

PERINATAL RISK FACTORS AND POSTPARTUM DEPRESSION:  
A COMPARISON OF PUBLICLY AND PRIVATELY INSURED WOMEN

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Submitted to the School of Nursing in partial fulfillment of the  
requirements for the Nursing Honors Program

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Abstract

Postpartum depression affects approximately 13% of women and is considered a major complication of childbirth. When it is undetected or untreated there is an increased risk for morbidity. Increased awareness of perinatal risk factors can improve care provided to pregnant and postpartum women. Also, increasing provider understanding of perinatal depression can help with earlier identification of prenatal risks, leading to more effective treatment prior to the traditional diagnosis of postpartum depression. This study examined how perinatal maternal risk factors, perceived stress, and depression related to postpartum depression among privately insured women and those on Medicaid.

Using the Cohen Perceived Stress Scale (PSS), pregnant women were assessed twice, both during pregnancy and the postpartum period. Participants were also assessed for psychosocial challenges during pregnancy and related medical diagnoses before delivery using items from the CDC Pregnancy Risk Assessment Monitoring tool (PRAMS). The prevalence of depression was determined by completion of the Edinburgh Postnatal Depression Scale (EPDS) and the Center for Epidemiological Studies Depression Scale (CES-D). From a larger data sample, frequency of perinatal stress and depression, psychosocial conflict, and medical conditions were described in relationship to postpartum depression among the two sample groups.

Participants were women seeking prenatal care prior to 21 weeks. They were aged 21-30 years old with no more than one previous birth, no previous preterm birth and no complications in the current pregnancy. Other inclusion criterion included residence in the Kansas City Area, fluency in reading and speaking the English language, and private or public insurance coverage at the time of enrollment.

Preliminary data analysis suggested that prenatal stress has a slightly higher incidence among the public pay population. The mean PSS scores throughout the perinatal period for

Medicaid mothers was 15.7 with a range from 2-28; mean PSS scores of mothers with private pay were 15.2 with a range from 2-26. Scores on the CES-D through pregnancy and the EPDS during the postpartum period trended towards higher scores in the private pay group. Women with Medicaid tended to report increased social stressors and decreased social support with 50% (n=4) of these women showing the likelihood for a depressive illness in the postpartum period. Further analysis with a larger sample and study completion is needed to determine the full effects of stress and depression in relation to physical problems, social conflict, and intent of pregnancy among participants.

Increased awareness of perinatal risk factors, stress and depression can improve care and lead to more effective treatments prior to the traditional diagnosis of postpartum depression. Ultimately, these actions will help to improve the health and function of the mother, newborn, and family.

## INTRODUCTION

Each year, 500,000 women suffer from postpartum depression in the United States. One in every eight postpartum women is affected, making postpartum depression a common and major complication of childbirth (Driscoll, 2006; Pogany & Peterson, 2007). The media has recently heightened the awareness of postpartum depression secondary to mothers who have killed themselves or their children. However, it is all too common and is a largely unrecognized and unreported condition.

Apart from causing emotional suffering, postpartum depression strains marriages, undermines a mother's confidence, impairs her social functioning and quality of life, and in serious cases contributes to infant abuse, infanticide and suicidal behavior (Driscoll, 2006). Although the considerable negative outcomes of untreated postpartum depression have been discussed at length in the literature, there remains a gap between the knowledge of this condition and consistent, systematic screening of women who are most at risk.

Women suffering from depression during pregnancy are at an increased risk for postpartum depression as well as risk-taking behaviors throughout the perinatal period (Nonacs, 2006). Social interactions and conflict during pregnancy may have detrimental effects that can influence pregnancy outcomes. Unhealthy life style choices such as smoking and alcohol consumption are examples of risk-taking behaviors that have been linked to these impaired social issues (Westdahl et al., 2007). Stress also plays a significant role in negative outcomes of pregnancy and the postpartum time. Increased stress during pregnancy can trigger preterm labor and negatively impact the health and well-being of the woman, child, and family (Dole et al., 2003; Driscoll, 2006).

The strongest risk factors for postpartum depression are: depression during pregnancy, anxiety during pregnancy, experiencing stressful life events or physical problems during pregnancy and early postpartum, low levels of social support, and a previous history of depression (Robertson, Grace, Wallington, & Stewart, 2005). Despite knowing these risk factors, screening is not a priority and the risk factors for postpartum depression are frequently overlooked which leads to as many as 50% of cases going undiagnosed (Beck & Gable, 2001). One reason that depression in pregnancy is often overlooked is because many practitioners do not distinguish depressive symptoms from neuro-hormonal changes associated with pregnancy (Nonacs, 2006). Women who are successfully recognized and diagnosed have had meticulous provider assessment, have self-reported symptoms, or screenings were done in a clinical setting. In a study done by Seehusen, Baldwin, Runkle, and Clark (2005), 70.2% of family practice physicians always or often screened for postpartum depression at postpartum gynecological examinations; however, only 18% used an instrument specifically for postpartum depression.

These findings all indicate a need for provider understanding of perinatal stress and depression. Earlier identification of prenatal risks can lead to more effective treatment prior to the traditional diagnosis of postpartum depression. Also, investigating perinatal stress and depression and identification of risk factors of these conditions may reduce the risk for chronic anxiety or undiagnosed depression, and improve the health and function of the mother, newborn, and family.

This descriptive, longitudinal pilot study aimed to investigate the prevalence of perinatal maternal risk factors, perceived stress, and depression in relation to postpartum depression. Using data from a larger pilot study being conducted by Dr. Ginger Breedlove, privately and publicly insured (Medicaid) women participated in the study. Study findings will enhance the understanding of the population as a whole and provide direction to the areas where interventions and continued research are most needed. In addition, risk factors will be identified among women who experience

perinatal depression to determine the individuals within the population who are most at risk of developing postpartum depression. This study is reflective of the U. S. Department of Health and Human Services (U.S. DHHS) and the Health and Human Resources Administration (HRSA) recent campaign to increase awareness of depression in the prenatal and postpartum period (U.S. DHHS, 2000).

