

Predictors of Psychological Distress in Low Income Mothers

Harry Adams

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Hudson Santos Phd RN, Thesis  
Advisor

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### Abstract

**Purpose:** Worldwide at least 10% women experience psychological distress, primarily depression, during the postpartum period. This rate is three to four fold higher for low-income women. The purpose of this study is to explore the extent to which social determinants of health factors and allostatic load (a biological measure of chronic stress) predict psychological distress in low-income pregnant women over the first postpartum year.

**Methods:** We conducted a secondary data analysis using the Child Community Health Research Network (CCHN) dataset obtained via the National Institute of Child and Human Development. Our sample was 2510 mothers, mean age 25.6. The psychological distress outcome variables were perceived stress, depression, and anxiety symptoms over the first year of postpartum. Our predictors were social determinants of health factors (e.g., demographic factors, maternal hardship, percent poverty level, interpersonal violence, food security) and allostatic load. We used logistic regression models to determine odd ratios for each individual predictor on each outcome of psychological distress over the first year postpartum.

**Results:** Interpersonal violence and perceived food insecurity were significant risk factors of stress, depression and anxiety symptoms over the first year postpartum. Other significant risk factors of psychological distress symptoms at individual time points included ethnicity, low poverty level, low education attainment, and public insurance status.

**Conclusions:** This is one of the first studies to report risk factors for maternal psychological distress over the first year postpartum. The significance of risk factors for psychological distress change over time. These results indicate both modifiable and non-modifiable risk factors as potential targets for further research.

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*Keywords:* psychological distress, low income mothers, postpartum depression, anxiety, chronic stress, allostatic load, social determinants of health

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### Predictors of Psychological Distress in Low Income Mothers

Women during the postpartum period often experience psychological distress including elevated stress and depression symptoms (Holditch-Davis et al., 2009; Holditch-Davis et al., 2015). Psychological distress contributes to the development of functional impairments and negative mental health outcomes including diagnosable psychopathology, such as postpartum depression (O'Hara & Wisner, 2014). Worldwide at least 10% of pregnant and postpartum women experience a mental disorder, primarily depression (WHO, 2017), and the estimated prevalence of experiencing one or more anxiety disorders is 8.5% (Goodman, Watson, & Stubbs, 2016). Maternal psychological distress including stress, depression, or anxiety symptoms occur in an estimated 25% of postpartum women (Kingston, McDonald, Austin, & Tough, 2015). These psychological distress symptoms often co-occur with the 13.1% of postpartum women experiencing both depressive and anxiety symptomology (Falah-Hassani, Shiri, Dennis, 2016).

The elevated levels of psychological distress in postpartum mothers has been linked to adverse outcomes for mothers and children (Holditch-Davis et al., 2015). For example, postpartum depression has been associated with negative effects for child development across the lifespan including behavioral problems, decreased academic performance, developmental delays, increased risk for developing depression, failure to thrive, insecure-avoidant attachment, and a reduction in social skills up to adolescence (Hübner-Liebermann, Hausner, & Wittman, 2012; Marcus et al., 2011; Netsi et al., 2017; Pearson et al., 2013). Maternal anxiety is associated with poor birth outcomes as well as behavioral and emotional maladjustment in children (Sockol, Epperson, & Barber, 2014). The elevated perception of stress during the perinatal period is associated with increased likelihood of preterm birth (Shapiro, Fraser, Frasc, & Seguin, 2013). Furthermore, the lifetime economic consequences of perinatal anxiety and depression have been

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estimated in the United Kingdom, as the total cost of health-related quality of life losses is £8500 (\$11,843.90) per woman giving birth (Bauer, Knapp, & Parsonage, 2016).

Low income women are at the highest risk to experience psychological distress (Chung et al., 2004). The risk of psychological distress has been hypothesized to be, in part, due to exposure to chronic or prolonged stress (Yim, Stapleton, Guardino, Hahn-Holbrook, & Schetter, 2015). Chronic stress, defined as long term exposures when demands exceed resources along with risk factors such as poverty, unsafe living environments, unstable social relationships, or exposure to racism or discrimination, can set a pathway of vulnerability to psychological distress (Lazarus & Folkman, 1984; Tanner Stapleton et al., 2016; Schetter & Tanner Staplelton 2015). Allostatic load theory explores the cumulative effect of stressful environments and contexts on dynamic homeostatic physiologic adaptations associated with chronic stress (Juster, McEwen, & Lupien, 2010; McEwen & Seeman, 1999). Allostatic load has been utilized to explore the biological etiology for the development of psychological distress symptoms and psychopathologies and this body of research exploring the negative effect of allostatic load changes has been shown to contribute to the development of negative physical and mental health outcomes including depression and anxiety (Hammen, Kim, Eberhart, & Brennan, 2009; Jolley, Elmore, Barnard, 2007; Vreeburg et al., 2009). Among low income postpartum mothers, Latina and African Americans have significantly higher allostatic load index as compared to Caucasian mothers (O'Campo et al., 2016), suggesting a racial and ethnic differences in biological regulation of chronic stress.

It is well-established that socioeconomic disadvantage confers important risk factors for maternal psychological distress. For example, young maternal age, low socioeconomic status, poor social support and/or marital relationship, history of abuse and/or domestic violence, and

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food insecurity are associated with depression and anxiety in mothers (Beydoun, Beydoun, Kaufman, Lo & Zonderman, 2012; Biaggi, Conroy, Pawlby, & Pariante, 2016; Chung et al., 2004; Dolbier et al., 2013; Field, 2017; Leung, Epel, Willet, Rimm & Laraia, 2014; Norhayati, Hazlina, Asrenee, & Emlin, 2015; Sockol, et al., 2014; Wu, Chen, & Xu, 2012;). Additional risk factors for elevated anxiety symptoms include being employed and having a high level of education (Field, 2017). Risk factors associated with increased perinatal maternal stress include young age, low income, low educational attainment, history of sexual abuse, recent stressful life events in the last month, smoking, alcohol consumption, low social support, preterm birth, and pregnancy with complications (Graignic-Philippe, Dayan, Chokron, Jacquet, & Toudjman, 2014; Leigh & Milgrom, 2008; Roy-Matton, Moutquin, Brown, Carrier, & Bell, 2011).

Current studies, however, typically explore maternal risk factors at a single time point. Information on how these risk factors may change in significance over time is largely unknown. Additionally, there is a lack of consensus as to which factors are consistently significant among low-income women and their effect on the prevalence of maternal psychological distress (O'Campo et al., 2016). Few studies simultaneously explore multiple risk factors of maternal psychological distress and social determinants of health, which include economic stability, education, social and community context, health and healthcare, and neighborhood and built environment (Office of Disease Prevention and Health Promotion, 2018). In addition, the relationship between allostatic load, as a marker of chronic stress, and psychological distress symptoms among the unique population of low-income postpartum mothers is not well established (O'Campo et al., 2016; Tanner Stapleton et al., 2016).

