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THE MODERATING ROLE OF SERVICE UTILIZATION BETWEEN NEWBORN MOTHERS FINANCIAL WORRIES AND DEPRESSION

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THE MODERATING ROLE OF SERVICE UTILIZATION
BETWEEN NEWBORN MOTHERS FINANCIAL WORRIES
AND DEPRESSION

BY
ALYSIA CARCIERI

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
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MASTER OF SCIENCE THESIS

OF

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ABSTRACT

The experience of pregnancy and childbirth is both an exciting and stressful time in a woman's life. New mothers, particularly those experiencing depression, can experience difficulty handling life's daily activities, including increases in financial stressors during pregnancy and after childbirth. Women are more likely to experience depression compared to men; and women of child-bearing age are even more at risk, regardless what their race or economic status is (Cadigan & Skinner, 2015). Moreover, financial worry occurs when a person has difficulty meeting basic needs including housing, food, health care, or having late and skipped bills. The United States provides a number of social services to support those in need, such as Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Supplemental Nutrition Assistance Program (SNAP), Cash Assistance, Housing Assistance and Head Start to name a few. However, a number of barriers interfere with participating in service utilization including job conflicts, transportation, environmental barriers, confusion about eligibility, dissatisfaction, stigma, embarrassment and lack of social support related to accepting government assistance (Panzera et al., 2017).

The current study examines new mothers' experiences with social service utilization, financial worries and concerns and maternal depression. The association between psychological and social factors in the health outcomes of new mothers is explored using the psychosocial theoretical framework. This study utilizes data collected from The Baby's First Years Project; a randomized control trial in the US designed to identify the impact of poverty reduction on children's development. The sample included 1,050 low-income mother/infant dyads from four cities in America; New York

City (NY), New Orleans (LA), Omaha (NE), and Twin Cities (MN). Linear regression was utilized to examine the impact of financial stress and service utilization on maternal depression after birth. Results revealed that demographic factors and financial worry significantly predicted maternal depression over and above the amount of service supports utilized by mothers. The results of the study contribute to the limited research available on the moderating role of service utilization and would be beneficial for healthcare officials and policy makers.

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CHAPTER 1

INTRODUCTION

The experience of pregnancy and childbirth is both an exciting and stressful time in a woman's life. New mothers are at risk for elevated levels of depression, and only 20% of women were asked about depression during a prenatal visit. One in eight women report symptoms of depression and 50% of pregnant women are treated for depression (Center for Disease Control and Prevention [CDC], 2022). Women are more likely to experience depression compared to men; and women of child-bearing age are at even more risk, regardless of their race or economic status (Cadigan & Skinner, 2015). Financial responsibility, when there are money related concerns for mothers, can lead to constant and consuming stress. Without consistent and reliable money for the household sacrifices have to be made. Stack & Meredith conducted a study in 2018 and found that parents who feared not being able to pay for groceries, so they consumed less food in order to make sure their children had a more substantial meal that day. This food insecurity, additional concerns on housing stability and the harmful long-term effects of poverty are why state and federal governments have created service support programs to help mothers with fears about monthly finances.

Mothers are often screened for depression at post-birth doctors' appointments, and if signs are present, the mother may be referred to a mental health professional. Some signs of depression in mothers are difficulty expressing emotions, absence of personal care, and lack of interpersonal interactions (McVittie, Craig & Temple, 2020). Emotional stress in this case may present itself through social isolation, loneli-

ness and withdrawal (Stack & Meredith, 2018). Depression can cause mothers to neglect their own well-being emotionally and physically. Mothers experiencing depression can have difficulty handling life's daily activities and larger tasks such as paying for bills.

It is important for mothers to have access and make use of healthcare and additional support services for improvement of overall maternal mental health. Maternal care can be divided into four stages: preconception, prenatal, postpartum care and beyond (Maru et al., 2021). Accessing healthcare within these time frames is important because there are unique risk factors associated with each stage of pregnancy. During these appointments, healthcare professionals are able to educate mothers on stage-specific risk factors and provide interventions if necessary. Despite these recommendations, maternal healthcare utilization varies between countries, regions and socioeconomic status (Maru et al., 2021).

Current literature does not adequately address the association between mothers' mental health outcomes, right after giving birth, and how beneficial government support is to those outcomes. More research is necessary in order to expand the knowledge between mothers' financial worries and mental health outcomes. In the current study, the psychosocial theoretical framework was used to explore the relationship between psychological and social factors in mothers' health outcomes. Further examination into this topic would prove beneficial not only for mothers, but also healthcare officials and policy makers.

CHAPTER 2

REVIEW OF LITERATURE

Finance Concerns

Worry can be broadly defined as negative thoughts about uncertain future events, whereas financial worry has been defined as negative thoughts about the uncertainty of one's financial situation (Magwegwe et al., 2022). Financial worry is related to financial well-being, which consists of different components such as feelings of stress or worry about the current financial situation and worry about future financial security (Magwegwe et al., 2022). Financial worry occurs when there is difficulty meeting basic needs including housing, food, health care, or having late and skipped bills. Material hardship refers to challenges in meeting basic daily needs and can result in financial hardship (Katz et al., 2018). In a sample of 892 pregnant low-income women, 56% of the sample reported material hardship associated with maternal depression and stress (Katz et al., 2018). New mothers experience hardships like adequate nutrition, transportation to medical appointments, ability to communicate with healthcare providers, paying for diapers, formula and paying for rent. Evidence suggests that these material hardships, in addition to low income, will adversely affect a new mothers mental health and being unable to meet daily needs is significantly associated with depression and anxiety (Katz et al., 2018).

