Improving Recognition of Postpartum Depression Using A Standardized PHQ-9 Score

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N840: Capstone Project

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May 1, 2023

Abstract

Current screenings for postpartum depression (PPD) lack evidence-based standardized guidelines regarding tools, frequency, and timing. A lack of consensus on critical PPD screening scores exists causing gaps in care regarding when to refer women for further mental health services. Providers indicate their schedule is too busy to conduct meaningful interviews with patients thus leading to lack of assessments all together. Gaps exist with implementation protocols as well as training for staff. The purpose of this study is to determine if identification of a patient with a Patient Health Questionnaire-9 (PHQ-9), set as the standard screening tool, of a score of ten or higher should receive a referral for mental health treatment. Furthermore, to disseminate a synthesis of evidence regarding screening for PPD to include suggested intervals of screening, and identification of at-risk patients who score high on the PHQ-9. The effects of PPD can extend long after the neonatal period, threatening the life of the mother-infant dyad if missed. Research indicates only twenty percent of women who screen high for PPD will actually obtain mental health services, even though by the year 2030 PPD is predicted to be the second largest health problem. Literature and evidence indicate that screenings completed within two days of birth are able to identify how likely a patient is to develop anxiety or depression up to a two to eight-week period postpartum. A comprehensive literature review was conducted and yields high level evidence recommending the use of the PHQ-9 as a widely validated tool for screening for depression in the perinatal setting. Compared to existing tools such as PHQ-2, WHO-5, and EPDS, evidence determined PHQ-9 to have the highest validity and reliability for screening against minor depressive symptoms. Strong evidence suggests a cutoff score of 10 and above for identification of depression. When applied to the perinatal population, a cutoff score of 10 is useful for clinicians to initiate referral. Implementing the PHQ-9 tool at standard intervals,

applying a standard cutoff score for referral and recognizing at-risk mothers for PPD will further decrease associated mortality with untreated PPD and improve the mother-infant bond.

Keywords: postpartum depression, PHQ-9, screening, cutoff scores, guidelines

Improving Recognition of Postpartum Depression Using A Standardized PHQ-9 Score

Approximately four to six weeks after giving birth, a new mother may have postpartum depression (PPD) if she exhibits one or more of the following symptoms: loss of interest in activities, difficulty sleeping, changes in appetite, lack of energy, sadness, anxiety, poor concentration, thoughts of worthlessness, and, in extreme cases, suicidal ideation. PPD - often called "the thief that steals motherhood" - poses serious consequences for both the mother and the infant (Beck, 1993, as cited in Beck 2022, p. 42). For example, PPD can seriously impair foundational maternal-child interaction and disrupt infant-to-mother attachment.

An estimated 13% to 19% of childbearing women will experience PPD, making it one of the most common morbidities related to childbirth (Hutchens & Kearney, 2020). Women who have limited partner support, suffer from psychiatric illnesses, are in an abusive relationship, or have a history of substance abuse are at increased risk of PPD. Other special at-risk groups include adolescent mothers, immigrant women, racial and ethnic minorities, and those with low socioeconomic status. Despite the severe consequences of PPD on the mother and child, currently over 50% will go unnoticed (Accortt et al., 2022).

The prevalence of diagnosed PPD, and thus the ability to treat it and improve outcomes for both the mother and infant, depends upon the working definition used in diagnosis, place (i.e. country), screening tools employed, and the time after birth of determination. (Slomian et al., 2019). The Patient Health Questionnaire-9 (PHQ-9) is a nine question, multiple choice questionnaire that objectifies the degree of depression severity, which is often given to new mothers to screen for PPD (scoring rubric: 0-4 "normal or minimal depression", 5-9 "mild depression", 10-14 "moderate depression", 15-19 "moderately severe depression", 20+ "severe depression"). However, there are currently no standardized guidelines instructing caregivers

when to refer the patient for mental health services based on the quantized PHQ-9 score. Without such guidelines, there is a lack of consensus in the labor and delivery community on critical PHQ-9 scores and need for mental health assistance.

While current research indicates that PPD is prevalent, diagnostic tools and testing methods vary and there is a lack of consensus regarding what test results mean in relation to patient care. For example, current assessment for PPD is not performed at standard intervals. The primary objective of this Capstone Project is to gather the most recent, relevant data on the use of PHQ-9 testing with new mothers, and to organize, analyze, and synthesize the best evidence and present findings to peers and the medical community. The secondary objective is to provide community awareness and education regarding the benefits of a standardized approach to PHQ-9 test scores. The purpose of this study is to determine if identification of a patient with a PHQ-9 of a score of ten or higher should receive a referral for mental health treatment. The aim of the Capstone Project is to disseminate a synthesis of the evidence regarding screening for PPD and identification of at-risk patients who score higher than ten on the PHQ-9 scale. Information gleaned from the analysis will provide a resource for providers and patients in the medical community and the public. Awareness of the PHQ-9 and the usefulness of the tool for early recognition and referral for PPD will be brought to the community.

Description/Background

The effects of PPD can extend long after the neonatal period (Accortt et al., 2022). Furthermore, PPD can threaten the life of the new mother if missed. Thus, the lack of a standardized PPD screening protocol can have devastating effects.

