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# COVID-19 in Children with Brain-Based Developmental Disabilities

## Update of a Rapid Review

Date: 12/04/2020

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## Abbreviations

COVID-19	Coronavirus disease 2019 (illness)
CDC	Centers for Disease Control and Prevention
ICU	Intensive care unit
N/A	Not applicable
NR	Not reported
PECO	Population, Exposure, Comparator, and Outcomes
PROSPERO	International prospective register of systematic reviews
SARS-CoV-2	Severe acute respiratory syndrome coronavirus 2 (virus)
SPOR	Strategy for Patient-Oriented Research
WHO	World Health Organization

## Key Definitions

**Brain-based developmental disability:** According to the CDC, “developmental disabilities are a group of conditions due to an impairment in physical, learning, language, or behavior areas. These conditions begin during the developmental period, may impact day-to-day functioning, and usually last throughout a person’s lifetime.” (National Center on Birth Defects and Developmental Disabilities, Centers for Disease Control and Prevention, 2019)

**Prevalence:** Number of cases that are affected by a disease.

**Pediatric:** Related to infants, children, and adolescents.



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## Summary

**Context:** In the last few months, COVID-19 has infected millions of people worldwide. Information regarding the impact of COVID-19 in children with brain-based disabilities, or those at risk of developing such conditions, remains scarce. The CHILD-BRIGHT Network, an innovative pan-Canadian network aiming to improve life outcomes for children with brain-based developmental disabilities and their families, commissioned a rapid review to the SPOR Evidence Alliance, which we undertook.

**Objectives:** Our review aimed to answer the following three research questions: (1) Are children with brain-based disabilities more likely to develop COVID-19? (2) Are children with brain-based disabilities more likely to develop complications due to COVID-19? and (3) Are children with brain-based disabilities more likely to have a poorer prognosis once they develop COVID-19?

**Methods:** We conducted a rapid review using search strategies iteratively developed and tested by an experienced medical information specialist in consultation with the review team and a panel of knowledge users. All searches were initially performed on April 18th, 2020, and updated on October 31st, 2020. We included studies with primary data regarding children aged between 0 and 18 years old with brain-based developmental disabilities, or who were at-risk of developing such disabilities, with confirmed or suspected COVID-19.

**Results:** Our search strategy identified 1448 new publications, of which 25 were included. Studies reported data on 2238 COVID-19 positive children, including 460 with a brain-based disability, and 66 at risk of developing such disability. Overall, the included studies showed a greater risk to develop severe COVID-19 disease in children with brain-based disabilities. Although mortality is very low, the case-fatality rate appeared to be higher in children with disabilities compared to children without disabilities.

**Conclusion:** Our review shows that children with brain-based disabilities are overrepresented in hospitalization numbers compared to children without disabilities. However, most studies included children that were hospitalized from COVID-19 in secondary and tertiary care centers. Results of this review should therefore be interpreted with caution.



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## Context

According to the World Health Organization, SARS-CoV-2 (COVID-19) has infected close to 61.8 million and caused the death of over 1.4 million individuals worldwide, as of December 1<sup>st</sup>, 2020<sup>1</sup>. Prevalence of COVID-19 in children is low. Of the 306,468 cases reported in Canada (November 17<sup>th</sup>, 2020), 42,527 (13.87%) were in patients aged 19 years old and under<sup>2</sup>. Of those, 273 were hospitalized (0.6%), and 47 were admitted to ICU (0.1%), with 2 deaths being reported. Data gathered for the U.S. indicated that of the 11,136,253 cases reported since the beginning of the pandemic, 787,558 (7.07%) were children, and of those, 117 death were reported<sup>3</sup>.

Based on the current available evidence, children do not appear to be at higher risk of contracting COVID-19 than adults<sup>4</sup>. Symptom manifestation in children appears to be milder than in adults<sup>5,6</sup>. Further, prevalence in individuals under 19 years of age has been quite low<sup>5,7,8</sup> and children could even be less susceptible to the COVID-19 disease<sup>4</sup>. However, children with comorbidities may be vulnerable to severe COVID-19 disease<sup>7</sup>

Certain individuals are at increased risk of experiencing severe outcomes or poorer prognostics, including older adults (aged 65 years and older) and individuals with underlying conditions such as cancer, diabetes, or liver diseases<sup>9</sup>. The Centers for Disease Control and Prevention (CDC) state that individuals of any age with underlying conditions are at higher risk of developing severe symptoms from COVID-19<sup>10</sup>. Moreover, UNICEF warns that children with underlying disabilities may be at greater risk of developing complications<sup>11</sup>. More data, including the presence of brain-based disabilities and other at-risk conditions in children, are required to have a better understanding of the clinical impacts of COVID-19 on these potentially more vulnerable populations.

In April 2020, we conducted a rapid review on the impact of COVID-19 disease in children with brain-based developmental disabilities<sup>12</sup>. Here, we report the results of an update of this review.



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## Objectives

**This rapid review was commissioned by the Strategy for Patient-Oriented Research (SPOR) funded CHILD-BRIGHT Network**, an innovative pan-Canadian network that aims to improve life outcomes for children with brain-based developmental disabilities and their families (<https://www.child-bright.ca>). Concerned with the potential impact of the novel coronavirus on children with brain-based developmental disabilities, they requested support from the SPOR Evidence Alliance to conduct a rapid review on the topic. Thus, this review aimed to answer the following questions:

- 1) Are children with brain-based developmental disabilities more likely to develop COVID-19?
- 2) Are children with brain-based developmental disabilities more likely to develop complications due to COVID-19?
- 3) Are children with brain-based developmental disabilities more likely to have a poorer prognosis once they develop COVID-19?

**We engaged with a panel of knowledge users (patients, caregivers, clinicians, decision makers) and researchers from the CHILD-BRIGHT Network** throughout the review process, from question development, literature search, interpretation, writing of results, to dissemination of findings.



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## Methods

We conducted a rapid review based on the proposed methodology guide of the Cochrane Rapid Reviews Methods Group<sup>13</sup>. We report our results based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement<sup>14</sup>.

### Literature Search

An experienced medical information specialist developed the search strategies through an iterative process in consultation with the review team and the panel of knowledge users. The MEDLINE strategy was peer reviewed by another senior information specialist prior to execution using the PRESS Checklist<sup>15</sup>. Using the OVID platform, we searched Ovid MEDLINE®, including Epub Ahead of Print and In-Process & Other Non-Indexed Citations, Embase Classic+Embase, PsycINFO, Cochrane Database of Systematic Reviews and the Cochrane Central Register of Controlled Trials. We also searched CINAHL (Ebsco) and Web of Science. Searches were initially performed on April 18th, 2020, and updated on October 31st, 2020.

We used a combination of controlled vocabulary (e.g., “Coronavirus Infections”, “Coronavirus”, “Child”) and keywords (e.g., “coronavirus”, “COVID-19”, “infant”) for the strategies and adjusted vocabulary and syntax across databases. There were no language restrictions on any of the searches but when possible, animal-only records were removed from the results. We limited results to publication years 2019 to present. Specific details regarding the strategies appear in Appendix 1.

We also updated our grey literature searches, which consisted of preprint articles from SSRN and medRxiv (last consulted November 13<sup>th</sup>, 2020), ongoing trials from the WHO International Clinical Trials Registry Platform (last consulted November 13<sup>th</sup>, 2020), ongoing reviews from PROSPERO (last consulted November 13<sup>th</sup>, 2020), and Government or Health organizations’ websites and reports (consulted between November 5<sup>th</sup> to November 13<sup>th</sup>, 2020) (Appendix 2).



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## Eligibility Criteria

We followed the PECO Framework in establishing eligibility criteria<sup>16,17</sup> (Table 1). We considered any study with primary data that included children aged between 0 and 18 with a brain-based developmental disability or at risk of developing such disability with confirmed or suspected COVID-19 (see Appendix 3 for full list).

**Table 1. PECO Inclusion Criteria**

<b>Population (P)</b>	Children (18 years and under) with brain-based developmental disabilities (e.g., cerebral palsy, autism, developmental delay, ADHD, severe impairments) or at-risk of developing brain-based disabilities (e.g., premature, congenital heart disease/defect).
<b>Exposition (E)</b>	COVID-19
<b>Comparator (C)</b>	Any or none
<b>Outcomes (O)</b>	Any outcome

## Study Selection and Extraction

Four reviewers individually performed screening for titles, abstracts and then full-text using pilot-tested standardized forms. We developed a standardized extraction form that included study characteristics (e.g., authors, country, study design), patients' characteristics (e.g., condition, sex, age), symptoms, treatments, and outcomes reported. Single reviewers extracted the data.

## Quality Assessment

We used the Joanna Briggs Institute (JBI) Critical Appraisal Checklists to assess the methodological quality of included studies<sup>18</sup>. Due to the diversity of designs included in this review, we used three different evaluation grids: one for cohort studies, one for case reports, and one for case series. Each grid evaluates 8 to 11 key biases relevant to each study design. Type of answers is the same for each grid: yes, no, unclear, not applicable. Two reviewers individually assessed the quality.