### *Research Questions*

Data collected from the Center for Epidemiological Studies Depression Scale (CES-D), Cohen Perceived Stress Scale (PSS), Pregnancy Risk Assessment Monitoring System tool (PRAMS), and the Edinburgh Postnatal Depression Scale (EPDS) were analyzed to address specific research questions, including:

- Are publicly insured (Medicaid) women more likely to report experiencing perinatal stress and depression than privately insured women?
- Is a lack of social support or social conflict during pregnancy related to an increased incidence of postpartum depression? Are publicly insured women more likely to report prenatal social issues?
- Are depression rates higher during the postpartum period in women who do not report positive intent of pregnancy?
- Are reported physical problems before and during the prenatal period related to an increased incidence of postpartum depression?

### *Review of the Literature*

#### *Diagnostic criteria for perinatal depression*

The American Psychiatric Association's (APA) *Diagnostic and Statistical Manual for Mental Disorders* (4<sup>th</sup> ed.) Text Revision (DSM-IV-TR) defines depression as a loss of pleasure in nearly all

normal activities for a period of at least two weeks, plus at least four of the following symptoms occurring almost daily for most of the day: 1) appetite or weight changes, 2) trouble sleeping, 3) energy depletion, 4) feelings of guilt or worthlessness, 5) difficulty thinking straight, and 6) recurrent thoughts of suicide (American Psychiatric Association [APA], 2000).

Currently, there is not a specific DSM-IV-TR category addressing antepartum depression. However, depression during pregnancy exhibits the same characteristics as depression in the non-pregnant population (Lintner & Gray, 2006). Some of these symptoms can be confused with normal physiological changes in pregnancy, so a pregnant woman's loss of interest in pleasurable activities or impairment of daily functioning may be the most important indicator for antepartum depression.

Postpartum depression is more than the "baby blues," which are said to occur in 50 to 90% of childbearing women (Lintner & Gray, 2006). The DSM-IV-TR defines postpartum depression as a major depressive disorder that occurs in women shortly after childbirth without the psychotic features (APA, 2000). In addition to the symptoms associated with a major depressive disorder, women with postpartum depression may exhibit anxiety, fear, disinterest or anger about the infant. Severe postpartum depression may escalate to thoughts of harming themselves, the baby or others (APA, 2000).

#### *Prevalence of postpartum depression*

Each year postpartum depression is undiagnosed in more than 50% of United States women who develop the disorder (Beck & Gable, 2001). However, 500,000 women struggle with postpartum depression in the United States each year and approximately 13% of women are affected (Driscoll, 2006; Wisner, Parry, & Piontek, 2002). The incidence of perinatal depression is often underestimated due to women not routinely being screened during and following pregnancy within the United States.

A descriptive study using the CES-D assessment scale was conducted by Lindgren in 2001 with women from two different socio-economic classes. When scored for prenatal depression, 44.4 percent were found to have depressive symptoms between 20 to 40 weeks gestation. Also, it was found that the depression was greater in single women, as 70% of the single women in the sample had a score greater than 16 on the CES-D, indicative of an increased likelihood for depression or depressive symptoms.

According to findings from Wisner et al. (2002), healthcare providers should expect one out of eight new mothers to develop postpartum depression. For women who suffer from depression during the antepartum period or have had previous episodes of postpartum depression, the risk occurrence is increased to one in four (Wisner, Parry, & Pointek, 2002). In attempts to estimate the prevalence of depression throughout the perinatal period by trimester, Bennett, Einarson, Taddio, Koren, and Einarson (2004) extracted studies and surveys from four databases including MEDLINE, CINAHL, EMBASE, and HealthSTAR. The 21 previously completed studies concluded that the rates of depression during the second and third trimesters were highest for the prenatal period. These two trimesters alone showed that 7.4 to 12.8% of the populations studied presented signs of depression when using the EPDS. The investigators concluded that rates of depression throughout the perinatal period were substantial.

#### *Frequency of perinatal depression screening in the healthcare setting*

A study of family practice physicians conducted by Seehusen, Baldwin, Runkle, and Clark (2005), demonstrated that 70.2% of the physicians always or often screened for postpartum depression at the postpartum exam. However, they also found that an instrument specifically designed for postpartum depression was only used in 18% of those cases.

Currently in the United States, universal screening for postpartum depression and use of a validated postpartum depression screening tool does not occur. Although it is known that the



diagnosis for 50% of women with postpartum depression is missed by healthcare providers, 71% say they feel confident making a diagnosis based solely on overall impression (Beck & Gable, 2001). This impression from a routine clinical evaluation does not identify postpartum depression as accurately as a validated screening tool (Ferguson, Jamieson, & Lindsay, 2002).

Smith, Rosenheck, Cavaleri, Howell, Poschman, and Yonkers (2004) conducted a study using written screening tools at four publicly funded clinics before attending their prenatal visit. They identified 23% of the 90 women as having feelings or symptoms of depression. Following the prenatal exam with the healthcare provider, the 90 women were asked if the provider addressed anything involving the assessment or diagnosis of depression, as well as whether treatment for depression was initiated. Only two of the women who were previously identified from the written screening tools were identified by the healthcare provider during the routine exam and treatment options discussed.

#### *Predictors of perinatal depression*

Research suggests that the strongest predictor of postpartum depression is antepartum depression (Lintner & Gray, 2006). Risk factors commonly associated with prenatal depression include: a history of depression, a non-supportive, absent, or abusive spouse, challenging life events, marriage difficulties, an unintended pregnancy, a history of a miscarriage or abortion, poverty, and specific personality tendencies such as controlling behaviors and difficulty accepting change (Suppaseemanont, 2006). In a meta-analysis of studies of prenatal risk factors related to postpartum depression, Driscoll (2006) found that the strongest risk factors are depression during pregnancy, anxiety during pregnancy, experiencing stressful life events or physical problems during pregnancy and early postpartum, low levels of social support, and a previous history of depression. Beck (2001) suggested that there are numerous significant predictors, agreeing with Watson's findings, and also adding: childcare stress, the nature of the infant's temperament, and low self-

esteem. In addition, women who are younger, with lower levels of education and income, non-white, single, and receiving care in inner-city settings were found to have higher levels of depression (Lindgren, 2001). Westdahl et al. (2007) states that assessing the social support and social conflict can provide insight to predict or identify pregnant women at risk for depression. Assessing the quality of these social relationships may predict prenatal depression, as an individual's negative response to these social aspects may be a trigger for depression. Boyd, Zayas, and McKee (2006) found that women who report dealing with negative life events and/or decreased social support have been found to be particularly at risk for depression during pregnancy.