The author, an award-winning and well-respected, long-time labor and delivery nurse, frequently sees patients with elevated PHQ-9 scores but a lack of a standardized referral process for those who score a ten or more during their postpartum stay. This begged the research

question for the Capstone Project creating the PICOT question: Among postpartum patients, does a PHQ-9 score of 10 or more, as compared to a PHQ-9 of less than 9 result in increased referrals within six months? Early identification of PPD and treatment can minimize the burden and to a significant extent improve the outcome (Hahn et al., 2021). Previous research indicates that only twenty percent of women who screen high for postpartum depression will actually obtain mental health services (Rodriguez et al., 2021). Even though by the year 2030 PPD is predicted to be the second largest health problem, among common medical conditions, the research is not clear about screening best practices (King et al., 2021).

This research study aligns closely with Cheryl Beck's Theory of Postpartum Depression (Beck, 1993, as cited in Beck 2022) which emphasizes PPD awareness, the importance of educating providers to discern symptoms of PPD, and patients' referral for appropriate support and treatment (Beck, 1993, as cited in Beck 2022). Another component of Beck's theory, particularly relevant to this research study, provides insight into how PPD screening can mitigate risks to the new mother. Beck (1993) developed the theory to provide a systematic explanation of PPD: both the "social psychological problem in postpartum depression and the social psychological process used to resolve this fundamental problem" (p. 43).

Unfortunately, many different screening methods are used in labor and delivery units across the country with no consensus as to best practices: tools, frequency, timing, and course of action based on results. For example, in hospital settings patients are often screened randomly, at times in triage (when the patient could be in pain) and immediately after birth (Accortt et al., 2022). Additionally, providers indicate their schedule is too busy to conduct meaningful interviews with patients and determine how they are coping as a new mother. Other assessments are reportedly done based on determination of the mothers mood and their determination of

necessity (King et al., 2021). Reasons for lack of assessment include inexperience, incompetency, and lack of awareness (King et al., 2021). Recent research (Accortt et al., 2022) reports the screening is often omitted altogether. While the framework has been created to establish the importance of PPD screening at routine intervals, there is little evidence of a sustained effort. Currently, there are no national mandated protocols for PPD screening.

It makes sense then that studies continue to show that PPD diagnoses are often missed with many new mothers during the all-important perinatal period. In fact, one study found that, despite various recommendations and guidelines, over 50% of individuals with PPD symptoms went undiagnosed (Accortt et al., 2022).

World wide developing countries report an even higher percentage of PPD. Statistics range from approximately 15.6 % during pregnancy and as high as 19.8 % after giving birth (Brito et al., 2022). Another study by Hahn-Holbrooke et al. (2018) found PPD as high as 17.7%, and attributed the increase from western data due to variations of wealth inequality, higher fertility rates, and the employment status of the individual.

Global studies found constraints for screening related to lack of time, provider awareness, and indicated a need for the professionals to play a key role in discerning factors and educating clients about PPD.

Studies indicate that immediate screening scores are able to identify how likely a patient is to develop anxiety or depression anywhere from two to eight weeks after giving birth (Accortt et al., 2022). At Stone Springs Hospital in Aldie, Virginia, the labor and delivery unit administers the PHQ-9 to women in the immediate postpartum period (one to two days following delivery). Nurses give the patient the questionnaire to fill out and then enter the score in the patient's electronic medical record. However, these same nurses lack an understanding of

the assessment tool and are frequently confused about the referral pathways based on screening test scores. For example, specific to this research study, while a PHQ-9 score above 10 is noted in the patient system, how the patient is managed varies.

Advanced nurse practitioners use a holistic approach to care blending science and art. Caring for patients and using evidence-based practice, these providers are in a unique position to educate and improve PPD screening, thus connecting more women to needed mental health treatment. Furthermore, psychiatric mental health practitioners have the unique advantage of being able to detect PPD and provide different treatment modalities as needed (Falana & Carrington, 2019).

The PHQ-9 has been validated as an acceptable method for PPD screening and is widely used (Wang et al., 2020). Though studies have also shown that the preferred method for PPD assessment is a psychiatric interview, this is difficult in practice due to cost and staffing limitations, lending emphasis to the importance of having and using a valid, standardized tool and protocol such as the PHQ-9. The questionnaire is already frequently used in healthcare settings and is easily incorporated into the electronic medical record. This familiarity and usability resonates with providers and places the PHQ-9 in an advantageous position for use throughout a woman's life.

With inconsistent standards for screening as well as lack of extensive research based on large sample sizes, the estimates for the incidence of PPD vary widely. Lawson et al. (2019) estimated the incidence to be 13-15%. A literature review by Woody et al. (2017) found the incidence range to be from 5% to 25%, mostly based on studies with small sample sizes.

The prevalence of PPD is similarly difficult to ascertain. It could be as widespread as between 10 and 20% of childbirths (Liu et al., 2021; Shorey et al., 2018). One study pegged it as

between 2.6 and 35% in the second month and for the next twelve months, between 6 and 29% in developed countries--with higher numbers in developing countries (Tebeka et al., 2021). According to data collected from the Centers for Disease Control, one in eight women experience the symptoms of postpartum depression. These statistics vary from state to state and can increase to as high as one in five in certain states (Depression Among, 2020).

