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An Examination of the Mother-Baby Relationship

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J. N. Andrews Honors Program
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HONS 497
Honors Thesis

An Examination of the Mother-Baby Relationship

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Department:

Abstract

This study examines the relationship between postpartum depression and mother-child bonding. The purpose of this study is to help improve the understanding of the bond between a mother and child and the factors that affect postpartum depression. The dependent variable is bonding, it described as the emotional attachment between mother and child. Bonding is measured using the Post Partum Bonding Scale. The independent variable is postpartum depression. This is a disease that arises after birth often affecting the way a woman connects with the world around her. This variable is studied using the Edinburgh Postnatal Depression Scale. A series of several demographic questions are used to understand the factors that affect postpartum depression. The sample population consists of 84 individuals 18 years and older who have given birth in the last 6 months. Data was collected through an online survey platform and through two state health centers. My hypothesis is that the higher the presence of postpartum depression the weaker the bond between a mother and her infant. It is also hypothesized that mothers with disadvantageous demographics, such as lower socioeconomic status and minority groups, will display a higher risk for postpartum depression. Significance of my results is determined based on a Person's r and a Chi square test, measured based on a .05 alpha with a medium effect size. The findings of the research mostly support my hypotheses. The research analysis showed a positive correlation between the two variables, as one's likelihood for PPD increases, so does the likelihood for mother child bonding disorders. In addition, when from a disadvantaged group, mothers score higher on the Edinburgh Postnatal Depression Scale.

An Examination of the Mother-Baby Relationship

Does postpartum depression in mothers have an effect on mother-child bonding? What factors influence one's likelihood for postpartum depression? In the field of public health one of the major areas of focus is maternal and child health. Those working in this field pay special attention to the mental health of mothers, because of the understanding that during the early stages of life a child relies heavily on the mother. The idea of postpartum depression as medical condition is relatively new, and the search for understanding and explanation of how a mother's mental health can affect her offspring is ongoing. In the field of public health, it is also known that those with particular characteristics have an increased risk for depression. Research is beginning on the correlation between such attributes and postpartum depression. The purpose of this study is to give deeper understanding of how maternal postpartum depression affects mother-child bonding, as well as how individualistic factors increase one's likelihood for postpartum depression.

Bonding is described as the process of developing a relationship and attachment between a mother and a newborn child (Ohoka, Koide, Goto, and Taylor, 2014). A bonding disorder is when there is difficulty forming an attachment between a mother and child. Studies have shown that there is an increased sensitivity for bonding starting at two weeks, peaking at six and decreasing at four months (Moehler, Brunner, Wiebel, Reck, and Resch, 2006). A lack of attachment during this time can lead to developmental and behavioral disorders in the child. When studying the significance of mother-infant bonding the tools used describe a mother's feeling towards her offspring and do not involve response of the child (O'Higgins, Roberts, Glover, and Taylor, 2013). There is much research on the normal bond between mothers and their children, but little is known on disorders in this relationship. Bonding disorders can be

caused by several factors; the common factors being anxiety, difficulty breastfeeding, or more severe causes such as the death of a twin (Ohoka et al., 2014).

Another perceived cause for bonding disorders is the presence of post-partum depression (PPD). PPD is a mood disorder that commonly describes depressive symptoms and diagnoses that appear several weeks after childbirth (Ohoka et al., 2014). This disease affects about 10 to 15% of all first-time mothers. Postpartum depression is not a disorder that stands alone; rather, it is a subcategory of major depression disorder. The recognition of PPD is relatively new. The Diagnostic and Statistical Manual for Mental Disorders (DSM-4; American Psychiatric Association, 1994) added the classification of “Major Depressive Disorder, with postpartum onset”. In the most recent edition (DSM-5; American Psychiatric Association, 2013) this is replaced by the diagnosis of “Major Depressive Disorder with peripartum onset”. This is defined as depression with the most recent episode occurring “during pregnancy or in the 4 weeks following delivery”. This reclassification has broadened the diagnostic possibility, allowing for clearer verification of the overlap of major depression symptoms and other manic/hypomanic symptoms (Sharma, and Mazmanian, 2014). The typical characteristics are loss of interest, sadness, and sometime suicidal or infanticide thoughts. In most cases PPD develops within the first four weeks, but may not appear up to a year post-delivery (Patel et al., 2012). The cause of postpartum depression is still undetermined but many believe it is caused by hormonal imbalance.

