB (Appendix A). The participants were recruited to participate and provided a poster advertising the project, the objective of the project, and the importance of learning how to screen for PPD. The poster was pinned on the staff notice board to announce the project. The primary investigator encouraged as many clinicians as possible to participate in the project. During the recruitment process, the primary investigator informed the clinicians that participation was voluntary. They did not face any personal or professional consequences for not partaking in the project. The meeting date, time, and venue were also printed on the poster. All the providers who attended the meeting were recruited. Participants were educated that participation in the project was voluntary and they could withdraw without consequences

During week one, the primary investigator reiterated the project's purpose, risks, and benefits. The primary investigator discussed the need for PPD screening, the use of EPDS and allowed a 10-15-minute question and answer session for the participants to

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seek clarification. The 20-minute educational session was delivered regarding the need for PPD screening, the use of EPDS, and available resources for patient referrals. Week two and three, the primary investigator observed the participants perform the EPDS screenings for continuity. Week four, implementation data were collected for four weeks and compared with the comparison data collected before the intervention.

The confidentiality measures followed the guidelines indicated by the Health Insurance Portability and Accountability Act (HIPAA), GCU IRB guidelines, and the Belmont Report (The Belmont Report, 2003). The participants were notified in writing via the recruitment flyers and an informational sheet about the project's potential risks. There are no notable health risks to the participants associated with taking part in the project. The only potential risk is discomfort with reporting clinician attitudes, beliefs, and practices regarding PPD screening. The participants were assured of the confidentiality of the information they provide and that it was not be shared with the employer or outside sources.

The data collected did not include any identifiable information about the participants. A random four-digit code was assigned as unique identifiers for each clinician participant. The paper surveys and the consent forms were kept in a code-locked cabinet at the facility manager’s office and will be destroyed after three years, according to GCU's IRB protocol. The inclusion criteria for patients were women who had a live birth, 18 and over in the postpartum period due for the postpartum follow-up visit at the specified facility. Informed consent was not required as the design involved the collection of data, not enrollment of patients. Therefore it was not obtained per the guidelines of the

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facility IRB. Patients were not contacted, and information was obtained from the EHR by the project site's data specialist.

Sources of Data and Instruments Used

Both a source of data and an instrument were used in the DPI. The DPI project outcomes were the numbers of screening and number of behavioral health referrals for PPD in childbearing women. The EHR was the source of data for the screening and referral numbers. The direct practice improvement or intervention involved the implementation of the EPDS to screen for PPD. Although the actual scores of the EPDS were not the outcome examined in this project, the EPDS instrument used as the direct practice improvement is described below.

The project's data was collected from EHR patient charts by the data specialist. The patient charts were reviewed to determine the number of PPD screenings conducted, positive screening results, and referral numbers to a specialist. The data collected from the EHR was nominal and included the number of screenings, positive diagnoses, and patients referred to specialist care every day. The data collected from the EHR was used to measure the intervention's effectiveness in promoting referrals for addressing PPD. It was presumed that the patients who tested positive after the screening were referred to either a behavioral therapist or clinical psychologist for management. This presumption was due to the strict guidelines on the primary investigator's inability to review the charts per the site's guidelines. The data specialist was unable to pull information from the area of the EHR that the behavioral specialist notes are stored. A HIPAA waiver was in place for the data specified per the guidelines of GCU IRB.

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The EPDS was the instrument used in the project (Appendix B). Permission to use the EPDS was granted to the primary investigator (Appendix C). The EPDS is a 10-item questionnaire used for screening patients for PPD in prenatal and postpartum women (Cox et al., 1987). The scale items correspond to the symptoms of PPD; therefore, the patient responses can be used to identify whether they have the condition. The EPDS has ten questions and usually takes about 5 to 10 minutes to answer. The question and responses are presented on a 4-point Likert scale, and the total score is calculated to determine a positive diagnosis of PPD or not. Higher total scores indicate more depressive symptoms or an increased level of PPD. Traditionally a score of 13 is used to distinguish depressed or nondepressed women. The clinicians participating in the project were educated on using the EPDS and the scoring process to identify depressive symptoms. The patient is referred to a behavioral health specialist if the score is calculated and over 10.

The EPDS administrations' scores were not analyzed or compared in this project, mainly due to the instrument not being previously administered to the comparison group. Administration of the EPDS was the direct practice improvement implemented in this project and was the independent variable. The change or difference in EPDS scores was not an outcome of the project, only the tool's administration or not.

Validity

The EPDS instrument was developed by psychiatrists in the United Kingdom (Cox et al., 1987). The EPDS has since been used internationally and translated to over 60 languages for clinical and research work and has been demonstrated as a valid measure for PPD (Shrestha et al., 2016). The EPDS content validity was evaluated in

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Edinburgh after its development (Shrestha et al., 2016). Cox et al. (1987) conducted an extensive pilot study involving 80 new mothers who completed the then 13-item EPDS within an average time of five minutes. The authors found the tool to have a sensitivity of 86%, representing the proportion of women identified by the test to be depressed who were actually depressed, and a specificity of 78% (proportion of women identified to not be depressed who were not depressed). Since then, the instrument has been validated several times in the different locations and settings, demonstrating an $\alpha = 0.82$ by Ing et al. (2017) and sensitivity (86.7 %) and specificity (91.5 %) obtained by Shrestha et al. (2016). These psychometrics demonstrate content validity because the EPDS represents what it aimed to measure (Leedy & Ormrod, 2013).

The validity of the data collected regarding clinician practices with PPD screening and referral was established through comparison with hospital records. The comparison ensured that the collected data reflects the actual provider actions regarding PPD screening and referral for appropriate care. The primary investigator compared the reported provider practices from the questionnaire to the facility records to ensure the project data's accuracy. The project data's validity ensured that the collected data is an accurate representation of the intervention's effect.

Reliability

Reliability defines how well an instrument measures what it should (Leedy & Ormrod, 2013). The reliability of the project data was ensured through inter-rater assurance and internal consistency. The first step of ensuring measurement reliability was using a reliable data collection instrument or source of data. The EPDS was determined to have a 73 % positive predictive value indicating that it is a reliable instrument

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(Shrestha et al., 2016). Cox et al. (1987) developed the EPDS with 13 items, but after tests for internal consistency, three were eliminated to increase the questionnaire's reliability to 0.88, up from 0.73, and a standardized a-coefficient of 0.87.

The reliability of the data collected from the EHRs was ensured as well through a consistent collection method. Reports were pulled from the EHR, and the data and records were compared to the EHR to ensure consistency of the entries. The primary investigator ensured the findings were the result of the direct practice improvement or intervention. An abrupt evaluation was conducted through observation to determine if the participating nurses and physicians were screening all patients who met the criteria. As part of the formative evaluation process, the primary investigator conducted observations on a random day to observe the conduct of the intervention. The observations were used to confirm whether the providers were adhering to the instructions of the intervention and confirmed the recorded practices. The formative evaluation was used to assure that the data collected is similar despite the different periods in which it was gathered (comparison and implementation).