A research project that looked at 565 studies from 80 different countries or regions found postpartum depression in 17.22% (95% CI 16.00 -- 18.51) of the world's population (Wang et al., 2021). In the United States, PPD afflicts approximately 13% of new mothers (Hahn-Holbrook et al., 2018). Untreated PPD impacts the mother, the neonate, and the entire family. For mothers, it can lead to weight problems, illicit alcohol and drug abuse, breastfeeding difficulties, relationship problems, and persistent dysthymia (Slomian et al., 2019). Studies have also linked it with depression later in life, suicidal ideation, and suicide attempts (Martin-Gomez et al., 2020).

Infants of depressed mothers display delayed psychological, cognitive, neurologic, and motor development (Slomian et al., 2019). Nine studies out of ten demonstrated compelling evidence linking PPD with infant health issues (Slomian et al., 2019). Maternal and infant bonding is compromised when PPD is present. Children of mothers with untreated PPD have been found to be more prone to violent outbursts and to experience cognitive functioning impairment, lack of impulse control, heightened emotional instability, and externalizing disorders - all of which can extend into adolescence. Additionally, these children suffer severe long term effects such as disrupted attachments and an elevated number of Adverse Childhood Experiences (ACE) (Hutchens et al., 2020; Martin-Gomez et al., 2020). Studies have also shown

that teenagers suffer from psychiatric and medical issues when their mothers' PPD went untreated (Slomain et al., 2019).

All relationships are strained as a consequence of PPD. Partners feel they are neglected and often report feeling unprepared for PPD and its effects (O'Brien et al., 2019). Both partners feel less connection and support for each other when one has PPD (O'Brien et al., 2019). The financial burden associated with untreated PPD can place a heavy strain on families and have been estimated to be around $14 million dollars annually in the United States (Clark et al., 2019).

Without mandated, standardized tools and protocols, including a comprehensive knowledge base of risk factors that contribute to postpartum depression, PPD screening will remain inconsistent and often overlooked. This will enable the status quo of misdiagnoses and the resulting real harm to new mothers, their infants, and their entire families.

One approach to targeting the gap could be within the healthcare industry, specifically Women's and children's service lines through the development of a standardized PHQ-9 protocol that includes a required referral to a mental health professional when the score is a ten or above ("moderate depression" or above). This small procedural change can have a profound positive effect on the long-term health of mothers, children, and families. Establishing a standardized protocol for referring patients who score above ten is critical as PPD is often overlooked during a postnatal visit. A woman who reports sadness may be thought to be experiencing "baby blues" a common phenomenon related to the hormonal fluctuations after giving birth (Hahn et al., 2021). Studies also show that client's are not properly educated about PPD and how to identify symptoms and differentiate between adaptation to a new family member and PPD (Lile-Brown & Joslyn, 2019). Clinician skill and education largely impacts an accurate detection of PPD or misdiagnosis for a woman who is showing signs/symptoms of PPD.

Literature Review

Search Methods

The academic databases of CINAHL, EBSCO, PUB Med, Psych Info, and Google scholar were chosen for their availability of content to conduct a robust search for current evidence related to the PICOT Question. Descriptors and key search words used included: depression, postpartum, mood, PHQ-9, criteria, analysis, intervention, referral, treatment, criteria and outcome. The Boolean operators “and " and “or " were utilized to combine terms and increase the search bandwidth, which were limited to include full text English language academic journal articles published after 2018. Additionally, each article required the use of both postpartum depression, PHQ-9, and outcome to help elucidate the correlation between postpartum depression and analysis. However, to further expand the search in order to validate the PHQ-9 and fully answer the PICOT question: With postpartum patients does a PHQ-9 (score of 10 or more) as compared to a PHQ-9 (less than 9) result in increased referrals within six months?

Search methods were expanded to include indicators, early intervention, maternal distress, and treatment. The modified search parameters identified articles that not only examined potential relationships between postpartum depression and the PHQ-9 scale, but looked at postpartum depression in relation to current screenings and treatments, how they compare to PHQ-9, and their shortcomings as well as successes.

After reviewing the quality and reliability of literature that examines potential relationships between postpartum depression and tools for detection other studies were included that assessed maternal distress in the postpartum period. Rigorous curation and indexing of the literature yielded articles that culminated with the most recent and highest level of evidence.

Quality and Quantity of Evidence

To examine the quality of literature reviewed, John Hopkins hierarchy of evidence as cited in (Dearholt & Dang, 2012) was used. According to Glasofer and Townsend (2019) the evidence is arranged with the most reliable evidence level at the top (level I), down to the least reliable. This is dependent on how the evidence of the literature reviewed is collected and the methods employed by each research. Studies in this literature review contain a total of eight articles, of which six level I, one of level II, and one level III. This indicates the majority of the literature review comes from meta-analysis and well designed controlled studies, yielding highly reliable evidence.