#### *Risk taking behaviors and outcomes related to depression*

Research has shown that depression in pregnancy may have a negative relationship with positive health practices such as nutrition, exercise, and regular prenatal care (Lindgren, 2001). Lindgren (2001) suggests that prenatal depression can alter a woman's behavior and is also associated with smoking, alcohol use, drug abuse, and poorer health behaviors in general, especially in the first trimester. Depressed women are also less likely to involve themselves in diet modification, exercise suggestions, or other prenatal instructions given by healthcare providers (Nonacs, 2006). Bennet et al. (2004) goes so far as to state that depressed women often are delayed in seeking prenatal care and that in doing this their risks for preeclampsia, poor pregnancy outcomes, and progression into postpartum depression. Nonacs (2006) also found that women who are depressed experience pre-term labor twice as often as women who are not affected by depression during their pregnancy.

#### *Maternal stress and depression impact on the fetus*

A woman's prenatal stress has been recently linked to perinatal outcomes for the infant such as low birth weight and gestational age (Ruiz & Avant, 2005). A stressful situation activates

the production of cortisol, CRH, ACTH in a pregnant woman. Although these hormones can sometimes be helpful to the body, high levels can affect pregnancy negatively (Huether & McCance, 2004). Prenatal stress can lead to lasting effects on the infant's health status, immune system development and functioning, and neuro-cognitive development (Ruiz & Avant, 2005). Dawson et al. (as cited in Boyd, Zayas, & McKee, 2006) found that infants of depressed mothers were more likely to have problems feeding, face behavior problems, be less engaged, and have a greater likelihood of insecure attachments to their depressed mothers than infants of non-depressed parents. Overall, stress and depression negatively impact an infant throughout the vulnerable and critical periods of their development.

## STUDY DESIGN AND METHODS

This descriptive, longitudinal research study was conducted as part of a larger ongoing pilot study aiming to investigate and compare perinatal maternal stress, depression, pregnancy outcomes, and cost of care in privately and publicly insured populations of pregnant women. Prior to data collection, approval from the University of Kansas Medical Center (KUMC) Institutional Review Board (IRB) and Office of Grants and Research was obtained for the larger pilot study. Participants in the study included privately and publicly insured pregnant women in the greater Kansas City area. Data collection occurred through four recruitment sites at Sage Femme Birth Center, Kansas City, KS, Women's Care, Overland Park, KS, For Women Only, Overland Park, KS, and Arbor Creek, Olathe, KS. Additional participant inclusion criterion required a pregnant woman between the ages of 21 and 30 years. She could not have more than one previous birth and could not have any previous preterm births. Also, there could not be any complications in her current pregnancy. Recruitment and enrollment had to occur prior to 21 weeks gestation and the participant had to reside in the greater Kansas City area. Insurance coverage at the time of

enrollment was necessary (either private or public insurance coverage), and the participant had to have fluency in reading and speaking the English language.

After obtaining consent to participate in research regarding perinatal stress and depression, women will complete a demographic form and be assigned to a group based on insurance payer status, Private or Public pay/Medicaid. Four assessment tools are administered either through phone interviews or by mail. Each participant completes the assessment tools twice during pregnancy and twice during the postpartum period. Participant compensation for full participation is provided through two 20 dollar coupons for Target, given at 34 weeks gestation and two months postpartum. Thus far, 36 women have agreed to participate in the study; however 10 participants have been lost to attrition. Demographic data was obtained from all enrolled in the study (n=36) and analyses of data are based on responses from 32 participants who are at varying points in the study (n=32).

#### *Characteristics of sample*

Participant demographic characteristics were obtained from the Demographic Data Form which is completed at the time of enrollment in the study (n=36). Ages of subjects ranged from 19 to 31 years, with an average of 25 years. The education level of the participants ranged from 8<sup>th</sup> grade or less to PhD level. The majority, 53%, had an associate, bachelors, masters or PhD degree. Thirteen percent had completed education through high school and three percent represented those with an education of 8<sup>th</sup> grade or less. Sixty-six percent of the participants were married and 28% are single. Over 50% of the participants were Caucasian and only 20% were American Indian, Alaskan Native, Asian and African American. Thirty percent did not specify their ethnicity. There were 18 women with private insurance and 14 women with Medicaid.

#### *Data collection and analysis*

Assessment tools were given at the time of enrollment (Time 1), 34 weeks gestation (Time 2), two weeks postpartum (Time 3) and two months postpartum (Time 4). Participant responses were used to analyze the specified research questions listed previously. Maternal stress was screened for using the Cohen Perceived Stress Scale (PSS) (Appendix A). The PSS is a ten item scale with scores ranging from 0 to 36 where the participant indicates the degree to which situations in life are appraised as stressful. Higher scores indicated that individual perceived environmental demands beyond their ability to cope. Prenatal depression was screened for using the Center for Epidemiologic Studies Depression Scale (CES-D) (Appendix B). The CES-D is a 20 item scale which used a four point response set and had scores ranging from 0 to 60. Depression was assessed at the time the survey is completed with a score greater than 16 indicating an increased likelihood for depression or depressive symptoms. The Pregnancy Risk Assessment Monitoring System (PRAMS) (Appendices C and D) was used to collect additional demographic information. This standardized questionnaire examined self-reported maternal attitudes and behaviors and asks care based questions before, during, and after pregnancy. The Centers for Disease Control (CDC) created this tool to improve maternal and infant healthcare and it is currently used in 37 states (CDC, 2006). However, these were not available for the population under investigation because Kansas is one of the states that does not participate in PRAMS. In attempts to best fit the research questions of the larger pilot study, the PRAMS tool was modified to address the specific content areas within each time set. Lastly, the Edinburgh Postnatal Depression Scale (EPDS) (Appendix E) was used in the postpartum period to provide an overall score of the likelihood of depression, identifying those at risk of or potentially suffering from major postpartum depression. The EPDS is a ten item questionnaire that is scored on a four point scale with the total scores ranging from 0-30. Scoring 13 or higher indicated that the woman was likely to be suffering from a depressive illness of varying severity and needs a mental health referral.

