

## Sigma Theta Tau International's 29th International Nursing Research Congress

### Associations of Children's Externalizing Behavior Disorder and Maternal Mental Health

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#### **Purpose:**

Children with a parent who suffers from mental illness are at significant risk for disruptions in their neurological, social, physical, and emotional development (Propper, Rigg, & Burgess, 2007; Rutter et al., 1984). Maternal depression is a public health concern related to child development because it is so prevalent among women of childbearing age. Approximately 20% of mothers will be depressed at some point in their life, most commonly occurring during childbearing years, with higher rates noted among low-income women (Hall, Williams, & Greenberg, 1985; Heneghan, Johnson Silver, Bauman, Westbrook, & Stein, 1998; Kessler et al., 1994; Propper et al., 2007). Depression compromises maternal-child interaction and cognitive stimulation, which is critical as a child is growing and learning to interact with the environment around them (Copple, 2012; Shonkoff & Phillips, 2000). Additionally, studies have shown that parents with mental illness such as schizophrenia, depression, anxiety, and bipolar disorder struggle to manage their illness while concurrently parenting (Reupert & Maybery, 2007).

Multiple studies have found associations between maternal mental illness and child mental health disorders. A meta-analysis reports significant associations of maternal depression with child internalizing problems, externalizing behavior disorders, and general psychopathology (Goodman et al., 2011). The current study focuses on associations with externalizing behavior disorders due to the severity of their outcomes for both children and their family.

Externalizing behavior disorders are characterized by the outward expression of negative or destructive behaviors, including impulsivity, aggression, hyperactivity, and delinquency (Liu, 2004; Miech, Caspi, Moffitt, Entner Wright, & Silva, 1999). These disorders are a public health concern because they can lead to poor outcomes such as low educational attainment, increased injuries and emergency room visits, juvenile delinquency, loss of employment, criminality, violence, and substance use disorders (Erskine et al., 2016; Rowe, Maughan, & Goodman, 2004). Studies have shown that the onset of symptoms of externalizing behavior disorders occur early in life (Costello, Foley, & Angold, 2006; Kessler & Wang, 2008). Using a nationally representative data set, the current study examines the associations of young children between the ages of 0 – 12 years who have been diagnosed with an externalizing behavior disorder and their mothers' self-reported mental health status.

#### **Methods:**

This study is a secondary data analysis of data from the National Survey of Child Health (NSCH) 2011/12. The NSCH is conducted by the Centers for Disease Control and Prevention's National Center for Health Statistics (Centers for Disease Control and Prevention, 2013). The NSCH is a cross-sectional telephone survey, with stratification by state and sample type (landline or cell phone), to assess the physical and emotional health of U.S. children age  $\leq 17$  years. Data was collected between February 2011 through June 2012 with the respondent being a parent/guardian with knowledge of the health of the sample child randomly selected from households with at least one child  $\leq 17$  years of age. The survey completion rate was 54.1% for the landline sample and 41.2% for the cell phone sample. NSCH data are weighted with the sampling weights provided in the NSCH dataset in order to yield nationally representative estimates and adjusted to account for nonresponse. Children  $\leq 12$  years of age were included in the sample for this analysis. Of the 95,677 respondents who completed the NSCH in 2011/12, a total of 66,870 had children  $\leq 12$  years of age included in this analysis.

**Measures. Externalizing Behavior Disorder.** As a proxy for externalizing behavior disorder diagnoses, respondents were asked, "Has a doctor or health professional ever told you that [child] has attention-deficit disorder or attention-deficit/hyperactivity disorder, that is, ADD or ADHD?" or "Has a doctor or other health care provider ever told you that [child] had behavioral or conduct problems, such as oppositional defiant disorder or conduct disorder?"

**Maternal Mental Health Status.** The primary independent variable of interest in the regression model is the self-reported maternal mental health status. As a proxy for mother's mental health, respondents were asked, "Would you say that, in general, [child]'s [MOTHER]'s / your] mental and emotional health is excellent, very good, good, fair, or poor?"

**Covariates.** The covariates selected for this analysis consisted of child and family characteristics: child's age (classified in 5 age groups), child's race/ethnicity (white, black, Hispanic, or other), child's gender (male or female), poverty level ( $\leq 100\%$  of federal poverty level, also known as living in poverty, or  $> 100\%$  of federal poverty level), and family structure (married, cohabiting, single, or other).

**Data analysis.** The secondary data analysis of the NSCH dataset was conducted using IBM SPSS version 24 statistical software. Data were weighted with the sampling weights provided in the NSCH dataset. The prevalence of mothers' report of poor mental and emotional health, children diagnosed with attention-deficit/hyperactivity disorder, and children diagnosed with behavioral problems were calculated for the sample population of U.S. children age 0-12 years ( $n = 66,870$ ). Chi-squared tests were conducted to assess the associations between the variables. To determine associations between maternal mental health status and child's diagnosis of externalizing behavior disorder, binary logistic regression was performed controlling for the five covariates. Binary logistic regression was also conducted for each of the independent variables and covariates, without controlling for other variables, to obtain the unadjusted odds ratios.