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The purpose of this study was to explore the extent to which and social determinants of health factors (e.g., maternal hardship, socioeconomic status) and allostatic load predicted stress, depression, and anxiety symptoms among low income mothers over the first year postpartum.

### **Method**

For this study, we conducted a secondary data analysis of de-identified data from the Child Community Health Research Network (CCHN) study dataset, obtained via the National Institute of Child and Human Development (NICHD), Data and Specimen Hub. The Institutional Review Board of the University of North Carolina at Chapel Hill approved the current study (#17-1518).

The CCHN study enrolled 3084 mothers through multi-site data collection completing recruitment between 2008 and 2010 from North Carolina, Illinois, Maryland, California, and Washington DC. The target population for the CCHN was low-income mothers and mothers who had preterm birth in order to study health inequalities. Women were enrolled in the study if they met the following eligibility criteria: self-identified as Black or African American, Hispanic or Latina, or White, between the age of 18 and 40, resided for at least 6 months within data collection locations, had three or fewer children, and had no plans for future sterilization after the index birth. Data collection included multiple methods administered at baseline (T0), 1 (T1), 6 (T2), 12 (T3), 18, and 24 months postpartum. For further information on the CCHN, refer to: <https://www.nichd.nih.gov/research/supported/cchn>.

### **Participants**

For this secondary data analysis, demographic data was utilized from the initial interview (T1) and hospital chart review (T0). We included data from 2510 participants who completed T1 (approximately 1 month postpartum), T2 (24- to 29-week postpartum) and T3 (50- to 65-week



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postpartum) study visits. We did not include later time points because the CCHN did not utilize the same measures of psychological distress after T3.

### Measures

#### *Predictors*

*Social Determinants of Health*: At T0, a set of demographic risk factors were utilized including ethnicity, percent poverty level, education, employment, health insurance status, ethnicity, marital status, and cohabitation. In order to measure public assistance, multiple survey questions were asked in order to assess the use of welfare programs and food stamps, i.e.: “In the past year, have you or any member of your family living with you received any income from the following sources? Temporary Assistance for Needy Families (TANF), Temporary Cash Assistance (TCA), or welfare cash assistance”; “In the past year have you or any member of your family living with you received any income from the following sources? Food stamps?”; “Have you ever received public assistance or welfare since turning age 18?”. Additionally, perceived food security was measured through the survey question: “In the last 12 months, were you ever hungry but didn't eat because you couldn't afford enough food”.

*Interpersonal Violence*: At T0, the Hurt, Insult, Threaten, Scream (HITS) screening tool was used to measure interpersonal violence. This tool utilizes four questions asking: how often does your partner: “physically hurt you”, “insult or talk down to you”, “threaten you with harm”, and “scream or curse at you”. Each item is scored with a 1-5 Likert scale for the frequency of the behavior, with one being “never” and five being “frequently”. The sum score of the responses are calculated giving a range from 4-20 with higher scores indicating higher interpersonal violence (Sherin, Sinacore, Li, Zitter, & Shakil., 1998).

*Allostatic Load Index*: At T2 and T3, the allostatic load index was collected as a composite measure of 10 biomarkers including body mass index, high density lipoprotein cholesterol, total

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cholesterol/high density lipoprotein ratio, pulse, systolic blood pressure, diastolic blood pressure, waist hip ratio, hemoglobin A1c, C-reactive protein, and cortisol (Juster, et al., 2010). The CCHN deviated from originally established allostatic load method for this composite score by creating a clinical cut off score for each measure based on clinical relevance. The clinical cut off points are as follows: body mass index of  $\geq 30$  kg/m<sup>2</sup>, high density lipoprotein  $\leq 40$  mg/dL, total cholesterol/high density lipoprotein ratio  $\geq 5.9\%$ , pulse  $\geq 100$  beats per minute, systolic blood pressure  $\geq 125$  mmHg, diastolic blood pressure  $\geq 80$  mmHg, waist hip ratio of  $\geq 0.85$ , hemoglobin A1C of  $\geq 5.4$ , c-reactive protein of  $\geq 3$  mg/L, and the top quartile of the sample for diurnal cortisol. A sum score was created based on these 10 clinical cut off values in order to get a final composite allostatic load index score. Participants with missing allostatic load data were included if three or less values out of the 10 biomarkers were missing and an average was taken based on the remaining measures to get a final composite allostatic load index score (for further details refer to O'Campo et al., 2016; Ramey et. al, 2015).

### ***Outcomes***

*Stress Symptoms:* At T1, T2 and T3, the Perceived Stress Scale (PSS) was utilized to measure stress symptoms (Cohen, Kamarck, & Mermelstein, 1983). This scale includes 10 questions assessing the frequency of specific feelings and thoughts over the last month with a Likert scale of 1-5, with one being “never” and five “almost always”. The total sum score ranging from 10-50 with higher scores indicating more perceived stress. For this analysis, the sum score was dichotomized into low chronic stress (bottom 75% of the distribution) and high chronic stress (top 25% of the distribution).

*Depressive Symptoms:* At T1, T2 and T3, the Edinburgh Postnatal Depression Scale (EPDS) was utilized to measure depressive symptoms. This scale consists of 10 questions assessing depressed

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mood for the last seven days. Responses are given on a 0-3 Likert scale. The sum of scores range from 0-30 with higher scores indicating worse depressive symptoms (Cox, Holden, & Sagovsky, 1987). For this analysis, the EPDS was dichotomized into no-to-low (scores  $\leq 9$ ) and moderate-to-high (scores  $\geq 10$ ) depressive symptom. Previous studies have shown that EPDS scores of  $\geq 10$  were clinically significant (Lagerberg, Magnusson, & Sudelin, 2011; Wisner, Parry, & Piontek, 2002).

Anxiety Symptoms: At T2 and T3, the Mini International Neuropsychiatric Interview (MINI) - Anxiety subscale, a clinical interview tool, was utilized to measure anxiety symptoms. This subscale includes six Yes or No questions asking about anxiety symptoms over the last six months (Hergueta, Baker, & Dunbar, 1998). A sum score of the yes responses (1) are calculated to get a score between 0-6. For this analysis, we used the CCHN dichotomization: No Generalized Anxiety Disorder (GAD) (sum score  $\leq 2$ ) and probable GAD (score of  $\geq 3$ ).

### **Analysis**

Descriptive statistics were first conducted in order to determine baseline information about our sample. Unadjusted logistic regressions were conducted for each predictor variable to each outcome (stress, depression, and anxiety symptoms) at each available time point (T1, T2, T3 for perceived stress and depression symptoms, and T2 and T3 for anxiety symptoms). As a parameter for statistical significance we selected an alpha level of  $< 0.05$ , and thus predictors with this threshold were entered into the adjusted logistic regression models. Beta estimates, parameter-likelihood odds ratio (OR), 95% confidence intervals (CI) for OR and *p*-values are reported.