Data Collection Procedures

Upon receiving permission to implement the project from the clinical site, and Grand Canyon University's IRB (see Appendix A), project data were collected in three stages: comparison, implementation of education, and implementation. The first stage involved collecting baseline or comparison data over the previous four weeks. The data specialist collected baseline data that involved reviewing the patient records to determine if any patients met the project sample criteria and outcomes of the frequencies of those screened for PPD and referred to behavioral health. The inclusion criteria included

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women in the postpartum period after live birth, 18 and over, and due for their follow-up postpartum visit. The exclusion criteria were women not in the postpartum period, women who had a miscarriage, and patients under the age of 18 years old. The data was transferred to the primary investigator via a company-secured email system in a Microsoft Excel File. A total of 40 recently completed charts for postpartum women were sampled. Each chart was reviewed to determine if the patient was screened for PPD, what the test outcome was, and if the patient was referred for behavioral therapy. The data was recorded in an abstraction tool using Microsoft Excel. Demographic data were not collected or provided in this project.

The primary investigator received permission and scheduled the meeting, location, and time from the clinic's Department Administrator. The Department Administrator was informed that the purpose of this meeting (pre-session) was to explain the project's intervention. The primary investigator provided an introduction during the meeting and gave some background information related to experience and education. The primary investigator has been a nurse for 16 plus years, has a master's degree in nursing leadership and management (MSN), and has worked within this healthcare system where the project was conducted for 14 years. The participants reviewed the virtual power point presentation regarding the incidence and importance of PPD screening and referrals. A live demonstration of the EPDS screening tool questions. The providers conducted a screening exam on each other and addressed any concerns with using the instrument at the time. The primary investigator explained how to access the EPDS in Health Connect. The primary investigator answered any questions the providers had pertaining to the

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demonstration of the screening tool, their role in the project, how to access the EPDS tool, and next meetings.

The second stage of data collection was the implementation of the educational intervention with the clinical staff involved in the project. Data collection in the third stage occurred during week four after the educational sessions were provided in week two. In this stage, the primary investigator had the data specialist sample all patient charts completed in the previous weeks, which met the project's prior inclusion and exclusion criteria. The patients whose charts were sampled had to be in their postpartum period. The primary investigator received the aggregated data on 40 more patients, including if the patient had been screened for PPD, the outcome of the test and the management strategy undertakes, i.e., if the patient was referred to behavioral therapy. No demographic data were collected per the clinical facility guidelines.

The collected data was kept on the primary investigator's site issued laptop and secured in a password-protected encrypted file on the laptop H/Drive. No hard copies or flash drives were used during the data collection for this project. The primary investigator used the software eraser (deletes files permanently from the computer) to remove information (Epic Capture Report and Excel Spreadsheet). Confidentiality and privacy guidelines were followed per the Health Insurance Portability and Accountability Act (HIPAA), Grand Canyon University and the site's IRB guidelines, and the Belmont Report (The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). The providers were notified of the minimal risk that may occur while participating in the project. The risks identified included third parties releasing information without the primary investigator's consent. There was no release of

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information without the primary investigator's consent during the implementation of the project. The healthcare providers were instructed not to include personal identifiers such as name, birthdate, social security number, or phone number if they used any hard copies in this project. The providers ensured no hard copies were used by any providers. The providers were informed that they were not obligated to participate in the quality improvement project and could have opted out at any time without consequence to their professional or personal lives.

There were no identifiable personal data collected for this project. The data collected were grouped into days, so no patient identifiers were needed. The data were recorded into a Microsoft Excel Spreadsheet file in columns of daily records of total screenings, positive diagnoses, and referrals. All data were stored in a password-protected personal laptop computer kept in the facility Department Administrator's office file cabinet. The primary investigator was the only person with access to the personal computer for the project's duration. The data will be deleted using ERASER software after the project report was approved according to GCU IRB guidelines.

A meeting via zoom with the providers was scheduled for two weeks after the initial pre-session education. The purpose of this meeting was to determine how the project was progressing thus far and to answer or address any concerns from the providers. This meeting was approximately 20-minutes, during which time the providers voiced that so far things were going well.

While the healthcare providers were not required to participate in the project, they were informed about the project through the clinic staff meeting and virtual huddles. Consents were not required per the sites' IRB. The healthcare providers' role in the

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project was explained, which was to conduct a screening assessment on their patients using the EPDS screening tool. The staff meeting consisted of RNs, APRNs, doctors, and medical assistants. The primary investigator scheduled one virtual meeting with the providers who participated in the project. The meetings were scheduled through e-mail. During the in-person meeting, the providers were instructed on the use and location of the EPIC Smart Phrase in EPIC. The first virtual Microsoft teams meeting was a check-in with the providers to answer any questions and address any project concerns. The last Zoom meeting was the post-session to discuss the findings, usefulness of the project, instrument, provider recommendation, and general over-all feeling related to the project's relevance.

The post-session meeting was scheduled four weeks after the initial pre-session; this meeting was approximately 20-minutes, via Microsoft Teams. During this meeting, the primary investigator and the providers discussed the project's conclusion, reviewed the number of screenings and referrals before (n =5) and after (n=21) $x2$ [1, N=80] after implementing the intervention. The primary investigator asked the providers their over-all feelings related to the intervention and if they felt it is sustainable.

Data Analysis Procedures

The clinical question used to guide this project was:

Q1: To what degree does the implementation of the Edinburgh Postpartum Depression Scale (EPDS) screening tool impacts the number of PPD screenings and behavioral health referrals when compared to the current practice for postpartum women in an obstetrics and gynecology clinic in urban California? The data was collected and recorded in two clusters, pre-intervention and post-intervention. The pre and post-

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intervention data were stored in two columns, comprising calculated numbers of PPD screening and behavioral health referrals, in a Microsoft Excel file. The data will be matched against each participant's assigned code. Screening and referral data were also stored in three columns, each containing binary records of whether the patient was screened (1 – Yes, 0 = No), returned a positive test result (1 = Yes, 0 = No), and referred for behavioral therapy (1 – Yes, 0 = No),. The staff marked the data by placing a yes in the column stating that the patient was referred to a behavioral health specialist.

The data were analyzed using the Statistical Package for Social Sciences (SPSS) software version 27. The analyses included descriptive and inferential measures. Descriptive findings present the collected data in the form of charts and tables for easy comparison. The discharge and referral data were analyzed using descriptive measures and shown in a bar chart. The total PPD screenings and the behavioral health referral numbers conducted per day for the four weeks before and after the project were compared using chi-square tests. This test was used so that the primary investigator could examine the differences between categorical variables in the different population. The findings were interpreted as statistically significant at a $p < .05$ level of significance. Clinical significance was determined to exist if a trend towards increased screening or referral is observed.