While pregnancy can be considered a joyous life event, mothers experience a variety of concerns during pregnancy which can lead to strong worries and concerns, including financial issues (Wilska et al., 2016). Strong fears about pregnancy, poten-

tially related to financial status, can cause mental health concerns like postpartum depression (Wilska et al., 2021). Ward, Kanu, & Robb (2021) discussed financial stress as a *stressful life event* leading to negative consequences for a mother during pregnancy and postpartum. Approximately 60% of women experience at least one *stressful life event*, such as not being able to pay bills, during pregnancy (Ward, Kanu, & Robb, 2021). In this study financial stress during pregnancy was the second highest predictor of postpartum depression in mothers (Ward, Kanu, & Robb, 2021).

Given the costs associated with pregnancy and childbirth, pregnant mothers are especially vulnerable to financial hardships. Pregnancy related hardships were reported in one study as bills they could not pay, loss of a job, separation/divorce, economic hardship, and lack of emotional support (Braveman et al., 2010). Financial strain or worry has been associated with difficulty paying for bills, housing affordability or homelessness, food insecurity, and paid parental leave is a common hardship that may exist (Laraia et al., 2022). Another less researched, but practical hardship, is the specific daily needs of the newborn. More specifically, mothers face a challenge paying for diapers every day. Researchers have found that 30% of mothers reported not having enough diapers for her baby (Austin & Smith, 2017). Mothers who are living with an inadequate amount of diapers are more likely to be living in poverty and report higher emotional consequences such as, frustration, guilt, feelings of being a bad mother and anxiety around not being able to change a soiled diaper (Austin & Smith, 2017).

On a broader scale, parental leave can have many benefits for new mothers, but also poses unique challenges. For instance, parental leave has been associated with improvements in child health, job continuity and reductions in supportive financial assistance around birth (Ybarra, Stankczyk & Ha, 2019). However, for some mothers, specifically single or low-income women, parental leave can be experienced as a burden to their financial status. Researchers have reported that low-income women will experience an even greater economic decline around the birth of a child (Ybarra, Stankczyk & Ha, 2019). There is no federally mandated parental leave program in the United States. Available programs such as Paid Family Leave, Temporary Disability Insurance and Family Medical Leave Act of 1993 are not options for all states and only provides assistance for qualified mothers (Ybarra, Stankczyk & Ha, 2019).

Financial worries and concerns are also related to longer term biopsychosocial outcomes for both mother and child. For example, a sample of 146 low-income pregnant mothers were included in a study that examined associations between financial worry and low birth weight. In this sample, financial worry was positively associated with depressive symptoms (Mitchell & Christian, 2017). Financial strain and worry were also linked to pregnancy related distress, clinically important outcomes during pregnancy and has potentially negative implications for the health outcomes of mothers and children (Mitchell & Christian, 2017).

Maternal Depression and Stress

Maternal mental health is closely related to developmental outcomes for children. When maternal health is untreated, problems can arise both mentally and physically such as chronic illness, mental disorders/illnesses, delayed physical health and delayed physical and emotional child development (McCloskey & Maguire-Jack, 2021). This is exacerbated by the fact that new mothers in the United States are expected to recover within a six to eight-week period after giving birth and without proper postpartum care during the first year or motherhood, depressive symptoms are very common (Schytt & Hildingsson, 2010). For mothers who experience mental health challenges, state and federal support exists to help mothers, children and families thrive. However, little research is linked to the outcomes for the mothers when they receive a certain number of support services.

The experience of maternal depressive or depression symptoms correlate with children's social, behavioral and functional development (Huhtala et al., 2014). For example, maternal depressive symptoms can interfere with mothers' response rates to children's needs, such as feeding (Savage & Birch, 2017). Another study found that during pregnancy, women who performed greater than one hundred and fifty minutes of physical activity did in fact have lower risk of postpartum depression after the baby was born (Shakeel et al., 2018). This further suggests the need for increased education and postpartum support to decrease depression or depressive symptoms.

Limited research has been conducted in the United States on the effects of maternal depression in relation to paying for household expenses. One article of interest in the United Kingdom measured single parent families and their psychological well-being linked to financial hardship. Similar issues to research conducted in the United

States arise with the United Kingdom study on access to social and financial support. Food banks are one of the most commonly used services supports; however, individuals either did not know they exist or know that they qualify to have access. There was also an issue with transportation for some participants (Stack & Meredith, 2018).

Seeking mental health support is not easy based on limitations of government provided support and participants willingness to go to the general practitioner, take medication or be financially responsible for their own therapy (Stack & Meredith, 2018). The American College of Obstetricians and Gynecologists recommends that practitioners screen pregnant women each trimester in order to provide appropriate interventions, which is only made possible with proper prenatal care (Bloom et al., 2012). However, many women report not even discussing risks associated with depression to their health care provider during pregnancy (Bloom et al., 2012).