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### Results

Our sample consisted of 2510 women who were enrolled in the CCHN study. Women in our sample had a mean age of 25.6 years (standard deviation [SD] = 5.67). Most of the women (53.8%) were self-reported African American, 24.2% Hispanic, and 22% Caucasian. The majority of participants (43%) had an income of < 100% federal poverty level (FPL) and a high school diploma (43.8%). The sample consisted of 57% unemployed women, 31.6% were non-married, 40.9% were non-cohabitating with the biological father, 53.1% were on Medicaid, and 51.4% expressed that they did not have food security. Regarding interpersonal violence as measured by HITS, the average score was 6.45 (SD = 2.40). In terms of allostatic load index, the average score was 2.62 (SD = 1.95) and 2.58 out of 10 (SD = 1.97) at T2 and T3, respectively (see Table 1).

For the psychological distress outcomes, the prevalence of elevated stress symptoms (top quartile) was 27.1%, 29.0%, and 30.2% from T1 to T3, respectively. Depressive symptoms (EPDS  $\geq 10$ ) prevalence as measured by the EPDS was 15.7%, 16.4%, and 16.0% from T1 to T3, respectively, whereas the prevalence GAD (MINI  $\geq 3$ ) was 8.0% and 7.9%, T2 and T3 (see Table 2).

### Risk Factors for Stress Symptoms

In the adjusted model for elevated stress symptoms (see Table 3), interpersonal violence was a significant risk factor across time (T1 OR=1.23, CI: 1.18-1.29; T2 OR=1.14, CI: 1.08-1.20; T3 OR=1.13, CI: 1.07-1.18, all  $p < .001$ ). Perceived Food Security was significant at T1 OR=2.32 (CI: 1.54-3.49,  $p < .001$ ) and T2 OR=1.98 (CI: 1.14-3.43,  $p = 0.015$ ). At T2, significant risk factors included being African American (OR=1.63, CI: 1.17-2.26,  $p = 0.004$ ). At T3, significant risk factors included having an income <100% FPL (OR=1.82, CI: 1.17-2.81,  $p =$

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0.007) and being unemployed (OR=1.35, CI: 1.01-1.80,  $p=0.044$ ). Different from the other findings, using food stamps in the past year was a significant protective factor at T1 (OR=0.72, CI: 0.54-0.96,  $p=0.025$ ). Supplementary Table S1 shows the complete unadjusted and adjusted model results for stress outcome.

### **Risk Factors for Depressive Symptoms**

In the adjusted logistic regression model for risk of elevated depressive symptoms (see Table 3), interpersonal violence was a significant risk factor across time (T1 OR=1.22, CI: 1.17-1.28; T2 OR=1.11, CI: 1.05-1.17; T3 OR= 1.11, 1.05-1.17; all  $p$ -values  $< .001$ ). At T1 and T2, women who perceived food insecurity had an OR=2.79 (CI 1.83-4.26,  $p < .001$ ) and OR=2.01 (CI 1.17-3.45,  $p = .012$ ), respectively. At T2 and T3, women who had lower than high school education had a significant OR=2.60 (CI 1.16-5.82,  $p = .021$ ) and OR=1.67 (CI 1.16-2.40,  $p = .006$ ). High school education was also significant factor for depression symptoms at T2 (OR=2.15, CI 1.03-4.50,  $p=0.042$ ). Regarding insurance, having no insurance was significant at T1 (OR=1.78, CI 1.01-3.11,  $p = 0.045$ ) and having Medicaid was significant at T2 (OR=1.55, CI 1.04-2.33,  $p=0.032$ ). Supplementary Table S2 shows the complete unadjusted and adjusted model results for depression outcome.

### **Risk Factors for Anxiety Symptoms**

In the adjusted model for elevated anxiety symptoms at T2 and T3, interpersonal violence and perceived food insecurity were significant risk factors (Table 3). Women who experienced interpersonal violence had a OR=1.12 (CI:1.05-1.20,  $p=0.001$ ) at T2, and a OR=1.12 (CI:1.05-1.20,  $p < .001$ ) at T3. Women who perceived food insecurity had a OR=2.46 (CI: 1.32-4.61,  $p = 0.005$ ) at T2, and similar risk is observed at T3 (OR=2.34, CI: 1.24-4.41,  $p = 0.008$ ).

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Supplementary Table S3 shows the complete unadjusted and adjusted model results for anxiety outcome.

### **Discussion**

We set out to explore the extent to which social determinants of health factors and allostatic load index were predictive of elevated stress, depression, and anxiety symptoms over the first year postpartum. The results from the adjusted logistic regression model showed multiple risk factors including interpersonal violence, food security, ethnicity, poverty level, education, and insurance status as significant predictors of elevated psychological distress symptomology.

Interpersonal violence as measured by HITS screening tool was the most consistent predictor associated with psychological distress symptoms over time in all three outcomes. Our findings add to the large body of knowledge on the link between experiencing interpersonal violence and developing psychological distress symptomology (Biaggi et al., 2016; Beydoun et al., 2012; Wu et al., 2012). Studies suggest that between 3-9% of women in the general population experience abuse during pregnancy, and this rates go up to as high as 50% when considering low income women (Alhusen, Ray, Sharps, & Bullock, 2015). While for some women the pregnancy can be a protective period from interpersonal partner violence, the large the majority of women can experience consistent patterns of abuse during the pregnancy and postpartum period (Alhusen et al., 2015). Regarding psychological distress a previous study established that interpersonal violence was associated with an increased risk of stress and depression over the first-year post-partum, however this study did not explore anxiety as an outcome (Velonis et al., 2017). When interpersonal violence is assessed across time during all three trimesters of pregnancy higher prevalence is reported than those that only screen once

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(Alhusen et al., 2015; Campbell, Garcia-Morena, & Sharps, 2004). These results highlight the importance of interventions that address prevention and screening for interpersonal violence multiple times across the perinatal period in order to reduce the effects of interpersonal violence on maternal psychological distress and other related poor health outcomes.

In our study, perceived food insecurity was another consistent risk factor over time. Food insecurity was associated with an increased risk of stress (T1, T2), depression (T1, T2), and anxiety symptomology (T2, T3). Within this study food security was measured in two ways: (1) as perceived food security, and (2) whether participants had received food stamps in the past 12 months. Receiving food stamps was a significant protective factor at T1 for stress symptoms. This is an interesting finding as it highlights the difference in the effect on psychological distress between perceived food security and receiving food stamps. Those individuals who received food stamps may have been more food secure with access to such benefits compared to those not receiving food stamps.

Utilizing Supplemental Nutrition Assistance Program (SNAP) services among very low food secure individuals has been shown to decrease the risk of depression compared to non-SNAP recipients (Leung et al., 2014). Another study found that SNAP participation in itself is not associated with maternal depression, but perceptions of the usage of welfare programs moderate the relationship between SNAP programs and maternal depression, with those with positive perceptions of welfare programs having less odds of depressive symptoms (Bergmans et al., 2018). These results highlight the increased complexity of food insecurity and psychological distress and future studies should incorporate more comprehensive measures of food security. For example, the Four-Dimensional Food Insecurity Scale (4D-FIS) was created in order to measure the complex phenomena of food security and includes four dimensions: quantitatively

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(reduction in food intake), qualitatively (reduction in dietary quality), psychologically (worry), and socially (alienation) (Johnson, 2017). Research utilizing more comprehensive measures of food security such as the 4D-FIS may provide a more informative context into the phenomenological experience of food insecurity rather than simple yes or no responses in terms of perceived food security and food stamp participation. Also, programs that aim to address the negative stigma associated with utilizing welfare food and nutritional programs could be an area to address the relationship between food security and psychological distress. These findings indicate that food and nutritional policies that aim to improve the perception and access of these programs among postpartum food insecure mothers could be tested as interventions to decrease the effect of food insecurity on psychological distress.