Statistical analysis was done by entering patient responses from these assessment tools into the Statistical Package for the Social Sciences (SPSS). Descriptive statistics and frequencies were collected to answer the identified research questions.

*Are publicly insured (Medicaid) women more likely to report experiencing perinatal stress and depression than privately insured women?*

Individual scores were calculated from the responses from each PSS, CES-D, and EPDS administered. The mean totals were then calculated for the private insurance and public insurance groups. Insurance payer status was taken from the Time 1 PRAMS item 17. Mean PSS, CES-D, and EPDS scores were calculated through cross-tabs analysis of the descriptive statistics for both groups. Trends of higher PSS scores, CES-D scores greater than 16, and EPDS score of 13 or greater were identified and payer status noted. The score ranges for each instrument were also determined.

*Is a lack of social support or social conflict during pregnancy related to an increased incidence of postpartum depression? Are publicly insured women more likely to report prenatal social issues?*

Social support and conflict were identified in Time 3 PRAMS item 9 which asks about any social stressors that may have occurred before or during the pregnancy (examples include sick family member, homeless, job loss, arguments, physical fight, and unpaid bills). EPDS total scores were calculated for each individual. Participants with EPDS scores of 13 or greater were identified and their responses to Time 3 PRAMS item 9 were investigated. Frequency of response to Time 3 PRAMS item 9 was also identified for both groups.

*Are depression rates higher during the postpartum period in women who do not report positive intent of pregnancy?*

Intentness of pregnancy was identified in Time 1 PRAMS item 11, with possible responses: “I was trying to get pregnant,” “I wasn’t trying to get pregnant or keep from getting pregnant,” “I was trying to keep from getting pregnant but was not trying very hard,” and “I was trying hard to keep from getting pregnant.” EPDS total scores were calculated for each individual. Participants with EPDS scores of 13 or greater were identified and their responses to Time 1 PRAMS item 11 were investigated. Also, both groups were observed for the frequency of response to Time 1 PRAMS item 11.

*Are reported physical problems before and during the prenatal period related to an increased incidence of postpartum depression?*

Physical problems during the three months before pregnancy including: asthma, hypertension, diabetes, anemia, heart problems, or seizures were identified in Time 1 PRAMS item 25. Also, physical problems during pregnancy including: diabetes, vaginal bleeding, kidney/bladder/UTI infection, severe nausea/vomiting/dehydration, incompetent cervix, hypertension or preeclampsia, placenta problems, pre-term labor pains, premature rupture of membranes, blood transfusion, or injuries from a car accident were identified in Time 3 PRAMS item 7. EPDS total scores were calculated for each individual. Participants with EPDS scores of 13 or greater were identified and their responses to Time 1 PRAMS item 25 and Time 3 PRAMS item 7 were evaluated. Frequency of response to Time 1 PRAMS item 25 and Time 3 PRAMS item 7 was also identified for both groups.

## FINDINGS

Frequency statistics were calculated and findings for each of the research questions are described below.

*Are publicly insured (Medicaid) women more likely to report experiencing perinatal stress and depression than privately insured women?*

Total Time 1 PSS scores at enrollment ranged from 2-26 (n=32) with a mean score of 16.22 for the Medicaid group (n=14) and a mean score of 15 for the private pay group (n=18). Total Time 2 PSS scores at 34 weeks gestation ranged from 6-27 (n=32) with a mean score of 15.77 for the Medicaid group (n=9) and a mean score of 15.66 for the private pay group (n=12). Total Time 3 PSS scores at two weeks postpartum ranged from 3-28 with a mean score of 17 for the Medicaid group (n=7) and a mean score of 15.33 for the private pay group (n=9). Total Time 4 PSS scores at two months postpartum ranged from 3-27 with a mean score of 13.8 for the Medicaid group (n=5) and a mean score of 15.14 for the private pay group (n=7). Total Time 1 CES-D scores at enrollment ranged from 2-24 with a mean score of 12 for the Medicaid group (n=9) and a mean score of 11.69 for the private pay group (n=16). Total Time 2 CES-D scores at 34 weeks gestation ranged from 2-26 with a mean score of 11.14 for the Medicaid group (n=7) and a mean score of 10.36 for the private pay group (n=11). A score of greater than 16 indicated an increased likelihood for depression or depressive symptoms. This occurred three times in the Medicaid group and four times in the private pay group during Time 1, for a total of seven scores above 16. This occurred twice in the public pay group and three times in the private pay group during Time 2, for a total of five scores above 16. Total Time 1 EPDS scores at two weeks postpartum ranged from 1-16 with a mean score of 8.7 for the Medicaid group (n=7) and a mean score of 6.44 for the private pay group (n=9). Total Time 2 EPDS scores at two months postpartum ranged from 1-16 with a mean score of 5 for the Medicaid group (n=4) and a mean score of 6.4 for the private pay group (n=7). A score of 13 or greater indicated a likely depressive illness of varying severity. This occurred once in each of the groups during the first Time 1 EPDS and only once in the private pay group during the Time 2 EPDS.



*Is a lack of social support or social conflict during pregnancy related to an increased incidence of postpartum depression? Are publicly insured women more likely to report prenatal social issues?*

Roughly 28% (n=4) of the Medicaid group (n=14) marked one or more of the examples describing negative events that happened before or during pregnancy related to social support or social conflict. Only 22% (n=4) of the private pay group (n=18) marked one or more of the examples. Four of the most commonly marked examples (I moved to a new address, my husband or partner lost his job, I argued with my husband or partner more than usual, I had a lot of bills I couldn't pay) were associated with two participants in the Medicaid group (n=14) with an EPDS score greater than 13, indicating a depressive illness.