If untreated maternal stress can result in severe physical and psychological impairment, mortality, compromised relationships, loss of productivity, child developmental outcomes altered and economic consequences (McCloskey & Pei, 2019). Lack of sleep, being more susceptible to common colds and illness, and coping with certain infections or pain for longer periods of time before consulting medical attention are some symptoms that can occur from stress and poor mental health education (Stack & Meredith, 2018). Weight gain is a concern later in pregnancy when physical activity decreases, elevating the mother's risk for additional health problems. Gestational weight gain is associated with gestational diabetes, maternal and fetal mortality and risk for cesarean sections (Koleilat et al., 2021). Some reported barriers to exercise

during pregnancy are lack of knowledge, medical restrictions and social support (Koleilat et al., 2021).

Mothers could benefit from several types of support; including financial, social and/or emotional support. Social support has been linked to reduced mental health problems (Marinez-Lora et al., 2021). In one study, supports were labeled as perceived functional supports, network supports and received supports, all researched in association with caregiver strain (Marinez-Lora et al., 2021). Findings were mixed whether parental strain on mothers utilizing mental health services actually decreased (Marinez-Lora et al., 2021). Supportive evidence suggests that parenting stress for socioeconomically disadvantaged can lead to poorer mental health and lower social support (Mersky et al., 2022).

Service Support Utilization

There are many programs in the United States to help support mothers, families and children. Government led services like Supplemental Nutrition Assistance Program (SNAP), Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), Medicaid, and Supplemental Security Income (SSI) are some of the services provided to families, mothers and children. Ideally, doctors and medical professionals would be able to give education to families during these times to avoid negative outcomes.

Research over the last 20 years supports the positive impacts of select service support including SNAP and WIC for mothers and children (Weber et al., 2018). Yet, even with the outcomes of access to formula, nutrition guidelines, health and growth,

and development, participation in the programs continues to decline (Weber, et al., 2018). As an example, Weber et al. interviewed parents/caregivers with infants 3-6 months old. The purpose was to learn more about their WIC experience and retention. The stigma of this particular service support was discussed through themes of daily life. Mothers faced individual levels of support, institutional levels (workplace autonomy), WIC and vendor level constraints as well as system support (awareness, restrictiveness and embarrassment) (Weber et al., 2018).

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), is a service supported program for low-income women, infants and children up to the age of 5 (WIC Fact Sheet, 2019). WIC provides mothers with education on diet, nutrition and referrals to other health services if needed (WIC Fact Sheet, 2019). Another service support made available to families is Supplemental Nutrition Assistance Program (SNAP). SNAP is a program that provides nutrition benefits to supplement the food budget for needy families determined by the federal and state eligibility requirements (Snap Eligibility, 2021). SNAP income and resources are reviewed annually (Snap Eligibility, 2021). Although there are more federal and state service supports for mothers and families, these two examples are provided to show how mothers utilize services.

Eligibility for these supports is based on income and assets often tied to federal poverty guidelines (King & Giefer, 2021). Mothers who are eligible for SNAP are most often receiving other governmental support as well. It was found that one in ten

mothers who received SNAP benefits also received at least one other program of support (King & Giefer, 2021). In 2019, about three in five children lived in families headed by mothers who were living in poverty (Fins, 2020).

Medicaid is a federal-state service support program that covers health care needs of one in five Americans (Rudowitz, Garfield & Hinton, 2020). Medicaid finances cover personal health care spending for hospitals, community health centers, physicians and jobs in the health field (Rudowitz, Garfield & Hinton, 2020). As long as an individual meets the eligibility requirements, they would be covered under Medicaid law and given the opportunity to utilize further health care needs (Rudowitz, Garfield & Hinton, 2020). Women with health insurance or Medicaid coverage are more likely to receive pregnancy screenings routinely and for health conditions (Wherry, 2018). Women who have access to a health professional have a lower probability of unplanned pregnancy and established early prenatal care compared to women without insurance (Wherry, 2018). However, even with consistent care, new mothers regularly omit certain concerns about their health (Harrison & Hicks, 1983).

In the United States, barriers to service utilization participation can include job conflicts, transportation, environmental barriers, confusion about eligibility, dissatisfactions, embarrassment, lack of social support related to accepting government assistance and stigma (Panzera et al., 2017). More specifically, stigma is the internalization of stereotypes (Panzera et al., 2017). It is important to understand stigma as one of the barriers to families accepting government services. One group of researchers conducted a focus group to inform others about women receiving services at a local clinic in the United States, and their understanding or utilization of WIC (Panzera et al.,

2017). One of the requirements for utilizing WIC is the child must join the appointments with the mother. With scheduling and childcare complications this can be difficult. There was noted long wait times, negative staff interactions and stigma of two kinds; embarrassment/pride and treatment (Panzera et al., 2017). Embarrassment and pride decreased mothers' decision to maintain in the program. Identity stigma became more prevalent with stereotypes of needing government assistance and self-defeating thoughts that the family may not even qualify. Treatment stigma results when during the process of enrolling, scheduling or interactions during the visits affects the mother from continuing her services (Panzera et al., 2017).