Potential Bias and Mitigation

The use of participants to implement the intervention may result in bias because not all nurses or physicians were included or participated. Including only the proactive nurses may indicate a practice improvement when those who did not participate were those most resistant to change. Also, there is no way of validating whether the patients

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provided accurate information during the screening process, thus demonstrating a potential source of bias associated with using a self-reported questionnaire. Some patients may provide inaccurate information in the questionnaire, resulting in inaccurate practitioner conclusions and referral outcomes.

The types of biases identified in the article are self-report, social desirability, recall, measurement error, and confirmation (Althubaiti, 2016). Self-reporting bias is experienced when using data collection tools, including surveys, interviews, and questionnaires. When collecting data using surveys to improve postpartum screening and education, the investigator could have encountered self-reporting bias (Althubaiti, 2016). The participants' feelings at the time of filling the questionnaire could also result in self-reporting bias.

Social desirability bias is encountered during data collection using surveys, interviews, or questionnaires. While the primary investigator was collecting data, the questions in the questionnaire contain private and sensitive information that required the participant to seek social desirability (Althubaiti, 2016). For example, when asking participants sensitive questions such as their knowledge about screening and postpartum stress, the subjects could have given socially acceptable responses (Huber-Krum et al., 2019). Social desirability bias could be the primary reason for the difficulty in accurately answering questions that are sensitive to the DPI project.

Recall bias is encountered when the participants provide responses based on their past experiences (Althubaiti, 2016). When using questionnaires, the participants in my project could be required to recall past events related to the role of education improved their knowledge of postpartum screening. Measurement error bias results from

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environmental conditions in a laboratory and device inaccuracy (Spiegelman, 2016). Given the nature of the project, measurement bias was not encountered because no devices and laboratory be required. This project entailed the implementation of a postpartum screening and education program to increase screening among women. Confirmation bias is evident when a decision is made based on the subject's preferences, beliefs, and preconceptions (Althubaiti, 2016). This quality improvement project instead of a research study with a hypothesis test, and for this reason, the primary investigator did not encounter confirmation bias.

Ethical Considerations

The potential sources of ethical issues may include the access and use of patient information. The primary investigator observed the Health Insurance Portability and Accountability Act's guidelines before handling any patient charts and retrieving data. Approval to access and use patient data were granted by the hospital. The project and the investigator adhered to the Belmont report's principles; respect for persons, beneficence, and justice (Sims, 2010). Respect was ensured by providing the primary potential subjects with the relevant information and letting them decide, without coercion, whether they participated in the project or not. Justice was achieved by ensuring that all the participants have the opportunity to receive the intervention. There was no control group in the project; thus, all patients were included, and all participating clinicians were trained.

Beneficence was achieved by ensuring that participating in the project does not harm the patients or the clinicians but has positive outcomes. The intervention was meant to improve providers' knowledge and practice of screening for PPD, thus improving

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health outcomes. The GCU IRB reviewed the proposed data collection procedures to ensure that all the ethical considerations were adhered to. The primary investigator did not have a potential conflict of interest in implementing this project.

Limitations

Several factors limited the project, such as lack of time to test for the intervention's long-term effect and resistance to change among providers. COVID-19 limited access to the facility. Therefore, all interventions were completed virtually. There is a need for sustainable interventions for early diagnosis and addressing of PPD in child-bearing women (Shitu et al., 2019). The project's short timeline (four weeks) limited the primary investigator's ability to evaluate the intervention's sustainability in promoting screening and referral for PPD treatment. The conclusions drawn from the project results were based on the short-term effects of the intervention. Therefore, with the short-term effects, the intervention's sustainability effects in the facility are not known. Although the short timeline is unavoidable, the primary investigator made recommendations for future evaluations of the long-term effectiveness and sustainability of the evidence-based practices.

Additionally, the ease with which to accept change among providers was unknown. If one or more of the clinicians are resistant to change, the intervention's potential impact may not be sustained long-term, resulting in persisting and untreated cases of PPD in child-bearing women. Failure to adopt the intervention's evidence-based practice recommendations could result in wrong conclusions regarding its effect on PPD screening and management. Participating in the project was voluntary; hence, participants' unwillingness to accept change was unlikely but unavoidable. The primary

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investigator encouraged participation and adoption of evidence-based practice by informing the participants about the importance of PPD screening and the associated health outcomes.

A delimitation of the project includes using a single unit in an OB/GYN care facility. The setting does not present an accurate depiction of maternal and child health service providers. Similarly, the EPDS scale is indicated for use in both pregnant and postpartum periods, and in this project, the target is the latter. The project was, however, be limited to the site because of existing connections for the primary investigator with the unit. The implementation of the intervention and the project results at various care centers, such as primary practice, may differ, affecting the findings' generalizability. However, with a similar focus for improved care outcomes and quality of life among patients, PPD screening is existent all over the nation and worldwide. The need and adoption of the intervention are not expected to differ across various centers.

Summary

Postpartum depression is the most prevalent condition affecting women associated with childbirth (CDC, 2020). Postpartum depression affects women in their most vulnerable period. When left untreated, it causes significant adverse effects such as cognitive defects, sleep disorders, suicidal tendencies, and maternal and infant mortality (Slomian et al., 2019). The condition is treatable, and early diagnosis of PPD has been associated with significant improvements in healthcare outcomes and quality of life for the mother, infant, and family members (Premji et al., 2019; Wilkinson et al., 2017). The proposed DPI's focus is the provision of an education program for nurses to promote

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screening for early PPD diagnosis and referral to specialists for management. The quality improvement project was guided by one clinical question.

A quantitative methodology was adopted to facilitate the evaluation of the quality improvement project. The methodology and design align with the project features, including the use of numerical data objectively analyzed using statistical methods to establish the causal-effect relationship between the intervention and the dependent variables. The dependent variables were the number of PPD screenings and behavioral health referrals regarding screening for PPD in child-bearing women during the postpartum period. Data were collected from aggregate patient records and completed EPDS questionnaires. Patient records were also be reviewed to determine the incidences of positive diagnoses and referrals for management resources.

Analysis procedures included both descriptive and inferential analysis to evaluate the effectiveness of the educational intervention on improving clinicians' knowledge and promoting PPD screening and referral to specialist care. Recruited clinicians were not required to sign consent forms per the guidelines of the facilities' IRB. The project was in adherence to the ethical principles of conducting research involving human subjects. The participants' anonymity and confidentiality were maintained throughout the project processes. The DPI was limited by resistance to change among the clinicians. An a priori power analysis indicated that a minimum of 30 patients was required for an independent sample comparison of frequencies at a .05 level of significance, a power of 80%, and a large effect size (.50). If a sample of 30 participants was not attained, the available number of those who met the criteria was recruited. The quasi-experimental design allowed for convenience sampling; thus, recruitment was based on availability and entry

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criteria. The staff who participated were recruited by a flyer approved by the facilities' IRB that was placed in the clinic on the wall. The staff contacted the primary investigator to participate in the educational intervention.

