

SCREENING FOR MENTAL HEALTH CONCERNS ACROSS PREGNANCY : FACTORS  
ASSOCIATED WITH DEPRESSION AND ANXIETY SYMPTOMS IN A LARGE OBGYN  
CLINIC

By  
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## ABSTRACT

Depression and anxiety are prevalent among pregnant women, however, mental health continues to be a portion of care neglected in the obstetric setting. Depression is often thought of as a disorder that leads to a persistent feeling of sadness. Anxiety is characterized by excessive fear and worry. Because of the many changes occurring throughout pregnancy, both physically and emotionally, it is not uncommon for pregnant women to struggle with depression, anxiety, or both. Previous studies have found that there are many factors associated with depression and anxiety throughout pregnancy. This study focuses on the relationship between age, gravida, and social support with levels of depression and anxiety among pregnant women.

The participants were pregnant women from the northern Mississippi area (N=502, 77.1% White, 19.6% African American, 1.4% Asian, 0.2% Native American, and 1.6% multiracial) ages 18 to 45. When the women arrived at the OBGYN of Tupelo, they were approached and asked if they were willing to participate in a study observing changes throughout pregnancy. If they consented, women were given the demographic questionnaire and packet of measures, including the Depression, Anxiety, and Stress Scale21 (DASS-21; Lovibond et al., 1995); DASS-21 and Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, Sagovsky, 1987).

The results showed that there was a negative correlation between maternal age and depression, as well as maternal age and anxiety, supporting the hypothesis. It was also found that married pregnant women, serving as an estimate for social support, were less likely to experience depression than non-married pregnant women; while no significant association was found between social support and anxiety. Lastly, there was no association found between gravida and depression and a negative correlation between gravida and anxiety.

Overall, the findings in this study were consistent with that of previous findings, with some variability in the gravida factor. The results showing the prevalence of depression and anxiety in pregnant women display the importance for mental health screening in every medical practice, but especially obstetrics.

## TABLE OF CONTENTS

ACKNOWLEDGMENTS.....	iii
ABSTRACT.....	iv
INTRODUCTION.....	1
METHODOLOGY.....	15
RESULTS.....	17
DISCUSSION.....	19
REFERENCES.....	26

## LIST OF TABLES

Table 1. Correlation Analysis Summary

Table 2. Means and Standard Deviations of Married vs. Non- married group symptoms

## **Introduction**

### ***1. Pregnancy***

#### *1.1 Pregnancy Definition*

Pregnancy is defined as having a developing embryo or fetus in the body (Davidson, Bennington, 2013). For humans, a full-term pregnancy lasts approximately forty weeks, or roughly nine calendar months (Davidson, Bennington, 2013). Each month of the pregnancy consists of a different milestone that the fetus and mother reach, such as observing a fetus heartbeat or identifying recognizable features. These milestones are typically categorized into a total of three trimesters that occur throughout the pregnancy term. The first trimester is conception through week thirteen, the second trimester is week fourteen through twenty-seven, and the third trimester is week twenty-seven through forty.

During the first trimester of pregnancy, the baby's organs and body structure develop. This is also the time that the mother goes through many physical changes as well, such as nausea, breast tenderness, fatigue, and other pregnancy symptoms. The first trimester is the most common trimester for miscarriages to occur. The mother will usually feel relief from most pregnancy symptoms in trimester two and she will also feel her baby beginning to make movements. As she makes it to trimester three, the uterus will increase in size, causing symptoms such as urinary incontinence, hemorrhoids, and shortness of breath (Pregnancy The Three Trimesters, 2019).

### *1.2 Pregnancy Prevalence*

The rates of pregnancy in the United States have decreased about 10% since the 1990s, hitting a record low in 2009 (Curtin, et al., 2013). In 1990, 11.6% of women ages 15-44 were pregnant, while in 2009, it was only measured to be 10.2%. It is possible that the economic decline occurring in 2007 is one explanation for this reduction. For teenagers specifically, a likely explanation is that use of contraceptives became more available and commonly used. In 2009, there was an estimated 6,369,000 women pregnant, with 4,131,000 live births, 1,152,000 induced abortions, and 1,087,000 fetal losses in the United States (Curtin, et al., 2013).