Research has shown that postpartum depression does not occur evenly throughout the population (Chiu, Sheffield, Hsu, Goldstein, Curtin, Wright, 2017). There are several factors that are believed to increase one’s likelihood for postpartum depression, such as age, race, education, marital status, and religiosity. The Center for Disease Control and Prevention (CDC) examined

data from 13 US states, showing that non-Hispanic white women were least likely to present postpartum depressive symptoms. A study of 3,748 women in New York City, concluded that the probability for PPD increased 1.5 times for Hispanic women as compared to white women (Chiu et al., 2017). Asian/Pacific Islander (API) women are 3.2 more likely to receive a diagnosis; “API women showed the highest rate for PPD, followed by Hispanics and African Americans” (Liu, and Tronick, 2013). Another factor that is suspected to influence postpartum depression is educational level. Those with lower academic status have an increase likelihood for PPD. However, in Liu, & Tronick study, most white women with PPD reported having a postgraduate degree, while diagnosed African American women possessed only a high school diploma (2013). It was also reported, of those with postpartum depression, that less educated females were significantly “more likely to report lack of enjoyment” but those with higher education associated with “crying and thoughts of self-harm” (Di Florio et al., 2017). A study investigating 13 factors and their prediction of PPS, reported that marital relationships had a moderate relationship between marital status and postpartum depression ($r = 0.39$) (Beck, 2001). Research has also been done on the correlation between depression and religion. One study found that there is contradicting results on this relationship; people with no religious affiliation are at a greater risk for depression; however, guilt associated with depression is often connected with religion (Blazer, 2012).

Postpartum depression and the lack of mother child bonding are believed to be closely related. It is understood that impairment during the first few months to the mother child bond can prove to be detrimental to the child. With PPD, the affects normally appear within a few weeks and can last a couple months; typically, the women who suffer often have difficulties developing feeling toward their offspring (O’Higgins, Roberts, Glover, & Taylor, 2013). Some studies have

shown that these difficulties cause developmental delays and difficult temperament (Wang, Chen, Chin, and Lee, 2005), suggesting that treatment for depression will help resolve the bonding disorder. Other studies suggest that PPD has no effect on the bond between a mother and child. In this research, I will explore the relationship between postpartum depression and mother child bonding.

I hypothesis that the stronger the presence of postpartum depression the weaker the bond between mother and child. Research has also shown that certain demographic factors increase one's likelihood for postpartum depression. Young, minority, low educated, single women have an increased probability for PPD. In this study, I will explore factors that influence postpartum depression and their significance. I hypothesize mothers with disadvantageous demographics will score higher on the Edinburgh Postnatal Depression Scale (EPDS).

My project is unique in that it seeks to add to the area of study of postpartum depression. Because of the limited knowledge in this field, there is much conflict in the possible correlation between PPD and bonding. My goal for this project is to help resolve this conflict. This project is also unique in the population being studied. The exploration of postnatal depression is typically performed on highly secular communities, my research will explore this disease in a mostly religious population. This project will also study the intersectionality of PPD with demographic characteristics.

Method

Type of design

During my research, I conducted a correlational study between post-partum depression scores and mother child bonding scores. I also performed a correlational study between social

factors, age, ethnicity, educational status, marital status, religiosity, and number of other children, and post-partum depression scores.

Selection and Description of Participants

Based on a G* Power test it was determined that the desired sample size for this study was 84 mothers. This would provide a power of .80 and a medium effect size (.30), according to a power analysis. The requirements for each participant was that they must be female, 18 years of age or older, and had given birth within the last six months. I was able to collect survey information from 80 females between the ages of ranging from 18 to 40+ years old, with most ranging from 18-35. Most participants were African American (39.29%) or Caucasian (22.62%); the remaining mothers identified as Hispanic (10.71%), Asian (2.38%), other (4.76%), or preferred not to answer. The average education status was completion of a High school diploma (M=23.81%); and the mean relationship status was married (n=31). Of those who answered, the average reported number of other children was 1.37 (SD=1.32), and the majority of the mothers were on maternity leave (n=28). Subjects were recruited via email, word of mouth, and from the researchers Facebook account using a snowball effect. Due to the restrictive sample size requirements, institutional approval was obtained and participants were also recruited from two off-campus health centers: InterCare Health of Benton Harbor, MI and Cone Health of Greensboro, NC (1356003-1). All mothers were provided with an explanation of the study, a consent form, and a link to begin the survey. Participants from the health centers were given physical copies of the study. All subjects remained anonymous throughout the data collection and analysis process.