Chapter 3 repeated the quality improvement project's purpose and problem statement. The clinical question guides the project in finding strategies. The other sections in the chapter include methodology, design, targeted population, and sample selection process. The last few sections comprise the instrumentation (EDPS), validity, and reliability of the tool. The final segments contain the data collection process, data analysis procedures, ethical considerations, and summarization of the chapter

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Chapter 4: Results

The numbers of PPD screening and referral for treatment among women of childbearing age in an OB/GYN clinic in Southern California were low. The project site attributed the low referral numbers to a knowledge gap among the providers regarding the screening and referral processes. An educational intervention was proposed for the clinicians working in the OB/GYN clinic to improve their knowledge, introduce a reliable, evidence-based instrument, and improve the practice of PPD screening and management referrals. The purpose of this quantitative, quasi-experimental quality improvement project was to determine to what degree the implementation of the Edinburgh Postpartum Depression Scale (EPDS) screening tool impacts the number of PPD screenings and behavioral health referrals when compared to the current practice for postpartum women in an obstetrics and gynecology clinic in an urban city in southern California over four weeks. Chapter 4 summarizes the sample and data collected, the analytical approaches used, and the project findings based on the clinical question. The project sample of childbearing women and the DPI's healthcare participants' descriptive characteristics (measures of central tendency or frequencies) are presented in tables, graphs, and figures. Answers to the clinical question were provided by comparing screening numbers and the referral numbers between the comparison and implementation groups. The analyses include chi-square tests (x^2) of these nominal level variables between the comparison and implementation groups. Statistical significance of any increase in the rate of screening or the rate of referral was set at $p<.05$. A summary of the results of the clinical question using the chi-square is provided. Clinical significance was

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finding increased screening and increased referral after implementing this DPI project and anticipated as the expected results.

Descriptive Data

Descriptive data were collected utilizing convenience sampling to obtain a sample of the project's targeted population. This population consisted of female patients ages 18 years old and older, immediately postpartum due for their postpartum visit after delivery. This clinic treats patients from all ethnic groups. The project sample consisted of $N = 80$ postpartum patients, 18-years old and older, with $n = 40$ screened for PPD during the pre-intervention and $n = 40$ screened after implementing the project. During the implementation of the intervention, not all of the clinic's providers participated in the project resulting in some patients not having the screening completed. The site provided no demographic data on patients other than being women of childbearing age (18-50). The data specialist provided all data in aggregate form in a Microsoft Excel datasheet that included a column of the date of service, if patient was screened, and if referred to behavioral health specialist.

Table 2 presents the results of comparison of the clinician practices before and after the intervention. More than half of the patients ($n = 27$, 67.5%) whose charts were reviewed for the comparison data were screened. After the intervention, 97.5% ($n = 39$) of the charts reviewed indicated that patients were screened for PPD. Table 2 shows a mean increase in screenings of 30% ($n = 12$) between the comparison and implementation groups. Of the 40 patients in the comparison group, 12 (30%) were observed to be positive for PPD using the provider's usual practice. In the implementation group, 21 (52.5%) of the 40 women screened were observed as positive for PPD using the EPDS.

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This descriptive shows that (*n = 21)* 52.5% of the implementation group were found to have a score of 10 or more on the EPDS as this was the criterion used in the project to signal a referral to behavioral health.

As noted in Table 2, referrals to a behavioral health specialist occurred in only (*n* = 5) 12.5 % of the patients examined before the intervention using usual practices. In comparison, for the post-intervention group, (*n* =21) 52.5% of the patients were referred to either a behavioral therapist or a clinical psychologist to manage their PPD symptoms after the intervention using the EPDS, but the primary investigator is not aware if the patient actually saw the behavioral therapist. (see Table 2) A mean difference of 40% (*n = 16)* more referrals was noted between the comparison and the implementation group. For the overall eighty patients (*N = 80)*, screening for PPD occurred in 82% (*n = 66)* of the sample, with 32.5% (*n = 26)* of those screened being referred for behavioral health.

Table 2

Frequencies of Screening, Positive Findings, and Referrals

Group	*Comparison (n = 40)*	*Implementation (n = 40)*	*Total Sample (N = 80)*
	n (%)	*n (%)*	*n (%)*
Screened for PPD	27 (67.5%)	39 (97.5%)	66 (82%)
Positive Screening Result	12 (30%)	21 (52.5%)	33 (41.25%)
Action Taken: Referral	5 (12.5%)	21 (52.5%)	26 (32.5%)

Data Analysis Procedures

Demographic data and characteristics for the patient sample were not collected for both comparison and implementation data, as noted above. Analysis of data was performed aiming to answer the following question: To what degree does the implementation of the Edinburgh Postpartum Depression Scale (EPDS) screening tool impacts the number of PPD screenings and behavioral health referrals when compared to

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the current practice for postpartum women in an obstetrics and gynecology clinic in urban California? Data for the comparison group (*n = 40)* was obtained from the patient medical record and coded as 1 = Comparison Group. The data was provided to the project investigator electronically in aggregate via email in the form of an attached Clarity Report from the clinic's electronic medical records system, which the investigator downloaded into a Microsoft Excel datasheet. The implementation group (*n*= 40) was also obtained by the data specialist, and data coded 2 as the implementation group.

1. Demographic data on the patients was not collected.
2. The data included the number of screenings and the number of referrals. The quality specialist exported the data into a Microsoft Excel datasheet.
3. The screenings were coded as 0 = Not screened or 1 Screened for PPD using usual practice or EPDS.
4. The referrals were coded 0 = No referral or 1 = Referral for PPD.
5. This coded data were entered into the Statistical Package for Social Sciences (SPSS) software version 27.
6. The comparison and implementation group samples' frequencies of the screening and referral numbers were presented in a tabular or graphic form.
7. A chi-square test was conducted on the screening frequencies and the referral frequencies between the two groups to determine if there was a significant difference between the comparison and implementation screenings. The effect size was also calculated to examine power, sample size, and other influences on the results.

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The project demonstrated internal and external reliability. The validity of the data was ensured by double-checking, where a second person reviewed the abstracted data against the patient charts to ensure that the information collected was accurate. For the screening data, the EPDS used to conduct the screenings was a valid and reliable instrument for clinical and research settings (Cox, 2017). The analysis procedures performed adhered to those described in the previous chapter and could be replicated. It was assumed that the validity of EHR data input in the system was regularly verified and ensured by management's periodic audits. Although an audit was not conducted for this particular data set, the clinic's Data Analysis personnel assigned to the project reviewed the abstracted data against the patient charts to ensure that the information collected was accurate.