## Synthesis

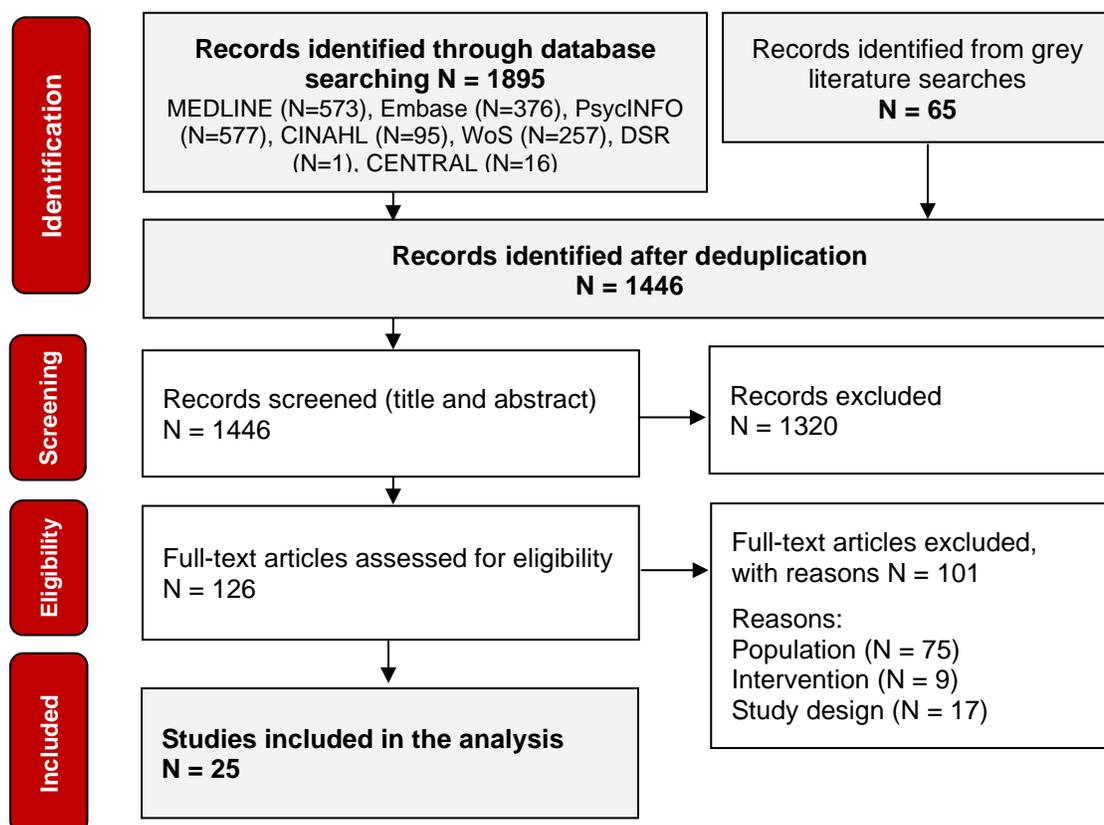
We report data using a narrative approach which includes tables of study characteristics, and detailed reporting of patients' characteristics, treatments, and outcomes. Our data synthesis focused on providing a descriptive summary to inform our knowledge users.

# Results

## Literature Search

The update of the bibliographic databases led to the identification of 1446 new publications, from which 126 were assessed for eligibility at full-text. In total, 25 articles were included in this review<sup>19-43</sup>. Ongoing trials, preprint articles, and reviews are listed in Appendix 2.

**Figure 1. Study Flow Diagram**





## Characteristics of Included Studies

Nine studies<sup>21,24,27,29,31,33,36,39,42</sup> included children with brain-based disabilities, and the others 16 included children at risk of developing a brain-based disability (premature infants and congenital heart diseases in most studies). Most studies were published in the United States and the majority of studies were case reports or case series (20/25, 80%).

**Table 2. Description of included studies**

Author Year Country	Study design	Brain-based disabilities	At-risk condition(s)	Total nb of cases (positive)	Nb cases (w/disability)	Nb cases (at-risk)
Krishnan <sup>31</sup> 2020 US	Case series	Down syndrome	Congenital heart disease	1	1	-
Newman <sup>33</sup> 2020 US	Case series	Down syndrome	Congenital heart disease	4	4	-
Turk <sup>42</sup> 2020 Multiple	Retrospective study (cohort)	Intellectual and developmental disabilities	-	916	125	-
Blumfield <sup>21</sup> 2020 US	Retrospective study (cohort)	Fragile X Syndrome, neurologic impairment	Congenital heart disease	19	6	-
Kanburoglu <sup>29</sup> 2020 Turkey	Prospective study (cohort)	Down syndrome	Congenital heart disease	37	1	3
Rodriguez <sup>36</sup> 2020 US	Case report	Down syndrome	Congenital heart disease	1	1	-
Simpson <sup>39</sup> 2020 US	Case series	Down syndrome	Congenital heart disease	7	3	4
Götzinger <sup>27</sup> 2020 Multiple	Prospective study (cohort)	DS and other neurological conditions	Congenital heart disease	582	34	25
Desai <sup>24</sup> 2020 US	Retrospective study (cohort)	Chromosomal abnormalities and diseases of the nervous system	-	627	285	-
Abasse <sup>19</sup> 2020 France	Case report	-	Preterm birth	1	-	1
Bezerra <sup>20</sup> 2020 Brazil	Case report	-	Congenital heart disease	1	-	1
Cook <sup>22</sup> 2020 UK	Case report	-	Preterm birth	1	-	1



Danley <sup>23</sup> 2020 US	Case report	-	Congenital heart disease	1	-	1
Elbehery <sup>26</sup> 2020 Saudi Arabia	Case report	-	Congenital heart disease	1	-	1
Gupta <sup>28</sup> 2020 US	Case report	-	Congenital heart disease, preterm birth	1	-	1
Kohli <sup>30</sup> 2020 US	Case report	-	Congenital heart disease	1	-	1
Needleman <sup>32</sup> 2020 US	Case report	-	Hypoxic ischemic encephalopathy	1	-	1
Olfe <sup>34</sup> 2020 Germany	Case report	-	Congenital heart disease	1	-	1
Piersigilli <sup>35</sup> 2020 Belgium	Case report	-	Congenital heart disease, preterm birth	1	-	1
Sagheb <sup>37</sup> 2020 Iran	Case series	-	Preterm birth	2	-	2
Schwartz <sup>38</sup> 2020 Iran	Case series	-	Congenital heart disease, preterm birth	19	-	13
Sisman <sup>40</sup> 2020 US	Case report	-	Preterm birth	1	-	1
Sumarni <sup>41</sup> 2020 Indonesia	Case report	-	Preterm birth	1	-	1
Zhu <sup>43</sup> 2020 China	Case series	-	Preterm birth	10	-	6
Eghbali <sup>25</sup> 2020 Iran	Case series	-	Congenital heart disease	1	-	1

### Quality of Included Studies

Of the 13 case reports, 95% of responses to quality assessment questions were positive (Appendix 4). All studies met the first three quality criteria, which focused on description of patients' demographic characteristics, history and clinical condition. Three out of 13 case reports did not fully report diagnostic tests or assessment methods.

For the 7 case series, the average of positive responses to quality assessment questions was 81%. For most of the case series, information regarding the inclusion of participants was not available, particularly in terms of the consecutive and complete nature of the inclusion of participants.



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Of the 5 cohort studies analyzed, 88% of responses to quality assessment questions were positive. We modified the interpretation of the first criteria on exposure since all cohort studies included in this review only had a single group of COVID positive patients. Also, the criteria on confounding factors were not applicable since COVID-19 is an emerging disease, which does not allow us to fully identify the confounding factors that are associated with it. In all cohort studies, no case was lost during follow-up.

### Patient Characteristics

The included studies reported data on 2238 COVID-19 positive children, including 460 with a brain-based disability, and 66 at risk of developing such disability. The mean age of children with brain-based disabilities or at risk was 4.4 years old and 48% were female. Most conditions were classified in broad categories, such as neurological disorders or chromosomal abnormalities. Thirty-six children had a congenital heart disease, and 27 were premature infants. More than half of the children with Down syndrome also had a congenital heart disease.

**Table 3. Number of cases in children with brain-based disabilities**

Number of cases	Brain-based disabilities
26	Neurological disorders
18*	Down syndrome
5	Neurologic impairments
1**	Fragile X syndrome
125	Intellectual and developmental disabilities
136	Chromosomal abnormalities
149	Diseases of the nervous system
<b>460</b>	<b>Total nb of cases</b>

\*Ten children with Down syndrome also had a congenital heart disease.

\*\*One child with Fragile X syndrome also had a congenital heart disease.

**Table 4. Number of cases in children at risk of developing brain-based disabilities**

Number of cases	At-risk conditions
36*	Congenital heart disease
27	Preterm birth
2	Congenital heart disease and preterm birth
1	Hypoxic ischemic encephalopathy
<b>66</b>	<b>Total nb of cases</b>

\*Excluding children with concomitant Down syndrome or Fragile X syndrome and congenital heart disease.



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For children with brain-based disabilities or at risk whose symptoms have been reported, the most frequent were breathing issues (27%), fever (16%), and cough (11%). For children with Down syndrome for whom symptoms were reported (n=9), 67% had fever, 56% had cough and 56% had breathing issues.

Antibiotics were the most frequently reported medication (92%), followed by antiviral medications (44%), and anti-inflammatory drugs (36%). Hydroxychloroquine were reported in 8 studies (32%). Oxygen delivered through a nasal cannula was the most frequently reported treatment (88%), followed by mechanical ventilation (36%), and non-invasive pressure ventilation (24%).

### Case Reports and Case Series

The 25 case reports and case series included a total of 57 children with brain-based disability or at risk of developing such disability. This number included 9 children with Down syndrome, 22 with congenital heart disease, and 26 preterm infants.