### *1.3 Pregnancy in Mississippi*

In 2016, there were 37,928 total births in the state of Mississippi (National Vital Statistics, 2018). These pregnancies were primarily of the Caucasian and African American race, with 19,411 and 15,879 births, respectively (National Vital Statistics, 2018). In 2005, the number of women per 1000 that were pregnant in Mississippi was 67.8, with the number rising in 2007 to 76.9, and in 2015 it was lower again to 64 women per 1000 (National Center for Health Statistics, 2019). In 2015, out of the 599,445 women at childbearing age (15-44), there were 38,394 live births in the state of Mississippi (National Center for Health Statistics, 2019). This means that 6.4% of women of childbearing age gave birth to a child during the year of 2015.

A study performed by Fan (2009) observed the hormonal changes that occurred throughout pregnancy, as well as their effect on psychological distress in women in two teaching hospitals in China. Finding that estradiol and progesterone levels increased



substantially in the first trimester and remained stable in the following trimesters, the researchers sought to find a correlation between the hormonal fluctuations and mental changes. The researchers found that progesterone and estradiol levels were positively correlated with levels of depression, while cortisol levels were positively correlated with anxiety (Fan et al., 2009). After further analyses, the authors found that there was a significant correlation between estradiol levels and depression incidence in the first trimester, and progesterone levels and depression postpartum (Fan et al., 2009).

The relationship between hormone changes throughout pregnancy and incidence of depression and anxiety means that nearly 40,000 women in Mississippi in 2015 were at a higher risk for depression and anxiety solely because of being pregnant.

Whether induced by hormones or not, the fetus is put at a higher risk for negative outcomes when the mother experiences psychological distress. Increased exposure to maternal cortisol (one of the hormones that increases during pregnancy and also associated with anxiety), can reduce birth weight, cause hyperglycemia, hypertension, and increased anxiety-related behavior (Harris, Seckl, 2011). A study performed with the Avon Longitudinal Study of Parents and Children, found that if pregnant mothers were in the top 15% of severity of anxiety symptoms, their children showed higher rates of behavioral and emotional problems later in life (O'Connor, et al., 2003). The increased issues in the children were observed all the way through seven years of age, showing that the stress in a mother affects her child into middle childhood (O'Connor, et al., 2003).

Because of the increased risk of negative birth outcomes and psychological problems for the child later on in life, mental health during pregnancy is a large issue that

needs attention and action. In Mississippi, an estimated 40,000 women each year are enduring physical, hormonal, and emotional changes that take a toll on their mental health, thus putting them and their child at risk.

## ***2. Depression***

### *2.1 - Major Depressive Disorder*

Major Depressive Disorder (MDD) is a psychiatric condition defined as a mood disorder that leads to a persistent feeling of sadness (American Psychiatric Association, 2013). More specifically, to meet criteria for a clinical diagnosis of major depressive disorder, an individual must report experiencing low mood most of the day, nearly every day and/or loss of interest in previously enjoyed activities for a period of two weeks. In addition to these criteria, four or more of the following must be reported: disturbed sleep, guilt or worthlessness, decreased energy, concentration deficit, change in appetite, psychomotor retardation or agitation, and suicidality (Lam, 2018).

A comprehensive presentation of depression includes symptoms that can be physical, emotional, and/or cognitive (Lam, 2018). Low mood is one of the most common symptoms, and can be described as feeling sad or upset often times with seemingly no known cause. A change in appetite is also commonly seen in those with depression. Often patients lose their appetite but some patients also eat out of the need for comfort, which can result in weight gain and further insecurities (Lam, 2018). Further, people with

depression often lose interest in activities that they normally enjoy. This can include a loss of sexual desire as well (Lam, 2018).

Terminal and middle insomnia are often seen in depressed patients. Terminal insomnia causes early awakenings and difficulty returning to sleep, while middle insomnia is waking up frequently throughout the night. Patients who experience any form of insomnia tend to feel mentally, physically, and emotionally drained (Lam, 2018). In fact, mental or emotional fatigue is another symptom of depression. Extreme forms of fatigue can lead to the inability to perform simple tasks and many patients describe that it feels impossible to get out of bed (Lam, 2018). Guilt is an emotion commonly felt with depression and patients often feel guilty or worthless, causing other symptoms such as low mood to plummet further. Additionally, concentration levels are often lower during depression which can impair patient's work or function (Lam, 2018). This vast number of symptoms ultimately leads to a pervasive disorder that impacts many, specifically, women (Noble, 2005).

One in seven individuals will at some point in their life experience a depressive episode (Lam, 2018). The lifetime prevalence rate of major depressive disorder in the U.S. is 16.2%, indicating that approximately 33 million Americans will experience a major depressive episode at some point in their life (News, 2003). Additionally, the lifetime prevalence of depression for women is nearly double that of men, with women having a lifetime prevalence of 21.3% and men 12.7% (Noble, 2005).