Results

The clinical question was addressed statistically using a chi-square test. The chi-square test assesses the differences in the distribution of PPD screening and referral to behavioral health between groups. When the frequencies of PPD screening were compared between the comparison and implementation group, the chi-square analysis showed no statistical difference in the number of patients screened for PPD between the two groups x^2 (1, *N=80)* = 2.130, p = .144. although a 30% (n =12) increase in the number screened was noted. (see Table 3)

When the frequencies of referrals to behavioral health were compared between the comparison and implementation groups, the chi-square analysis showed a statistically significant difference in patients referred for behavioral health between the two groups x^2 [1, *N=80*] = 5.170, p = .023. Before intervention (n = 27, 67.5%) patients were referred

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and after (n = 39, 97.5%) were referred. This result shows a 40% increase in patients referred to behavioral health. (see Table 3)

Table 3

Crosstabulation of Screening and Referrals

Outcome	Comparison *n (%)*	Implementation *n (%)*	x^2	*P*
Screened for PPD	27 (67.5%)	39 (97.5%)	2.130	.144
Action Taken: Referral for PPD	5 (12.5%)	21 (52.5%)	5.170*	.023*

Note. *= $p \leq .05$. Proportions of the groups appear in parentheses.

The clinical question was answered affirmatively. To what degree does the implementation of the Edinburgh Postpartum Depression Scale (EPDS) screening tool impacts the number of PPD screenings and behavioral health referrals when compared to the current practice for postpartum women in an obstetrics and gynecology clinic in urban California? The implementation of the EPDS with healthcare providers for use with postpartum women showed a statistically significant difference in the frequency of referrals to behavioral health x^2 (1, N=*80*) = 5.170, p = .023, although it did not result in a statistical difference in the frequency of screening for PPD x^2 (1, N=*80*) = 2.130, p = .144.

PPD screening increased from 27 screenings out of 40 before the intervention to 39 out of 40 after using the EPDS. The number of referrals to a behavioral therapist or a clinical psychologist significantly increased from 5 referrals before the intervention to 21 referrals after the intervention using the EPDS. The clinical question was addressed using a combination of the descriptive analysis followed by confirmation using an inferential analysis. Increases in screening and referral were noted clinically after implementing the quality improvement project using the EPDS. These observations are on the frequencies were provided graphically in Figure 1 and Figure 2. A statistically significant difference

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(*p<.05)* was noted in the referral of patients for postpartum depression between the groups (*p =.023).* (See Figure 2) However, as noted in Table 3 and Figure 1, the chi-square test showed no statistical difference (*p<.05)* in patients screened for PPD between the groups (*p* = .144). (see Figure 1)

Figure 1 Screening for Postpartum Depression by Group

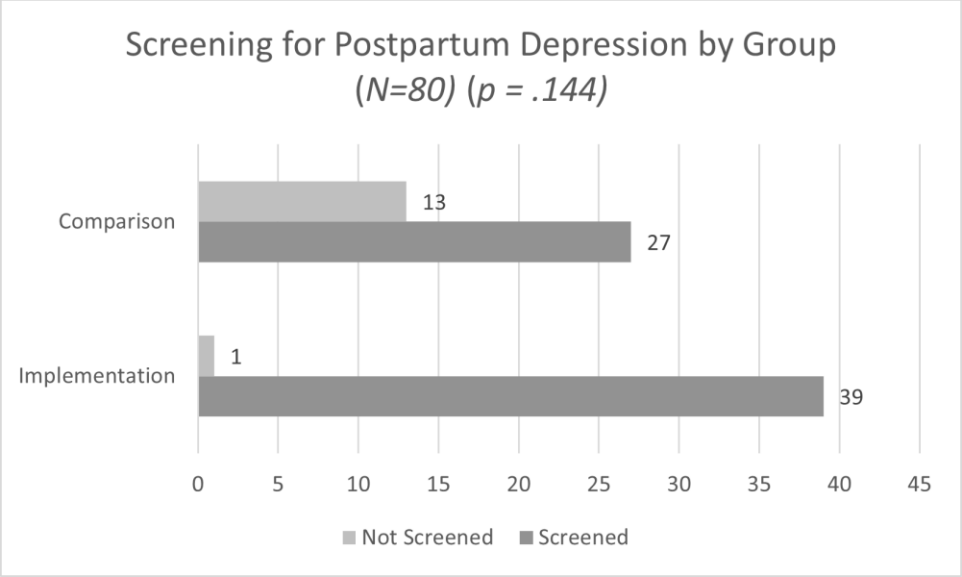
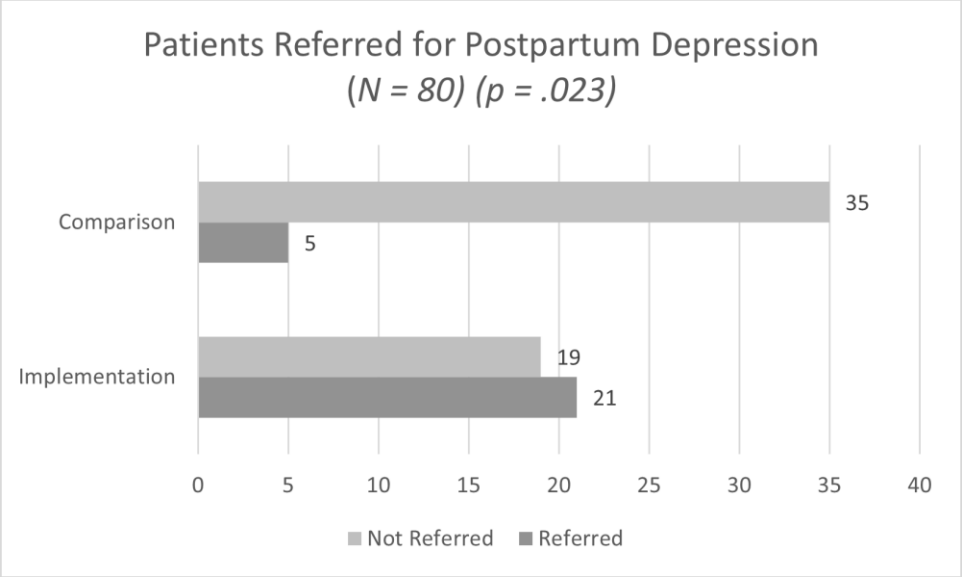


Figure 2 *Patients Referred for Postpartum Depression per Group*



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Summary

Women of childbearing age are adversely affected by PPD, especially if not identified in the early stages (Premji et al., 2019). As noted in Figures 1 and 2, 66 patients (82%) of patients were screened and *26 (*32%) were referred to behavioral health out of the 80 patients included in this project.. Routine screening for postpartum women was a feasible strategy for managing PPD through early-stage symptom identification using the EPDS and management including referral (Ahlqvist-Björkroth et al., 2019).