Our results are largely in agreement with previous literature exploring risk factors for maternal psychological distress (Chung et al, 2004; Garfield et al., 2015; Graignic-Philippe et al., 2014; Field, 2017; O'Campo et al., 2016). However, our findings also show that some socio determinants of health factors explored were not stable predictors of psychological distress over time. For example, low maternal educational status including less than high school (T2 and T3) and high school (T3) was associated with elevated depressive symptoms; being African American was found to be associated with an increased likelihood of experiencing elevated PSS score at T2; having an income <100% FPL was associated with an increased likelihood of experiencing elevated perceived stress score at T3. Previous literature exploring low income status and stress, depressive, and anxiety symptoms suggest a strong link between these factors (Chung et al, 2004; Garfield et al., 2015; Graignic-Philippe et al., 2014; Field, 2017; O'Campo et al., 2016). Our findings support the hypothesis that education status, race and income are not a



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constant risk factors for psychological distress over time. Future research should try to explain the fluctuation in significance of risk factors.

Contrary to previous research our study did not find allostatic load as a statistically significant predictor for psychological distress (Hammen et al., 2009; McEwen & Seeman, 1999; Vreeburg et al., 2009). The CCHN measured the allostatic load index based on clinical cut offs of 10 biomarkers in attempt to be clinically relevant (O'Campo et al., 2016; Ramey et. al, 2015). Allostatic load as a comprehensive metric of the biological changes related to chronic stress may not be best represented as an index made out of equally weighted cut offs. The original measure developed by McEwen & Seeman (1999) generated cut off values based on the top quartile of the sample. The CCHN deviated from the originally established allostatic load method for this composite score by creating a clinical cut off score for each measure based on clinical relevance as described in the methods section. Despite this inconsistent utilization of the allostatic load index measure, the allostatic load index is a good biomarker candidate for low-income minority women as there is a lack of reliable alternative molecular predictors for perinatal mental health outcomes (Guintivano, Manuck, & Meltzer-Brody, 2018). Additional research is needed to explore the relationship between allostatic load measures as a predictor for maternal psychological distress during the postpartum period.

Some limitations need to be taken into consideration while interpreting the results of this study. First, interpersonal violence was only measured at one time point, when research suggests that when there are multiple measurements there is an increased detection in prevalence (Alhusen et al., 2015; Campbell et al., 2004). Second, in the CCHN food security was limited to yes or no responses for participants regarding perceived food security and food stamp utilization. Other comprehensive measures such as the 4D-FIS may better inform the phenomenological

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experience of food insecurity and provide more information in the development of future interventions and policies. Third, the CCHN chose to deviate from the original allostatic load index measurement with clinically relevant cut offs and further research is needed to explore the strengths and limitations of this approach in establishing an allostatic load index. Lastly, we explored psychological distress outcomes isolated from each other, because combined analysis would reduce sample size substantially. Future studies should consider that psychological distress symptoms are comorbid and explore this aspect in their analysis.

Our findings have multiple clinical implications related to maternal risk factors for psychological distress over the first year postpartum. These results indicate modifiable risk factors (e.g., interpersonal violence and food security) as potential targets for further intervention research in order to better create interventions to improve mother's quality of life and decrease the prevalence of negative mental health outcomes. The longitudinal nature of this study can also be utilized clinically to inform the timing of important screening measures that aim to prevent the effects of these risk factors on increased psychological distress symptoms.

### **Conclusions**

Our study is one of the first to explore how various factors of social determinants of health and allostatic load index were associated with elevated stress, depression, and anxiety symptoms over time in mothers during the first year postpartum. Interpersonal violence and food security were consistently associated with increased psychological distress symptoms, while other variables fluctuated in significance over time. Our findings indicate the need for further research to explore why and in what conditions risk factors vary over time. This information is of great relevance for screening for women at risk for psychological distress. A better understanding of these risk factors will likely lead to interventions as well as inform policy that

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aim to help reduce maternal risk of developing psychological distress and negative mental health outcomes.

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**Table 1***Descriptive Statistics for Continuous and Categorical Predictor Variables*

<b>Predictor</b>	<b>Sample Size</b>	<b>% or Mean (SD)</b>
<b>Age</b>	2510	25.68 (5.76)
<b>Ethnicity</b>	2454	
Caucasian	540	22%
African American	1320	53.8%
Hispanic	594	24.2%
<b>FPL</b>	2510	
<100%	1070	43%
100-200%	688	27.4%
>200%	743	29.6%
<b>Maternal Education</b>	2443	
<HS	464	19%
HS	1070	43.8%
Some Higher	557	22.8%
4 Year College Degree	352	14.4%
<b>Employment</b>	2422	
Unemployed	1380	57%
Employed	1042	43%
<b>Marital Status T1</b>	2509	
Married	1717	68.4%
Non Married	792	31.6%
<b>Cohabitation T1</b>	2406	
Cohabiting	1421	59.1%
Non-Cohabiting	985	40.9%
<b>Interpersonal Violence (HITS)</b>	2064	6.45 (2.40)
<b>US vs Foreign Born</b>	2507	
US Born	1991	79.4%
Foreign Born	516	20.6%
<b>Health Insurance</b>	2473	
No Insurance	115	4.7%
Medicaid	1312	53.1%
Private Insurance	1046	42.3%
<b>Current Public Assistance</b>	908	
yes	705	7.6%
no	203	22.4%
<b>Past Year TANF, TCA, Welfare</b>	2508	
yes	486	19.4%
no	2016	80.6%
<b>Food Stamps Past Year</b>	2515	

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yes	1214	48.5%
no	1291	51.5%
<b>Public Assistance since 18</b>	2506	
yes	926	37%
no	1580	63%
<b>Perceived Food Security</b>	2505	
yes	1214	51.4%
no	1291	48.4%
<b>Allostatic Load T2</b>	1535	2.62 (1.95)
<b>Allostatic Load T3</b>	1552	2.58 (1.97)

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Note: Federal Poverty Level (FPL), High School (HS), United States (US), Temporary Assistance for Needy Families (TANF), Temporary Cash Assistance (TCA), Hurts Insult Threaten Scream (HITS)

**Table 2***Prevalence of Psychological Distress Symptoms Over Time*

<b>Psychological Distress</b>	<b>T1</b>	<b>T2</b>	<b>T3</b>
<b>Stress Symptoms</b>			
PPS < top quartile (low)	1752 (72.9%)	1188 (71.0%)	1204 (69.8%)
PSS ≥ top quartile (high)	651 (27.1%)	486 (29.0%)	522 (30.2%)
<b>Depression Symptoms</b>			
EPDS ≤ 9 no-to-low	2028 (84.3%)	1409 (83.6%)	1449 (84%)
EPDS ≥ 10 moderate-to-high	378 (15.7%)	277 (16.4%)	227 (16%)
<b>Anxiety Symptoms</b>			
MINI ≤ 2 no GAD	--	1552 (92%)	1592 (92.1%)
MINI ≥ probable GAD	--	135 (8%)	136 (7.9%)

Note: Perceived Stress Score (PSS), Edinburgh Postnatal Depression Scale, Mini International Neuropsychiatric Interview (MINI), Generalized Anxiety Disorder (GAD)

Table 3

Statistically significant results from the unadjusted and adjusted logistic regression analyses across time and psychological distress outcome (stress, depression, anxiety).