Authors from the cases reports and case series reported several children that had to be admitted to the intensive care unit (ICU). In children with Down syndrome, 67% (6/9) of them were admitted to the ICU. Also, children with comorbidities were often admitted in ICUs. In children with congenital heart disease or prematurity, 59% (13/22) and 65% (17/26) of them respectively were admitted to ICU.

The most common type of complication observed in all children was acute respiratory distress syndrome (Table 5, 6, 7). More specifically, 3 children with Down syndrome, 7 children with congenital heart disease and 8 premature infants suffered from acute respiratory distress. The second most common complication in children was pneumonia. It affected 2 children with Down syndrome, 5 children with congenital heart disease and 4 premature infants. Other complications included heart failure (2 cases with Down syndrome, 5 cases with congenital heart disease), bacterial or viral co-infection (2 cases with Down syndrome, 3 cases with congenital heart disease), pneumothorax (1 case with congenital heart disease, 2 premature infants) and acute renal injury (1 case with Down syndrome, 3 cases with congenital heart disease). Among all cases reported, 7 children died: 2 with Down syndrome, 1 with congenital heart disease, and 4 premature infants. However, it is also important to note that several children did not experience any complications (5/9 with Down syndrome, 9/22 with congenital heart disease, and 12/26 preterm infants).



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**Table 5. Complications for each child with Down syndrome**

	Down Syndrome									T	
	♀	♂	♂	♂	♂	♂	♂	♂	♂		
No complication			X	X	X		X		X	5	
ARDS		X					X		X	3	
Pneumonia	X								X	2	
Heart failure							X		X	2	
Bacterial or viral coinfection							X		X	2	
Necrotizing enterocolitis							X		X	2	
Acute Kidney injury									X	1	
Death									X	X	2

ARDS=Acute Respiratory Distress Syndrome ; Bac =Bacterial ; Necrotizing E = Necrotizing enterocolitis ; SIH = Severe intraventricular hemorrhage

**Table 6. Complications for each child with congenital heart disease**

	Congenital heart disease																						T	
	♀	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂		
NO complication			X	X	X		X					X						X			X	X		9
ARDS		X				X		X	X			X						X		X		X	X	9
Pneumonia	X							X	X									X	X					5
Heart failure					X		X	X	X		X													5
Bac/viral coinfection					X		X									X								3
Acute Kidney injury							X				X	X												3
Necrotizing E					X		X																	2
SIH																		X						1
Hypoxemia														X										1
Pneumothorax																					X			1
Death							X																	1

ARDS=Acute Respiratory Distress Syndrome ; Bac =Bacterial ; Necrotizing E = Necrotizing enterocolitis ; SIH = Severe intraventricular hemorrhage

**Table 7. Complications in preterm infants**

	Preterm																						T	
	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂		
NO complication	X						X	X				X	X	X	X	X				X	X		X	13
ARDS			X	X	X	X		X	X								X	X					X	9
Pneumonia			X		X												X	X					X	5
Pneumothorax				X							X													2
DIC																				X	X			2
White lung								X						X										2
SLA		X																						1
MOF																			X					1
SIH			X																					1
Death							X	X								X				X				4

ARDS=Acute Respiratory Distress Syndrome; DIC= Dissiminated intravascular coagulation; SLA = Severe lactic acidosis; MOF= Multiple organ failure; SIH = Severe intraventricular hemorrhage



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## Cohorts Studies

Blumfield et al.<sup>21</sup> retrospectively reviewed the medical records of 19 children and adolescents with COVID-19 admitted to the hospital in New York City. Twelve patients had comorbidities, including 5 who had severe neurologic impairments and 1 with Fragile X syndrome and congenital heart disease. Among the 19 cases, 14 were admitted to intensive care. In total, two patients died. They both had comorbidities but they were not specified by the authors.

In the prospective cohort study by Kanburoglu et al.<sup>29</sup>, 37 newborns from Turkey who contracted COVID-19 in the community and were admitted to intensive care were enrolled in the study. Of these infants, one had Down syndrome and congenital heart disease, and 3 were premature infants. The child with Down syndrome died after 21 days in intensive care from acute respiratory distress and bacterial co-infection. The mean hospitalization length for all cases was 11 days, ranging from 1 to 35 days.

The study by Desai and colleagues<sup>24</sup> examined electronic medical records of 627 children with COVID-19 in the United States. Of the 293 children hospitalized, 28 (10%) were considered severe. Of these severe cases, at least 20 had a disability. Hospitalized children were also younger than those not hospitalized (5.6 years vs 8.2 years,  $p < 0.001$ ). Among the severe cases, there were more children with underlying conditions, including chromosomal abnormalities (71% vs 22%,  $p < 0.001$ ), as well as children with a nervous system disease (71% vs 23%,  $p < 0.001$ ). This was also the case in children with heart problems (50% vs 11%,  $p < 0.001$ ) and other comorbidities. In this study, only 1 patient died, but the authors did not report details related to the child's pre-existing conditions.

The study by Götzinger et al.<sup>27</sup> presents the analysis of 582 children with COVID-19 in Europe. 363 (62%) children were hospitalized and 48 (8%) were admitted to intensive care. Among children with comorbidities ( $n = 145$ , 25% of all cases), 26 had neurological disorders, 25 had congenital heart diseases and 10 had chromosomal abnormalities. Univariate analyzes demonstrate that the odds to be admitted to intensive care were higher in children with neurologic disorders and congenital heart diseases (respectively, odds ratio 2.8, 95% CI 1.0-7.9,  $p = 0.037$ , and odds ratio 2.9, 95% CI 1.0-8.4,  $p = 0.029$ ). Results were not statistically significant in children with chromosomal abnormalities (odds ratio 2.8, 95% CI 0.5-13.8,  $p = 0.19$ ). For multivariate analyzes, the odds ratio for all pre-existing conditions combined was 3.27 (95% CI 1.67-6.42,  $p = 0.0015$ ). Authors also pointed out that children younger than 1 month old were more at risk to be admitted to intensive care (odds ratio 5.06, 95% CI 1.72-14.87,  $p = 0.0035$ ). During the study, only 4



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children died, including 2 with comorbidities, without further details by the authors. The reported case-fatality rate was 0.69% (95% CI 0.20-1.82).

In their study, Turk and colleagues<sup>42</sup> analyzed thousands of electronic medical records to compare differences in deaths and comorbidities between patients of all ages with and without intellectual and developmental disabilities. Their database included more than 30,000 patients with COVID-19, including 916 children aged 17 and under, from which 125 had a disability. In terms of age distribution, for all cases with disabilities, 26.4% were children (125/474). In comparison, for all cases without disabilities, 2.7% were children (791/29808). Their study showed that people with a disability were more likely to have comorbidities compared to people without disabilities. This was also true in children with disabilities for whom some comorbidities were up to 35% more common when compared to children without disabilities. The case-mortality rate was similar for patients with or without disability for all ages (around 5%). However, differences were apparent when comparing between age groups. In children 17 years old and under, the case-fatality rate was higher in children with disability than without (1.6%, 95% CI 0.4-5.6, versus 0.1%, 95% CI 0.0-0.7). This difference was persisting for adults between 18 and 75 (4.5%, 95% CI 2.7-7.4, versus 2.7%, 95% CI 2.5-3.0) but did not persist for people aged 75 or more (21.1%, 95% CI 11.1-36.3, versus 20.7%, 95% CI 19.5-21.9).



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## Discussion

Overall, the included studies showed that there is a greater risk to develop severe COVID-19 disease in children with brain-based disabilities, with pre-existing comorbid conditions, and in younger children. While a few studies mentioned male sex as a potential associated risk factor, most found no difference relative to sex.

Although mortality is very low among children, the case-fatality rate appears to be higher in children with disabilities, compared to children without disabilities (1.6%, 95% CI 0.4-5.6, versus 0.1%, 95% CI 0.0-0.7)<sup>42</sup>. Since comorbidities are more frequent in individuals with brain-based disabilities, including children, this may partly explain their higher risk of developing severe COVID-19 disease. As highlighted by Desai<sup>24</sup> and Götzinger<sup>27</sup>, younger age may also play a role in illness severity.

One important thing to note though is that many studies (e.g. Götzinger<sup>27</sup>, Blumfied<sup>21</sup>, and Kanburoglu<sup>29</sup>) included children that were hospitalized from COVID-19, often in secondary and tertiary care centers. Results of this review may therefore seem alarming, but these does not include information about children with disabilities who have contracted COVID-19 but have not been hospitalized. Furthermore, illness severity in children seems still generally low; in Canada, as of November 25, 2020, only 1.4% of the hospitalized cases were children, with two reported deaths<sup>2</sup>.

Additionally, case-fatality rates reported in the included studies were calculated on relatively low number of children with disabilities, which may question their reliability. They were also limited to the cases analysed by the studies, which may affect generalizability. Case-fatality rates also varies significantly from one country to another, and may be influenced by several factors, such as country age distribution, testing strategies, and definition of COVID-19 related deaths. Also, case-fatality rates should be interpreted with caution, because asymptomatic and undiagnosed cases may fall under the radar.

Nevertheless, our review shows that children with disabilities are overrepresented in hospitalization numbers compared to children without disabilities.



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## Limitations

Our rapid review had certain limitations. Due to our study design, screenings and data extractions were performed by single reviewers. However, we did perform pilot-testing for each review form to optimize consistency between reviewers. Further, despite our best efforts to identify all relevant studies, it is possible that some were missed.