Collection of data on screening and referral for PPD was performed after education of nurses on the use of a valid and reliable tool for screening e.g., EPDS. Clinicians often lack adequate knowledge of the PPD screening tools and the referral process for patients with symptoms making this educational intervention necessary. The clinical question of this quantitative, quasi-experimental quality improvement project was to determine to what degree does the implementation of the EPDS screening tool impact the number of PPD screenings and behavioral health referrals when compared to the current practice for postpartum women in an OB/GYN clinic in an urban city in southern California over four weeks? A descriptive analysis showed that screenings increased and referrals increased after the implementation. To provide a solution to the clinical question, the relationship between implementation of the EPDS, screenings and referrals to behavioral health data was analyzed using a chi-square test (x^2). Implementation of the EPDS with healthcare providers did not show a statistical difference in the frequency of screening for PPD x^2 [1, $N=80$] = 2.130, p = .144. However, a statistically significant difference in the frequency of referral to behavioral health x^2 [1, $N=80$] = 5.170, p = .023

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was noted showing that a positive relationship existed between the independent variable involving the EPDS and the frequency of referral to behavioral health.

A potential source of error included the identification of the number of screenings from the pre-intervention data. This error may occur because the use of the EPDS or just the practice of PPD screening was not mandatory. Therefore, some of the patients may have been screened for PPD, but the records may not indicate this performance. Additionally, some clinicians may have used different screening methods, such as the PHQ-9, which may not be reflected in the patient charts. Similar challenges were experienced concerning the data collected about referrals to behavioral therapists or clinical psychologists. Despite these possible limitations, the analysis procedures were aligned with the clinical question. In each inferential analysis, the pre-intervention data were compared with the post-intervention data to determine if there existed a significant difference. Performance of screening for PPD and referral to behavioral health if positive were both clinically significant quality improvements measured and analyzed in this chapter.

Chapter 5 provides an overview of the project and its significance to the community. A summary of the findings and conclusions from the primary investigator's paradigm is provided. Other sections include implications and recommendations for future projects and clinical practices.

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Chapter 5: Summary, Conclusions, and Recommendations

Postpartum depression (PPD) is a major public health problem and causes complications during childbirth. The CDC (2020) estimates that PPD affects 12.5% of women in the United States (US) annually. The project is important because it addresses PPD and the effectiveness of routine screening in reducing its prevalence. The aim of conducting the project was to address the screening deficiencies through the introduction of an educational program for postpartum depression screening of women aged 18-50 years visiting Obstetrics and Gynecology (OB/GYN clinic. Implementing an educational program to increase the screening using an instrument like the Edinburgh can enhance knowledge improvement among nurses and increase behavioral referrals (Moraes et al. (, 2017). Routine PPD screening also increases the early positive diagnosis and facilitates timely intervention and treatment (Simhi et al., 2019; Slomian et al., 2019).

The project was designed to address the problem of PPD prevalence and screening among women during postpartum. The project aimed to promote routine screening and prevent the negative effects for infants, mothers, and family members. This quantitative, quasi-experimental project contributes to understanding the topic by synthesizing the current literature that emphasizes the need for PPD screening in this OB/GYN population.

This project promotes an understanding of the problem of PPD by exploring the negative consequences of inadequate screening and providing an evidence-based intervention best suited to address the issue. PPD is an issue that negatively affects the mother-infant relationship and weakens the maternal and bonding responsiveness between the two (Śliwerski et al., 2020). The project fits within other investigations by

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implementing a reliable instrument like the Edinburgh to increase PPD screening in childbearing women. Chapter 5 provides an overview of the project and its significance to the community. A summary of the findings and conclusions from the primary investigator's paradigm is provided. Other sections include implications and recommendations for future projects and clinical practices.

Summary of the Project

The clinical question was addressed using a combination of the inferential and descriptive analysis results. The question was addressed using a statistical analysis of the PPD screenings and referrals to behavioral health following the implementation of a PPD screening program using the EPDS. A Chi-square test was used to compare the frequencies of PPD screenings and referrals before and after the intervention. The clinical question was: To what degree does the implementation of the Edinburgh Postpartum Depression Scale (EPDS) screening tool impacts the number of PPD screenings and behavioral health referrals when compared to the current practice for postpartum women in an obstetrics and gynecology clinic in urban California? The response to the clinical question was affirmative. Implementation of PPD screening using the EPDS improved provider screening and referral practices, particularly noting that screenings in the post-implementation group were 97.5% (*n = 39)*, with 40% (*n = 16)* more referrals in behavioral health noted with postpartum women visiting the clinic.

Convenience sampling was used to select 40 participants for the comparative group and 40 patients for the implementation group. The nurses were introduced to the EPDS within an educational session designed to increase performance of PPD screening and referral. After the educational intervention with the nurses, the patients' behavioral

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referral rates were measured again through a medical record review. A total of 80 medical charts were reviewed before and after the intervention to determine if there was a change in the behavioral referral rates by the data specialist. The data was analyzed using descriptive and inferential statistics. The descriptive statistics showed the frequencies of screening and referral between the comparative and implementation groups. The chi-square test was used to determine if the differences between the two group's frequencies were statistically different. The chi-square showed that there was a statistically significant relationship between screening with the EPDS in the implementation group and referral to behavioral health.

Summary of Findings and Conclusions

Two samples comprised of 40 patient charts each were analyzed using both descriptive and inferential statistical approaches ($N = 80$). The samples consisted of 40 patients who had been attended to before the intervention was introduced and 40 who had visited the facility during the four-week project duration. The findings indicate that 67.5% ($n = 27$) of patients were screened before the intervention but only 12.5% ($n = 5$) of the patients had been referred to address their PPD symptoms. After the intervention, 97.5 ($n = 39$) were screened for PPD and 52.5% ($n = 21$) were referred to behavioral health showing a 30% ($n = 12$) increase in screening and a 40% ($n = 16$) increase in referral.

To answer the clinical question, a chi-square analysis was conducted to examine the relationship of PPD screening with the EPDS and referral to behavioral health. The clinical question was: To what degree does the implementation of the Edinburgh Postpartum Depression Scale (EPDS) screening tool impacts the number of PPD

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screenings and behavioral health referrals when compared to the current practice for postpartum women in an obstetrics and gynecology clinic in urban California?