*Are depression rates higher during the postpartum period in women who do not report positive intent of pregnancy?*

There were two participants with total EPDS scores of 13 or greater in the Time 1 survey. Of these two individuals, one reported "I was trying to get pregnant," and the other reports "I wasn't trying to get pregnant or trying to keep from getting pregnant." For the Time 2 survey, there was one participant with an EPDS score of 13 or greater and they indicated "I wasn't trying to get pregnant or trying to keep from getting pregnant." For the participants with total EPDS scores less than 13 during the postpartum period, 39% stated "I was trying to get pregnant", 39% stated "I wasn't trying to get pregnant or trying to keep from getting pregnant," 15% stated "I was trying to keep from getting pregnant but was not trying very hard," and seven percent stated "I was trying hard to keep from getting pregnant."

*Are reported physical problems before and during the prenatal period related to an increased incidence of postpartum depression?*

Six of the 26 participants answered yes to one or more of the examples of physical problems before pregnancy on the Time 1 PRAMS item 25. Two of these participants were among the public pay group while the other four were from the private pay group. Nine participants answered yes to one or more of the examples of physical problems during pregnancy on the Time 3 PRAMS item seven (n=18). Five of the participants with physical problems had Medicaid and the other four were covered by private pay. EPDS scores at Time 1 and Time 2 of 13 or greater, indicating a depressive illness, were evident in one participant from the private pay group at two weeks and two months postpartum.

## DISCUSSION

At this point in the study, in order to most appropriately discuss the identified research questions, statistical frequencies were used rather than correlative statistics. Conclusions were drawn from the data based on frequencies from the private pay and Medicaid groups. Due to the small and varying sample size during the ongoing study, no correlations were conducted between factors or variables under investigation.

Maternal reports of stress and depression throughout the perinatal period between publicly and privately insured women were compared in the first research question. The mean PSS scores showed that at enrollment, 34 weeks gestation, and two weeks postpartum the public pay group reported higher perceptions of stress than the private pay group. Publicly insured women also reported higher average prenatal depression scores than their privately insured counterparts. The first CES-D at enrollment showed seven participants scoring greater than 16. The Time 2 CES-D showed five participants with a score greater than 16, indicating a likelihood of depression or depressive symptoms. However, of the first seven, three were public pay and four were private pay. In the Time 2 CES-D there were two in the public pay group and three in the private pay group. The EPDS means scores were higher in the public pay group at two weeks postpartum and higher in the

private pay group at two months postpartum. A score of 13 or greater was found once in each group at two weeks postpartum and only once in the private pay group at two months postpartum. The reports of increased stress throughout pregnancy and postpartum period among women of lower socio-economic status follow the current literature findings. However, the public pay group demonstrated an increased incidence of perinatal depression. With the limited number of response sets, no conclusive statements can be made at this time regarding increased rates of depression between the two groups.

Sufficient social support can promote healthy pregnancies, but social stressors or social conflict can possibly impair the entire perinatal period. In evaluations of social support and social conflict before or during pregnancy, a higher percentage of women with Medicaid marked one or more phrases describing negative social events when compared to those in the private pay group. Two of the four participants reporting incidences of decreased social support or social conflict scored 13 or greater on the EPDS, indicating a possible depressive illness. These findings support the literature stating that social interactions and conflict and the individual's response to these situations can trigger depression (Westdahl et al., 2007).

Unintended pregnancy is described as one of many predictors of perinatal depression according to Suppaseemanont (2006). The third research question investigated maternal reports of the intent of pregnancy related to total EPDS scores. No conclusive statements regarding whether a relationship exists between these factors can be made at this time due to the small response sets that were received. The highest percentage of women in the study did report either they were trying to get pregnant or that they were not trying to keep from getting pregnant. The two participants who had EPDS scores indicative of a depressive illness fell into these two response categories. Also, women who reported they were trying to keep from getting pregnant did not score 13 or above on the EPDS.

Physical problems before and during pregnancy can influence the well-being of the mother and fetus, as well as trigger postpartum depression (Watson, 2006). The final research question investigated reported physical problems before and during the prenatal period and the relation to postpartum depression. Before pregnancy, 23% (n=26) of the participants reported at least one or more physical problems (asthma, hypertension, diabetes, etc.) and there was a higher incidence within the private pay group. When assessed during pregnancy, 50% (n=18) of the participants reported at least one physical problem (vaginal bleeding, preeclampsia, cervix or placenta problems, premature labor, etc.) and there was a higher incidence among the Medicaid group. Only one participant (private pay) was linked to an EPDS score indicating a depressive disorder and also indicated physical problems before and during pregnancy. These data do not allow any conclusions to be made regarding increased depression related to physical problems. Interestingly, the participant who did have a depressive illness score and physical problems reported multiple physical problems before and during pregnancy and scored far above the lower limit of 13 on the EPDS.

None of the recruitment sites that are included in the study screen prenatally for depression beyond the standard “yes” or “no” question regarding a history of mental health illness. Also, a formal depression screening tool specific to the postpartum period is not used in most settings. The literature supports this finding that there is a low incidence of screening for perinatal depression and the identification of risk factors is not a collective priority.

### *Limitations*

Data are still being gathered for the larger on-going pilot study, which hindered the analysis of specific research questions. Findings and trends cannot be generalized for a general population at this time. Due to the small number of participants currently enrolled, as well as the number of participants at different survey points in the study, enrollment and recruitment has been the most

challenging factor thus far in the study. Through the process a fourth site has been added, and research team members have gone on-site to recruit and speak with candidates who qualify. Recruitment guidelines (Appendix F) have helped to guide members of the research team in subject recruitment. Also, the participant inclusion criterion has been expanded as the study progressed. The number of gestational weeks at enrollment was increased from 18 weeks to less than 21 weeks to be eligible for the study. Lastly, due to the loss of surveys and decreased return rate when mailing surveys four times during the perinatal period, the process was switched almost completely to phone surveys. The completion of enrollment and data collection in the larger pilot study will offer more conclusive results.