## Results:

The prevalence of mothers reporting fair or poor mental and emotional health in the population was 7.3%. 7.7% of children in the weighted sample population were diagnosed with attention-deficit/hyperactivity disorder and 3.6% were diagnosed with a behavioral disorder. Compared to girls, boys had a higher percentage of diagnosis of externalizing behavior disorders (70.5%). The median age of initial diagnosis of attention-deficit/hyperactivity disorder was 6 years of age and the median age of diagnosis of behavioral disorders was 5 years of age. Using chi-square test of independence, statistically significant differences were noted between maternal level of mental health and between child externalizing behavior disorders across all of the variables in the study. The chi-square distributions were significant for each of the variables indicating differences between distributions of those that have mental health disorders and those that do not.

Binary logistic regression was performed to assess the association of the mother's self-reported mental health on the outcome of the child being diagnosed with an externalizing behavior, while controlling for age, race, sex, poverty status, and family structure. The model containing all predictors was statistically significant ( $X^2 = 269,4895.641$ ,  $df = 15$ ,  $p < 0.001$ ), explained between 6.5% (Cox and Snell R square) and 14.6% (Nagelkerke R squared) of the variance in child's diagnosis of an externalizing behavior disorder, and correctly classified 91.5% of cases. All of the independent variables made statistically significant contributions to the model ( $p < 0.001$ ). Both adjusted and unadjusted odds ratios are reported.

The strongest predictor was maternal poor mental health with an adjusted odds ratio of 5.365 (95% CI: 5.324-5.407). This indicates that mothers with poor mental and emotional health were 5.365 times more likely to have a child diagnosed with an externalizing behavior disorder, after controlling for all other variables in the model. A significant graded relationship is noted in the odds ratios of maternal mental health with increasing odds of a child being diagnosed with an externalizing disorder as the mother's mental health status decreases. The strength of the association noted between maternal poor mental

health and child externalizing behavior disorders decreased when adjusted for the covariates. The unadjusted odds ratio was 6.703 (95% CI: 6.655-6.751).

After adjusting for other factors in the model, compared to older children age 10-12 years of age, younger children are 27.2-89.3% less likely to be diagnosed with an externalizing behavior disorder (1-3 years OR = 0.107; 7-9 years OR = 0.728). Also, when compared to white children, children of other races/ethnicities are 32.8-56.2% less likely to be diagnosed with an externalizing behavior disorder, after adjusting for all other variables in the model (Black OR = 0.672; Hispanic OR = 0.438).

### **Conclusion:**

The current study builds on the previous studies supporting the association between maternal mental health and child behavioral health. The odds of a mother's mental health to be poor is significantly higher for children that are diagnosed with an externalizing behavior disorder. The graded associations of the decline in maternal mental health status as they relate to their child being diagnosed with an externalizing disorder are concerning. Often pediatric nurses view the child as their patient and do not assess the mental or physical health of the parent. While this study is limited in understanding the direction of the associations, the effects of maternal mental health on child health and conversely, child's behavioral health on maternal mental health should be considered during the pediatric assessment. Due to the prevalence and early onset of behavioral symptoms in childhood, understanding the epidemiology and associations between maternal mental health and child behavioral health are important to intervene early to provide support for the mother and the child and potentially modify the home environment for the preservation of maternal mental health and the prevention and early intervention of these behavior disorders.

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### **Title:**

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### **Keywords:**

child behavior disorders, maternal mental health and pediatrics

### **References:**

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### **Abstract Summary:**

Using a nationally representative data set, this study examines the associations of young children diagnosed with an externalizing behavior disorder and their mother's mental health status. Significant graded associations of the decline in maternal mental health status was related to the child being diagnosed with an externalizing behavior disorder.

### **Content Outline:**

#### **Introduction**

A. Review the literature on maternal depression and child health.

B. Statistics and information on maternal depression.

C. Statistics and information on externalizing behavioral disorders in children.

## Methods

- A. Information on the National Survey of Child Health (2011/12)
- B. Give an overview of the design, measures, and data analysis used in this secondary data analysis

## Results

- A. Show table with results from the logistic regression and discuss significant associations noted.

## Discussion

- A. Current study builds on the previous studies supporting the association between maternal mental health and child behavioral health.
- B. Discuss the graded association that was noted in the decline of maternal mental health status and implications for nursing.

## Conclusion

- A. Discuss the importance to assess maternal mental health while assessing the child and intervening early to preserve the mental health of the mother and prevent behavioral disorders in children.

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**Author Summary:** Cary is a Robert Wood Johnson Foundation Future of Nursing Scholar at the University of Texas Health Science Center at Houston Cizik School of Nursing. She has experience working as a registered nurse delivering community health programs both locally and internationally to pediatric populations. She serves as a research associate at Baylor College of Medicine. Her research interests include the prevention of pediatric adversity, injury, and mortality through strengthening community and family systems.