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## Appendix 1. Search Strategies

Children with Disabilities

Update

2020 Oct 31

Ovid Multifile

Database: Ovid MEDLINE: Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE® Daily and Ovid MEDLINE® <1946-Present>, Embase Classic+Embase <1947 to 2020 October 29> , APA PsycInfo <1806 to October Week 4 2020>

Search Strategy:

- 
- 1 Coronavirus/ (11726)
  - 2 Coronavirus Infections/ (38463)
  - 3 (COVID-19 or COVID19).mp. (126503)
  - 4 ((coronavirus\* or corona virus\*) and (hubei or wuhan or beijing or shanghai)).mp. (7739)
  - 5 Wuhan virus\*.mp. (24)
  - 6 2019-nCoV.mp. (2540)
  - 7 (nCoV or n-CoV).mp. (2793)
  - 8 HCoV-19.mp. (40)
  - 9 (SARS-CoV-2 or SARS-CoV2 or SARSCoV-2 or SARSCoV2).mp. (43049)
  - 10 (novel coronavirus\* or novel corona virus\*).mp. (12029)
  - 11 ((coronavirus\* or corona virus\*) adj2 "2019").mp. (74817)
  - 12 ((coronavirus\* or corona virus\*) adj2 "19").mp. (5177)
  - 13 (coronavirus 2 or corona virus 2).mp. (52025)
  - 14 (coronavirus\* or corona virus\*).ti. (31857)
  - 15 or/1-14 [COVID 19] (160667)
  - 16 Developmental Disabilities/ (46010)
  - 17 (development\* adj2 (abnormal\* or atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or handicap\* or impair\*).tw,kf. (193329)
  - 18 (global adj2 delay\*).tw,kf. (4538)
  - 19 exp Child Development Disorders, Pervasive/ (109409)
  - 20 (autis\* or asperger\*).tw,kf. (173231)
  - 21 Attention Deficit Disorder with Hyperactivity/ (73375)
  - 22 attention deficit\*.tw,kf. (102802)
  - 23 ADHD.tw,kf. (91984)
  - 24 hyperkinetic syndrome\*.tw,kf. (1101)
  - 25 (kanner\* adj syndrome?).tw,kf. (89)
  - 26 exp Learning Disabilities/ (88134)
  - 27 ((learning or scholastic\*) adj3 (atypical\* or a-typical\* or deficit\* or delay\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*).tw,kf. (102201)
  - 28 (alexia\* or alexic\* or dyslexia\* or dyslexic\* or reading disab\* or word blindness or (verbal\* adj1 agnosi\*).tw,kf. (30584)
  - 29 exp Language Development Disorders/ (11028)
  - 30 ((language or auditor\* or semantic\* or speech or speak\* or talk\* or verbal\*) adj3 (atypical\* or a-typical\* or deficit\* or delay\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*).tw,kf. (119545)
  - 31 Cerebral Palsy/ (67986)
  - 32 ((cerebral adj1 palsy) or (diplegia\* adj1 spastic) or (little adj1 disease)).tw,kf. (68546)
  - 33 ((brain? or central\*) adj1 palsy).tw,kf. (237)
  - 34 ((brain or central\* or cerebral\*) adj1 (paralys\* or pares#s)).tw,kf. (1773)
  - 35 encephalopathia infantilis.tw,kf. (0)
  - 36 exp Malformations of Cortical Development/ (19283)
  - 37 Neural Tube Defects/ (17853)



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- 38 (neural tube? adj2 defect\*).tw,kf. (17682)
- 39 (acrania? or craniorachischis\* or diastematomyelia\* or exencephal\* or iniencephal\* or neurenteric cyst? or neuroenteric cyst? or spinal dysraphism\* or spinal cord myelodysplasia\* or (tethered adj2 cord syndrome\*)).tw,kf. (9062)
- 40 spina? bifida\*.tw,kf. (19236)
- 41 (cleft spine? or open spine? or rachischis\* or schistorrhach\* or spina? dysraphia\* or status dysraphicus).tw,kf. (693)
- 42 Intellectual Disability/ (62896)
- 43 (intellectual\* adj2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).tw,kf. (72656)
- 44 (brain\* adj2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).tw,kf. (65161)
- 45 (cognitiv\* adj2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).tw,kf. (350185)
- 46 (cognition\* adj2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).tw,kf. (16695)
- 47 (mental\* adj2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).tw,kf. (335811)
- 48 Down Syndrome/ (68896)
- 49 (Down\* adj2 syndrome\*).tw,kf. (60709)
- 50 (mongolism\* or mongoloid\*).tw,kf. (7419)
- 51 ("trisomy 21" or "trisomy G1" or "trisomy (G)1" or "trisomy G-1" or "trisomy GM" or "trisomy G" or "21 trisomy" or "G1 trisomy" or "G(1) trisomy" or "G-1 trisomy" or "GM trisomy" or "G trisomy").tw,kf. (15776)
- 52 "Chromosomes, Human, Pair 21"/ (10454)
- 53 (translocat\* adj1 DS).tw,kf. (11)
- 54 Fetal Alcohol Spectrum Disorders/ (9074)
- 55 ((f?etal or f?etus\*) adj2 alcohol syndrome\*).tw,kf. (6887)
- 56 FASD.tw,kf. (4914)
- 57 (alcohol-related adj3 (birth defect\* or birth disorder\*)).tw,kf. (302)
- 58 (alcohol-related adj3 (neurodevelopment\* or neuro-development\*) adj2 (deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or handicap\* or impair\*)).tw,kf. (368)
- 59 Neonatal Abstinence Syndrome/ (2325)
- 60 ((neonat\* or newborn\*) adj2 (abstinen\* or addiction\* or withdrawal\*)).tw,kf. (3835)
- 61 Fragile X Syndrome/ (15639)
- 62 "Fragile X".tw,kf. (18357)
- 63 (FRAXA or FRAXE or "Fra(X)").tw,kf. (1639)
- 64 ("Mar (X)" or "Marker X" or "Martin-Bell").tw,kf. (615)
- 65 ("X-Linked" adj2 mental retardation).tw,kf. (2832)
- 66 Angelman Syndrome/ (3514)
- 67 (angelman\* or "happy puppet" or puppet child\*).tw,kf. (4719)
- 68 exp Brain Injuries/ (285580)
- 69 (brain\* adj3 (injur\* or commotio\* or concuss\* or damag\* or trauma\*)).tw,kf. (294407)
- 70 concussion\*.tw,kf. (25174)
- 71 commotio.tw,kf. (1073)
- 72 exp Stroke/ (379714)
- 73 stroke?.tw,kf. (701609)
- 74 ((cerebrovascular or cerebro-vascular) adj2 (accident\* or arrest\* or failure\* or injur\* or insufficienc\* or insult\*)).tw,kf. (26138)
- 75 (cerebral vascular adj2 (accident\* or arrest\* or failure\* or injur\* or insufficienc\* or insult\*)).tw,kf. (3810)
- 76 isch?emic seizure\*.tw,kf. (110)
- 77 isch?emic cerebral attack\*.tw,kf. (72)
- 78 (apoplex\* or apoplectic\*).tw,kf. (8855)
- 79 ((brain or cerebral) adj2 insult\$2).tw,kf. (5568)
- 80 Asphyxia Neonatorum/ (11456)
- 81 ((neonat\* or newborn\*) adj3 (anoxi\* or asphyxi\* or hypoxi\* or respiratory failure\*)).tw,kf. (20430)
- 82 Hypoxia-Ischemia, Brain/ (8846)
- 83 exp Infant, Premature/ (174633)