Predictors	Time	N	Unadjusted Model			Adjusted Model			
			$\beta$	OR (95% CI)	p-value	$\beta$	OR (95% CI)	p-value	
<b>Stress Symptoms (PSS)</b>									
<b>African American</b> (Reference Caucasian)	<b>T2</b>	1643	0.53	1.70 (1.29-2.23)	<0.001	0.49	1.63 (1.17-2.26)	0.004	
<b>%FPL &lt;100%</b> (Reference >200%)	<b>T3</b>	1726	0.68	1.98 (1.53-2.55)	<0.001	0.60	1.82 (1.17-2.81)	0.007	
<b>Employment</b> (Reference employed)	<b>T3</b>	1668	0.42	1.51 (1.22-1.88)	<0.001	0.30	1.35 (1.01-1.80)	0.044	
<b>Interpersonal Violence (HITS)</b>	<b>T1</b>	2062	0.23	1.26 (1.21-1.32)	<0.001	0.21	1.23 (1.18-1.29)	<0.001	
	<b>T2</b>	1351	0.15	1.17 (1.11-1.23)	<0.001	0.13	1.14 (1.08-1.20)	<0.001	
	<b>T3</b>	1383	0.14	1.15 (1.094-1.20)	<0.001	0.12	1.13 (1.07-1.18)	<0.001	
<b>Food Stamps Past Year</b> (Reference no food stamps)	<b>T1</b>	2399	.24	1.27 (1.06-1.53)	0.009	-0.33	0.72 (0.54-0.96)	0.025	
<b>Perceived Food Security</b> (Reference perceived food secure)	<b>T1</b>	2400	1.17	3.23 (2.31-4.52)	<0.001	0.84	2.32 (1.54-3.49)	<0.001	
	<b>T2</b>	1688	1.21	3.36 (2.25-5.01)	<0.001	0.68	1.98 (1.14-3.43)	0.015	
<b>Depression Symptoms (EPDS)</b>									
<b>Education</b> (Reference 4-year college degree)	<b>&lt;HS</b>	<b>T2</b>	1645	1.55	4.69 (2.61-8.43)	<0.001	0.77	2.60 (1.16-5.82)	0.021
		<b>T3</b>	1685	0.71	2.03 (1.28-3.22)	0.003	0.51	1.67 (1.16-2.40)	0.006
	<b>HS</b>	<b>T2</b>	1645	1.13	3.11 (1.78-5.43)	<0.001	0.77	2.15 (1.03-4.50)	0.042

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<b>Interpersonal Violence (HITS)</b>	<b>T1</b>	2064	0.23	1.25 (1.20-1.31)	<0.001	0.20	1.22 (1.17-1.28)	<0.001
	<b>T2</b>	1360	0.12	1.13 (1.07-1.19)	<0.001	0.10	1.11 (1.05-1.17)	<0.001
	<b>T3</b>	1383	0.12	1.12 (1.07-1.18)	<0.001	0.10	1.11 (1.05-1.17)	<0.001
<b>Health Insurance</b> (Reference private insurance)								
No Insurance	<b>T1</b>	2371	0.69	1.99 (1.22-3.25)	0.006	0.57	1.78 (1.01-3.11)	0.045
Medicaid	<b>T2</b>	1661	0.73	2.07 (1.55-2.77)	<0.001	0.44	1.55 (1.04-2.33)	0.032
<b>Perceived Food Security</b> (Reference perceived food secure)	<b>T1</b>	2402	1.32	3.74 (2.64-5.32)	<0.001	1.03	2.79 (1.83-4.26)	<0.001
	<b>T2</b>	1680	0.90	2.45 (1.59-3.78)	<0.001	0.70	2.01 (1.17-3.45)	0.012
<b>Anxiety Symptoms (MINI)</b>								
<b>Interpersonal Violence (HITS)</b>	<b>T2</b>	1360	0.13	1.14 (0.67-1.21)	<0.001	0.12	1.12 (1.05-1.20)	0.001
	<b>T3</b>	1384	0.13	1.14 (1.07-1.21)	<0.001	0.12	1.12 (1.06-1.20)	<0.001

Note: Federal Poverty Level (FPL), High School (HS), United States (US), Hurts Insult Threaten Scream (HITS), Perceived Stress Score (PSS), Edinburgh Postnatal Depression Scale, Mini International Neuropsychiatric Interview (MINI)

## Supplementary Tables

Supplementary Table S1

*Unadjusted and Adjusted Logistic Regression for Stress Symptoms*

			Stress Symptoms (PSS)					
Predictors	Time	N	Unadjusted Model			Adjusted Model		
			$\beta$	OR (95% CI)	p-value	$\beta$	OR (95% CI)	p-value
<b>Age, years</b>	T1	2403	-0.16	0.98 (0.97-1.00)	0.055	--	--	--
	T2	1674	-0.03	0.98 (0.96-0.99)	0.001	0.02	1.02 (0.98-1.05)	0.342
	T3	1726	-0.02	0.98 (0.96-0.99)	0.010	0.02	1.02 (0.99-1.05)	0.135
<b>Ethnicity</b>								
(Reference Caucasian)								
African American	T1	2347	0.25	1.29 (1.02-1.63)	0.037	-0.11	0.89 (0.64-1.25)	0.51
	<b>T2</b>	1643	0.53	1.70 (1.29-2.23)	<0.001	<b>0.49</b>	<b>1.63 (1.17-2.26)</b>	<b>0.004</b>
	T3	1689	0.40	1.49 (1.14-1.95)	0.004	0.21	1.23 (0.91-1.66)	0.175
Hispanic	T1	2347	0.30	1.35 (1.03-1.77)	0.032	0.12	1.13 (0.78-1.64)	0.514
	T2	1643	-0.12	0.89 (0.63-1.25)	0.484	--	--	--
	T3	1689	0.13	1.14 (0.83-1.57)	0.405	--	--	--
<b>%FPL Group</b>								
(Reference >200%)								
<100%	T1	2403	0.57	1.77 (1.42-2.22)	<0.001	0.32	1.37 (0.95-1.99)	0.09
	T2	1674	0.60	1.82 (1.40-2.35)	<0.001	0.18	1.20 (0.86-1.67)	0.28
	<b>T3</b>	1726	0.68	1.98 (1.53-2.55)	<0.001	<b>0.60</b>	<b>1.82 (1.17-2.81)</b>	<b>0.007</b>
100-200%	T1	2403	0.31	1.36 (1.06-1.74)	0.016	0.12	1.12 (0.79-1.60)	0.523
	T2	1674	0.11	1.12 (0.83-1.51)	0.455	--	--	--
	T3	1726	0.35	1.42 (1.06-1.89)	0.018	0.33	1.39 (0.91-2.11)	0.123
<b>Education</b>								
(Reference 4-year college degree)								
<HS	T1	2338	0.86	2.36 (1.68-3.33)	<0.001	0.38	1.46 (0.88-2.43)	0.147
	T2	1633	0.65	1.92 (1.29-2.86)	0.001	0.11	1.12 (0.62-2.01)	0.708
	T3	1685	0.90	2.45 (1.67-3.60)	<0.001	0.53	1.70 (0.96-3.02)	0.069