Discussion of Findings

Universal depression screening in practice requires the use of a validated tool and establishing cutoff thresholds for screening. High level research of level one evidence, including one systematic review and two meta-analyses, recommend the use of the PHQ-9 as a widely validated tool for screening depression. Costantini et al. (2021) conducted a systematic review of forty-two studies and established that the PHQ-9 has been consistently evaluated with high operational properties to screen for depression. Overall, when a cutoff score of 10 was applied (in 57% of studies; detailed discussion of cutoff scores below), the tool provided a sensitivity of 0.85 or higher in 45% of studies, and specificity of 0.75 or higher in 80% of studies in this systematic review. Even though sensitivity and specificity dropped to as low as 0.37 and 0.42, respectively in some studies depending on the cutoff scores, Costantini et al. (2021) still recommended the PHQ-9 for screening of depression across multiple primary care settings. Levis et al. (2019) performed a meta-analysis to examine the diagnostic accuracy of the PHQ-9 and determined greater reliability of the tool compared to other references. Accuracy of the

PHQ-9 did not differ across populations in any meaningful way except it was noted to be more specific in the older population. Using a large sample size (data were obtained for 58 of 72 eligible studies) total n=17 357; major depression cases n=2312 the authors report the PHQ-9 has maximum sensitivity and specificity with 88% and 85%, respectively.

While Levis et al. (2019) provided evidence for PHQ-9 for screening for depression in a wide variety of populations, Wang et al. (2021)'s meta-analysis focused on the use of the PHQ-9 as the ideal tool for use in perinatal settings. While the Edinburgh Postnatal Depression Scale (EPDS) is considered a "legacy" tool, the PHQ-9 is the most widely used depression indicator globally. With the perinatal time frame as limited, widespread use of the PHQ-9 throughout healthcare systems, and during a women's lifespan Wang et al. (2021) provides supporting data that the PHQ-9 is equally valid. The PHQ-9 had a pooled sensitivity and specificity of 84% and 81%, respectively, in this study. The median correlation between the PHQ-9 and the EPDS was 0.59.

Comparing different existing tools for screening depression: PHQ-9, PHQ-2, and WHO-5, Ghazisaeedi et al. (2021)'s meta-analysis found the PHQ-9 to have the highest validity and reliability for screening against minor depressive symptoms in medical students. Even though this meta-analysis recruited a mere sample size of 400 students and has limited generalizability, it still provided backing for the use of PHQ-9 to screen for depression.

As there is consensus on the use of the PHQ-9 for screening depression, strong evidence also suggests a cutoff score of 10 and above for differentiating major depression. In the context of postpartum depression, a cutoff score of 10 is useful for clinicians to initiate prompt referral and treatment. Both Levis et al. (2019) and Wang et al. (2021)'s meta-analyses yielded maximum sensitivity and specificity at a cutoff score of 10.

Echoing both authors, Neupane et al. (2021) performed a meta-analysis to see how the PHQ-9 would perform when validity studies stray from the cutoff score of 10. Overall, the sensitivity of the PHQ-9 was under-estimated with a cutoff score less than 10, and over-estimated with a cutoff score more than 10 (Neupane et al., 2021). Interestingly, a clearly established cutoff score of the PHQ-9 led to more pronounced bias in reporting when a different cutoff score was used, compared to the Edinburgh Postnatal Depression Scale (EPDS), which did not have a clear cutoff. Neupane et al. (2021) found that without a clear cutoff, the bias in reporting was diluted in EPDS's validity studies that used different cutoff scores. This finding highlights even more that a cutoff of 10 should be used for the PHQ-9 in screening for major depression.

Some evidence exists for the use of a range of cutoff scores for differentiating severities of depressive symptoms. Ghazisaeedi et al. (2021) demonstrated that a PHQ-9 cutoff score of 5 could predict minor depression in medical students in Iran, and a cutoff score of 10 would warrant treatment. However, because of the lack of evidence from other papers backing up the use of multiple cutoff scores, this is a weak recommendation.

Not only has the optimal cutoff selection in studies of the PHQ-9 been consistent, Carroll et al. (2020) systematically reviewed 49 articles validating the use of PHQ-9 in low and middle income countries and concluded that the test is accepted globally as a depression screener. As part of increasing clinical use and standardization, measure validation is critical to capture depression cross-culturally hence, preventing potential underreporting and over-pathologizing of symptoms.

A retrospective study examined the validity, reliability, and optimal cut-off points of the PHQ-9 with a sample size of 400 medical students in Iran. Ghazisaeedi et al. (2021) completed a

meta-analysis of the study and found that the PHQ-9 has the highest validity and reliability among all tools. This study concluded that a cutoff score of 5 can distinguish between students with or without minor depressive disorder. Consistent findings with this literature review conclude that even with this study the cutoff number requiring intervention is 10. Another significant component is that Ghazisaeedi et al. (2021) was not measuring postpartum depression with the PHQ-9.