Instruments

Mothers were provided a link or a study packet containing both questionnaires, and a set of demographic questions. The first survey was the 10 question Edinburgh Postnatal Depression Scale (EPDS). The scale is not a diagnostic tool but rather a screening tool. This scale assesses how the mother has felt over the past 7 days. The scale has reliability alpha of 0.87 (Cox, Holden, & Sagovsky, 1987). Scoring is done on a 4-point Likert scale, with a total possibility of 30 points, and a score of 11 or more indicating a likelihood for PPD (Smith, Matthey, Lange, and Væver, 2018). The second scale measures the bond between mothers and her child. This was studied through the 25 question Post-Partum Bonding Questionnaire (PBQ), studying the presence of bonding disorders between mother and child. Mothers were asked questions based on how they relate to their child. This scale is rated on a 6-point Likert-scale; there is a total possibility of 125 points, with a score higher than 38 indicating a likelihood for bonding disorder. This scale is reliable with an alpha between 0.67 and 0.88 (Brockington, Fraser, and Wilson, 2006). The demographics form consists of 10 questions asking about individual characteristics of the mother. Questions were compiled from the principle investigator and research advisor's previous knowledge of the literature. Questions focused on the age, race, educational and marital status, and number of other children.

Data collection strategies

Consenting mothers, who participated online were given a link providing access to the questionnaires. Participants, from either health center, were asked if they were interested in taking a survey, by an approved facility member. Those who consented were then given a physical copy of the survey packet. Mothers answered the EPDS consisting of 10 questions about how they have felt over the past 7 days, the PBQ stating how they relate with their infant,

as well as 10 demographic questions. Upon completion via the online platform, mothers were reminded of the reason for the study and thanked for their participation. Those who completed the physical survey, were given instruction to return the packet to the staff person. Mothers were then reminded that their answers were completely anonymous and thanked for their participation. The total process for the study took no longer than 10 minutes to complete.

Analysis

In this study, the independent variable is the scores from the Edinburgh Postnatal Depression scale, and the dependent variable is the scores from the Post Partum Bonding Questionnaire. To assess the relationship between these two variables I conducted a correlation analysis. This analysis examines the relationship between post-partum depression and mother-child bonding scale. Both of my variables are interval/ratio so a Person's r test was conducted to examine the existence and strength of the relationship. To analyze how social factors and characteristics influence one's likelihood for postpartum depression, I used the answers from the demographic questionnaire and scores from the EPDS. The data from the demographic section consist of nominal data, and thus a Chi square test was conducted to explore the significance of each factor to PPD scores. Both tests were run using a .05 significance level.

Results

The total number of participants involved in this study was 84. Of this number, data was only used from 80 mothers; 4 were disregarded due to a lack of completion. The scores on the Edinburgh Postnatal Depression Scale ranged from 0 to 16 ($M=3.96$, $SD=3.83$, $n=82$). The Post Partum Bonding Scale scores ranged from 0 to 76 ($M=6.50$, $SD=9.39$, $n=80$).

Figure 1. Total PBQ vs Total EPDS.

This figure illustrates the relationship between Post Partum Depression scores and Edinburgh Postnatal Depression Scale scores.

The first research question on the relationship between postpartum depression and mother child bonding was analyzed using a Pearson's r , because of interval/ratio property of this data. The results support my hypothesis that as one's likelihood for PPD increased so did the likelihood for mother child bonding disorders. Figure 1 summarizes my results, showing that there is a positive correlation between scores on the Edinburgh Postnatal Depression Scale and the Post Partum Bonding Scale. The Pearson's r concluded that is a moderate positive correlation between scores on the EPDS and scores on the PBQ, $r = .380$ ($r^2 = 0.145$), $n = 80$. The results not only suggested that there is a positive correlation, but also established significance at the 0.01 level.