This large gap between women and men prevalence rates could be due to a variety of factors however, research supports that the most likely explanations include hormonal fluctuations, biological predisposition, and genetic vulnerability (Noble, 2005). The

largest contributor has been shown to be hormonal fluctuations, as it has been found that 20-40% of women report experiencing issues preceding menstruation such as depressed mood, irritability, anxiety, and emotional lability (Noble, 2005). Menstruation is not the only time that women experience these mood fluctuations due to hormones. This symptom is shown to occur during pregnancy, postpartum, and menopause (Noble, 2005). The multiple occurrences of hormonal changes in a woman's lifetime supports the larger lifetime prevalence rate. Social factors may also play a role in depression among women. One study, by Hussain (2010), observed a community-based sample of 101 women who reported feelings of depression and found that there were common difficulties reported. Specifically, these problems included: troubles with a partner or significant other, problems with work or studies, problems with herself, and worries about other family members (Hussain, 2010).

The 33 million American men and women that will experience depression at some point in their lifetime show the need for a deeper understanding of this mental illness. Not only that, but with the prevalence for depression in women being almost double that of depression in men, help is strongly desired.

## *2.2 Depression in Pregnancy*

More recently, there has been a focus on understanding the experience of major depressive disorder in pregnancy. Castro et al. (2015) followed women throughout their pregnancy experience and found that 17.34% of women had major depressive symptoms during their second trimester of pregnancy. Such symptoms were measured via the Beck Depression Inventory (BDI) and the Edinburgh Postnatal Depression Scale (EPDS). It

was also found that 31.98% of the women met the qualifications for lifetime major depression, suggesting that the depressive symptoms may not be restricted to the pregnancy or time of the study (Castro et al., 2015). Another study using a sample of women in Jamaica at a hospital-based OB clinic used the EPDS to measure self-reports of depression (Pottinger, 2009). The researchers found that 25% of the pregnant women endorsed symptoms of depression persistent enough to be diagnosed with a depressive disorder, and over half of the participants self-reported feelings of depression at some point throughout their pregnancy (Pottinger, 2009). These findings suggest that depression is a pervasive mental disorder seen in pregnant patients.

Additionally, in a study assessing the association between antenatal and postnatal depression and how this impacted offspring, results indicated that 70% of the pregnant women sampled reported depressive symptoms throughout pregnancy (Pearson, 2013). However, it was interesting to note that most women reported not seeking treatment due to fear that it would harm their baby (Pearson, 2013). This is a concerning finding given that not seeking treatment can actually place their babies at a higher risk for negative outcomes. For example, children of antenatally depressed mothers are at a 1.28 higher risk of becoming diagnosed with depression as an adult than those without depressed mothers (Pearson, 2013). Aside from the long-term effects that untreated parental depression might have on the child, there are many more immediate risks that are probable when a pregnant mother is not treated for depression. For example, a study performed by Hede-gaard, Henrikson, Sabroe, and Secher (1993) found that psychological distress such as depression was related to preterm birth. This study was conducted among a large sample size of 5459 women in Denmark at a maternity care center. Using a general health

questionnaire, researchers found that in the 30<sup>th</sup> week of pregnancy, psychological distress was strongly associated with preterm birth (Hedegaard, et al., 1993). Another study observing depressed mood among 922 pregnant women and birth weights of their children, found that those with self-reported measures of depressive symptoms using the Centers for Epidemiologic Studies Depression Scale were three times more likely to give birth to an infant of low birth weight at a weight less than 2,500 grams (i.e. normal range is between 2,500-4,500 grams; Liu, 2012). Therefore, the prevalence of depression during pregnancy should not be overlooked.

### ***3. Anxiety***

#### *3.1 Generalized Anxiety Disorder*

The DSM-5 defines Generalized Anxiety Disorder as excessive anxiety and worry about a number of activities (American Psychiatric Association, 2013). For Generalized Anxiety disorder (GAD) to be diagnosed, one must report a persistent, irrational worry that impairs social, occupational, or other aspects of functional life. Moreover, the specific criteria for being diagnosed with GAD includes an excessive fear and worry more days than not for at least 6 months, during various activities. The person must also report difficulty controlling their worry. Furthermore, in addition to the uncontrollable worry, the individual also needs to report experiencing at least three of the following characteristics: restlessness, easily fatigued, difficulty concentrating, muscle tension, irritability, or sleep troubles. These symptoms must cause significant distress or impairment in important areas of function and must not be due to another substance or different disorder (Ghinassi,

2010). The prevalence of generalized anxiety disorder in the U.S. is 9.0% being the life-time morbid risk and 2.0% for 12-month prevalence, with females being twice as likely to be diagnosed than males (Kessler, et al., 2012).