Despite universal screening for perinatal depression being widely accepted, gaps exist with implementation protocols and training for staff. Moderate evidence from level II and III studies exists that training and education can improve early diagnosis and treatment. Rodriguez et al. (2021) strongly endorsed mental health referrals increasing with identification and implementation of colocated counseling services added to 10 clinics. This retrospective cohort study identified an increase of referral rates from 22% (238 of 1106 women) to 57% (560 of 978 women).

While Rodriguez et al. (2021) examined improving referral rates, other studies focused on the ability to administer screenings efficiency in clinics and their referral rates. Coffman et al. (2019) screened 302 for postpartum depression, and referred 19 to case management. Through education barriers were illuminated and improved screening and treatment occurred. 47% (n = 9) of the women who were referred accessed care. Of the 19 participants referred to case management, 47% (n = 9) accessed care. The results of focus groups illuminated barriers to screening and treatment programs for women at the individual, local, and macrosystem levels. Consistently level II and III evidence gives a moderate recommendation for improved training and education to providers and staff regarding perinatal depression.

In summary, the PHQ-9 is a reliable, valid tool, globally disseminated for identification of perinatal individuals at risk for postpartum depression. As indicated by Costantini et al. (2021), the PHQ-9 is widely validated as a screening tool, and a cut off score is more useful than an algorithm. Neupane et al. (2021) through meta-analysis demonstrated the usefulness of a clearly defined standard cutoff in eliminating bias in accuracy. In comparison to traditional semi-structured diagnostic interviews, PHQ-9 sensitivity was greater, as Levis et al. (2019) deduced through a data analysis for 58 depression cases. Furthermore, Wang et al. (2021) further exemplified through a meta analysis of 35 eligible articles, that the PHQ-9 shows adequate sensitivity and specificity as a depression screening tool, converging with the validity of Edinburgh Postnatal Depression Scale. In addition, unlike the EPDS, the PHQ-9 can assess depression both during and outside the perinatal period, thus proving advantageous in monitoring scores over the lifespan of a woman. The PHQ-9 is a validated tool for measuring depression with an acceptable cutoff of 10. Population differences may depart from standard cutoffs on occasion as Ghazisaeedi et al. (2021) discovered. However, in this literature review no studies were encountered pertaining to postpartum depression indicating that any other number except 10 should be used as a cutoff indicating referral for mental health. Review of six studies of high level evidence gives a strong recommendation for using 10 as the standard cut off for identification of individuals at risk for postpartum depression.

Fragmented screening, diagnosis, and referral issues delay early intervention in the perinatal population for women at risk for postpartum depression. As screening is not often conducted properly or timely, many individuals are not identified. Formal training, standardized education, and a process for referral is moderately recommended based on the literature reviewed.

Project Implementation

Screening for postpartum depression has been recommended by The United States Preventive Services Task Force (USPSTF) and The American College of Obstetricians and Gynecologists (ACOG) (Ellington, 2021). However, standardized screening processes are meager, and determining ways to interpret data varies. To improve outcomes, the identification of women who are at risk for postpartum depression benefits from standardized scoring that has a clear referral pathway.

After a literature review about postpartum depression was completed, one intervention to bridge gaps related to standardized screening emerged. Women who score ten or greater on the PHQ-9 should be identified as having an increased risk for perinatal depression and referred for services.

Middle-range theorist Dr. Cheryl Beck identified the importance of recognizing the stages of PPD and emphasized early identification in her Teetering on the Edge Theory of Postpartum Depression (Beck, 1993, as cited in Beck 2022). Although the theory emerged three decades ago, Beck provided a framework that became a backbone for research and clinical interventions on PPD. Its findings are relevant to this day for providers to screen, educate, and support women throughout the antepartum, intrapartum, and postpartum time. Congruent with Beck's findings, gaps exist that indicate additional consideration is necessary.

At this time there isn't a formal process for referring patients who score a 10 or greater. This project supports early identification of patients at risk for PPD and referring patients who score a 10 on the PHQ-9. In an effort to give additional consideration as Beck suggested, all patients who screen a 10 or greater in the hospital should be referred for support (Beck, 1993, as cited in Beck 2022). To facilitate this it is necessary to educate staff on the importance of screening and referral.

Nurses are the front line of administering the PHQ-9 and recognizing women at high risk for negative sequelae. To assist with the implementation of the project a physical poster will be displayed emphasizing the significance of PPD screening and identifying patients at risk learned from the literature review. The poster will also highlight referral pathways for patients scoring a ten or greater.

Kicking off the project would start at a staff meeting to introduce the author's PICOT topic**:** With postpartum patients does a PHQ-9 score of 10 or more, as compared to a PHQ-9 of less than 9, result in increased referrals within six months? Information would be provided about how nurses can be an essential part of early identification of PPD and treatment. Presentation of PPD and the PHQ-9 will be presented via powerpoint to give an overall view. A brief overview of risk factors for PPD and long term repercussion of untreated PPD will also be discussed. After the powerpoint presentation has been completed a physical poster will be placed in the staff lounge, education room, and physician lounge for all to view. The poster will reinforce the powerpoint presentation and reach any staff members who miss the live presentation.