Theoretical Consideration

There is research that examines the association between mother's social and psychological influences on health. The psychosocial theory, most closely associated with Erik Erikson, explains the changes in self-understanding and social relationships from infancy through later life (Newman and Newman, 2020, p. 149). It focuses on the mental processes to support the connection between the self and the individual's social world. Development within this theory is ongoing and continues to build as individuals and social environments change (Newman & Newman, 2020). The current study uses this framework as a means to further investigate how supplemental service support and monthly payment expenses affect mothers' mental health. Variables in the current study directly relate to the core elements of the psychosocial model. The psychological perspective will explore mothers' mental health outcomes, specifically depression. The social perspective uses the central process; a way that an individual

takes in or makes sense of the social/cultural expectations to explore service supports (Newman & Newman, 2020, p. 156).

The Current Study

The current study will aim to combine the psychological and social perspectives to further understand the effects of service support and mothers' mental health outcomes. Specifically, this study explores how mother's financial concerns impact mental health outcomes (depression) when utilizing social and need based services. The current study fills a gap in the research literature of the potential impact of service utilization and maternal depression. As such, it is hypothesized that:

Hypothesis 1: Mothers with high financial worries will experience significantly higher levels of depression compared to mothers with low financial worries.

Hypothesis 2: Service utilization will play a moderating role between financial worry and depression. It is expected that new mothers who have high financial worries and high service utilization will have the lowest levels of depression, compared to mothers who have low rates of service utilization.

Chapter 3

METHODOLOGY

Procedure & Sampling

The present study is using baseline data from The Baby's First Years Project (BFY). BFY is a randomized control trial in the United States designed to identify the causal impact of poverty reduction on children's early development. BFY is providing the first understanding of the extent to which household income plays a role in children's cognitive, socio-emotional, and brain development. Data collection began in 2017, by Survey Research Center, Institute for Social Research, University of Michigan, Ann Arbor, Michigan, under contract from the University of California, Irvine. A total of 1,050 low-income mother/infant dyads were recruited from the hospital postpartum in four metropolitan cities in America; New York City (NY), New Orleans (LA), Omaha (NE), and the Twin Cities (MN), between May 2018 and June 2019. Mothers were recruited from 12 hospitals in the four cities shortly after giving birth. Participants were eligible based on information provided in a screening interview. The inclusion criteria included mothers of legal age for informed consent (18 or older), household income below the federal poverty line in the prior calendar year, infant admitted to the newborn nursery and not requiring admittance to the intensive care unit, residence in the state of recruitment and stating intent not to leave the state, infant discharged with the mother and the mother speaks English or Spanish. Mothers were initially excluded if they refused, or if they were unable to be approached due to procedures, interventions, being busy, or not being in their hospital room. A total of

1,050 new mothers consented to participate in the research study and were administered a baseline interview and offered and agreed to the cash gift deposit. Forty percent of the mothers were given a high cash amount of \$333 per month and 60% remaining received \$20 per month for the first several years of their children's lives. Mothers were told the cash payments would continue until the child was 40 months old and that the study would follow up with them annually for the next 3 years. Quantitative data were collected at four checkpoints: baseline shortly after a child is born, at one year old, two years old and three years old. During the first two follow ups mothers participated in an at-home visit and year 3 follow ups took place at a local university setting. Prior to launching the study, secured approvals were met from state or local officials to ensure that participants would not lose eligibility for most public benefits due to the cash gift. Data for this research study was accessed according to the protocols described by the University of Rhode Island International Review Board.

Measures

Demographic Variables: A variety of demographic information was collected from study participants including: Mother's Income (mother's reported annual earned income), Mother's Highest Level of Education (Less than high school, High School diploma or GED, Some college, no degree, Associate's degree, Bachelor's degree or higher), Mother's Age (in years), Race (White, Black or African-American, Asian or Pacific Islander, American Indian, Eskimo, Aleut, or Other), Ethnicity (Hispanic or Latino or Not Hispanic or Latino), Emergency Funds (Have you set aside emergency or rainy day funds that would cover your expenses for 3 months in case of sickness, job loss, economic downturn, or other emergencies?), and Eviction Threat (In the last 12 months, has your current or previous landlord ever threatened to evict you for non-payment of rent). The Gift Group (low cash gift or high cash gift) was also included in this study as demographic variables of interest.

A few demographic variables were recoded to have fewer categories for the purpose of the study. The race variable was recoded to those (1) single race and (2) multiracial. Eviction threat was recoded into a dichotomous variable of (0) those who did not fear eviction threat and (1) those who did. Individuals who reported owning a home or having not leased or rented were sorted as missing since the fear of eviction was not applicable to them. After a series of preliminary analyses, it was determined that race, ethnicity, eviction threat and mother's education were significantly correlated with study outcome variables and included as control variable in a multivariate analysis.

Expense Worry: The current study used expense worry as an independent variable. Expense Worry was collected from baseline data. Participants were asked “*How often do you worry about being able to meet your monthly living expenses? Would you say you worry all the time, very frequently, occasionally, rarely, very rarely, or never*” indicating: (1) all the time through (6) never. Expense worry was analyzed as a dichotomous variable, with scores above the mean indicating high worry. The original variable was reverse coded to reflect that a higher number indicated more worries.

Service Support: The current study used Service Support as a moderator variable. Service Support data was collected from participants by asking “*Are you currently receiving services and support?*”. Mothers were then given a checklist of options and were asked to check all the possible services they received. Possible choices included (1) Food Stamps, (2) Free or reduced childcare, (3) Head Start, (4) Women, Infants and Children (WIC), (5) State unemployment, (6) Cash assistance, (7) Medicaid coverage for self, (8) Housing assistance, (9) Other. The service support variable was recoded to “(1) yes, I receive services” or “(0) no I do not receive that service”. A new variable was created to measure the total number of supports mothers received. Responses ranged from 0 to 9.