### *3.2 Anxiety in pregnancy*

While women are more likely to be diagnosed with anxiety than men, pregnant women are at an even higher risk. Symptoms of anxiety are often seen in pregnant women for various reasons. Silva, Nogueira, Clapis, and Leite (2017) conducted a study in the primary health care department of a Brazilian hospital and observed 209 pregnant women at random. They found that 26.8% of women reported symptoms of anxiety as assessed by the Hospital Anxiety Subscale, and a demographic questionnaire obtaining information about socioeconomic characterization, gestational anamnesis, life-changing events, pre-existing conditions, and interpersonal relationships. Additionally, it was also found that anxiety was more frequent in the third trimester (Silva et al, 2017). This could be due to the many stressful factors that occur during pregnancy, specifically towards the end. Concerns for the many complications that could occur, the stress of taking care of a child, and the fear of childbirth itself are just a few of the many examples that cloud a woman's mind and lead to feelings of anxiety (Silva, et al., 2017).

A study conducted in Malaysia was specifically concerned with risk factors of anxiety and depression in pregnant women. In order to collect data, author Fadzil (2013) began a cross-sectional study over a three-month period at an antenatal clinic. Women at all stages of pregnancy were interviewed and the Hospital Anxiety and Depression Scale

(HADS) was used to screen for anxiety and depression. This measure only detects depressive and anxiety symptoms and cannot fully diagnose a patient. Upon completion of the project, it was found that 23.4% of the women displayed abnormal symptoms of anxiety. Patients scoring high on the HADS (>8) were then referred to an interviewer to complete a Mini International Neuropsychiatric Interview (M.I.N.I), a measure used to diagnose anxiety disorders. It was found that 9.1% of pregnant women displayed symptoms pervasive enough to be diagnosed with an anxiety disorder (Fadzil, et al., 2013). As research continues to establish a link between pregnancy and anxiety symptoms, more research specifically screening for and assessing such concerns are warranted.

#### ***4. Associated factors in pregnancy***

##### *4.1 - Social support*

A factor considered to be protective during pregnancy is social support. Social support is defined as a voluntary act from one individual to another, resulting in a positive response from the recipient (Hupcey, 1998). Social support, such as close relationships with loved ones, can often counteract the effects of depression (Spoozak, et al., 2009). Specifically, a study conducted by Spoozak et al. (2009) collected data from pregnant women in Connecticut and Western Massachusetts recruited from OB and psychiatric settings. In this study, women were interviewed in person during the first half of their pregnancy and interviewed over the phone at week 28 of gestation. The Composite International Diagnostic Index (CIDI) and the Post Traumatic Stress Disorder Symptom Scale-Self-Report were used to screen for depression, anxiety, and stress (Spoozak, et al., 2009). Using the Modified Kendler Social Support Interview (MKSSI), a questionnaire



of 27 questions covering relationships, the study found that women with higher levels of social support from family, spouse, friends and other relatives showed a significantly lower level of depression as assessed by the CIDI (Spoozak, et al., 2009). Additionally, a literature analysis found that social support is strongly, negatively correlated with depression and anxiety during pregnancy (Biaggi, et al., 2016), such that perceived lack of social support is an important risk factor for pregnant women and the experience of symptoms of both anxiety and depression. One study performed on pregnant immigrants in Canada found that all women with scores of 12 or higher on the EPDS (suggesting clinical range of depressive symptoms) reported a need for better social support and felt dissatisfaction in their relationships at the time (Zelkowitz, et al., 2014).

A study conducted in Germany by author Martini (2015) used the Composite International Diagnostic Interview for Women (CIDI-V) to diagnose pregnant women with depressive or anxiety disorders (Martini, 2015). A Social Support Questionnaire was also used to observe levels of social support, measuring emotional support, instrumental support, social integration, and social strain (Fydrich, et al., 2007). It was found that both anxiety and depression were negatively correlated with levels of social support (Martini, 2015).