Physical posters effectively reach many groups due to portability and easy access. Individuals who may not be able to attend an in-person conference can participate. With technology a creative and informative product can be developed that will capture attention. Presenting a poster in an area with high traffic is desirable as there aren’t any physical constraints to view the poster. Another advantage of poster presentation is the opportunity to learn about the result of many hours of research with a small investment in time.

Initially, the setting where the PPD screening and referral program using a standardized cutoff score will be at Stone Springs Hospital where this author is affiliated. Implementation will take place in both the labor and delivery and postpartum units. Currently, there isn’t any referral process in place or any recognition with screening results greater than 10. Staff on labor and

delivery has a population of 95 and the sample size is 75 with a goal to reach all of the team with the information. In addition to the nurses there are 10 obstetricians who routinely deliver at the hospital. These providers will have the poster in the area where they watch tv and monitor fetal tracings.

Eventually, the information would be shared in local obstetricians, pediatricians, and family practice offices. Health fairs and other community events are places to target as well. Overall, the poster should be well received and without any roadblocks. One barrier that could emerge is the staff avoiding attending a poster presentation. Interference could be due to a lack of time, disinterest, or awareness. Alterations to increase visibility, if necessary, include: moving the poster to various locations, announcing the opportunity in different areas, and individually encouraging staff to review the poster. Any of the interventions to increase poster awareness will not alter the project.

It is anticipated that the staff will be eager to learn more about the PHQ-9 since the hospital has recently started using this tool in place of the Edinburg screening tool. Many staff members do not know why the tool was changed, and the significance of the PHQ-9.
Key stakeholders in this project are nurses, physicians and patients. Case management would also benefit from dissemination of this information. Initially, the plan described will reach the necessary individuals. During the implementation phase this author will also align with the hospital educator to assess learning and identify other strategies if necessary, and receive feedback from staff. It is the goal of this project to promote learning through mechanisms that will spark interest and be relevant for the learner.

Summary/Conclusion/Recommendations

The Capstone Project was determined by the research question, among postpartum patients, does a PHQ-9 (score of 10) as compared to a PHQ-9 (less than 9) or more result in

increased referrals within six months? Guided by (Beck, 1993, as cited in Beck 2022) Teetering on the Edge Theory of Postpartum Depression nursing framework, the literature review gleaned information that is current and evidence based.

An extensive literature review was completed, and it determined with the prevalence of maternal depression during the perinatal period, it is imperative that clinicians are unremitting with their screening practices. Utilizing evidence-based practice guidelines with a clear referral process will optimize identification of patients at-risk for developing postpartum depression (PPD) (Johnson et al., 2021). Strong evidence for the use of 10 as the cutoff to initiate prompt referral consistently emerged (Carroll et al., 2020; Levis et al., 2019; Wang et al., 2021).

Research gained from the literature review of this Capstone Project is aimed to educate clinicians about the prevalence of PPD, and promote a clear screening and referral pathway. Specifically, the literature review will be implemented at StoneSprings Hospital, where the author is currently affiliated. Currently, when a patient scores a 10 or greater on the PHQ-9, a referral is not always initiated. The literature review provides current evidence to support changing the current screening practice and boost the referral rate for PPD.

As there isn't a process for routine screening and referral at Stone Springs Hospital for PPD, it is expected that providing education to clinical personnel will increase referral rates when a patient scores a 10 or greater on the PHQ-9. Engaging stakeholders from the beginning and through the process with current research will address the gap between maternal depression and support. It is expected that the number of referrals will increase for mental health support.

One anticipated outcome is that mother-infant attachment and bonding will improve with timely recognition and interventions for at-risk mothers suffering from PPD. Other potential benefits of early recognition of PPD are decreased healthcare costs for the patient from untreated PPD and decreased maternal mortality (Epperson et al., 2020).

Another impact on clinical practice would be improved education offered by providers and clinicians throughout a patient's hospitalization. Nurses will be better educated to discuss matrescence and the transition to motherhood. Overall, an increased awareness of PPD and the symptoms will occur for both clinicians and patients.

One recommendation for future practice would be to start screening patients in their OB/GYN offices prior to giving birth. Screening for maternal mental well-being throughout the perinatal period would improve maternal-child outcomes (Moyer & Kinser, 2021).

Future practice would benefit from having screening tools that can be easily accessed like mobile applications. The ease of access can increase awareness of, reduce the stigma against PPD, as well as provide patients with multiple opportunities to seek help if needed. Providing PPD education at a prenatal visit and screening every trimester would be another way to collect data and recognize PPD at frequent intervals.

There are many potential reasons for PPD to manifest and therefore many variables associated with the diagnosis. More research is needed, not only to improve evidence-based practice but also to address gaps in the literature regarding PPD, screening, and how to best care for women suffering from the diagnosis. Future studies focused on high quality randomized controlled trials related to matrescence would provide rich information about the lived experiences women have encountered when suffering from symptoms and seeking care.