Mother’s Depression: The current study used Mother’s Depression as the dependent variable. Data was collected for this variable from baseline data from the BFY project database. Mother’s Depression was rated using the Rasch-derived CES-D 10 item short form scale (Cole et al., 2004), from the larger Center for Epidemiological Studies Depression Scale (CES-D) 20. The CES-D 10 score was coded for a total overall depression score. The questions were “*During the past week... I was bothered;*

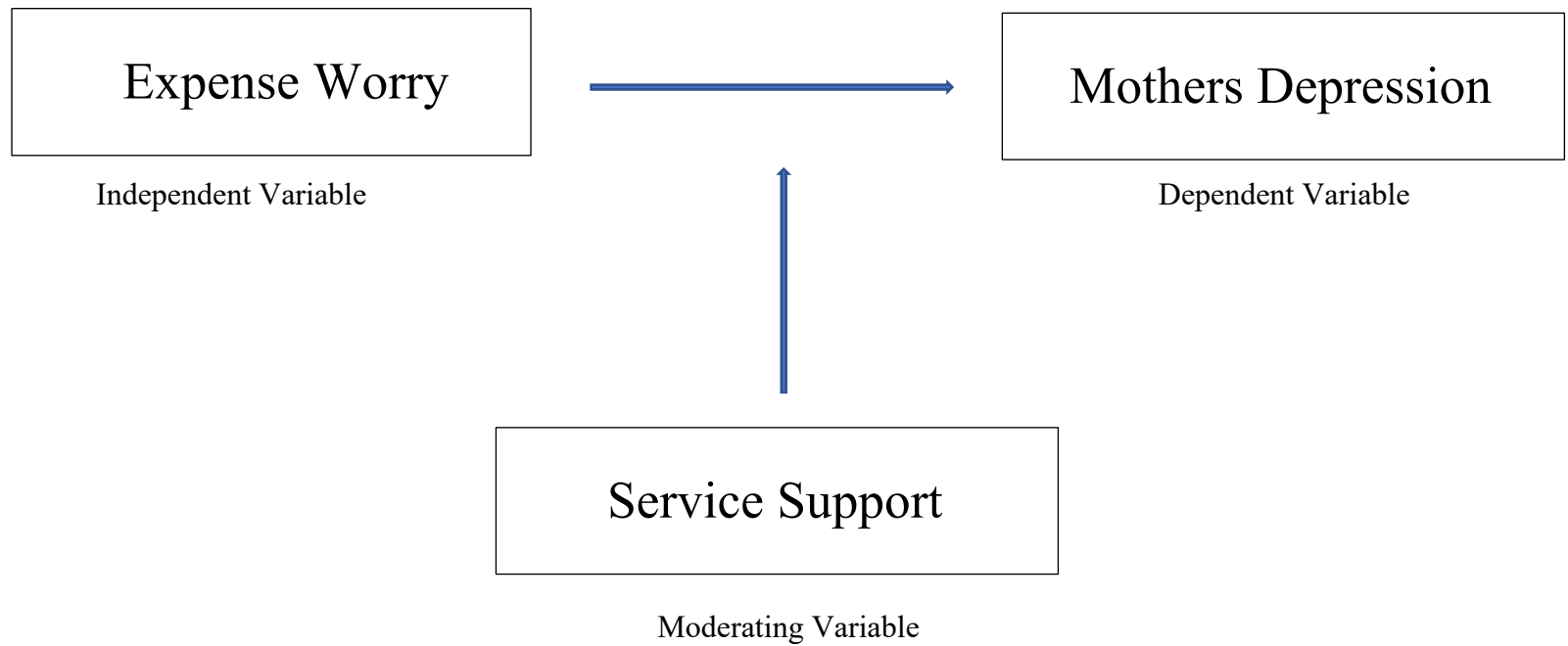
I felt I could not shake off the blues with the help from my family or friends; I felt I was just as good as other people; I had trouble keeping my mind on what I was doing; I felt that everything I did was an effort; I felt hopeful about the future; I thought my life had been a failure; I felt fearful; I felt lonely; and People were unfriendly. Participants were asked to scale them from “rarely or none of the time (less than 1 day)”, “some or a little of the time (1-2 days)”, “occasionally or moderate amount of time (3-4 days)”, to “most or all of the time (5-7 days)”. The CES-D will be entered into analyses as a dichotomous variable, following the CES-D 10 guidelines of a cutoff score above 10 indicating high depression. The internal consistency for this scale was ($\alpha = .683$); since the alpha is less than .70 the variables were transformed to create Z-scores and used for analysis.

Data Analysis

The present study utilized the Statistical Package for the Social Sciences (SPSS) Version 27 to conduct all statistical analyses. Preliminary analyses, including frequencies and descriptive statistics, were run to determine demographic variable information and to aid in calculating for missing data and to determine which variables needed to be recoded for analyses. Mean substitutions were conducted for missing data in demographic and primary study variables.