In the previously mentioned Malaysia study conducted by Fadzil (2013), relationship status was observed as a risk factor for anxiety and depression in pregnant women. It was found that being unmarried was associated with antenatal anxiety, further suggesting the need for social relationships, specifically marriage, as a protective factor against mental health concerns during pregnancy (Fadzil, et al., 2013). Muraca (2014) conducted a study observing factors on depression with women who recently gave birth. After using

the Composite International Diagnostic Interview (CIDI-SF) to screen for depression, it was found that marital status had the largest, negative association with depression. Statuses showing the highest risk of depression were widowed, separated, and divorced (Muraca, 2014). Because social support plays such a large role in depression and anxiety in pregnant women, it is important to more fully understand the relationship. By better acknowledging the importance of social support throughout pregnancy, it could be possible to reduce the incidence of depression and anxiety among pregnant women.

#### *4.2 Maternal Age*

Maternal age is also a factor potentially impacting depression and anxiety in pregnancy. It has been found that younger (15-19 years old) expecting mothers have a higher risk of experiencing depression than adult mothers (Kim, Connolly, & Tamim, 2014). A study analyzing Canadian mothers using the Maternity Experiences Survey and Edinburgh Postnatal Depression Scale found that 14% of teen mothers experienced Post Partum Depression while only 7.2% of adult mothers were diagnosed (Kim, Connolly, Tamim, 2014). Thompson and Ajayi (2016), observed the prevalence of antenatal depression among pregnant women in clinics in Nigeria. Results suggested that young maternal age (15-20 years) had a significant association with antenatal depression, which was viewed as a risk factor for depression (Thompson, Ajayi, 2016).

Another study assessed pregnant women at an outpatient gynecological setting in Germany. Women were assessed for any anxiety or depression diagnosis using the Composite International Diagnostic Interview for Women (CIDI-V). Comparing symptoms with age, results suggested that younger maternal age (<25 years old) was associated with

a higher risk for anxiety disorders during pregnancy (Martini, et al., 2015) with authors concluding that low maternal age is a risk factor for an anxiety disorder during pregnancy. These studies show the importance of observing age during pregnancy and contemplating the effect of younger age on the mother's mental health.

#### *4.3 Primigravida vs. Multigravidity*

Another factor to consider related to mental health is whether or not the mother has been pregnant before (i.e. primigravida vs. multigravidity). A study performed in Corum, Turkey used the State Anxiety Inventory to assess anxiety symptoms in pregnant women. It was found that women pregnant for the first time demonstrated higher levels of anxiety than multigravida women (Duman, 2012). It is possible that this is because new mothers have many questions and concerns about the outcome of the pregnancy, causing women to feel anxious (Duman, 2012). A similar study was completed in hospitals in China to study maternal depression throughout pregnancy and early postpartum (Shi et al., 2018). It was found that being a first-time mother served as a protective factor against depressive symptoms, as measured by the EPDS and socio-demographic collected information (Shi et al., 2018).

If the woman is pregnant and gives birth to the baby, then it is considered parity. A study performed in Portugal aimed to understand the connection between parity and depression throughout pregnancy using the State-Anxiety Inventory and the EPDS (Figueiredo, 2011). It was found that second-time mothers showed more depression symptoms than first-time mothers, showing that parity is a factor to consider when screening for depression in pregnant women (Figueiredo, 2011).

### ***5. Present Study/Hypothesis***

Based on previous literature, the overall aim of this study was to assess potential relations between age, gravidity, relationship status and depressive and anxiety symptoms during pregnancy. More specifically the following were hypothesized:

- 1) Age will be related to the experience of depression and anxiety in that it will be negatively correlated with both anxiety and depressive symptoms.
- 2) Married women (as an estimate of increased social support) will demonstrate significantly less symptoms of depression and anxiety than non-married women (single, separated, divorced, widowed etc.).
- 3) There will be a positive correlation between gravida and depression and a negative correlation between gravida and anxiety among pregnant women.

## Methodology

### *Methods*

The sample consisted of 502 pregnant women attending the OBGYN Clinic of Tupelo, MS, aged 18-45 with a mean age of 28. The ethnic breakdown was as follows: 77.1% White, 19.6% African American, 1.4% Asian, 0.2% Native American, and 1.6% multiracial. Participants were 137 primigravida, 357 multigravida, and 357 married. The women were approached in the waiting room and asked if they would like to participate in a study observing changes that occur throughout pregnancy. If they consented, the women were given the demographic questionnaire along with self-report measures to complete and return for analysis. All procedures were approved by the University of Mississippi's Institutional Review Board.