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HS	T1	2338	0.53	1.70 (1.24-2.33)	0.001	0.13	1.14 (0.73-1.78)	0.572	
	T2	1633	0.54	1.71 (1.20-2.44)	0.003	0.00	0.97 (0.58-1.62)	0.899	
	T3	1685	0.62	1.85 (1.31-2.62)	<0.001	0.26	1.30 (0.77-2.19)	0.330	
Some Higher	T1	2338	0.62	1.85 (1.32-2.60)	<0.001	0.33	1.39 (0.90-2.15)	0.137	
	T2	1633	0.55	1.73 (1.18-2.55)	0.005	0.06	1.06 (0.63-1.79)	0.828	
	T3	1685	0.69	1.99 (1.37-2.90)	<0.001	0.48	1.62 (0.97-2.71)	0.064	
<b>Employment</b> (Reference employed)	T1	2317	0.32	1.38 (1.14-1.66)	0.001	0.11	1.11 (0.87-1.43)	0.403	
	T2	1621	0.38	1.46 (1.17-1.83)	0.001	0.07	1.07 (0.78-1.46)	0.680	
	<b>T3</b>	1668	0.42	1.51 (1.22-1.88)	<0.001	<b>0.30</b>	<b>1.35 (1.01-1.80)</b>	<b>0.044</b>	
<b>Marital Status</b> (Reference married)	T1	2403	0.25	1.28 (1.05-1.56)	0.015	-0.18	0.83 (0.62-1.13)	0.243	
	T2	1674	0.55	1.73 (1.36-2.20)	<0.001	0.15	1.17 (0.80-1.71)	0.431	
	T3	1726	0.00	1.00 (0.96-1.04)	0.899	--	--	--	
<b>Cohabitation</b> (Reference living together)	T1	2403	0.38	1.46 (1.22-1.75)	<0.001	0.24	1.27 (0.97-1.66)	0.084	
	T2	1674	0.00	1.00 (1.00-1.01)	0.897	--	--	--	
	T3	1726	0.00	1.00 (1.00-1.00)	0.976	--	--	--	
<b>Foreign Born</b> (Reference US Born)	T1	2403	-0.03	0.97 (0.90-1.05)	0.453	--	--	--	
	T2	1674	0.00	1.00(0.98-1.03)	0.784	--	--	--	
	T3	1726	0.04	1.04 (0.96-1.13)	0.379	--	--	--	
<b>Interpersonal Violence (HITS)</b>	<b>T1</b>	2062	0.23	1.26 (1.21-1.32)	<0.001	<b>0.21</b>	<b>1.23 (1.18-1.29)</b>	<b>&lt;0.001</b>	
	<b>T2</b>	1351	0.15	1.17 (1.11-1.23)	<0.001	<b>0.13</b>	<b>1.14 (1.08-1.20)</b>	<b>&lt;0.001</b>	
	<b>T3</b>	1383	0.14	1.15 (1.094-1.20)	<0.001	<b>0.12</b>	<b>1.13 (1.07-1.18)</b>	<b>&lt;0.001</b>	
<b>Health Insurance</b> (Reference private insurance)									
	No Insurance	T1	2369	0.50	1.65 (1.08-2.52)	0.021	0.25	1.28 (0.75-2.18)	0.365
		T2	1650	-0.11	0.90(0.51-1.58)	0.706	--	--	--
	T3	1701	0.13	1.14 (0.68-1.92)	0.631	--	--	--	

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Medicaid	T1	2369	0.39	1.48 (1.22-1.79)	<0.001	0.14	1.15 (0.87-1.52)	0.327
	T2	1650	0.44	1.55 (1.24-1.94)	<0.001	0.19	1.21 (0.86-1.69)	0.278
	T3	1701	0.43	1.54 (1.24-1.92)	<0.001	0.04	1.04 (0.76-1.43)	0.59
<b>Current Public Assistance</b> (Reference No Public Assistance)	T1	855	-0.06	0.94 (0.67-1.33)	0.736	--	--	--
	T2	614	-0.11	0.90(0.60-1.34)	0.605	--	--	--
	T3	620	0.09	1.10 (0.73-1.63)	0.660	--	--	--
<b>Past Year TANF, TCA, Welfare</b> (Reference no TANF, TCA, Welfare)	T1	2395	0.37	1.45 (1.17-1.81)	0.001	0.10	1.10 (0.79-1.54)	0.561
	T2	1668	0.57	1.77 (1.37-2.29)	<0.001	0.01	1.01 (0.67-1.53)	0.948
	T3	1723	0.36	1.43 (1.11-1.84)	0.006	0.11	1.11(0.76-1.62)	0.59
<b>Food Stamps Past Year</b> (Reference no food stamps)	T1	2399	.24	1.27 (1.06-1.53)	0.009	<b>-0.33</b>	<b>0.72 (0.54-0.96)</b>	<b>0.025</b>
	T2	1670	0.49	1.63 (1.31-2.01)	<0.001	-0.21	0.81 (0.57-1.17)	0.259
	T3	1724	0.50	1.651(1.34-2.03)	<0.001	-0.07	0.94 (0.67-1.30)	0.690
<b>Public Assistance since 18</b> (Reference no public assistance)	T1	2399	0.33	1.39 (1.15-1.67)	0.001	0.14	1.15 (0.87-1.51)	0.338
	T2	1670	0.55	1.72 (1.39-2.14)	<0.001	0.21	1.23(0.88-1.73)	0.232
	T3	1725	0.37	1.44 (1.17-1.78)	0.001	-0.09	0.91 (0.66-1.26)	0.585
<b>Perceived Food Security</b> (Reference perceived food secure)	T1	2400	1.17	3.23 (2.31-4.52)	<0.001	<b>0.84</b>	<b>2.32 (1.54-3.49)</b>	<b>&lt;0.001</b>
	T2	1688	1.21	3.36 (2.25-5.01)	<0.001	<b>0.68</b>	<b>1.98 (1.14-3.43)</b>	<b>0.015</b>
	T3	1722	0.67	1.96 (1.33-2.88)	0.001	0.14	1.16 (0.70-1.91)	0.574

