THE EFFECT OF COVID-19 ON CHILDREN AND ADOLESCENTS WITH NEURODEVELOPMENTAL DISEASES (NDD) SUCH AS ADHD AND AUTISM SPECTRUM DISORDER: A LITERATURE REVIEW
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Abstract

- Per a CDC survey in 2016, 6.1 million children (9.4%) were diagnosed with ADHD.
- In New York, the prevalence of ADHD increased from 5.6% in 2003 to 8.8% in 2011.
- The prevalence of autism, according to the CDC, has increased from 1 in 59 in 2014 to 1 in 54 in 2016.
- Developmental disability is diagnosed in rural areas more than urban, with fewer services offered in the rural setting.

Objectives

- To identify the psychological side effect of COVID-19 in the vulnerable sector of children and adolescents who have ADHD or autism.
- Also, in terms of lockdown and remote learning which affected a huge sector of children and their families, what was the impact on this special sector with learning difficulties?

Methods

- Resources: PubMed and Google scholar.
- MESH words ‘COVID-19’, ‘ADHD’, ‘neurodevelopmental diseases’ and Boolean operators like AND/OR.
- Around 35 papers in this area were published during 2020 and 2021.
- Studies were limited to those that addressed the impact of COVID-19 on children and adolescents with neurodevelopmental diseases.

<table>
<thead>
<tr>
<th>Author</th>
<th>Sample Size</th>
<th>Type of study</th>
<th>Purpose of the study</th>
<th>Results</th>
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<tbody>
<tr>
<td>Nearchou. F et al 2020</td>
<td>n=12,242 children (age 3 to 18 y/o)</td>
<td>Meta-analysis</td>
<td>Study the psychosocial effect of COVID on children and adolescents with no psychiatric co-morbidities.</td>
<td>Depression prevalence ranged from 22.6% to 43.7%</td>
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<td>Saurabh. K et al 2020</td>
<td>N=252 (9-18 y/o; with a mean age of 15.4y; 85.12% males and 14.88% females)</td>
<td>Cross-sectional</td>
<td>Study the effect of COVID on children.</td>
<td>Feelings of worry were reported in 68.5% among those in quarantine compared to 51.9% who are not in quarantine with a p-value=0.0049.</td>
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<tr>
<td>Non-Weiler et al 2020</td>
<td>453 children aged 4-15 years including neurotypical controls.</td>
<td>Cross-sectional</td>
<td>Study the effect of COVID on children with neurodevelopmental diseases.</td>
<td>higher emotional symptoms prevalence compared to neurotypical controls (42% vs. 15%; p&lt;0.001).</td>
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<tr>
<td>Jansen. O et al 2020</td>
<td>61,467 clinical notes for patients below 18 years from the psychiatric services in the central Denmark region.</td>
<td>Traditional review</td>
<td>Study the effect of COVID on children with mental illness.</td>
<td>113 notes reported pandemic-related psychopathology in 94 children and adolescents (55% female, median age 14 years).</td>
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<tr>
<td>Li. D et al 2020</td>
<td>3613 Chinese students already diagnosed with ADHD (50% male and 50% female)</td>
<td>Cross-sectional</td>
<td>Study the effect of COVID on the mental health of ADHD children.</td>
<td>Clinical depressive symptoms significantly associated with: smartphone addiction OR=1.41</td>
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<tr>
<td>Melegari et al 2021</td>
<td>992 children and adolescents (528 children, 464 adolescents and their parents.</td>
<td>Cross-sectional</td>
<td>Study the impact of lockdown on mood and behavior in ADHD children.</td>
<td>55% of patients discontinued their medications.</td>
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Discussion/Conclusion

- In most of the studies, children with NDDs demonstrated a worsening of behavioral and mental health symptoms, such as new symptoms of anxiety, depression, obsessive-compulsive, post-traumatic stress disorder, boredom, temper tantrum, and worsening of oppositional/defiant and hyperactive impulsive symptoms.

Strengths and Limitations:

- Cross-sectional studies drawbacks: association not causation, limited generalization, online questionnaires, self-report and measurement error, inability to work with participants in person.
- Other confounders were not considered such as previous addiction history or previous mental or psychiatric illnesses.
- Validated psychological tests were needed.
- Measurement error, the studies relied on personal opinions and parents’ gradings.
- The generalizability of findings is limited due to different nationalities, the discrepancy in health services, and to different racial distributions.

Policy Implications:

- Simplified implications of the Covid-19 protective measures.
- New learning methods.
- Telemedicine reform and evaluation (closer follow-ups, medication modification and refills).
- Allocating resources and funds for research.
- Affordable insurance and special health care programs for children and their families.