References

Accortt, E. E., Haque, L., Bamgbose, O., Buttle, R., & Kilpatrick, S. (2022). Implementing an inpatient postpartum depression screening, education, and referral program: A Quality Improvement initiative. *American Journal of Obstetrics & Gynecology MFM*, *4*(3), 100581. https://doi.org/10.1016/j.ajogmf.2022.100581

Beck, C. T. (2022). Teetering on the edge. *Advances in Nursing Science*, *46*(1), 14–27. https://doi.org/10.1097/ans.0000000000000432

Beck, C. T. (1999). Postpartum depression. Stopping the thief that steals motherhood. *AWHONN Lifelines.*; 3(4): 41-44. https://doi.org/10.1111/j.1552-6356.1999.tb01115.x

Beck, C. T. (1993). Teetering on the edge: A substantive theory of postpartum depression. *Nursing research*.

Brito, A. P., Silva, C. M., Riesco, M. L., & McArthur, A. (2022). Experiences of health professionals in screening for postpartum depressive symptoms: A qualitative systematic review protocol. *JBI Evidence Synthesis*, *20*(9), 2329–2335. https://doi.org/10.11124/jbies-21-00329

Carroll, H. A., Hook, K., Perez, O. F., Denckla, C., Vince, C. C., Ghebrehiwet, S., Ando, K., Touma, M., Borba, C. P. C., Fricchione, G. L., & Henderson, D. C. (2020). Establishing reliability and validity for mental health screening instruments in resource-constrained settings: Systematic review of the PHQ-9 and key recommendations. *Psychiatry Research*, *291*, 113236. https://doi.org/10.1016/j.psychres.2020.113236

Coffman, M. J., Scott, V. C., Schuch, C., Mele, C., Mayfield, C., Balasubramanian, V., Stevens, A., & Dulin, M. (2020). Postpartum depression screening and referrals in Special Supplemental Nutrition Program for Women, infants, and children clinics. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, *49*(1), 27–40. https://doi.org/10.1016/j.jogn.2019.10.007

Clark, M., Searing, A., Ross, D., Wagnerman, K., & Gardner, A. (2019). Maternal depression costs Society billions each year, new Model Finds. https://ccf.georgetown.edu/2019/05/31/maternal-depression-costs-society-billions-eachyear-new-model-finds/

Costantini, L., Pasquarella, C., Odone, A., Colucci, M. E., Costanza, A., Serafini, G., Aguglia, A., Belvederi Murri, M., Brakoulias, V., Amore, M., Ghaemi, S. N., & Amerio, A. (2021). Screening for depression in primary care with patient health questionnaire-9 (PHQ-9): A systematic review. *Journal of Affective Disorders*, *279*, 473–483. https://doi.org/10.1016/j.jad.2020.09.131

Dearholt, S., & Dang, D. (2012). Johns Hopkins nursing evidence-based practice: Models and guidelines (Second edition.). Sigma Theta Tau International.

Ellington K. (2021). Perinatal depression screening: Improving outcomes during COVID-19. *Nursing*, *51*(10), 50–54. https://doi.org/10.1097/01.NURSE.0000791712.24103.2e

Epperson, C. N., Huang, M.-Y., Cook, K., Gupta, D., Chawla, A., Greenberg, P. E., & Eldar-Lissai, A. (2020). Healthcare resource utilization and costs associated with postpartum depression among commercially insured households. *Current Medical Research and Opinion*, *36*(10), 1707–1716. https://doi.org/10.1080/03007995.2020.1799772

Falana, S. D., & Carrington, J. M. (2019). Postpartum depression. *Nursing Clinics of North America*, *54*(4), 561–567. https://doi.org/10.1016/j.cnur.2019.07.006

Ghazisaeedi, M., Mahmoodi, H., Arpaci, I., Mehrdar, S., & Barzegari, S. (2021). Validity, reliability, and Optimal Cut-off scores of the WHO-5, PHQ-9, and PHQ-2 to screen depression among university students in Iran. *International Journal of Mental Health and Addiction*, *20*(3), 1824–1833. https://doi.org/10.1007/s11469-021-00483-5

Glasofer, A., & Townsend, A. B. (2019). Determining the level of evidence. *Nursing Critical Care*, *14*(6), 22–25. https://doi.org/10.1097/01.ccn.0000580120.03118.1d

Hahn-Holbrook, J., Cornwell-Hinrichs, T., & Anaya, I. (2018). Economic and health predictors of national postpartum depression prevalence: a systematic review, meta-analysis, and meta-regression of 291 studies from 56 countries. *Frontiers in psychiatry*, *8*, 248.DOI:10.3389/fpsyt.2017.00248

Hahn, L., Eickhoff, S. B., Habel, U., Stickeler, E., Schnakenberg, P., Goecke, T. W., Stickel, S., Franz, M., Dukart, J., & Chechko, N. (2021). Early identification of postpartum depression using demographic, clinical, and digital phenotyping. *Translational Psychiatry*, *11*(1). https://doi.org/10.1038/s41398-021-01245-6

Hutchens, B. F., & Kearney, J. (2020). Risk factors for postpartum depression: An umbrella review. *Journal of Midwifery & Women's Health*, *65*(1), 96–108. https://doi.org/10.1111/jmwh.13067