PREDICTORS OF PSYCHOLOGICAL DISTRESS IN LOW INCOME MOTHERS

<b>Allostatic Load T2</b>	T2	1521	0.71	1.07 (1.25-1.14)	0.013	0.05	1.05 (0.98-1.12)	0.211
	T3	1244	-0.01	0.99 (0.93-1.06)	0.799	--	--	--
<b>Allostatic Load T3</b>	T3	1548	0.15	1.02 (0.96-1.07)	0.583	--	--	--

Note: Perceived Stress Score (PSS), Federal Poverty Level (FPL), High School (HS), United States (US), Temporary Assistance for Needy Families (TANF), Temporary Cash Assistance (TCA), Hurts Insult Threaten Screen (HITS)

Supplementary Table S2

*Unadjusted and Adjusted Logistic Regression for Depressive Symptoms*

Depressive Symptoms (EPDS)								
Predictors	Time	N	Unadjusted Model			Adjusted Model		
			$\beta$	OR (95% CI)	p-value	$\beta$	OR (95% CI)	p-value
<b>Age, years</b>	T1	2406	-0.01	0.99 (0.97-1.10)	0.454	--	--	--
	T2	1686	-0.03	0.97 (0.95-1.00)	0.020	0.022	1.02 (0.99-1.06)	0.209
	T3	1726	0.01	1.008 (0.986-1.031)	0.462	--	--	--
<b>Ethnicity</b> (Reference Caucasian)								
African American	T1	2350	0.21	1.23 (0.92,1.64)	0.157	--	--	--
	T2	1655	0.48	1.62 (1.13,2.31)	0.008	-0.01	0.99 (0.61-1.62)	0.966
	T3	1689	0.13	1.13 (0.81-1.59)	0.463	--	--	--
Hispanic	T1	2350	0.14	1.15 (0.83-1.16)	0.405	--	--	--
	T2	1655	0.52	1.69 (1.12,2.53)	0.012	0.10	1.10 (0.64-1.88)	0.723
	T3	1689	0.31	1.36 (0.93-1.99)	0.111	--	--	--
<b>%FPL Group</b> (Reference >200%)								
<100%	T1	2406	0.46	1.59 (1.21-2.08)	0.001	0.06	1.06 (0.79-1.44)	0.694
	T2	1686	0.86	2.36 (1.69-3.30)	<0.001	0.32	1.37 (0.95-1.98)	0.091
	T3	1726	0.45	1.56 (1.11-2.15)	0.006	-0.05	0.95 (0.68-1.33)	0.773
100-200%	T1	2406	0.20	1.22 (0.90-1.66)	.209	--	--	--
	T2	1686	0.36	1.44 (0.98-2.11)	0.066	--	--	--
	T3	1726	0.34	1.40 (0.98-2.00)	0.066	--	--	--
<b>Education</b> (Reference 4-year college degree)								
<HS	T1	2341	0.55	1.73 (1.17-2.58)	0.007	0.16	1.18 (0.85-1.63)	0.317
	<b>T2</b>	1645	1.55	4.69 (2.61-8.43)	<0.001	<b>0.77</b>	<b>2.60 (1.16-5.82)</b>	<b>0.021</b>
	<b>T3</b>	1685	0.71	2.03 (1.28-3.22)	0.003	<b>0.51</b>	<b>1.67 (1.16-2.40)</b>	<b>0.006</b>
HS	T1	2341	0.19	1.20 (0.83-1.80)	0.321	--	--	--

## PREDICTORS OF PSYCHOLOGICAL DISTRESS IN LOW INCOME MOTHERS

	<b>T2</b>	1645	1.13	3.11 (1.78-5.43)	<0.001	<b>0.77</b>	<b>2.15 (1.03-4.50)</b>	<b>0.042</b>
	T3	1685	0.31	1.36 (0.89-2.09)	0.154	--	--	--
Some Higher	T1	2341	0.27	1.31 (0.88-1.94)	0.19	--	--	--
	T2	1645	1.10	3.00 (1.67-5.40)	<0.001	0.68	1.97 (0.95-4.12)	0.070
	T3	1685	0.41	1.51 (0.95-2.40)	0.079	--	--	--
<b>Employment</b> (Reference employed)	T1	2320	0.41	1.51 (1.20-1.91)	0.001	0.16	1.18 (0.88-1.57)	0.280
	T2	1632	0.26	1.30 (1.00-1.70)	0.054	--	--	--
	T3	1668	0.39	1.48 (1.13-1.94)	0.004	0.31	1.36 (0.97-1.91)	0.078
<b>Marital Status</b> (Reference married)	T1	2406	0.21	1.23 (0.97-1.57)	0.092	--	--	--
	T2	1686	0.69	1.99 (1.46-2.73)	<0.001	0.13	1.13 (0.74-1.75)	0.572
	T3	1726	-0.01	0.99 (0.92-1.07)	0.798	--	--	--
<b>Cohabitation</b> (Reference living together)	T1	2406	0.25	1.28 (1.03-1.60)	0.029	-0.24	0.98(0.74-1.30)	0.871
	T2	1686	<0.01	1.00 (1.00-1.01)	0.198	--	--	--
	T3	1726	0.00	1.00(1.00-1.01)	0.898	--	--	--
<b>Foreign Born</b> (Reference US Born)	T1	2406	-0.02	0.98 (0.90-1.05)	0.575	--	--	--
	T2	1686	-0.02	0.98 (0.91-1.06)	0.645	--	--	--
	T3	1726	-0.01	1.00 (0.94-1.06)	0.885	--	--	--
<b>Interpersonal Violence (HITS)</b>	T1	2064	0.23	1.25 (1.20-1.31)	<0.001	<b>0.20</b>	<b>1.22 (1.17-1.28)</b>	<b>&lt;0.001</b>
	T2	1360	0.12	1.13 (1.07-1.19)	<0.001	<b>0.10</b>	<b>1.11 (1.05-1.17)</b>	<b>&lt;0.001</b>
	T3	1383	0.12	1.12 (1.07-1.18)	<0.001	<b>0.10</b>	<b>1.11 (1.05-1.17)</b>	<b>&lt;0.001</b>
<b>Health Insurance</b> (Reference private insurance)								
No Insurance	T1	2371	0.69	1.99 (1.22-3.25)	0.006	<b>0.57</b>	<b>1.78 (1.01-3.11)</b>	<b>0.045</b>
	T2	1661	0.83	2.28 (1.27-4.12)	0.006	0.50	1.65 (0.78-3.48)	0.187
	T3	1700	0.61	1.84 (1.03-3.29)	0.040	0.35	1.42 (0.74-2.75)	0.293
Medicaid	T1	2371	0.46	1.59 (1.25-2.01)	<0.001	0.23	1.26 (0.92-1.72)	0.158