### *Measures*

To measure levels of depression and anxiety, the **Depression, Anxiety, and Stress Scale (DASS-21)**; Lovibond & Lovibond, 1995) was used. The DASS-21 assesses symptoms of depression, anxiety, and stress over the previous week. The DASS-21 is found to have good reliability and validity in clinical and non-clinical populations ( $\alpha$ s = .82-.97; Antony et al., 1998; Henry & Crawford, 2005). The depression domain includes seven items screening for anhedonia, pessimism, and other depressive symptoms. The anxiety domain includes seven items screening for arousal sensitivity, skeletal muscle

effects, and worry. The stress domain includes seven items observing characteristics related to nervous arousal, ability to relax, and tension (Symon et al., 2012). Each item is scored from 0 to 4, with 0 being, 'did not apply at all' and 4 being 'applies to me much of the time' or, 'most of the time'. The levels of each scale range from normal to extremely severe (Symon et al., 2012), with higher scores indicating elevated severity. Only the depression and anxiety subscales were used for this study.

The **Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden Sagovsky, 1987)** was also used to measure symptoms of depression. The EPDS consists of ten statements assessing symptoms of depression. Participants rate their agreement with the statement from "yes most of the time" to "no, never", ranked from 0 to 4. The scores are then summed. A cut off score of 7 is suggestive of a depressive disorder (Bunevicius et al., 2009). The EPDS has demonstrated good reliability and internal consistency ( $\alpha = 0.83$ ). Further, it has been shown to have a sensitivity of 92% and specificity of 73% (Bunevicius et al., 2009). As it has been suggested to be a more specific assessment for pregnant and postpartum women's experience of depressive symptoms, the EPDS was also used in this study.

### **Results**

*1) Age will be related to the experience of depression and anxiety in that it will be negatively correlated with both anxiety and depressive symptoms.*

Correlation analyses were conducted to assess the strength of the relationship between each observed variable and levels of depression and anxiety. Significant associations were found between maternal age and symptoms of depression (DASS-depression;  $r = -.14, p < .01$ ; EDPS;  $r = -.18, p < .01$ ), as well as maternal age and anxiety ( $r = -.14, p < .01$ ).

*2) Married women (as an estimate of increased social support) will demonstrate significantly less symptoms of depression and anxiety than non-married women (single, separated, divorced, widowed etc.)*

In order to examine differences in depressive and anxiety symptoms between married and non-married pregnant women, independent samples  $t$ -tests were conducted. All tests violated Levene's test for homogeneity of variances, therefore,  $t$ -tests not assuming homogeneous variances were calculated. The results of these tests indicated there was a significant difference in depressive symptoms observed between the two groups (married and non-married), as measured by both the DASS-depression  $t(63.74)=-2.58, p < .05$  and EDPS  $t(66.76)=-3.02, p < .01$ . See Table 2 for means and standard deviations of each

group. These results suggest that individuals in the married group experienced less depressive symptoms than their non-married counterparts.

Additionally, the independent samples  $t$ -test comparing differences between anxiety symptoms in married and non-married demonstrated no significant differences between the two groups  $t(-60.10)=1.06, p=.29ns$ .

*3) There will be a positive correlation between gravida and depression and a negative correlation between gravida and anxiety among pregnant women.*

Correlational analyses were run to assess the association between gravida and symptoms of depression. No association was found between gravidity and depression (DASS-depression,  $r = -.05, p = .32ns$ ; EDPS,  $r = .00, p = .95ns$ ). Additionally, no relation was found between number of previous pregnancies and depressive symptoms (DASS-depression,  $r = -.01, p = .78ns$ ; EDPS,  $r = -.02, p = .67ns$ ).

Additionally, correlations were run to determine any association between gravidity and anxiety among pregnant women. Results suggested that gravidity, as measured by being pregnant before was negatively associated with anxiety ( $r = -.12, p < .05$ ). Number of previous pregnancies was also significantly, negatively associated with anxiety ( $r = -.09, p < .05$ )



## Discussion

The purpose of this study was to assess potential relation between the age, social support, gravida and symptoms of depression and anxiety in pregnant women. Using a clinical sample of pregnant women recruited at a large OBGYN clinic, data were collected.