Bivariate analysis, including Pearson's Product Moment Correlation, was conducted between independent and dependent variables to determine if significant associations were present. A 3-step linear regression model was used to explore linear regression and test a moderation model. Linear regression was used to compare if mothers' concerns about finances is a strong predictor of depression. Before the regression was completed a Z-score was calculated to standardize the data. Demographic factors that were significantly correlated with primary study variables were used as covariates in the regression analyses as step 1. Step 2 included the independent variable (expense worry), and step 3 included the interaction term/moderator variable (expense worry x service support). Moderation analyses were run to determine if the relationship between independent and dependent variables (i.e., expense worry and depression outcomes) was influenced by a moderating factor (service support).

Figure 1. *The moderating role of service supports on mother's expense worries and mothers' depression.*



CHAPTER 4

FINDINGS

Table 1 reflects univariate analyses, such as descriptive statistics and frequencies, which were conducted to determine sample size of demographic and primary study variables. Within the study, mother's depression with a possible score of maximum 22, it was found that the average score for depression fell around 6.9. Out of a total of 9 service supports that mothers were able to check off if they currently received, 2.7 services were found to be used as an average per person. It was found that mothers reported on average 3.7 out of 6 for expense worry. Mothers' income was an average of \$7,596.40 and it was found that the average age of mothers in the sample was 27. A majority of mothers had at least a high school diploma. Almost all mothers reported have a single race (95.2%) as well as almost 40% of the population reporting their ethnicity as non-Hispanic or Latino.

Table 1. *Frequencies and Descriptives and Demographics and Primary Study variables (N = 1,050)*

	N	% of N	Mean	SD	Range
Mother's Income			7,596.35	8,911.25	0-150,000
Mother's Education			2.16	.989	1-5
(1) Less than high school diploma	244	23.2%			
(2) High school diploma or GED	539	51.4%			
(3) Some college, no degree	178	17.0%			
(4) Associate's degree	34	3.2%			
(5) Bachelor's degree or higher	55	5.2%			
Emergency Funds^a			4.12	1.66	1-5
(1) Yes	233	22.2%			
(5) No	817	77.8%			
Eviction Threat^a			.09	.291	0-1
(0) No	952	90.7%			
(1) Yes	98	9.3%			
Mothers Age			27.09	5.86	18-48
Race^a			1.05	.213	1-2
(1) Single reported race	1000	95.2%			
(2) Multiracial	50	4.8%			
Mothers Ethnicity^a			.42	.493	0-1
(0) Not Hispanic	608	58.1%			
(1) Hispanic	440	41.9%			
Gift Group			.57	.893	0-4
(0) Low cash gift	600	57.1%			
(1) High cash gift	400	38.1%			
(2) Low cash gift, not accepted after randomization	1	0.1%			
(3) High cash gift, not accepted after randomization	2	0.2%			
(4) Gift not accepted before randomization	47	4.5%			
Mothers Depression			6.86	4.52	0-22
Service Support^a			2.70	1.36	1-7
Expense Worry^a			3.67	1.65	1-6

^aStudy variables were recoded

Table 2 reflects the Pearson Product Moment Correlation used to explore the associations among primary study variables and demographic variables to be controlled for in the main analyses. Total support and expense worry was significantly correlated with maternal depression ($r = .112, p < .001$), indicating that as the total numbers increase, mothers' depression would also increase in value. Mother's education had a significant negative correlation with maternal depression ($r = -.103, p < .001$), indicating that the higher the education level the lower the depression score. The threat of eviction was significant and positive ($r = .163, p < .001$), indicating that mothers with a higher fear of eviction threat experienced higher depression. It was found that race was significantly and positively correlated with mother's depression ($r = .138, p < .001$) indicating that mothers who reported a single race had a higher likelihood of depression. Lastly, for demographic variables, mother's ethnicity was also significantly correlated with depression, indicating that mothers who reported not being Hispanic or Latino had higher depression scores. Mothers' income, age, gift group and emergency funds were not shown to be significantly correlated with mothers' depression, and therefore not included as control variables in the regression.

Table 2. *Bivariate correlations between predictor and outcome variables.*

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Income	-										
2. Mother's Education	.108**	-									
3. Emergency Funds	-.075*	-.056	-								
4. Eviction Threat	.046	-.057	.089**	-							
5. Mother's Age	.158**	.146**	.078*	.066*	-						
6. Mothers Race	-.015	.012	.001	-.010	-.041	-					
7. Mothers Ethnicity	.009	-.086**	.090**	.037	.160**	-.060	-				
8. Gift Group	.031	.027	-.027	-.036	.068*	-.052	.082**	-			
9. Total Support	-.076*	-.064*	-.001	.127**	.072*	.104**	-.219**	-.029	-		
10. Maternal Depression	-.019	-.103**	-.002	.163**	-.032	.138**	-.175**	-.033	.112**	-	
11. Expense Worry	.009	-.004	.193**	.202**	.166**	.028	.109**	-.016	.021	.244**	-

$p < .05^*$, $p < .01^{**}$

Regression/Moderation

Hierarchical regression analyses were conducted in two blocks. The first block included demographic variables (race, ethnicity, eviction threat and mother's education) significantly correlated with the outcome variable, mother's depression. The second block included demographic variables, primary study variables (service support and expense worry) and an interaction term (service support x expense worry).