Johnson, A., Stevenson, E., Moeller, L., & McMillian-Bohler, J. (2021). Systematic screening for perinatal mood and anxiety disorders to promote onsite mental health consultations: A Quality Improvement Report. *Journal of Midwifery & Women's Health*, *66*(4), 534–539. https://doi.org/10.1111/jmwh.13215

King, C. R., Morgan, S. M., Firebaugh, C. M., Beeson, T., Legg, T. J., & Wardlow, R. (2021). Postpartum depression: Far reaching impact and the role of empowerment. *Open Journal of Depression*, *10*(02), 29–42. https://doi.org/10.4236/ojd.2021.102003

Lawson, A., Dalfen, A., Murphy, K. E., Milligan, N., & Lancee, W. (2019). Use of text messaging for postpartum depression screening and information provision. *Psychiatric Services*, *70*(5), 389–395. https://doi.org/10.1176/appi.ps.201800269

Levis, B., Benedetti, A., & Thombs, B. D. (2019). Accuracy of patient health questionnaire-9 (PHQ-9) for screening to detect major depression: Individual participant data meta-analysis. *BMJ*, l1476. https://doi.org/10.1136/bmj.l1476

Lile-Brown, K., & Joslyn, M. L. (2019). Mandatory Screening and Education for Postpartum Depression in the State of Kansas. Kansas Nurse, 94(2), 18–20.Liu, X., Wang, S., & Wang, G. (2021). Prevalence and risk factors of postpartum depression in women: A systematic review and meta-analysis. *Journal of Clinical Nursing*, *31*(19-20), 2665–2677. https://doi.org/10.1111/jocn.16121

Martín-Gómez, C., Moreno-Peral, P., Bellón, J., Conejo-Cerón, S., Campos-Paino, H., Gómez-Gómez, I., . . . Motrico, E. (2022). Effectiveness of psychological interventions in preventing postpartum depression in non-depressed women: A systematic review and meta-analysis of randomized controlled trials. *Psychological Medicine, 52*(6), 1001-1013. https://doi:10.1017/S0033291722000071

Moyer, S. W., & Kinser, P. A. (2021). A comprehensive conceptual framework to guide clinical practice and research about mental health during the perinatal period. *Journal of Perinatal & Neonatal Nursing*, *35*(1), 46–56. https://doi.org/10.1097/jpn.0000000000000535

Neupane, D., Levis, B., Bhandari, P. M., Thombs, B. D., & Benedetti, A. (2021). Selective Cutoff reporting in studies of the accuracy of the patient health Questionnaire-9 and Edinburgh Postnatal Depression Scale: Comparison of results based on published cutoffs versus all cutoffs using individual participant data meta-analysis. *International Journal of Methods in Psychiatric Research*, *30*(3). https://doi.org/10.1002/mpr.1873

O'Brien, A. J., Chesla, C. A., & Humphreys, J. C. (2019). Couples' experiences of maternal postpartum depression. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, *48*(3), 341–350. https://doi.org/10.1016/j.jogn.2019.04.284

Rodriguez, A. N., Holcomb, D., Fleming, E., Faucher, M. A., Dominguez, J., Corona, R., McIntire, D., & Nelson, D. B. (2021). Improving access to perinatal mental health services: The value of on-site resources. *American Journal of Obstetrics & Gynecology MFM*, *3*(6), 100456. https://doi.org/10.1016/j.ajogmf.2021.100456

Shorey, S., Chee, C. Y., Ng, E. D., Chan, Y. H., Tam, W. W., & Chong, Y. S. (2018). Prevalence and incidence of postpartum depression among healthy mothers: A systematic review and meta-analysis. *Journal of Psychiatric Research*, *104*, 235–248. https://doi.org/10.1016/j.jpsychires.2018.08.001

Slomian, J., Honvo, G., Emonts, P., Reginster, J.-Y., & Bruyère, O. (2019). Consequences of maternal postpartum depression: A systematic review of maternal and infant outcomes. *Women's Health*, *15* (1) 1-55. https://doi:10.1177/1745506519844044

Tebeka, S., Le Strat, Y., De Premorel Higgons, A., Benachi, A., Dommergues, M., Kayem, G., Lepercq, J., Luton, D., Mandelbrot, L., Ville, Y., Ramoz, N., Tezenas du Montcel, S., Mullaert, J., Dubertret, C., Bertin, E., Bourneuf, C., Colombe, J., Couppa, L., Dommergue, M., … Ville, Y. (2021). Prevalence and incidence of postpartum depression and environmental factors: The IGEDEPP cohort. *Journal of Psychiatric Research*, *138*, 366–374. https://doi.org/10.1016/j.jpsychires.2021.04.004

Wang, L., Kroenke, K., Stump, T., & Monahan, P. (2021). Screening for perinatal depression with the Patient Health Questionnaire depression scale. *General Hospital Psychiatry*, *68*, 74–82. https://doi.org/10.1016/j.genhosppsych.2020.12.007

Woody, C. A., Ferrari, A. J., Siskind, D. J., Whiteford, H. A., & Harris, M. G. (2017). A systematic review and meta-regression of the prevalence and incidence of perinatal depression. *Journal of Affective Disorders*, *219*, 86–92. https://doi.org/10.1016/j.jad.2017.05.003