## CONCLUSION

A substantial amount of women are affected by postpartum depression and there is a high degree of impairment associated with the disorder. Depression before, during and after pregnancy, as well as stress, can negatively impact the health and function of the mother, infant, and family. Provider understanding and early identification of prenatal risks are needed to improve earlier recognition and begin effective treatment for postpartum depression. The purpose of this study was to investigate the prevalence of perinatal maternal risk factors, perceived stress, and depression, in relation to postpartum depression among privately and publicly insured groups of women. Current literature supports a relationship between low economic status and higher incidences of stress and depression. This study examined the connection between stress, depression, and different socioeconomic classes. Do all classes of women suffer equally from depression in the perinatal period? In this study the mean scores for stress indicated that the lower socioeconomic group perceived more events as stressful. In regards to prenatal and postpartum depression, the data did not predict a specific class with higher incidences of depression and the mean scores varied among both groups. This may indicate that depression has an equal prevalence

among all classes. Publicly and privately insured women do have differences in access to health care, and those on Medicaid are likely slower to enter the system. All childbearing women should be screened, but women of a lower socio-economic class with increased risk factors may need to be screened earlier to limit potential negative outcomes associated with depression. Although prenatal screening is not currently mandated and improvement is needed in regards to postpartum screening, there are several accurate and feasible screening tools available. Quick, frequent screening throughout the antepartum and postpartum period is a cost-effective and efficient way to identify pregnant and postpartum women who are struggling with depression, depressive symptoms, or pertinent risk factors for depression.

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## APPENDIX A

*Perceived Stress Scale (PSS)*

Instructions: The questions in this scale ask you about your feelings and thoughts during the last month. In each case, please indicate with a check how often you felt or thought a certain way.

1. In the last month, how often have you been upset because of something that happened unexpectedly?

0=never 1=almost never 2=sometimes 3=fairly often 4=very often

2. In the last month, how often have you felt that you were unable to control the important things in your life?

0=never 1=almost never 2=sometimes 3=fairly often 4=very often

3. In the last month, how often have you felt nervous and "stressed"?

0=never 1=almost never 2=sometimes 3=fairly often 4=very often

4. In the last month, how often have you felt confident about your ability to handle your personal problems?

0=never 1=almost never 2=sometimes 3=fairly often 4=very often

5. In the last month, how often have you felt that things were going your way?

0=never 1=almost never 2=sometimes 3=fairly often 4=very often

6. In the last month, how often have you found that you could not cope with all the things that you had to do?

0=never 1=almost never 2=sometimes 3=fairly often 4=very often

7. In the last month, how often have you been able to control irritations in your life?

0=never 1=almost never 2=sometimes 3=fairly often 4=very often



8. In the last month, how often have you felt that you were on top of things?

\_\_0=never \_\_1=almost never \_\_2=sometimes \_\_3=fairly often \_\_4=very often

9. In the last month, how often have you been angered because of things that were outside of your control?

\_\_0=never \_\_1=almost never \_\_2=sometimes \_\_3=fairly often \_\_4=very often

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

\_\_0=never \_\_1=almost never \_\_2=sometimes \_\_3=fairly often \_\_4=very often

APPENDIX B

*CES- Depression Scale*

INSTRUCTIONS: Using the scale below, please circle the number before each statement which best describes how often you felt or behaved this way **DURING THE PAST WEEK:**

**1 = Rarely or none of the time (< 1 day)**

**2 = Some or a little of the time (1-2 days)**

**3 = Occasionally or a moderate amount of time (3-4 days)**

**4 = Most or all of the time (5-7 days)**

DURING THE PAST WEEK:

1 2 3 4 I was bothered by things that usually don't bother me.

1 2 3 4 I did not feel like eating; my appetite was poor.

1 2 3 4 I felt that I could not shake off the blues even with help from my family or friends.

1 2 3 4 I felt that I was just as good as other people.

1 2 3 4 I had trouble keeping my mind on what I was doing.

1 2 3 4 I felt depressed.

1 2 3 4 I felt that everything I did was an effort.

1 2 3 4 I felt hopeful about the future.

1 2 3 4 I thought my life had been a failure.

- 1 2 3 4 I felt fearful.
- 1 2 3 4 My sleep was restless.
- 1 2 3 4 I was happy.
- 1 2 3 4 I talked less than usual.
- 1 2 3 4 I felt lonely.
- 1 2 3 4 People were unfriendly.
- 1 2 3 4 I enjoyed life.
- 1 2 3 4 I had crying spells.
- 1 2 3 4 I felt sad.
- 1 2 3 4 I felt that people dislike me.
- 1 2 3 4 I could not "get going."

APPENDIX C

*CDC Pregnancy Risk Assessment Monitoring System*

(PRAMS) Questionnaire

Time 1: Enrollment

1. Do you have a telephone in your home that has been working (in service) for the past month? \_\_\_\_
2. Are you residing at the residence where you have lived for the past month? \_\_\_\_
3. Just before you got pregnant, did you have health insurance? \_\_\_\_
4. Just before you got pregnant, were you on Medicaid? \_\_\_\_
5. If attempting, did you have any problems getting Medicaid during this pregnancy?

Yes    No    Not applicable

6. When did your health care coverage begin? (Whether privately insured or on Medicaid)  
\_\_\_\_\_
7. Before you got pregnant with your baby, did you ever have any other babies who were born alive? \_\_\_\_
8. Did the baby born previously weigh 5 pounds, 8 ounces or less at birth? \_\_\_\_
9. Was the baby born previously more than 3 weeks before its due date? \_\_\_\_
10. How many months were you pregnant with this pregnancy when you were sure you were pregnant? \_\_\_\_
11. Which of the following statements best describes you during the 3 months before you got pregnant?