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- 84 ((preterm or pre-term or prematur\* or pre-matur\*) adj3 (baby or babies or infant\* or neonat\* or newborn\*)).tw,kf. (155142)
- 85 exp Infant, Low Birth Weight/ (98754)
- 86 small for gestational age?.tw,kf. (25592)
- 87 (SGA or LBW or VLBW).tw,kf. (40094)
- 88 low\* birth weight?.tw,kf. (72964)
- 89 exp Congenital Heart Defects/ (152311)
- 90 ((cardiac\* or cardio\* or heart?) adj2 (abnormalit\* or anomal\* or atypical\* or a-typical\* or defect\* or deficien\* or deform\* or impair\* or malform\*)).tw,kf. (125977)
- 91 (tetralog\* adj2 fallot\*).tw,kf. (24505)
- 92 ((cardiac\* or cardio\* or heart?) adj5 (congenital\* or inborn\* or hereditar\* or inherit\*)).tw,kf. (136608)
- 93 Intensive Care Units, Neonatal/ and (Survivors/ or Survivorship/ or "Patient Discharge"/) (1214)
- 94 (neonat\* adj2 (critical care or intensive care or ICU or ICUs) adj3 (discharg\* or graduat\* or surviv\*)).tw,kf. (1654)
- 95 (post\* adj2 (NICU or NICUs)).tw,kf. (208)
- 96 ((NICU or NICUs) adj3 (discharg\* or graduat\* or surviv\*)).tw,kf. (1778)
- 97 or/16-96 [BRAIN/HEART DISABILITIES] (3394297)
- 98 exp Substance-Related Disorders/ (538421)
- 99 (alcoholis\* or alcoholic\*).tw,kf. (260043)
- 100 ((binge? or binging) adj2 (alcohol\* or drink\*)).tw,kf. (20125)
- 101 (alcohol\* adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\*)).tw,kf. (174692)
- 102 ((narcotic\* or opioid\* or opiate\*) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).tw,kf. (60839)
- 103 ((drug? or substance?) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or "non-medical use?" or "nonmedical use?" or "non-prescribed use?" or "nonprescribed use?" or "non-prescription use?" or "nonprescription use?" or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).tw,kf. (357240)
- 104 (heroin\* adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).tw,kf. (17603)
- 105 ((hydrocodone or bekamid\$2 or codinovo\$2 or dico\$2 or dicodid\$2 or dihydrocodeinone\$2 or hycodan\$2 or hycon\$2 or hydrocodeinonebitartrate\$2 or hydrocodon\$2 or hydrocon\$2 or hydrocodonum\$2 or robidone\$2) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).tw,kf. (158)
- 106 ((fentanyl or alfentanil\$2 or alfenta\$2 or alfentanyl\$2 or beta hydroxymefentanyl or brifentanil\$2 or carfentanil\$2 or duragesic\$2 or fanaxal\$2 or fentanest\$2 or fentora\$2 or hypnorm\$2 or limifen\$2 or lofentanil\$2 or mefentanyl\$2 or mirfentanil\$2 or ofentanil\$2 or phentanyl\$2 or R-39209 or R-4263 or rapifen\$2 or remifentanil\$2 or sublimaze\$2 or sufenta\$2 or sufentanil\$2 or sulfentanyl\$2 or trefentanil\$2) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).tw,kf. (905)
- 107 ((morphine or anpec\$2 or duramorph\$2 or epimorph\$2 or miro\$2 or morfin\$2 or morfine\$2 or morphin\$2 or morphinium\$2 or morphium\$2 or MS contin or morphia\$2 or opso\$2 or oramorph\$2 or SDZ 202-250 or SDZ202-250 or skenan\$2 or transmorphine\$2 or trans-morphine\$2) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).tw,kf. (12837)
- 108 ((oxycodone or bionine\$2 or bionone\$2 or bolodorm\$2 or broncodal\$2 or bucodal\$2 or cafacodal\$2 or cardanon\$2 or codenon\$2 or codix 5 or "col 003" or col003 or DETERx\$2 or dihydrohydroxycodone or dihydrohydroxycodone or dihydrododeinone or dihydronone\$2 or dinarkon\$2 or endone\$2 or eubine\$2 or eucodal\$2 or eucodale\$2 or eucodalum\$2 or eudin\$2 or eukdin\$2 or eukodal\$2 or eumorphal\$2 or eurodamine\$2 or eutagen\$2 or hydrocodal\$2 or hydroxycodone\$2 or ludonal\$2 or m-oxy or medicodal\$2 or narcobasina\$2 or narcobasine\$2 or narcosin\$2 or nargenol\$2 or narodal\$2 or nsc 19043 or nucodan\$2 or opton\$2 or ossicodone\$2 or oxanest\$2 or oxaydo\$2 or oxepta\$2 or oxicone\$2 or oxicontin\$2 or oxiconum\$2 or oxikon\$2 or oxy ir or oxycod\$2 or oxycodone\$2 or oxycodonehydrochloride or oxycodone hydrochloride or oxycodonehydrochlorid or oxycodyl\$2 or oxycone\$2 or oxycontin\$2 or oxydose\$2 or oxyfast\$2 or oxygesic\$2 or oxyir\$2 or oxykon\$2 or oxynorm\$2 or pancodal\$2 or pavinal\$2 or percolone\$2 or pronarcin\$2 or remoxy\$2 or roxicodone\$2 or roxicodone\$2 or roxicodone\$2 or sinthiodal\$2 or stupenal\$2 or supeudol\$2 or tebodol\$2 or tekodin\$2 or thecodin\$2 or thecodin\$2 or xtampa\$2 or xtampza\$2) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-



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prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using)  
adj2 (illicit\* or illegal\*))).tw,kf. (736)

109 or/98-108 [SUBSTANCE/ALCOHOL DISORDERS] (1017135)

110 exp Infant/ (2323956)

111 exp Child/ (5000102)

112 Adolescent/ (3734371)

113 (baby or babies or infant? or infanc\* or neonat\* or newborn\* or preschool\* or pre-school\* or toddler?).tw,kf.  
(1974884)

114 (adolescen\* or child\* or pre-adolescen\* or preteen\* or pre-teen\* or school-age\* or teen or teens or teenager?  
or youth\*).tw,kf. (4771870)

115 exp Pediatrics/ (210118)

116 p?ediatric\*.tw,kf. (986896)

117 or/110-116 [INFANTS/CHILDREN/ADOLESCENTS] (10033552)

118 97 and 117 [BRAIN DISABILITIES - CHILDREN/ADOLESCENTS/YOUNG ADULTS] (1274649)

119 15 and 118 [COVID-19 - BRAIN DISABILITIES - CHILDREN/ADOLESCENTS/YOUNG ADULTS] (785)

120 Prenatal Exposure Delayed Effects/ (53524)

121 (prenatal\* or pre-natal\* or preterm\* or antenatal\* or ante-natal\* or antepartum\* or ante-partum\*).tw,kf.  
(525883)

122 ((before or prior) adj3 (birth\* or childbirth\* or child birth\*).tw,kf. (25864)

123 (baby or babies or infant? or infanc\* or neonat\* or newborn\*).tw,kf. (1850894)

124 or/120-123 [PRENATAL EXPOSURE/NEWBORNS] (2167152)

125 109 and 124 [SUBSTANCE ABUSE - PRENATAL EXPOSURE/NEWBORNS] (28800)

126 15 and 125 [COVID-19 - SUBSTANCE ABUSE - PRENATAL EXPOSURE/NEWBORNS] (1)

127 119 or 126 [ALL CONDITIONS OF INTEREST] (785)

128 exp Animals/ not Humans/ (18591781)

129 127 not 128 [ANIMAL-ONLY REMOVED] (392)

130 limit 129 to yr="2019-current" (364)

131 (2020041\* or 2020042\* or "20200430" or 202005\* or 202006\* or 202007\* or 202008\* or 202009\* or  
202010\*).dt. (850688)

132 130 and 131 [UPDATE PERIOD] (296)

133 132 use ppez [MEDLINE RECORDS] (296)

134 Coronavirinae/ (4154)

135 Coronavirus infection/ (49107)

136 (COVID-19 or COVID19).mp. (126503)

137 ((coronavirus\* or corona virus\*) and (hubei or wuhan or beijing or shanghai)).mp. (7739)

138 Wuhan virus\*.mp. (24)

139 2019-nCoV.mp. (2540)

140 (nCoV or n-CoV).mp. (2793)

141 HCoV-19.mp. (40)

142 (SARS-CoV-2 or SARS-CoV2 or SARSCoV-2 or SARSCoV2).mp. (43049)

143 (novel coronavirus\* or novel corona virus\*).mp. (12029)

144 ((coronavirus\* or corona virus\*) adj2 "2019").mp. (74817)

145 ((coronavirus\* or corona virus\*) adj2 "19").mp. (5177)

146 (coronavirus 2 or corona virus 2).mp. (52025)

147 (coronavirus\* or corona virus\*).ti. (31857)

148 or/134-147 [COVID 19] (159105)

149 exp developmental disorder/ (47316)

150 (development\* adj2 (abnormal\* or atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled  
or disorder\* or disturb\* or handicap\* or impair\*).tw,kw. (194866)

151 (global adj2 delay\*).tw,kw. (4532)

152 exp autism/ (138455)

153 (autis\* or asperger\*).tw,kw. (174912)

154 attention deficit disorder/ (94217)

155 attention deficit\*.tw,kw. (104003)

156 ADHD.tw,kw. (93039)

157 hyperkinetic syndrome\*.tw,kw. (1117)

158 (kanner\* adj syndrome?).tw,kw. (90)

159 exp learning disorder/ (72466)