The first regression block explored demographic variables predicting mother's depression. Results of the regression (Table 3, Model 1a) showed that demographic variables significantly predicted mother's depression: Eviction threat ($b = .165, p < .001$), mothers' education ($b = -.111, p < .001$), mothers' race ($b = .131, p < .001$), and ethnicity ($b = -.183, p < .001$). After controlling for demographic variables, the second block (Table 3, Model 1b), showed that expense worry emerged as a significant predictor of mother's depression ($b = .239, p < .001$). Support services did not significantly predict mother's depression ($b = .028, ns$). Service support explained a significant proportion of variance in depression, $R^2 = .088, F(1895.718) = 21424.202, p < .001$.

Finally, the interaction term of expense worry x service support was not a significant predictor of mother's depression ($\beta = .002, ns$). When adding the interaction term of expense worry x service support into the model with demographic variables, results showed that the interaction term only accounted for an additional 3.3% of the variance in depression with mothers with newborns ($R^2 = .06$, Model 1b). Service support also explained a significant proportion of the variance in depression with expense worry x service support, $R^2 = .143, F(3071.272) = 21424.292, p < .001$.

Table 3. *Linear regression model predicting mother's depression*

Variable	Model 1a			Model 1b		
	B	SE	β	B	SE	β
Race	2.770	.628	.131**	2.534	.613	.119**
Ethnicity	-1.678	.272	-.183**	-1.849	.273	-.202**
Eviction Threat	2.558	.460	.165**	1.760	.460	.113**
Mother's Education	-.509	.136	-.111**	-.516	.132	-.113**
Expense Worry				.655	.081	.239**
Service Support				.095	.100	.028
Expenseworry X Support				.009	.130	.002
DF		4			7	
F Change		25.361**			24.911**	
R ² Change		.088			.055	
Adjusted R ²		.085			.138	

a. Dependent Variable: Maternal depression (Center for Epidemiological Studies Depression Scale (CES-D) total score)

b. $p < .001$ **

CHAPTER 5

CONCLUSION

The current study explored the social, financial and psychological experiences of new mothers. Specifically, this research study examined the impact of financial stress and service utilization on maternal depression after birth. When exploring service support as a moderator between financial worries and depression, it was hypothesized that the impact of worries about finances and depression would change depending on mother's levels of support possible. Study findings from a linear regression revealed that demographic factors and financial worry significantly predicted maternal depression, over and above the amount of service support utilized by mothers. This research adds to existing literature about mother's mental health outcomes and continues to build on knowledge related to the importance of service support utilization and socio-contextual factors that impact depression in new mothers.

Hypothesis 1 sought to explore how high worries about finances were associated with higher levels of depression. Mothers in this study varied in age, race and ethnicity but the common factor is they were all mothers to a newborn. Linear regression confirmed hypothesis 1, with study findings revealing that the higher the financial worries are for a mother, the higher their rates of their depression. This finding is important because it extends the research findings to describe how specific new mothers under certain types of stress may experience childbirth and the fourth trimester of pregnancy. Much of the existing literature focuses on children's outcomes, whereas this finding

suggests that mothers are at risk for mental health concerns when their financial worries are a chronic stressor.

These study findings also highlight the important contribution of socio-cultural factors on new mothers' experience of depression. There is research to support certain demographic variables having increased cause for depressive symptoms. Education and access to a high-quality level of patient care is something not afforded to every mother. Families with free or low-cost health services, as well as parent education, have been shown to lead to improvement in mental health symptoms (Lee & Hunter, 2021). In this current study finances were examined as overall income and potential outcomes of having less income. Fear of eviction and low-income status emerged as significant predictors of depression. Financial burdens also impact mothering by creating additional financial stress on themselves and not being able to provide for their children (Bloom et al., 2012).

The current study did not yield significant findings in regression analyses related to Hypothesis 2. It was hypothesized that mothers with newborns who had worries about finances, but also utilized several service supports would have lower levels of depression. The demographic variables like race, ethnicity, eviction threat and mother's education were more likely to affect depression rather than a total number of supportive services. It is plausible that mothers in the hospital right after birth may not be utilizing as many services at that time that they may when the child is older. Our findings revealed that on average a mother utilized 2.7 services out of a total of 9. Some supports like Head Start or State funded Pre-kindergarten are not applicable

for these mothers due to the age of their child limiting the amount of total support. Additionally, one item not explored in his study was the amount of other children in the household. Family size may change patterns of service support utilization, including cash assistance and various other supports.

In a recent article based on WIC and SNAP programs, evidence supports that individuals that take part in food benefit programs do have increased odds for depressive symptoms (Adynski et al., 2020). This research suggests that involvement in increased access to food services alone does not decrease odds for psychosocial stressors including reducing depression (Adynski et al., 2020). Factors such as paying for diapers have been considered a substantial financial burden for mothers and diapers are not an allowable expense for anti-poverty programs like WIC. Mothers of newborns who have trouble paying for diapers have significantly been associated with higher levels of depression (Austin & Smith, 2017). Researchers believe that the cause for depression is a combination of biological, social and psychological factors (Cadigan & Skinner, 2015). This suggests that there is not one reason a mother has depression but also suggests there is no one solution to help ease depression.