In this project, the statistical significance of the change in clinicians' referrals after the intervention was used to address this question. The findings indicated that after implementing a PPD screening education program, the screening and referral numbers increased over the four weeks. While there was no statistical difference using $p < .05$ in the proportion of screening according to the chi-square test x^2 (1, $N=80$) = 2.130, p = .144, there was a statistically significant difference in the proportion of referrals to behavioral health x^2 (1, $N=80$) = 5.170, p = .023. This finding is supported by previous studies that indicate that both screening and educational interventions were effective and significantly minimized PPDs risks (Ahlqvist-Björkroth et al., 2019; Clevesy et al., 2019). The knowledge acquired by nurses can also increase screenings and enhance referrals for psychological intervention to reduce PPD effects. The findings indicated that implementing the EPDS effectively improved provider practice to screen all the postpartum women. Therefore, the knowledge acquired by healthcare providers after implementing the change improves interventions which improve quality (Vasta et al., 2018).

In addition to the statistical findings of the project, the results are clinically significant. Thirty percent more women were screened for PPD after implementation showing that improvement in nursing practice contributes to greater quality care. Further, 40% more women were referred for treatment for depression which as the literature review shows is the most common obstetric complication in the United States, with prevalence rates of 15% to 20% among new mothers (Rafferty et al., 2019). The clinical

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significance of this project is important because it impacts care delivered by clinicians and improves patient outcomes like PPD.

Implications

The project has theoretical, practical, and future implications in the field of nursing. Determining the impact of implementing a PPD screening education program on the early diagnosis of PPD fills clinicians' current knowledge gap and increases the frequency of screenings and referrals completed. The practice of nursing is a discipline where an investigation is conducted to address practice or safety issues, and evidence-based strategies are used to impact clinical practice (Melnyk, 2018)

Theoretical Implications

Theoretically, the findings significantly advance scientific knowledge by contributing to the existing literature. The quality improvement project significantly contributed to the present body of knowledge on PPD screening and its application in the OB/GYN clinics as part of preventive interventions. The project advances women's and newborn' healthy through the development of new strategies associated with PPD screenings applicable in different clinical and hospital care settings. Also, the project significantly adds to the current literature on the significance of routine screening interventions to promote attitudes towards professional referral for PPD among childbearing women. This project's outcomes align with existing outcomes that support the need for screening to improve clinicians' knowledge to reduce the risk of PPD among women (Ahlqvist-Björkroth et al., 2019; Clevesy et al., 2019; Vasta et al., 2018). This project's findings support the effectiveness of screening mothers for PPD in OB/GYN clinics and are consistent with the current literature. For example, the findings align with

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previous studies that indicate that both screening and educational interventions significantly and effectively reduced PPDs risks (Ahlqvist-Björkroth et al., 2019; Clevesy et al., 2019).

The clinical question aligned with Lewin's change theory. Many studies have shown success in using this Lewin's change model as an explanatory framework for the benefits of change (Wojciechowski et al., 2016). These studies were conducted in other healthcare settings and were instrumental in exploring the benefits of change. The studies yielded the following theme: change is critical to organizational growth and sustainability (Hussain et al., 2018; Wojciechowski et al., 2016). According to these authors, all clinicians' goal should be to provide the best possible care and be aware of the population's needs. Providers can achieve this level of care by learning to integrate this into practice and exploring their own biases and stereotypes (Handtke et al., 2019). Providers would better understand why patients formulate some of their healthcare choices if they were more attuned to the perceptions and lifestyles of the population they serve (Handtke et al., 2019). Providers must recognize that a patient's cult

Both models were used to help design the intervention for the population. The change model described concepts guiding the providers and the patients to embrace both the uncertainty and resistance to change that can be experienced as new concepts and different adjustments to the practice were introduced. As the theory was applied to the DPI project, it was understood that providers would reject prior knowledge and replace it with new information to practice evidence-based methods on performing PPD screening.

During the first step in the change model (unfreezing), the providers and patients were not accustomed to performing PPD screening at each patient visit; hence, this was a

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change in their everyday practice environment. Regular screening were not a part of the patients' routine; hence, this was a chance for them to incorporate the new clinical practice. Providers revealed that the patients experienced some resistance because of postpartum depression screening. These new ideas of performing consistent PPD depression screening compelled both the provider and patients to let go of an old pattern and adapt to this new practice. The evidence behind adapting to change was the determining factor in physicians' resistance regarding the unknown (Gupta et al., 2017).

Practical Implications

The findings can be applied in the healthcare setting, particularly OB/GYN clinics, to improve nurses' knowledge, encourage referrals, and reduce PPD symptoms among women (Ahlqvist-Björkroth et al., 2019). Clinicians in the practicum setting would encourage women to undergo screening within the first weeks of giving birth to reduce PPD prevalence. A culture of routine screening would be implemented in the OB/GYN clinic to reduce the risk of PPD and improve patients' outcomes. Screening can also ensure that women's wellbeing and productivity are improved after undergoing the process (Ahlqvist-Björkroth et al., 2019). PPD screening and treatment is a cost-effective approach that can be adopted as a standard care practice for the postpartum period by the OB/GYN clinic setting to align with the USPSTF recommendations.

Moreover, clinicians' knowledge can be utilized to encourage referrals for psychological counseling to minimize PPD effects. Increased psychological interventions can reduce the number of new mothers diagnosed with PPD and promote the outcomes of the at-risk population. PPD screening can become a part of the practice site's standardized practice and provide support for all pediatric care settings to adopt this protocol. The

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clinical site this project was conducted at will continue this process for positive patient outcomes.

Future Implications

The future implications entail implementing the EPDS educational intervention to positively impact PPD screening and referral frequency. The project has both strengths and weaknesses. The first strength is that the findings in the project are supported by evidence from previous studies. For example, implementing educational interventions is effective and can significantly minimize PPDs risks by increasing referrals and screening numbers (Ahlqvist-Björkroth et al., 2019; Clevesy et al., 2019). The second strength is that the project's findings are reliable because they were implemented in an OB/GYN clinic in Southern California. The results were positive and enhanced referrals and screening to reduce PPD symptoms. The sample was selected from a specific geographical region, and outcomes could not be similar when applied to other healthcare facilities. The second weakness is the interval of time the project was conducted.

The conclusions are credible given the methodology, project design, and data collected in the OB/GYN clinic in Southern California. A quantitative and quasi-experimental method was effective in collecting both descriptive and inferential statistical data to address the project's clinical question. The comparison and implementation comparison of the behavioral referral numbers was important in determining the effectiveness of educational intervention programs in promoting screening and PPD referrals.

Recommendations

Postpartum depression is a growing health concern affecting women after giving

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birth. Although the reviewed evidence recommends routine screening reducing the risk of PPD, the practice is not well implemented in healthcare organizations. The recommendation is for the adoption of a standardized routine screening protocol in all healthcare settings. The integration of a standardized routine screening is recommended to reduce risks of PPD and improve clinicians' knowledge about its importance on women's productivity and wellbeing. The recommendation is supported by this project's outcome that PPD negatively affects women and educational and psychological interventions can reduce the risks. This section comprises recommendations for future projects and practices in healthcare settings.