It was found that as the age of pregnant women increased, the likelihood of experiencing anxiety and depression decreased, thus the hypothesis that depression and anxiety will be negatively correlated with age was supported. One potential reason for the varying levels of depression and anxiety as age changes is that younger women may have a lower level of emotional maturity (deCastro, et al. 2011) Also, it may be that there is less life experience for the younger mothers. This insufficiency could lead to the younger mothers feeling that they have more to worry about. If they do in fact have less life experience and are not ready to be a mother, this would lead to lack of preparations, ultimately causing strong feelings of anxiety (Kim, Connolly, Tamim, 2014).

The results also indicated a significant correlation between social support, as measured by marital status, and depression. Those who were married showed fewer depressive symptoms than women who were not married. This finding is consistent with the previous literature, which shows social support as a protective factor for depression during pregnancy (Spoozak, et al., 2009). These results are likely because when women perceive a sense of support, they are less likely to experience persistent negative feelings

(Spoozak, et al., 2009).

Each type of relationship has a different nature of support, with marriage being one of the most supportive relationships one can be in (Spoozak, et al., 2009). It also validates the previous finding that women who scored poorly on the Edinburgh Postnatal Depression Scale also reported unhappiness in their romantic relationship and a perceived lack of support (Zelkowitz, et al., 2014). Therefore, the original hypothesis predicting that married women will have fewer depressive symptoms than their non-married counterparts was accepted.

The results demonstrated a negative correlation between gravida and levels of anxiety, meaning that the more times a woman has been pregnant before, the lower her levels of anxiety. Often times anxiety is seen when a woman likes to feel in control. During pregnancy, there is a lack of control that can cause strong anxiousness in women who have the urge to be in control (Van Bussel, et al., 2009). When a woman has already been through pregnancy and realized that despite the lack of control, her and her baby were healthy, her next pregnancy will consist of less fear; explaining why first-time pregnancies would cause a woman to have higher levels of anxiety. First-time mothers also have fears that are not as applicable to multigravida mothers. Fears such as labor and childbirth pains and outcomes are pervasive in mothers who have never experienced giving birth. Although physicians do their best to inform patients of what is to come during the months of pregnancy and giving birth, there is so much learning that comes with the experience (Koelewijn, et al., 2017). The lack of this experience in first-time mothers is a plausible reason as to why there is a higher level of fear, and therefore a higher level of anxiety, in women who have never been pregnant before.

The relationship between levels of depression and gravida proved to be non-significant. This causes us to reject the hypothesis, as it was predicted that there would be a positive relationship between gravida and levels of depression. Previous findings discuss first-time mothers as a protective factor for depression during pregnancy, meaning that it there would be a positive relationship (Shi, et al., 2018). However, these same findings found previous miscarriages as a risk factor for depression in pregnant women (Shi, et al., 2018). Because the current study conducted only observed previous pregnancies, not the outcome of these pregnancies, a possible explanation for the lack of significance is that there were patients that had negative outcomes in their previous pregnancy, causing a negative relationship, while the ones who had not been pregnant before still answered to not be at risk for depression. This would skew the results away from the positive direction, causing it to appear non-significant.

### ***Limitations***

Although there are many strengths of this study including the recruitment of pregnant women in their home OBGYN clinic, there are some limitations to the study. One of these limitations is the self-report measures. The only data collected is that of self-reports from the participants. Although these measures are psychometrically valid, they only assess symptoms. If a clinical diagnostic interview were performed, true diagnoses could be given. If this were the case, there could be more extensive comparison between this study and past literature.

Secondly, the lack of data on pregnancy outcomes potentially led to a variation in the results for the relationship between gravida and depression compared to previous findings. If there were measures assessing the number of children the participant has, and the outcome of the previous pregnancies, more informed analyses could be run possibly showing a significant relationship between depression and gravida. This is important because if a woman has a history of a miscarriage or other negative outcome in her previous pregnancy, it would most likely change many of her responses about her feelings. It has been shown that women who have had prior miscarriages have poorer psychological health than those who have not (Devlin, 2016).

Additionally, more specific measures for social support would prove beneficial. It is difficult to understand the level of social support a woman has primarily based on her living situation (i.e. married, separated, widowed, divorced etc.). A woman could be living with family and feel very supported, but still be considered unmarried, widowed, or divorced. This lack of data could lead to a skewing of the results, and would be more accurate if there was an additional section for social support.

The last limitation is that of the recruitment approach. There were times that it was difficult to obtain women to participate in the study. It could be that women who agreed to participate had a larger interest, possibly because they had already felt the effects of pregnancy on their mood, thus leading to selection bias.