A more comprehensive understanding of maternal mental health is explored through racial disparities and understanding how race is associated with depression. The population of the sample was reported as Black, African American (46%), White (21%), Asian or Pacific Islander and American Indian, Eskimo, Aleut making up a combined 3.2%. 30% of the sample reported other or refused/don't know as their race. Previous literature based on race shows that Black mothers are at an increased risk and have significantly higher odds of experiencing depression (Parker, 2021). Consistent

with previous findings Black mothers also had a higher rate of social and economic adverse experiences such as, unemployment, poverty and experienced financial crisis (Parker, 2021). The current study found that a majority of the sample reported Black, African American and based on previous findings, future research should be done with a focus on maternal health outcomes for a more diverse population.

Findings within the present study can be interpreted using the Psychosocial theoretical framework (Newman & Newman, 2020). Giving birth to a baby is considered a new life event. Mothers who have a predisposition for depression may consider giving birth/newborn stage, a stressful life event. Davies et al (2022), discuss food insecurity, low education and inadequate housing as increasing risk factors for depression. Within this study, it was found that there were associations among housing, paying for expenses, education level and depression. Existing literature using the psychosocial framework suggests multiple pathways to depression and without the presence of supportive resources adapting and coping responses will vary (Billings & Moos, 1982). Additional research suggests that Black mothers in particular are less likely to access and use formal mental health services (Parker, 2021). There is stigma associated with Black cultural beliefs and perceptions of seeking help for mental needs is a factor that has been associated with underutilization of services (Parker, 2021).

Limitations of the Current Study

Study findings should be interpreted within the context of certain methodological challenges. For example, the published reliability for the short form CES-D 10 scale using Cronbach's Alpha is strong ($\alpha = 0.86$) indicating this scale is appropriate to use

to determine levels of depressive symptoms (Williams et al. 2020). However, in the current study sample the internal consistency of the CES-D 10 was low ($\alpha = .683$). Based on our data, individuals in this sample population scored on average 6.9 out of a possible 22 on the CES-D 10 depression scale. This would indicate that this sample of mothers with newborns were not expressing high levels of depression or the scale was not accurately measuring the expression of depressive symptoms in mother's immediately after childbirth.

It may also be concluded that this study's reliability was lower due to when the questionnaire was administered. Mothers were asked the questions during a time when hormones and emotions are heightened and this could have affected the reliability. Research demonstrates that about 10-15% of all mother's experience postpartum depression, occurring immediately after childbirth and lasting up to three to four years (Lee & Hunter, 2021). Mothers also experience different worries and fears during different trimesters of pregnancy. Mothers in the first trimester may have worries on the idea of becoming a mother, second trimester worries about bodily changes and third trimester worries about the anticipation of labor/delivery and increased fears or worries on parenting and financial status (Brunton et al., 2015). This research suggests that administering a depression screening immediately after giving birth may not be representative of the population.

Additional limitations should also inform interpretation of the current study. First, Baby's First Years data used for this study was baseline data. The dataset planned additional waves of data that at the time of this current study were not available. A second limitation using Baby's First Years data is that responses are mostly

self-reported. Primary and outcome variables were drawn from self-reported questionnaires which have a tendency to be unreliable (Chung et al., 2018). Such data can be influenced by comprehension of questions, dominant language or language questionnaire was administered in and bias. The final limitation for this study would be the existing information and the country of origin. There was limited research in service support and depression in mothers in the United States.

Implications and Future Directions

This research aided existing literature in mother's mental health outcomes and continues to build on the importance of service support. Our research reviewed existing literature on depression being a troubling part of preconception, prenatal and postnatal care for mothers. With this research we can see that mothers do have worries about finances and that triggers depression. Our findings did not support that the more services utilized would lower mothers' depression. In this case, this population may not have reported using many services, been depressed or reporting high depression symptoms, but future research should determine at different periods throughout pregnancy and afterward would lower depression with continued support.

Future research would benefit from adjusting the timing of administration of the depression screening. In addition to self-reported data there were no assessments given to measure how important the support or resource was. In order to determine service support, it was either "yes, I receive it" or "no I do not." This study aimed to determine whether or not a support/resource would lower depression; however just a

yes or no answer does not determine how important that service is to their lives. A majority of the previous literature was compiled outside of the United States and, therefore, future research with an aim on conducting new studies or using similar research questions within the United States would be beneficial.

Home based services and early developmental programs were not discussed or used as potential supports for families in this study. Home visiting services like Healthy Families of America or Early Head Start, typically service families that have complex needs (Mersky et al., 2022). Home based interventions have been linked to parenting outcomes, but retention is low and variability of the service effect needs to be considered. Mersky et al., 2022, found that stress levels increased overtime from birth throughout infancy. Future research would be beneficial to increase the support options to include families with children under three years old. Most often home visiting supports are only given to families who ask or have concerns related to development. To generalize this information to the larger population, more guidance on supports available to all families. It was found that most families stopped receiving services 60 days postpartum, limiting the long-term effects on home visiting services (Mersky et al., 2022).

Lastly, the majority of the sample (46%) accounted for Black, African American women. Black mothers are underutilizing support for mental health. There is a need to increase awareness and silence stigma to continue to provide appropriate practice for all mothers. Mental health professionals should broaden support for mental health and help to target the most fragile. Research in diverse groups of new mothers would allow for greater ability to generalize race findings for additional populations

and move the field forward in identifying strategies and supports that could help all new mothers, and their babies, to grow and thrive.

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