

Food Insecurity and Neurocognitive Disorders in Children (ADHD)

The Nutritional Link: Can we make a difference?



Presented by Shauna T. Johnson, DNP, Ed.S, APRN, PMHNP-BC

Background

Attention Deficit Hyperactivity Disorder (ADHD)- most common **neurobehavioral disorder** diagnosed in U.S children (Rucklidge, 2018).

Across all age groups **food insecurity** impacts emotional and behavioral wellness(Shankar, Chung, & Frank, 2017).

With Increased risk for:

- **Greater Cognitive Problems and Poor attention span** (Howard, 2011)
- **Learning Disabilities** (Weinreb et al., 2002)
- **Depression, Aggression, Anxiety, Behavioral Problems (ADHD),** (Whitaker et. al., 2008)
- **Suicidal Symptoms, Dysthymia, Substance Abuse** (Alaimo et al.,2002)



**GEORGIA
SOUTHERN
UNIVERSITY**

Summary of Evidence

- Evidence supports the **positive relationship** between the **brain and gut microbiota** (Petra et al., 2015)
- **Gut biota impacts cognition, mood and memory** (Galland, 2014)
- **Altering gut microbiota** may be useful in **treating and preventing neurological function abnormalities** (Galland, 2014)
- Administration of **early probiotics positively affected Gut microbiota** and reduced the risk for ADHD (Party, 2012)
- Administration of **Vitamins and minerals in children with ADHD improves aggression and emotional regulation in children with ADHD** (Rucklidge, 2018)
- **Low iron and ferritin associated with increased ADHD symptoms** (Bener et al., 2014)

Methods

- **Setting** - McIntosh Trail Community Service Board(CSB)- rural GA.
- **Design** - Educational intervention
- **Participants**- 39 Caregivers of children referred for evaluation and treatment of neurocognitive disorders
- **Measurements** - U.S Household Food Security Survey Module: Six Item Short Survey, Resource Survey

Methods

- **Assess Food Insecurity** with parents of children who present for evaluations at Butts and Spalding County CSB
- **Assess barriers and use of resources**
- **Provide education regarding diet and available resources within the community**
- **Post intervention interview to assess for change in eating patterns and behavior changes**

Results

Data Analysis

- **n=5 (12%) Reported Dietary Change**
- **n=10 (25%) Reported Behavior Change**, (n=6 had been prescribed psychostimulants such as Ritalin)
- **Single mothers were 20 times more likely to experience food insecurity, $p= 0.008$. Identified as a very high risk group; children of single mothers were at significantly greater risk for food insecurity and therefore, at greater risk for neurocognitive disorders and mental health problems throughout lifespan**

Discussion

- Identified the importance of including **Food Insecurity assessments** in behavioral health evaluations
- Added to growing body of literature related to **Nutrition and Behavior**
- Determined that **educational interventions** for parents which are offered **after abnormal behavior changes in children have developed are ineffective**
- **Single mothers are at very high risk for experiencing food insecurity and their children are at higher risk for neurocognitive disorders for life**
- **Early Intervention with broad spectrum vitamin and probiotic supplementation is needed for prevention of development of neurocognitive disorders**
- **Most families did not make dietary changes**
- **Maternal stress major factor preventing change**
- **Therefore, Advocate for changes in policy to include Probiotics and Vitamins in SNAP program**



Policy and Advocacy

Organizational	Local	National
<ul style="list-style-type: none">• Inclusion of Food Insecurity Assessments within Behavioral health evaluations• Educate Staff on the importance of Food Insecurity Assessment• Educate staff on the link between food insecurity and behavior	<ul style="list-style-type: none">• Link families with community nutrition resources• Provide nutrition education to community partners	<p>Lobby for inclusion of Vitamins and Probiotics in SNAP (Supplemental Nutrition Assistance Program)</p>

References

- Alaimo, K., Olson, C., Frongillo, E. (2002). Food Insecurity but not low family income positively associated with dysthymia and suicide symptoms in adolescents. *Journal of Nutrition, 132*, 719-725.
- Bener, A., Kamal, M., Bener, H., & Bhugra D. (2014). Higher Prevalence of Iron Deficiency as Strong Predictor of Attention Deficit Hyperactivity Disorder in Children. *Annals of Medical and Health Sciences Research, 4*(3), 291-298.
- Galland, L. (2014). Gut Microbiome and the brain. *Journal of Medicinal Food, 17*(12), 1-12.
- Parrrty, A., Kaliomaki, A., Wachlin, P., Salminen, S., & Isolauri, E. (2015). A Possible link between early probiotic Intervention and the risk of neuropsychiatric disorders later in childhood: A Randomized trial. *Pediatric Research, 77*, 823-828.
- Rucklidge, J., Eggleston, M., Johnstone, J., Darling, K., and Frampton, C. (2018), Vitamin-mineral treatment improves aggression and emotional regulation in children with ADHD: a fully blinded, randomized, placebo-controlled trial. *Journal of Child Psychology and Psychiatry, 59*:3 (2018), pp 232–246.
- Shankar, P., Chung, P., & Frank, D. (2017). Association of food insecurity with children's behavioral, emotional, and academic outcomes: A Systematic Review. *Journal of Developmental and Behavioral Pediatrics, 38*, 135-150.
- Weinreb, L., Wehler, C., Perloff, J., Scott, R., Hosmer, D., Sagop, L., and Gunderson, C. (2002). Hunger: Its impact on children's health and Mental Health. *Pediatrics, 110*(4), e41.
- Whitaker, R., S. Phillips, and S. Orzol. 2006. Food Insecurity and the Risks of Depression and Anxiety in Mothers and Behavior Problems in their Preschool-Aged Children. *Pediatrics, 118*: e859-e868.