I was trying to get pregnant

I wasn't trying to get pregnant or trying to keep from getting pregnant

I was trying to keep from getting pregnant but was not trying very hard

I was trying hard to keep from getting pregnant

12. Are you currently in school or working outside the home? \_\_\_\_

13. How would you describe the time during this pregnancy?

One of the happiest times of my life

A happy time with a few problems

A moderately hard time

A very hard time

One of the worst times of my life

14. How many months pregnant were you when you had your first visit for prenatal care?  
(Do not count a visit that was only for a pregnancy test or only for WIC  
supplemental) \_\_\_\_

15. Did you get prenatal care as early in your pregnancy as you wanted? \_\_\_\_

16. The following is a list of problems some women can have getting prenatal care. For each  
item, say YES if it was a problem during this pregnancy, or NO if it was not a  
problem:

a. I couldn't get an appointment when I wanted one. \_\_\_\_

b. I didn't have enough money or insurance to pay for my visits. \_\_\_\_

c. I had no way to get to the clinic or doctor's office. \_\_\_\_

d. I couldn't take time off from work. \_\_\_\_

e. The doctor/midwife or my health plan would not start care as early as I wanted.  
\_\_\_\_

f. I didn't have my Medicaid card. \_\_\_\_

g. I had no one to take care of my children. \_\_\_\_

h. I had too many other things going on. \_\_\_\_

i. I didn't want anyone to know I was pregnant. \_\_\_\_

17. How is your prenatal care paid for?

a. Medicaid

b. Private Health Insurance

18. Are you enrolled in WIC (Nutrition Program for Pregnant Women)? \_\_\_\_

19. In the 3 months before you got pregnant, how many cigarettes did you smoke in an average day? (A pack has 20 cigarettes)

41 or more

21-40

11-20

6-10

1-5

Less than 1

None

20. How many cigarettes do you smoke in an average day now?

41 or more

21-40

11-20

6-10

1-5

Less than 1

None

21. During the three months before you got pregnant, how many alcoholic drinks did you have in an average week?

14 drinks or more/week

7-13 drinks/week

4-6 drinks/week

1-3 drinks/week

Less than 1 drink/week

I didn't drink then

22. How many drinks do you have on an average day now?

14 drinks or more/week

7-13 drinks/week

4-6 drinks/week

1-3 drinks/week

Less than 1 drink/week

None

23. Have you ever heard or read that taking the vitamin folic acid can help prevent some birth defects? \_\_\_\_

24. How many times a week are you taking a multivitamin or prenatal vitamin?

I do not take a multivitamin or prenatal vitamin

1-3 times a week

4-6 times a week

Every day of the week

25. During the 3 months before you got pregnant with this baby, did you have any of the following?

Asthma

High blood pressure (hypertension)

High blood sugar (diabetes)

Anemia (poor blood, low iron)

Heart problems

Epilepsy or seizures



26. At any time with a previous pregnancy did a doctor, nurse, or other health care worker diagnose you with depression or provide you prescription medication for depression? \_\_\_\_

APPENDIX D

*CDC Pregnancy Risk Assessment Monitoring System*

(PRAMS) Questionnaire

Time 3: 2 weeks postpartum

1. Was the baby born more than 3 weeks before the due date (Yes or No)? \_\_\_\_

2. How was your baby delivered? Vaginal or Cesarean

3. Were there any complications during labor or birth?

Cesarean section

Forceps or vacuum extraction

Other: \_\_\_\_\_

4. Did the baby weigh 5 pounds and 8 ounces or less at birth (Yes or No)? \_\_\_\_

5. Did the baby have to be admitted to the NICU (Yes or No)? \_\_\_\_

6. Did you have to be readmitted to the hospital after initial discharge (Yes or No)? \_\_\_\_

7. Did you have any of these problems during the pregnancy (Yes or No to each of following)?

High blood sugar (diabetes) that started before the pregnancy \_\_\_\_

High blood sugar (diabetes) that started after the pregnancy \_\_\_\_

Vaginal bleeding \_\_\_\_

Kidney or bladder or UTI infection \_\_\_\_

Severe nausea, vomiting or dehydration \_\_\_\_

Cervix had to be sewn shut (incompetent cervix) \_\_\_\_

High blood pressure, hypertension (including PIH, preeclampsia, eclampsia) \_\_\_\_

Problems with the placenta (abruption or previa) \_\_\_\_

Labor pains more than 3 weeks before my baby was due (preterm or early labor)  
\_\_\_\_

Water broke more than 3 weeks before the baby was due (PROM) \_\_\_\_

I had to have a blood transfusion \_\_\_\_

I was hurt in a car accident \_\_\_\_

8. Did you do any of the following things because of these problems (Yes or No to each)?

I went to the hospital emergency room and stayed < 1 day \_\_\_\_

I went to the hospital and stayed 1-7 days \_\_\_\_

I went to the hospital and stayed > 7 days \_\_\_\_

I stayed in bed at home more than 2 days because of medical advice \_\_\_\_

9. Pregnancy can be a difficult time for some women. The next questions are about things that may have happened before or during the pregnancy. (For each item indicate Yes or No):

A close family member was very sick and had to go to the hospital \_\_\_\_

I got separated or divorced from my husband or partner \_\_\_\_

I moved to a new address \_\_\_\_

I was homeless \_\_\_\_

My husband or partner lost his job \_\_\_\_

I lost my job even though I wanted to go on working \_\_\_\_

I argued with my husband or partner more than usual \_\_\_\_

My husband or partner said he didn't want me to be pregnant \_\_\_\_

I had a lot of bills I couldn't pay \_\_\_\_

I was in a physical fight \_\_\_\_

My husband or partner or I went to jail \_\_\_\_

Someone very close to me had a bad problem with drinking or drugs \_\_\_\_

Someone very close to me died \_\_\_\_

10. During the pregnancy (over last twelve months) did someone push, hit, slap, kick, choke, or physically hurt you (Yes or No)? \_\_\_\_

11. How was your delivery paid for?

Medicaid

Personal income

Health Insurance (Private)

