Socioeconomic status as an indicator for Attention Deficit/Attention Deficit-Hyperactivity Disorder prevalence in youth aged 4-17

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Prevalence in Youth Aged 4-17

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ABSTRACT

Attention-Deficit/Hyperactivity Disorder (ADHD) is perhaps the most common neurodevelopmental childhood disorder. Children who have ADHD have troubling focusing, controlling their behavior, poor impulse control, and tend to have a hard time interacting positively with other people. For children, this learning disorder poses significant difficulties to completing school work, maintaining controlled behavior, overall academic outcomes, and even social trouble down the line. ADHD diagnoses do not go away with age, but can be managed with certain types of treatment medications. Diagnoses of ADHD can be problematic, as there is no single test to diagnose it. Furthermore, other neurological problems such as depression, anxiety, and other learning disabilities have similar symptoms, and many who have ADHD also have coexisting conditions.

Similar to many health burdens, ADHD varies depending on the social characteristics and demographics of the child. Across the United States, there has been a variety of prevalence levels among children aged 4-17. Through obtaining and mapping data using GIS software, these prevalence levels become clearer and the disparities between different sub-populations of this subject group more glaring. Based on data from the National Survey of Children’s Health from 2003, 2007, and 2011, ADHD diagnoses have increased nationwide on the whole, with specific states and regions bearing most of the burden. In order to further understand who this disorder impacts within the American population, data from comparing states showing the percentage of state Supplemental Nutrition Assistance Program (SNAP) Benefits (i.e. food stamps) was gathered to indicate the percentages of households considered as low-income within each state. By looking at the ADHD prevalence data alongside the SNAP Benefits data, one can clearly observe the regions in which both diagnoses of this disorder as well as recipients of SNAP were very high, demonstrating how the disorder impacts children from families of low socioeconomic status (SES).

Racial characteristics also correlate with ADHD prevalence, as shown by the data used. For instance, states with majority non-white populations such as Louisiana, had very high rates of ADHD diagnoses of children as well as high percentages of the population on SNAP. However, there is some correlation between the percentage of non-white individuals within a state and the percentage of ADHD diagnoses. Race does not seem to be the best indicator of the prevalence of ADHD diagnoses. Kentucky, a state that has a majority white population, consistently had one of the highest rates of ADHD diagnoses among children. In contrast, Nevada, a state that has a large non-white population, has consistently had one of the lowest rates of ADHD diagnoses. Further, Kentucky has a very high percentage of its population receiving SNAP, whereas Nevada has a much lower percentage on SNAP. Therefore, the data analyzed demonstrate the presence of a correlation between ADHD diagnoses in children aged 4-17 and low-income socioeconomic status (as indicated by the percentage of SNAP recipients) and a much weaker correlation between non-white population and large diagnoses of ADHD in children aged 4-17.

MAPPED DATA

SNAP Benefits Recipients (% State Population) as of July 2003

SNAP Benefits Recipients (% State Population) as of July 2007

SNAP Benefits Recipients (% State Population) as of July 2011

SNAP Benefits Recipients (% State Population) as of July 2015

SNAP Benefits Recipients (% State Population) as of July 2016

SNAP Benefits Recipients (% State Population) as of July 2017

SNAP Benefits Recipients (% State Population) as of July 2018

Main Results

After thorough data analysis and visualization, it was found that between and including the years 2003 and 2011 low-income socioeconomic status is a reliable indicator for ADHD prevalence in children aged 4-17. The graphed data indicates that a large portion of the children with ADHD also live in states with a high percentage of SNAP recipients, thus suggesting that a correlation does exist between the two. For instance, Louisiana consistently had one of the highest rates of ADHD diagnoses among this subject group as well as a consistently large percentage of SNAP recipients, thus indicating a low-income population with a high prevalence of ADHD among its youth.

Additionally, this research showed that on the whole, ADHD diagnoses in children aged 4-17 have seen nationwide. Between 2003 and 2011, ADHD diagnoses have increased by 42% (Budinich, 2011). In almost every state diagnoses have risen from year to year. This is clear that ADHD affects many children across the United States. However, it affects children of lower socioeconomic status disproportionate. The data mapped from 2003, 2007, 2011, and joined with United States polygons to present the data on a color gradient showing different percentages of children identified with this diagnosis. Based on this data, it is clear that ADHD affects children of low-income status. Some causes could be the lack of access to medical resources for treatment of ADHD. Furthermore, poverty increases the likelihood of other comorbid conditions that may affect overall health and development.

Logistics

Global Information Systems (GIS) mapping technology via ArcMap/ArcView was used to create the maps of the continental United States above. Data from sources such as the CDC and PolicyMap were then joined by the CDC and PolicyMap were then joined with United States polygons to present the data on a color gradient showing different percentages of children with ADHD as well as the percentage of SNAP recipients per state. The CDC data obtained from the National Survey of Children’s Health was the primary data source for ADHD prevalence. PolicyMap provided the data for the non-white population by county for the states of Kentucky, Louisiana, and Nevada, as well as the percentages of SNAP Recipients in these states for the time period 2013-2017. Data for ADHD/ADD diagnoses per state was obtained for the years 2003, 2007, and 2011. There was not data available of diagnoses percentages per state for years beyond 2011 as of yet. This would have been very helpful to add to this research, as it would be more current data and more indicative of the prevalence of this disorder today. However, information on percentages of ADHD diagnoses (“Ever have been told have ADHD?”) depending on family income and race from 2014-2016 as shown on Tables 2 and 2 helped to somewhat fill the gap in data and show that the trend in ADHD diagnoses in the U.S. as a whole project holds true for more current years as well.

Conclusions

In conclusion, ADHD affects children from all backgrounds and all characteristics. However, it seems to disproportionately affect children of low-income status. Some causes for this could be poor school resources, poor health as a result of food insecurity, and lack of access to medical resources for treatment of ADHD. Furthermore, people of low socioeconomic status typically have more stressful daily situations such as securing food for their families, making finances meet for rent, and simply being able to live day to day. As a result, being hyperactive and hyperaware of everything occurring around them and of everything they need to do for basic survival is increased and may result in those higher rates of ADHD diagnoses. Furthermore, if parents of young children are not able to devote the necessary and adequate attention to their individual needs as a result of a stressful economic situation, ADHD risk in young children increases (NCHS, 2015). It is important to remember therefore, that there are many environmental as well as familial factors that contribute to a child’s potential development of this disorder.

If early detection resources, adequate medical resources, proper school in schools, and a better understanding of the condition as a whole can become widespread, ADHD’s effects on children may be mitigated and allow these children to succeed socially, academically, as well as maintain healthy lives regardless of race and socioeconomic status. Though it likely cannot be eradicated, these changes across all communities of the United States can help ease those struggling with this disorder and can translate to improved mental and physical health among the entire American population.