A Chi- square test was performed to examine the relations between social factors and characteristics and mother's likelihood for postpartum depression. The results partially support my hypothesis that those with disadvantaged demographics have an increased likelihood for postpartum depression, presented by higher scores on the Edinburgh Postnatal Depression Scale.

Table 2 shows the relation between demographics and PPD is significant for some factors, such as age, $X^2(65)=132.46, p<0.001$ and education, $X^2(104)=177.34, p<0.001$. Older women and those with more education have an increased likelihood for PPD. There is no significance found for factors such as marital status $X^2(65)=71.20 p>0.001$, ethnicity $X^2(65)=67.12 p>0.001$, work status $X^2(78)=83.37 p>0.001$, number of other children $X^2(60)=49.21 p>0.001$, or frequency of church attendance $X^2(96)=98.94 p>0.001$. Results show that there is not enough evidence to determine a relationship between Edinburgh Postnatal Depression scores and these factors. The results of ethnicity did follow the trend that minorities show an increases probability for PPD, although not significant.

Table 1. Comparisons of demographics by likelihood for PPD based on EPDS scores

Demographics	Overall Sample	EPDS scores ≤ 10	EPDS scores <10	Chi square test of independence
Age in years				
N/A	2	2	4	$\chi^2(65)=132.456$ P<0.001* N=71
18-25	20	20	0	
26-30	20	20	0	
31-35	20	18	2	
36-40	6	6	0	
40+	1	1	0	
Ethnicity				
N/A	5	3	2	$\chi^2(65)=67.109$ P=.405 N=72
White	19	19	0	
Hispanic/Latino	9	9	0	
Black/African American	33	31	2	
Asian	2	2	0	
Other	4	4	0	
Marital Status				
N/A	5	3	2	$\chi^2(65)=71.197$ P=.279 N=71
Married	31	30	1	
Domestic Partnership	3	3	0	
Single	27	26	1	
Divorced	2	2	0	
Separated	3	3	0	
Number of Other Children				
0-1	41	39	2	$\chi^2(60)=49.271$ P=.837 N=63
2-3	19	19	0	
4-6	3	3	0	
Work Status				
N/A	6	4	2	$\chi^2(78)=83.369$ P=.318 N=72
Currently Working	13	13	0	
On Maternity Leave	28	26	2	
Homemaker	10	10	0	
Student	2	2	0	
Unemployed	12	12	0	
Unable to Work	1	1	0	
Education Status				
N/A	6	4	2	$\chi^2(104)=177.342$ P<0.001* N=72
No/ Limited School	5	4	1	
High School Graduate	20	20	0	
Some College	9	9	0	
Trade School	1	1	0	
Associate Degree	5	5	0	
Bachelor's Degree	19	18	1	
Master's Degree	5	5	0	
Professional/ Doctoral Degree	2	2	0	
Frequency of Church Attendance				
0-2	40	38	2	$\chi^2(96)=98.939$ P=.398 N=58
3-5	15	15	0	
6-12	3	3	0	

significance was determined at the p=0.001 level

Discussion

The purpose of this study was to determine the relationship between postpartum depression and mother child bonding and the factors that affect postpartum depression. My first hypothesis was that the higher the presence of postpartum depression (PPD) the weaker the bond between a mother and her infant will be. Therefore, as a mother's scores of the EPDS increases so would her scores on the PBQ. The result of my study supported my first hypothesis. The statistical analysis run was a Person's r and the results showed that there was a positive significant correlation between postpartum depression and a weaker mother-child bond. My secondary hypothesis was that mothers possessing disadvantageous demographics and minority groups will display a higher risk for postpartum depression. Thus, factors such as age, race, marital status, or education, influence one's postpartum depression scores. A Chi-square test was run to analyze significance, and my hypothesis was partially supported. The results for age agreed with my initial hypothesis. While not statistically significant only African American mothers presented PPD scores of 11 or higher. Marital and educational status did not agree with my hypothesis. Both factors showed that those with less or no higher education and single mothers possessed less of a risk for postpartum depression. Religiosity and number of other children did not show significance with EPDS scores. Although, desired affect size was achieved, it is understood that having a large and more diverse population would draw more conclusive data on the population.