Recommendations for Future Projects

The first recommendation for future research is conducting a study using a longitudinal approach. A longitudinal project is suggested because the primary investigator would have time to observe the nurses for measurable changes after implementing the change (Wargo, 2015). Also, a longitudinal study would allow the DNP student to establish the patterns related to the relationships of cause and effect following the implementation of the EPDS educational intervention program.

The second recommendation would entail conducting future projects using a mixed approach that combines qualitative and quantitative research designs. A mixed approach would provide both descriptive and statistical findings. For example, the investigators could, in future projects, measure the nurses' experiences to establish their attitudes and perceptions in routine screening referrals to reduce PPD risks. The third suggestion for future projects would be implementing EPDS educational program for more than four weeks in OB/GYN clinics. The findings suggested that implementing the

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EDPS PPD screening education for the OB/GYN clinic providers increased referrals within six weeks after childbirth.

Fourth, the future project should measure screening among pregnant and postpartum women to establish those referred and treated. The recommendation is based suggested because this project's focus was on the frequency of PPD screening and referral among women after giving birth. Including pregnant women in the sample would significantly contribute to scientific knowledge by establishing whether nurses refer them for PPD screening.

Lastly, a comparison of the differences in referral numbers screening by the level of provider, nursing, and clinical staff should be investigated in the future. The role of an individual healthcare provider introducing the EPDS to the women being screened might influence outcomes. Furthermore, different healthcare professionals communicate differently with patients.

Recommendations for Future Practice

The implementation of a postpartum depression educational intervention is recommended for future practice in OB/GYN clinics to improve referral numbers. This project's findings indicated that EPDS increased knowledge among nurses and improved referral numbers to both behavioral therapists and clinical psychologists for women within the first six weeks of PPD. Therefore, educational programs should be a standard practice policy with OB/GYN clinics to increase referrals, improve women's healthcare, and help reduce PPD complications. Referrals increase early diagnosis of PPD and

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significantly improve healthcare outcomes and mothers’ and infants' quality of life (Premji et al., 2019; Wilkinson et al., 2017).

The second recommendation for future practice entails the implementation of postpartum depression screening and education programs. This project's findings indicated that following the implementation of a PPD screening education program, referrals per week increased, and nurses' knowledge also improved. Implementing the EPDS educational program is recommended to reduce the knowledge gap as reported by healthcare providers (Ahlqvist-Björkroth et al., 2019). Improved knowledge levels can enhance referrals for early diagnosis of PPDs, screening, and psychological interventions.

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Appendix A

Grand Canyon University Institutional Review Board Determination Letter

3300 West Camelback Road, Phoenix Arizona 85017 602.639.7500 Toll Free 800.800.9776 www.gcu.edu

DATE: December 18, 2020

TO: Georgina Floyd

FROM: Grand Canyon University Institutional Review Board

STUDY TITLE: Improving the Postpartum Depression Screening and Education for the Postpartum Women in a OB-GYN clinic

IRB REFERENCE #: SUBMISSION TYPE: IRB-2020-3081

ACTION: DECISION DATE: Determination of Exempt Status December 18, 2020

REVIEW CATEGORY: N/A

Thank you for submitting your study materials.

GCU is not the IRB of record as prior IRB approval has been obtained from [redacted] Institutional Review Board. Expedited approval was obtained November 30, 2020; Protocol Number 12634. Grand Canyon University Institutional Review Board has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations. You now have GCU IRB approval to collect data. If applicable, please use the approved recruitment script and informed consent(s) that are included in your published documents. We will put a copy of this correspondence on file in our office.

If you have any questions, please contact the IRB office at irb@gcu.edu or 602-639-7804. Please include your study title and reference number in all correspondence with this office.

Submission Response for Initial Review Submission Packet

Dr. Cynthia Bainbridge

Assistant Dean, Research and Dissertations

Director, Institutional Review Board College of Doctoral Studies

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Appendix B

Edinburgh Peri/Postnatal Depression Scale (EPDS)

Perinatal Services BC
An agency of the Provincial Health Services Authority

Edinburgh Perinatal/Postnatal Depression Scale (EPDS)

For use between **28–32 weeks** in **all** pregnancies and **6–8 weeks** postpartum

Name: _____ Date: _____ Gestation in Weeks: _____

As you are having a baby, we would like to know how you are feeling. Please mark "X" in the box next to the answer which comes closest to how you have felt in the **past 7 days**—not just how you feel today.

In the past 7 days:

1. I have been able to laugh and see the funny side of things
   - 0 ☐ As much as I always could
   - 1 ☐ Not quite so much now
   - 2 ☐ Definitely not so much now
   - 3 ☐ Not at all

2. I have looked forward with enjoyment to things
   - 0 ☐ As much as I ever did
   - 1 ☐ Rather less than I used to
   - 2 ☐ Definitely less than I used to
   - 3 ☐ Hardly at all

3. I have blamed myself unnecessarily when things went wrong
   - 3 ☐ Yes, most of the time
   - 2 ☐ Yes, some of the time
   - 1 ☐ Not very often
   - 0 ☐ No, never

4. I have been anxious or worried for no good reason
   - 0 ☐ No, not at all
   - 1 ☐ Hardly ever
   - 2 ☐ Yes, sometimes
   - 3 ☐ Yes, very often

5. I have felt scared or panicky for no very good reason
   - 3 ☐ Yes, quite a lot
   - 2 ☐ Yes, sometimes
   - 1 ☐ No, not much
   - 0 ☐ No, not at all

6. Things have been getting on top of me
   - 3 ☐ Yes, most of the time I haven't been able to cope
   - 2 ☐ Yes, sometimes I haven't been coping as well as usual
   - 1 ☐ No, most of the time I have coped quite well
   - 0 ☐ No, I have been coping as well as ever

7. I have been so unhappy that I have had difficulty sleeping
   - 3 ☐ Yes, most of the time
   - 2 ☐ Yes, sometimes
   - 1 ☐ Not very often
   - 0 ☐ No, not at all

8. I have felt sad or miserable
   - 3 ☐ Yes, most of the time
   - 2 ☐ Yes, quite often
   - 1 ☐ Not very often
   - 0 ☐ No, not at all

9. I have been so unhappy that I have been crying
   - 3 ☐ Yes, most of the time
   - 2 ☐ Yes, quite often
   - 1 ☐ Only occasionally
   - 0 ☐ No, never

10. The thought of harming myself has occurred to me
    - 3 ☐ Yes, quite often
    - 2 ☐ Sometimes
    - 1 ☐ Hardly ever
    - 0 ☐ Never

Total Score ☐

Talk about your answers to the above questions with your health care provider.

Translations for care-provider use available on PSBC website: perinatalservicesbc.ca.

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Appendix C

Permission to Use Edinburgh Peri/Postnatal Depression Scale

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Detection of Postnatal Depression: Development of the 10-item Edinburgh Postnatal Depression Scale

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