12. After your baby was born was he or she put in an intensive care unit (Yes or No)? \_\_\_\_

13. After your baby was born how long did he or she stay in the hospital?

Less than 24 hours

24-48 hours

3 days

4 days

5 days

6 days or more

My baby was not born in a hospital

My baby is still in the hospital

14. What type of insurance does the baby have?

Private

State Medicaid (CHIP)

None

15. Did you ever breastfeed or pump breast milk to feed your new baby after delivery (Yes or No)? \_\_\_\_

16. Were you breastfeeding or pumping breast milk at discharge from the hospital (Yes or No)? \_\_\_\_

17. Are you still breastfeeding or feeding pumped milk to your new baby (Yes or No)? \_\_\_\_

18. Are you currently in school or working outside the home (Yes or No)? \_\_\_\_
19. Since your baby was born have you sought help for depression from a doctor, nurse or other health care worker?
20. During the pregnancy did you ever eat less than you felt you should because there was not enough money to buy food?
21. During the pregnancy and now, how often do you feel unsafe in the neighborhood where you live?
- Always
- Often
- Sometimes
- Rarely
- Never
22. At any time during the pregnancy or after delivery did a doctor, nurse, or other health care worker talk with you about “baby blues” or postpartum depression?
23. At any time during the pregnancy or after delivery did a doctor, nurse, or other health care worker *diagnose* you with depression?
24. Since your new baby was born did you seek help for depression from a doctor, nurse, or other health care worker?
25. At any time during your most recent pregnancy did you get counseling or take prescription drugs for your depression?
26. We would like to know how you felt about the prenatal care you got during your most recent pregnancy. If you went to more than one place for prenatal care, answer for the place where you got *most* of your care. For each item answer YES if you were satisfied and NO if you were not satisfied. Were you satisfied with:
- The amount of time you had to wait after you arrived for your visits
- The amount of time the doctor or health care provider spent with you during visits
- The advice you got on how to take care of yourself

The understanding and respect that the staff showed toward you as a person

27. During any of your prenatal care visits did a doctor, nurse or health care worker ask you any of the following:

If you:

Smoked cigarettes

Drank alcoholic beverages

Were being hurt emotionally or physically by someone

Used illegal drugs

Wanted to be tested for HIV/AIDS

Planned to use birth control after your baby was born

Wanted to learn about breastfeeding your newborn

28. During the most recent pregnancy, did you get any of these services?

Childbirth classes

Parenting classes

Classes on how to stop smoking

Visits to your home by a nurse or other health care worker

Food stamps

WIC

TANF (Temporary Assistance for Needy Families or welfare)

Other programs (please describe)





APPENDIX E

*Edinburgh Post Natal Depression Scale (EPDS)*

As you have recently had a baby, we would like to know how you are feeling. Please circle 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 -

As much as I always could

Not quite so much now

Definitely not so much now

Not at all

2. I have looked forward with enjoyment to things -

As much as I ever did

Rather less than I used to

Definitely less than I used to

Hardly at all

3. I have blamed myself unnecessarily when things went wrong -

Yes, most of the time

Yes, some of the time

Not very often

No, never

4. I have been anxious or worried for no good reason -

No, not at all

Hardly ever

Yes, sometimes

Yes, very often

5. I have felt scared or panicky for no good reason -

Yes, quite a lot

Yes, sometimes

No, not much

No, not at all

6. Things have been getting on top of me -

Yes, most of the time I haven't been able to cope at all

Yes, sometimes I haven't been coping as well as usual

No, most of the time I have coped quite well

No, I have been coping as well as ever

7. I have been so unhappy that I have had difficulty sleeping -

Yes, most of the time

Yes, sometimes

Not very often

No, not at all

8. I have felt sad or miserable -

Yes, most of the time

Yes, quite often

Not very often

No, not at all

9. I have been so unhappy that I have been crying -

Yes, most of the time

Yes, quite often

Only occasionally

No, never

10. The thought of harming myself has occurred to me -

Yes, quite often

Sometimes

Hardly ever

Never

## APPENDIX F

### *Perinatal Stress Study*

#### Consent Process for Research Team Members

This outline is for those team members who will be assisting in the consenting process at Woman's Care OB/GYN offices and Sage Femme Birth Center.

1. The health care provider must first query their patients as to interest in this study on stress in the perinatal period (prior to 18 weeks gestation through 2 months postpartum)
2. Once the provider has disclosed patient interest in the study, the patient must sign the *Authorization for Release of Information for Research Recruitment* form. This provides the phone contacts and address of the potential participant.
3. If a research team member is on-site, the patient may discuss with the team member their consent to participate. This includes the following steps:
  - a. Introduce briefly the study
  - b. Provide the Consent Form to read
  - c. Ask if the patient understands the study and whether they have any questions
  - d. Remind them that the study is voluntary and they can withdraw at any time without repercussions in their maternity health care.
  - e. If they want to participate they need to sign, along with the research team member the appropriate spaces. DO NOT sign in the Principal Investigator space.

- f. **The consent form must be returned to the Research Office where the consent will be signed by the PI and copied, and then a copy will be mailed to the participant.**
4. After consent please provide the participant the self-addressed, stamped envelope that contains the following: Demographic Data Form, PRAMS Time 1, Perceived Stress Scale, CES Depression Scale, and the Perinatal Stress and Depression Resource List. Advise the participant that it will take approximately 30 minutes to complete all surveys.

**Surveys will be by assigned numeric codes so patient names will NOT appear.**

5. Request completion of the surveys and return in the mail within 24 hours.
6. **Ask and record** if they would like to continue surveys through mailings, or through personal phone calls at 34 weeks, 2 weeks post partum and 2 months post partum.
7. Remind participants they will receive a \$20 Target gift certificate after completing Time 2 (at 34 weeks), and a second \$20 gift certificate after completing Time 4 (at 2 months post partum).
8. THANK them for assisting in advancing research and understanding of how stress in pregnancy may affect health of mothers and babies, and to let us know anytime if they want to leave the study, or have a change of contact information.