Results did show similar trends to previous research. Studies have shown that higher EPDS scores were related to more severe bonding disorders (Ohoka et al., 2014). In Moehler et al., study entitled *Maternal depressive symptoms in the postnatal period are associated with long-term impairment of mother-child bonding*, their results state that there is a correlation

between postnatal depression and mother-infant bonding (2006). In their study they also examined the short-term implications of postpartum depression. Results in my study agree with their findings, scores on the PBQ increased as scores on the EPDS increased.

The results of the Chi-square test have some similar tendencies to previous research. My study showed that minority women had a likelihood for higher Edinburgh Postnatal Depression Scale (Liu, and Tronick, 2013). My results were not fully supported by other studies for such factors as age, education and marital status. Studies suggest that younger, single women with lower educational status have a higher possibility for this disease. I discovered that within my population older mothers, and those with more education scored higher on the EPDS. In one study, by Liu, & Tronick, their findings agreed with what I discovered, white women with PPD tend to have higher education but minorities possess a high school diploma (2013). For the factors number of other children, and their age, my results were not significant with scores on the EPDS. In the article *Experience of pregnancy and delivery as predictors of postpartum depression*, results showed that the number of pregnancy and children were not significant predictors of postpartum depression; agreeing with the discoveries made by my study (Tuohy, and McVey, 2008).

Limitations

My study explores and seeks find understanding of a new emerging subsection of public health. This study gives voice to a very small, restrictive community of individuals, that limited people have studies in this capacity. The purpose of this study was to help form a more concrete understanding on the relationship between postpartum depression and mother-child bonding. The study did have several limitations. The main restriction on my research was the population size. Despite reaching the desired effect size, my sample size was still relatively small and limited in

variety. Throughout the data collection process, I had much difficulty finding participants that meet the criteria. The requirements for those participating in my study were for mothers to be 18 or older and have given birth within the last 6 months. Initially, recruitment consisted solely of word of mouth and social media postings. This granted approximately 15 mothers. The next effort for gaining participants was to speak with local daycare centers, and church affiliated children's programs. Several child care centers, as well as a few local churches were contacted, but received limited responses. Finally, I contacted several local medical and women's health centers. One of the locations responded, InterCare Health, stating that they would love to be involved but could not guarantee my entire sample size. I then expanded my search for participation centers. Through a family friend connection in North Carolina, I was able to initiate the IRB process at the Center for Women's Health Care. After gaining IRB approval, data collection began. The process was slow and arduous; constant reminders and follow-ups were done with each location to ensure that data was actively being collected. Data collection also continued via word of mouth and social media. My efforts resulted in a population of 84 mothers, with data analyzed from 80 of these individuals.

Future Research

With the possibility of continuing this study, I suggest contacting large hospitals and health organizations. I also suggest reaching out to social support programs such as WIC, requesting for assistance in the distribution of questionnaires. Their support and additional participants would reduce the difficulty of data collection and possibly increase the diversity of the study.

I believe that apart from looking for the relationship between postpartum depression and mother-child bonding, future research should also look for the possible correlation of paternal

postpartum depression and child bonding. Although, postpartum depression is relatively new, the idea of paternal postpartum depression is still being verified. Exploring of this topic would help establish credibility for this mental health disease. This current study also considers factors that influence the possibility of PPD. There is an understanding that religion and the more religious an individual is lowering the risk of developing depression (McCullough, & Larson, 1999). The fields of medicine and psychology, also recognize that those of lesbian, gay, bisexual, transgender, plus (LGBT+) community present with elevated rates of depression (Cochran, Sullivan, & Mays, 2006). Another consideration for further research would an analysis of how religiosity and sexual orientation correlate to the susceptibility to postpartum depression.

Conclusion

The overall purpose of my research was to help increase the available knowledge on the relationship between mother and child. Currently in the field, there is debate on the correlation between postpartum depression and bonding. Analyzing the relationship between postpartum depression and bonding, this study, has added to the argument that these two variables are associated, and that through improving the mental and emotional health of those suffering with PPD we can improve bonding disorders. My study has also added to the overall understanding of those at greater risk for PPD. In the continuation of this project I hope that more knowledge and insight is brought into this field. As one interested in maternal and child public health, I anticipate that this research can be used to improve the lives of those in my community and around the world. Understanding some of the factors that influence postpartum depression can also improve the screening and care provided to at risk mother's during pregnancy.

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