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- 160 ((learning or scholastic\*) adj3 (atypical\* or a-typical\* or deficit\* or delay\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).tw,kw. (102558)
- 161 (alexia\* or alexic\* or dyslexia\* or dyslexic\* or reading disab\* or word blindness or (verbal\* adj1 agnosi\*)).tw,kw. (31041)
- 162 exp developmental language disorder/ (11028)
- 163 ((language or auditor\* or semantic\* or speech or speak\* or talk\* or verbal\*) adj3 (atypical\* or a-typical\* or deficit\* or delay\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).tw,kw. (118966)
- 164 cerebral palsy/ (67986)
- 165 ((cerebral adj1 palsy) or (diplegia\* adj1 spastic) or (little adj1 disease)).tw,kw. (68484)
- 166 ((brain? or central\*) adj1 palsy).tw,kw. (238)
- 167 ((brain or central\* or cerebral\*) adj1 (paralys\* or pares#s)).tw,kw. (1870)
- 168 encephalopathia infantilis.tw,kw. (0)
- 169 exp cortical dysplasia/ (19283)
- 170 exp neural tube defect/ (62884)
- 171 (neural tube? adj2 defect\*).tw,kw. (18055)
- 172 (acrania? or craniorachischis\* or diastematomyelia\* or exencephal\* or iniencephal\* or neurenteric cyst? or neuroenteric cyst? or spinal dysraphism\* or spinal cord myelodysplasia\* or (tethered adj2 cord syndrome\*)).tw,kw. (9552)
- 173 spina? bifida\*.tw,kw. (19985)
- 174 (cleft spine? or open spine? or rachischis\* or schistorrhach\* or spina? dysraphia\* or status dysraphicus).tw,kw. (707)
- 175 exp intellectual impairment/ (551411)
- 176 (intellectual\* adj2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).tw,kw. (73165)
- 177 (brain\* adj2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).tw,kw. (65706)
- 178 (cognitiv\* adj2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).tw,kw. (352637)
- 179 (cognition\* adj2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).tw,kw. (17472)
- 180 (mental\* adj2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).tw,kw. (331515)
- 181 Down syndrome/ (68896)
- 182 (Down\* adj2 syndrome\*).tw,kw. (61259)
- 183 (mongolism\* or mongoloid\*).tw,kw. (7532)
- 184 trisomy 21/ (39549)
- 185 ("trisomy 21" or "trisomy G1" or "trisomy (G)1" or "trisomy G-1" or "trisomy GM" or "trisomy G" or "21 trisomy" or "G1 trisomy" or "G(1) trisomy" or "G-1 trisomy" or "GM trisomy" or "G trisomy").tw,kw. (16349)
- 186 chromosome 21/ (10454)
- 187 (translocat\* adj1 DS).tw,kw. (11)
- 188 fetal alcohol syndrome/ (12900)
- 189 ((f?etal or f?etus\*) adj2 alcohol syndrome\*).tw,kw. (7441)
- 190 FASD.tw,kw. (5012)
- 191 (alcohol-related adj3 (birth defect\* or birth disorder\*)).tw,kw. (308)
- 192 (alcohol-related adj3 (neurodevelopment\* or neuro-development\*) adj2 (deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or handicap\* or impair\*)).tw,kw. (388)
- 193 neonatal abstinence syndrome/ (2325)
- 194 ((neonat\* or newborn\*) adj2 (abstinen\* or addiction\* or withdrawal\*)).tw,kw. (3895)
- 195 fragile X syndrome/ (15639)
- 196 "Fragile X".tw,kw. (18535)
- 197 (FRAXA or FRAXE or "Fra(X)").tw,kw. (1663)
- 198 ("Mar (X)" or "Marker X" or "Martin-Bell").tw,kw. (630)
- 199 ("X-Linked" adj2 mental retardation).tw,kw. (2982)
- 200 happy puppet syndrome/ (4021)
- 201 (angelman\* or "happy puppet" or puppet child\*).tw,kw. (4797)
- 202 exp brain injury/ (285196)
- 203 (brain\* adj3 (injur\* or commotio\* or concuss\* or damag\* or trauma\*)).tw,kw. (295289)



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204 concussion\*.tw,kw. (26300)  
 205 commotio.tw,kw. (1099)  
 206 exp cerebrovascular accident/ (379714)  
 207 stroke?.tw,kw. (711941)  
 208 ((cerebrovascular or cerebro-vascular) adj2 (accident\* or arrest\* or failure\* or injur\* or insufficienc\* or insult\*)).tw,kw. (27361)  
 209 (cerebral vascular adj2 (accident\* or arrest\* or failure\* or injur\* or insufficienc\* or insult\*)).tw,kw. (3866)  
 210 isch?emic seizure\*.tw,kw. (111)  
 211 isch?emic cerebral attack\*.tw,kw. (72)  
 212 (apoplex\* or apoplectic\*).tw,kw. (8957)  
 213 ((brain or cerebral) adj2 insult\$2).tw,kw. (5589)  
 214 newborn hypoxia/ (6901)  
 215 ((neonat\* or newborn\*) adj3 (anoxi\* or asphyxi\* or hypoxi\* or respiratory failure\*)).tw,kw. (20220)  
 216 hypoxic ischemic encephalopathy/ (13532)  
 217 Prematurity/ (118110)  
 218 ((preterm or pre-term or prematur\* or pre-matur\*) adj3 (baby or babies or infant\* or neonat\* or newborn\*)).tw,kw. (155041)  
 219 exp low birth weight/ (101984)  
 220 small for gestational age?.tw,kw. (26035)  
 221 (SGA or LBW or VLBW).tw,kw. (40359)  
 222 low\* birth weight?.tw,kw. (73931)  
 223 exp congenital heart malformation/ (155668)  
 224 ((cardiac\* or cardio\* or heart?) adj2 (abnormalit\* or anomal\* or atypical\* or a-typical\* or defect\* or deficien\* or deform\* or impair\* or malform\*)).tw,kw. (123344)  
 225 (tetralog\* adj2 fallot\*).tw,kw. (24360)  
 226 ((cardiac\* or cardio\* or heart?) adj5 (congenital\* or inborn\* or hereditar\* or inherit\*)).tw,kw. (138650)  
 227 neonatal intensive care unit/ and (exp survivor/ or survivorship/ or hospital discharge.mp.) [mp=ti, ab, ot, nm, hw, fx, kf, ox, px, rx, ui, sy, tn, dm, mf, dv, kw, dq, tc, id, tm, mh] (1039)  
 228 (neonat\* adj2 (critical care or intensive care or ICU or ICUs) adj3 (discharg\* or graduat\* or surviv\*)).tw,kw. (1657)  
 229 (post\* adj2 (NICU or NICUs)).tw,kw. (219)  
 230 ((NICU or NICUs) adj3 (discharg\* or graduat\* or surviv\*)).tw,kw. (1785)  
 231 or/149-229 [BRAIN/HEART DISABILITIES] (3707184)  
 232 exp drug dependence/ (538421)  
 233 (alcoholis\* or alcoholic\*).tw,kw. (263269)  
 234 ((binge? or binging) adj2 (alcohol\* or drink\*)).tw,kw. (20259)  
 235 (alcohol\* adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\*)).tw,kw. (175979)  
 236 ((narcotic\* or opioid\* or opiate\*) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).tw,kw. (61703)  
 237 ((drug? or substance?) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or "non-medical use?" or "nonmedical use?" or "non-prescribed use?" or "nonprescribed use?" or "non-prescription use?" or "nonprescription use?" or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).tw,kw. (360765)  
 238 (heroin\* adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).tw,kw. (17827)  
 239 ((hydrocodone or bekadid\$2 or codinovo\$2 or dico\$2 or dicodid\$2 or dihydrocodeinone\$2 or hycodan\$2 or hycon\$2 or hydrocodeinonebitartrate\$2 or hydrocodon\$2 or hydrocon\$2 or hydrocodonum\$2 or robidone\$2) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).tw,kw. (171)  
 240 ((fentanyl or alfentanil\$2 or alfenta\$2 or alfentanil\$2 or beta hydroxymefentanyl or brifentanil\$2 or carfentanil\$2 or duragesic\$2 or fanaxal\$2 or fentanest\$2 or fentora\$2 or hypnorm\$2 or limifen\$2 or lofentanil\$2 or mefentanil\$2 or mirfentanil\$2 or ofcentanil\$2 or phentanyl\$2 or R-39209 or R-4263 or rapifen\$2 or remifentanil\$2 or sublimaze\$2 or sufenta\$2 or sufentanil\$2 or sulfentanil\$2 or trefentanil\$2) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).tw,kw. (930)



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241 ((morphine or anepc\$2 or duramorph\$2 or epimorph\$2 or miro\$2 or morfin\$2 or morfine\$2 or morphin\$2 or morphinium\$2 or morphium\$2 or MS contin or morphia\$2 or opso\$2 or oramorph\$2 or SDZ 202-250 or SDZ202-250 or skenan\$2 or transmorphine\$2 or trans-morphine\$2) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))) .tw,kw. (12879)

242 ((oxycodone or bionine\$2 or bionone\$2 or bolodorm\$2 or broncodal\$2 or bucodal\$2 or cafacodal\$2 or cardanon\$2 or codenon\$2 or codix 5 or "col 003" or col003 or DETERx\$2 or dihydrohydroxycodeinone or dihydrohydroxydodeinone or dihydrone\$2 or dinarkon\$2 or endone\$2 or eubine\$2 or eucodal\$2 or eucodale\$2 or eucodalum\$2 or eudin\$2 or eukdin\$2 or eukodal\$2 or eumorphal\$2 or eurodamine\$2 or eutagen\$2 or hydrocodal\$2 or hydroxycodeinoma\$2 or ludonal\$2 or m-oxy or medicodal\$2 or narcobasina\$2 or narcobasine\$2 or narcosin\$2 or nargenol\$2 or narodal\$2 or nsc 19043 or nucodan\$2 or opton\$2 or ossicodone\$2 or oxanest\$2 or oxyaydo\$2 or oxecta\$2 or oxicone\$2 or oxicontin\$2 or oxiconum\$2 or oxikon\$2 or oxy ir or oxycod\$2 or oxycodeinon\$2 or oxycodeinonhydrochloride or oxycodone hydrochloride or oxycodonhydrochlorid or oxycodyl\$2 or oxycone\$2 or oxycontin\$2 or oxydose\$2 or oxyfast\$2 or oxygesic\$2 or oxyir\$2 or oxykon\$2 or oxynorm\$2 or pancodine\$2 or pavinal\$2 or percolone\$2 or pronarcin\$2 or remoxy\$2 or roxicodone\$2 or roxycodone\$2 or sinthiodal\$2 or stupenal\$2 or supeudol\$2 or tebodol\$2 or tekodin\$2 or thecodin\$2 or thecodin\$2 or xtampa\$2 or xtampza\$2) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))) .tw,kw. (770)

243 or/232-242 [SUBSTANCE/ALCOHOL DISORDERS] (1021957)

244 exp child/ (5000102)

245 exp adolescent/ (3734583)

246 juvenile/ (52115)

247 (baby or babies or infant? or infanc\* or neonat\* or newborn\* or preschool\* or pre-school\* or toddler?) .tw,kw. (1956842)