## PREDICTORS OF PSYCHOLOGICAL DISTRESS IN LOW INCOME MOTHERS

	<b>T2</b>	1661	0.73	2.07 (1.55-2.77)	<0.001	<b>0.44</b>	<b>1.55 (1.04-2.33)</b>	<b>0.032</b>
	T3	1700	0.39	1.48 (1.12-1.96)	0.006	0.08	1.09 (0.76-1.56)	0.648
<b>Current Public Assistance</b> (Reference No Public Assistance)	T1	855	0.04	1.04 (0.68-1.60)	0.855	--	--	--
	T2	618	0.37	1.45 (0.85-2.48)	0.174	--	--	--
	T3	622	0.40	1.49 (0.87-2.54)	0.146	--	--	--
<b>Past Year TANF, TCA, Welfare</b> (Reference no TANF, TCA, Welfare)	T1	2398	0.39	1.48 (1.14-1.92)	0.003	0.23	1.26 (0.89-1.79)	0.193
	T2	1680	0.38	1.47 (1.08-1.99)	0.014	0.05	1.05 (0.69-1.61)	0.816
	T3	1722	0.27	1.30 (0.95-1.78)	0.097	--	--	--
<b>Food Stamps Past Year</b> (Reference no food stamps)	T1	2402	0.33	1.39 (1.12-1.74)	0.003	-0.16	0.85 (0.62-1.17)	0.322
	T2	1682	0.45	1.59 (1.23-2.07)	<0.001	-0.17	0.85 (0.57-1.26)	0.409
	T3	1723	0.20	1.23 (0.95-1.59)	0.122	--	--	--
<b>Public Assistance since 18</b> (Reference no public assistance)	T1	2402	0.14	1.15 (0.92-1.45)	0.216	--	--	--
	T2	1682	0.25	1.28 (0.99-1.67)	0.064	--	--	--
	T3	1724	0.22	1.24 (0.95-1.61)	0.109	--	--	--
<b>Perceived Food Security</b> (Reference perceived food secure)	<b>T1</b>	2402	1.32	3.74 (2.64-5.32)	<0.001	<b>1.03</b>	<b>2.79 (1.83-4.26)</b>	<b>&lt;0.001</b>
	<b>T2</b>	1680	0.90	2.45 (1.59-3.78)	<0.001	<b>0.70</b>	<b>2.01 (1.17-3.45)</b>	<b>0.012</b>
	T3	1722	0.66	1.94 (1.24-3.02)	0.004	0.34	1.41 (0.80-2.48)	0.239
<b>Allostatic Load T2</b>	T2	1532	-0.03	0.98 (0.91-1.05)	0.478	--	--	--

## PREDICTORS OF PSYCHOLOGICAL DISTRESS IN LOW INCOME MOTHERS

	T3	1244	-0.01	0.99 (0.92-1.07)	0.858	--	--	--
<b>Allostatic Load T3</b>	T3	1548	-0.47	0.95 (0.89-1.02)	0.189	--	--	--

Note: Edinburgh Postnatal Depression Scale (EPDS), Federal Poverty Level (FPL), High School (HS), United States (US), Temporary Assistance for Needy Families (TANF), Temporary Cash Assistance (TCA), Hurts Insult Threaten Scream (HITS)

Supplementary Table S3

*Unadjusted and Adjusted Logistic Regression for Anxiety Symptoms*

Anxiety Symptoms(MINI)								
Predictors	Time	N	Unadjusted Model			Adjusted Model		
			$\beta$	OR (95% CI)	p-value	$\beta$	OR (95% CI)	p-value
<b>Age, years</b>	T2	1687	-0.01	0.99 (0.96,1.18)	0.374	--	--	--
	T3	1728	0.00	1.00 (0.97,1.03)	0.925	--	--	--
<b>Ethnicity</b> (Reference Caucasian)								
African American	T2	1656	0.09	1.10 (0.71-1.70)	0.686	--	--	--
	T3	1691	0.07	1.08 (0.70-1.66)	0.745	--	--	--
Hispanic	T2	1656	-0.22	0.80 (0.46-1.40)	0.438	--	--	--
	T3	1691	-0.26	0.77 (0.45-1.32)	0.346	--	--	--
<b>%FPL Group</b> (Reference >200)								
<100%	T2	1687	0.43	1.54 (0.99-2.40)	0.054	--	--	--
	T3	1728	0.26	1.30 (0.86-1.96)	0.214	--	--	--
100-200	T2	1687	0.30	1.35 (0.82-2.21)	0.241	--	--	--
	T3	1728	-0.21	0.81 (0.48-1.34)	0.408	--	--	--
<b>Education</b> (Reference 4-year college degree)								
<HS	T2	1645	0.71	2.03 (1.04-3.97)	0.039	0.33	1.39 (0.85-2.25)	0.188
	T3	1687	0.23	1.26 (0.69-2.32)	0.452	--	--	--
<HS	T2	1645	0.28	1.32 (0.71-2.48)	0.383	--	--	--
	T3	1687	0.05	1.06(0.61-1.81)	0.845	--	--	--
Some Higher	T2	1645	0.56	1.75 (0.91-3.38)	0.095	--	--	--
	T3	1687	0.17	1.18 (0.65-2.13)	0.585	--	--	--
<b>Employment</b> (Reference employed)								
	T2	1633	0.42	1.53 (1.05-2.22)	0.028	0.06	1.06 (0.67-1.69)	0.792
	T3	1670	0.09	1.10 (0.76-1.58)	0.614	--	--	--
<b>Marital Status</b>								
	T2	1687	0.33	1.39 (0.93-2.08)	0.108	--	--	--





## PREDICTORS OF PSYCHOLOGICAL DISTRESS IN LOW INCOME MOTHERS

<b>Public Assistance since 18</b> (Reference no public assistance)	T3	1725	0.38	1.46 (1.03-2.08)	0.034	0.11	1.12(0.71-1.75)	0.633
	T2	1683	0.51	1.67 (1.17-2.38)	0.004	0.43	1.53 (0.95-2.46)	0.079
<b>Perceived Food Security</b> (Reference perceived food secure)	T3	1726	0.39	1.48 (1.04-2.11)	0.029	0.05	1.05 (0.66-1.65)	0.844
	<b>T2</b>	1687	1.01	2.74 (1.61-4.66)	<0.001	<b>0.90</b>	<b>2.46 (1.32-4.61)</b>	<b>0.005</b>
<b>Allostatic Load T2</b>	<b>T3</b>	1724	1.24	3.43 (2.11-5.69)	<0.001	<b>0.85</b>	<b>2.34 (1.24-4.41)</b>	<b>0.008</b>
	T2	1533	0.01	1.01(0.92-1.11)	0.773	--	--	--
<b>Allostatic Load T3</b>	T3	1246	-0.06	0.95 (0.85-1.06)	0.331	--	--	--
	T3	1549	0.03	1.03 (0.94-1.12)	0.591	--	--	--

Note: Mini International Neuropsychiatric Interview (MINI), Federal Poverty Level (FPL), High School (HS), United States (US), Temporary Assistance for Needy Families (TANF), Temporary Cash Assistance (TCA), Hurts Insult Threaten Scream (HITS)