### ***Future Direction***

In order to eliminate the few limitations that were found, future studies could include components to measure levels of social support in a more in-depth mode. By

including measures of levels of closeness of family ties, partner relationships and other relationships, researchers would have a better idea of the social support the participant was receiving. Thus, being able to find a more accurate relationship between levels of social support and depression and anxiety in pregnant women. A possible measure for this is the Modified Kendler Social Support Interview (MKSSI) which assesses the quality of support from parents, partner, other family members, and friends through a 27-question survey (Spoozak, et al., 2009).

If women were also surveyed about their previous pregnancy outcomes, instead of just the number of previous pregnancies, there would most likely be more clarity in the results of the relationship between gravida and depression. This addition would lead to a better understanding of the relationship between first-time mothers' vs. experienced mothers' battles with depression and anxiety.

Lastly, if it were possible to consent and screen every OB patient, not just the ones that chose to participate, the selection bias would be nonexistent. Furthermore, if each woman showing symptoms was next given a clinical diagnostic interview to be given a diagnosis, there would be more clarity in the results and more women would be fully treated.

Ultimately, the goal would be to have every obstetrician also trained to screen for these mental illnesses. It has been shown that raising awareness of the mental changes during pregnancy and having educational sessions have been enough to reduce the premature birth rate immensely. A study done on women who were said to be at psychosocial risk (determined via interview) in public hospitals in Spain and France, found that mothers who went to educational sessions, discussing antenatal depression and the difficulties

of pregnancy, had more positive birth outcomes than women who did not. Women attending 10 two-hour sessions had a premature birthrate of 4.4%, while those who did not, had a rate of 22.4% (Collado, et al., 2014). There was also found to be a significant difference in birth weight, with the group who had not been to any informative sessions having a lower child birth weight (Collado, et al., 2014). This shows that simply informing the patients of the changes that occur throughout pregnancy and teaching them how to deal with such issues, will decrease the chance of negative birth outcomes.

In order to correctly inform pregnant women of the changes that occur throughout pregnancy not only physically but mentally, physicians need to be well aware of the symptoms associated with these changes, specifically depression and anxiety. Additional helpful information is the factors associated with depression and anxiety. If the physicians know which factors (i.e. older age, low social support, and first-time mother) led to an increased risk of depression and anxiety, they would be able to more carefully observe their patient's mental health. By educating physicians about these concerns, they will be able to increase patient awareness, therefore increasing the positive pregnancy outcomes.

### ***Conclusion***

Unfortunately, many health care providers do not know the appropriate way to care for mental health, which causes a large gap between physical health and mental health. Women being treated by supportive physicians that asked about their mental well-being experienced fewer depressive symptoms (Pottinger, 2009). If more doctors were better informed on how to screen for and treat mood disorders, pregnant women would

have the opportunity for complete physical and mental treatment, resulting in a healthier, happier mother and baby.

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*Table 1. Summary of Correlation Analysis*

	<b>DASS-dep</b>	<b>EPDS</b>	<b>DASS-anx</b>
<b>Age</b>	<b>-0.14**</b>	<b>-0.18***</b>	<b>-0.14**</b>
<b>Pregnant Before</b>	<b>-0.05</b>	<b>0.00</b>	<b>-0.12*</b>
<b>Number of Previous pregnancies</b>	<b>-0.78</b>	<b>-0.02</b>	<b>-0.09*</b>

*Note.* EPDS= Edinburgh Postnatal Depression Scale, DASS-dep= Depression, Anxiety, and Stress Scale – depression component; DASS-anx – Depression, Anxiety, and Stress Scale – anxiety component. \* $p < .05$  ; \*\* $p < .01$  ; \*\*\* $p < .001$

**Table 2. Means and Standard Deviations of married vs. Non- married group symptoms**

	<b>DASS-dep</b>	<b>EPDS</b>	<b>DASS-anx</b>
<b>Married</b>	<b>N=325 ; 1.68 (1.95)</b>	<b>N=312 ; 6.47 (4.70)</b>	<b>N=322 ; 2.85 (2.88)</b>
<b>Non-married</b>	<b>N=123 ; 2.99 (4.36)</b>	<b>N=114 ; 9.01 (6.16)</b>	<b>N=122 ; 3.26 (3.94)</b>

**Note.** DASS-dep = Depression, Anxiety, and Stress Scale – depression component; EPDS= Edinburgh Postnatal Depression Scale; DASS-anx = Depression, Anxiety, and Stress Scale – anxiety component