248 (adolescen\* or child\* or pre-adolescen\* or preteen\* or pre-teen\* or school-age\* or teen or teens or teenager? or youth\*) .tw,kw. (4779185)

249 exp pediatrics/ (210118)

250 p?ediatric\* .tw,kw. (1014514)

251 or/244-250 [INFANTS/CHILDREN/ADOLESCENTS] (9875135)

252 231 and 251 [BRAIN DISABILITIES - CHILDREN/ADOLESCENTS/YOUNG ADULTS] (1271361)

253 148 and 252 [COVID-19 - BRAIN DISABILITIES - CHILDREN/ADOLESCENTS/YOUNG ADULTS] (790)

254 prenatal exposure/ (61304)

255 (prenatal\* or pre-natal\* or preterm\* or antenatal\* or ante-natal\* or antepartum\* or ante-partum\*) .tw,kw. (533139)

256 ((before or prior) adj3 (birth\* or childbirth\* or child birth\*)) .tw,kw. (25871)

257 (baby or babies or infant? or infanc\* or neonat\* or newborn\*) .tw,kw. (1831477)

258 or/254-257 [PRENATAL EXPOSURE/NEWBORNS] (2152814)

259 243 and 258 [SUBSTANCE ABUSE - PRENATAL EXPOSURE/NEWBORNS] (29286)

260 148 and 259 [COVID-19 - SUBSTANCE ABUSE - PRENATAL EXPOSURE/NEWBORNS] (1)

261 253 or 260 [ALL CONDITIONS OF INTEREST] (790)

262 exp animal/ or exp animal experimentation/ or exp animal model/ or exp animal experiment/ or nonhuman/ or exp vertebrate/ (54231358)

263 exp human/ or exp human experimentation/ or exp human experiment/ (41754484)

264 262 not 263 (12478679)

265 261 not 264 [ANIMAL-ONLY REMOVED] (786)

266 limit 265 to yr="2019-current" (743)

267 (2020041\* or 2020042\* or "20200430" or 202005\* or 202006\* or 202007\* or 202008\* or 202009\* or 202010\*) .dc. (1339945)

268 266 and 267 [UPDATE PERIOD] (414)

269 268 use emczd [EMBASE RECORDS - UPDATE PERIOD] (414)

270 (COVID-19 or COVID19) .mp. (126503)

271 ((coronavirus\* or corona virus\*) and (hubei or wuhan or beijing or shanghai)) .mp. (7739)

272 Wuhan virus\* .mp. (24)

273 2019-nCoV .mp. (2540)

274 (nCoV or n-CoV) .mp. (2793)

275 HCoV-19 .mp. (40)

276 (SARS-CoV-2 or SARS-CoV2 or SARSCoV-2 or SARSCoV2) .mp. (43049)



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277 (novel coronavirus\* or novel corona virus\*).mp. (12029)  
 278 ((coronavirus\* or corona virus\*) adj2 "2019").mp. (74817)  
 279 ((coronavirus\* or corona virus\*) adj2 "19").mp. (5177)  
 280 (coronavirus 2 or corona virus 2).mp. (52025)  
 281 (coronavirus\* or corona virus\*).ti. (31857)  
 282 or/270-281 [COVID 19] (153877)  
 283 (baby or babies or infant? or infanc\* or neonat\* or newborn\* or preschool\* or pre-school\* or toddler?).tw,id. (1924606)  
 284 (adolescen\* or child\* or pre-adolescen\* or preteen\* or pre-teen\* or school-age\* or teen or teens or teenager? or youth\*).tw,id. (4717264)  
 285 exp Pediatrics/ (210118)  
 286 p?ediatric\*.tw,id. (970266)  
 287 limit 282 to (100 childhood <birth to age 12 yrs> or 120 neonatal <birth to age 1 mo> or 140 infancy <2 to 23 mo> or 160 preschool age <age 2 to 5 yrs> or 180 school age <age 6 to 12 yrs> or 200 adolescence <age 13 to 17 yrs>) [Limit not valid in Ovid MEDLINE(R),Ovid MEDLINE(R) Daily Update,Ovid MEDLINE(R) In-Process,Ovid MEDLINE(R) Publisher,Embase; records were retained] (151769)  
 288 283 or 284 or 285 or 286 (6408538)  
 289 282 and 288 (10103)  
 290 287 or 289 [COVID-19 - INFANT/CHILD/ADOLESCENT POPULATION] (152014)  
 291 limit 290 to yr="2019-current" (139236)  
 292 (202004\* or 202005\* or 202006\* or 202007\* or 202008\* or 202009\* or 202010\*).up. (3809199)  
 293 291 and 292 [UPDATE PERIOD] (69839)  
 294 293 use ppez,emczd (69519)  
 295 293 not 294 [PSYCINFO RECORDS] (320)  
 296 133 or 269 or 295 [ALL DATABASES] (1030)  
 297 remove duplicates from 296 (777)  
 298 297 use ppez [MEDLINE UNIQUE RECORDS] (289)  
 299 297 use emczd [EMBASE UNIQUE RECORDS] (197)  
 300 297 not (298 or 299) [PSYCINFO UNIQUE RECORDS] (291)

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CINAHL

#	Query	Limiters/Expanders	Last Run Via	Results
S89	S87 AND S88	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	64
S88	EM 20200410-20201231	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	201,056
S87	S80 OR S85	Limiters - Published Date: 20190101-20201231 Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	118
S86	S80 OR S85	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen -	133



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			Advanced Search Database - CINAHL Plus with Full Text	
S85	S9 AND S84	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	2
S84	S72 AND S83	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	5,495
S83	S81 OR S82	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	194,187
S82	TI ( (before or prior) N3 (birth* or childbirth* or (child N0 birth*)) ) OR AB ( (before or prior) N3 (birth* or childbirth* or (child N0 birth*)) ) OR TI ( baby or babies or infant# or infanc* or neonat* or newborn* ) OR AB ( baby or babies or infant# or infanc* or neonat* or newborn* )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	190,280
S81	(MH "Prenatal Exposure Delayed Effects")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	5,532
S80	S9 AND S79	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	131
S79	S62 AND S78	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	180,358
S78	S73 OR S74 OR S75 OR S76 OR S77	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	1,245,654



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S77	TI p#ediatric* OR AB p#ediatric*	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	139,118
S76	(MH "Pediatrics+")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	21,413
S75	TI ( adolescen* or child* or pre-adolescenc* or preteen* or pre-teen* or school-age* or teen or teens or teenager# or youth* ) OR AB ( adolescen* or child* or pre-adolescenc* or preteen* or pre-teen* or school-age* or teen or teens or teenager# or youth* )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	611,289
S74	TI ( baby or babies or infant# or infanc* or neonat* or newborn* or preschool* or pre-school* or toddler# ) OR AB ( baby or babies or infant# or infanc* or neonat* or newborn* or preschool* or pre-school* or toddler# )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	205,298
S73	(MH "Child+") OR (MH "Minors (Legal)") OR (MH "Adolescence")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	990,585
S72	S63 OR S64 OR S65 OR S66 OR S67 OR S68 OR S69 OR S70 OR S71	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	198,740
S71	TI ( (oxycodone or bionine or bionone or bolodorm or broncodal or bucodal or cafacodal or cardanon or codenon or codix 5 or "col 003" or col003 or DETERx or dihydrohydroxycodone or dihydrohydroxydodeinone or dihydronone or dinarkon or endone or eubine or eucodal or eucodale or eucodalum or eudin or eukdin or eukodal or eumorphal or eurodamine or eutagen or hydrocodal or hydroxycodone or ludonal or m-oxy or medicodal or narcobasina or narcobasine or narcosin or nargenol or narodal or nsc 19043 or nucodan or opton or ossicodone or oxanest or oxaydo or oxecta or oxicone or oxicontin or oxiconum or oxikon or oxy ir or oxycod or oxycodone or oxycodonehydrochloride or oxycodone hydrochloride or oxycodonhydrochlorid or oxycodyl or oxycone or oxycontin or oxydose or	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	170



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	<p>oxyfast or oxygesic or oxyir or oxykon or oxynorm or pancodine or pavinal or percolone or pronarcin or remoxy or roxicodone or roxycodone or sinthiodal or stupenal or supeudol or tebodal or tekodin or thecodin or theocodin or xtampa or xtampza) N3 (abus* or addict* or dependen* or disorder# or habituat* or misus* or (mis N0 us*) or (non N0 medical*) or nonmedical* or (non N0 prescrib*) or nonprescrib* or (non N0 prescription*) or nonprescription* or withdrawal* or ("use" or used or uses or using) N2 (illicit* or illegal*)) ) OR AB ( (oxycodone or bionine or bionone or bolodorm or broncodal or bucodal or cafacodal or cardanon or codenon or codix 5 or "col 003" or col003 or DETERx or dihydrohydroxycodone or dihydrohydroxydodeinone or dihydronone or dinarkon or endone or eubine or eucodal or eucodale or eucodalum or eudin or eukdin or eukodal or eumorphal or eurodamine or eutagen or hydrocodal or hydroxycodone or ludonal or m-oxy or medicodal or narcobasina or narcobasine or narcosin or nargenol or narodal or nsc 19043 or nucodan or opton or ossicodone or oxanest or oxaydo or oxecta or oxicone or oxicontin or oxiconum or oxikon or oxy ir or oxycod or oxycodone or oxycodonehydrochloride or oxycodone hydrochloride or oxycodonhydrochlorid or oxycodyl or oxycone or oxycontin or oxydose or oxyfast or oxygesic or oxyir or oxykon or oxynorm or pancodine or pavinal or percolone or pronarcin or remoxy or roxicodone or roxycodone or sinthiodal or stupenal or supeudol or tebodal or tekodin or thecodin or theocodin or xtampa or xtampza) N3 (abus* or addict* or dependen* or disorder# or habituat* or misus* or (mis N0 us*) or (non N0 medical*) or nonmedical* or (non N0 prescrib*) or nonprescrib* or (non N0 prescription*) or nonprescription* or withdrawal* or ("use" or used or uses or using) N2 (illicit* or illegal*)) )</p>			
S70	<p>TI ( (morphine or anpec or duramorph or epimorph or miro or morfin or morfine or morphin or morphinium or morphium or MS contin or morphia or opso or oramorph or SDZ 202-250 or SDZ202-250 or skenan or transmorphine or trans-morphine) (abus* or addict* or dependen* or disorder# or habituat* or misus* or (mis N0 us*) or (non N0 medical*) or nonmedical* or (non N0 prescrib*) or nonprescrib* or (non N0 prescription*) or nonprescription* or withdrawal* or ("use" or used or uses or using) N2 (illicit* or illegal*)) ) OR AB ( (morphine or anpec or duramorph or epimorph or miro or morfin or morfine or morphin or morphinium or morphium or MS contin or morphia or opso or oramorph or SDZ 202-250 or SDZ202-250 or skenan or transmorphine or trans-morphine) (abus* or addict* or dependen* or disorder# or habituat* or</p>	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	157



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	<p>misus* or (mis N0 us*) or (non N0 medical*) or nonmedical* or (non N0 prescrib*) or nonprescrib* or (non N0 prescription*) or nonprescription* or withdrawal* or (("use" or used or uses or using) N2 (illicit* or illegal*)) )</p>			
S69	<p>TI ( (fentanyl or alfentanil or alfenta or alfentanyl or beta hydroxymefentanyl or brifentanil or carfentanil or duragesic or fanaxal or fentanest or fentora or hypnorm or limifen or lofentanil or mefentanyl or mirfentanil or ofentanil or phentanyl or R-39209 or R-4263 or rapifen or remifentanil or sublimaze or sufenta or sufentanil or sulfentanyl or trefentanil) N3 (abus* or addict* or dependen* or disorder# or habituat* or misus* or (mis N0 us*) or (non N0 medical*) or nonmedical* or (non N0 prescrib*) or nonprescrib* or (non N0 prescription*) or nonprescription* or withdrawal* or (("use" or used or uses or using) N2 (illicit* or illegal*)) ) OR AB ( (fentanyl or alfentanil or alfenta or alfentanyl or beta hydroxymefentanyl or brifentanil or carfentanil or duragesic or fanaxal or fentanest or fentora or hypnorm or limifen or lofentanil or mefentanyl or mirfentanil or ofentanil or phentanyl or R-39209 or R-4263 or rapifen or remifentanil or sublimaze or sufenta or sufentanil or sulfentanyl or trefentanil) N3 (abus* or addict* or dependen* or disorder# or habituat* or misus* or (mis N0 us*) or (non N0 medical*) or nonmedical* or (non N0 prescrib*) or nonprescrib* or (non N0 prescription*) or nonprescription* or withdrawal* or (("use" or used or uses or using) N2 (illicit* or illegal*)) ) )</p>	<p>Search modes - Boolean/Phrase</p>	<p>Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text</p>	<p>141</p>
S68	<p>TI ( (hydrocodone or bekadid or codinovo or dico or dicodid or dihydrocodeinone or hycodan or hycon or hydrocodeinonebitartrate or hydrocodon or hydrocon or hydrocodonum or robidone) N3 (abus* or addict* or dependen* or disorder# or habituat* or misus* or (mis N0 us*) or (non N0 medical*) or nonmedical* or (non N0 prescrib*) or nonprescrib* or (non N0 prescription*) or nonprescription* or withdrawal* or (("use" or used or uses or using) N2 (illicit* or illegal*)) ) ) OR AB ( (hydrocodone or bekadid or codinovo or dico or dicodid or dihydrocodeinone or hycodan or hycon or hydrocodeinonebitartrate or hydrocodon or hydrocon or hydrocodonum or robidone) N3 (abus* or addict* or dependen* or disorder# or habituat* or misus* or (mis N0 us*) or (non N0 medical*) or nonmedical* or (non N0 prescrib*) or nonprescrib* or (non N0 prescription*) or nonprescription* or withdrawal* or (("use" or used or uses or using) N2 (illicit* or illegal*)) ) )</p>	<p>Search modes - Boolean/Phrase</p>	<p>Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text</p>	<p>43</p>
S67	<p>TI ( heroin* N3 (abus* or addict* or dependen* or disorder# or habituat* or misus* or (mis N0 us*) or (non N0 medical*) or nonmedical* or (non N0 prescrib*) or nonprescrib* or (non N0 prescription*) or nonprescription* )</p>	<p>Search modes - Boolean/Phrase</p>	<p>Interface - EBSCOhost Research Databases Search Screen - Advanced Search</p>	<p>1,662</p>



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	or nonprescription* or withdrawal* or ("use" or used or uses or using) N2 (illicit* or illegal*)) ) OR AB ( heroin* N3 (abus* or addict* or dependen* or disorder# or habituat* or misus* or (mis N0 us*) or (non N0 medical*) or nonmedical* or (non N0 prescrib*) or nonprescrib* or (non N0 prescription*) or nonprescription* or withdrawal* or ("use" or used or uses or using) N2 (illicit* or illegal*)) )		Database - CINAHL Plus with Full Text	
S66	TI ( (drug or drugs or substance#) N3 (abus* or addict* or dependen* or disorder# or habituat* or misus* or (mis N0 us*) or (non N0 medical*) or nonmedical* or (non N0 prescrib*) or nonprescrib* or (non N0 prescription*) or nonprescription* or withdrawal* or ("use" or used or uses or using) N2 (illicit* or illegal*)) ) OR AB ( (drug or drugs or substance#) N3 (abus* or addict* or dependen* or disorder# or habituat* or misus* or (mis N0 us*) or (non N0 medical*) or nonmedical* or (non N0 prescrib*) or nonprescrib* or (non N0 prescription*) or nonprescription* or withdrawal* or ("use" or used or uses or using) N2 (illicit* or illegal*)) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	45,397
S65	TI ( (narcotic* or opioid* or opiate*) N3 (abus* or addict* or dependen* or disorder# or habituat* or misus* or (mis N0 us*) or (non N0 medical*) or nonmedical* or (non N0 prescrib*) or nonprescrib* or (non N0 prescription*) or nonprescription* or withdrawal* or ("use" or used or uses or using) N2 (illicit* or illegal*)) ) OR AB ( (narcotic* or opioid* or opiate*) N3 (abus* or addict* or dependen* or disorder# or habituat* or misus* or (mis N0 us*) or (non N0 medical*) or nonmedical* or (non N0 prescrib*) or nonprescrib* or (non N0 prescription*) or nonprescription* or withdrawal* or ("use" or used or uses or using) N2 (illicit* or illegal*)) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	10,195
S64	TI ( alcoholis* or alcoholic* ) OR AB ( alcoholis* or alcoholic* ) OR TI ( (binge# or binging) N2 (alcohol* or drink*) ) OR AB ( (binge# or binging) N2 (alcohol* or drink*) ) OR TI ( alcohol* N3 (abus* or addict* or dependen* or disorder# or habituat* or misus* or (mis N0 us*)) ) OR AB ( alcohol* N3 (abus* or addict* or dependen* or disorder# or habituat* or misus* or (mis N0 us*)) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	34,491
S63	(MH "Substance Use Disorders+")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	166,205
S62	S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR S35 OR S36 OR S37 OR S38 OR S39 OR S40 OR S41 OR S42 OR S43 OR S44 OR S45 OR	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	442,089



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	S46 OR S47 OR S48 OR S49 OR S50 OR S51 OR S52 OR S53 OR S54 OR S55 OR S56 OR S57 OR S58 OR S59 OR S60 OR S61			
S61	TI ( neonat* N2 ("critical care" or "intensive care" or ICU or ICUs) N3 (discharg* or graduat* or surviv*) ) OR AB ( neonat* N2 ("critical care" or "intensive care" or ICU or ICUs) N3 (discharg* or graduat* or surviv*) ) OR TI ( post* N2 (NICU or NICUs) ) OR AB ( post* N2 (NICU or NICUs) ) OR TI ( (NICU or NICUs) N3 (discharg* or graduat* or surviv*) ) OR AB ( (NICU or NICUs) N3 (discharg* or graduat* or surviv*) ) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	869
S60	MH "Intensive Care Units, Neonatal" AND MH ( "Survivors" OR "Survivorship" OR "Patient Discharge" )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	443
S59	TI ( (cardiac* or cardio* or heart#) N2 (abnormalit* or anomal* or atypical* or a-typical* or defect* or deficien* or deform* or impair* or malform*) ) OR AB ( (cardiac* or cardio* or heart#) N2 (abnormalit* or anomal* or atypical* or a-typical* or defect* or deficien* or deform* or impair* or malform*) ) OR TI tetralog* N2 fallot* OR AB tetralog* N2 fallot* OR TI ( (cardiac* or cardio* or heart#) N5 (congenital* or inborn* or hereditar* or inherit*) ) OR AB ( (cardiac* or cardio* or heart#) N5 (congenital* or inborn* or hereditar* or inherit*) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	19,534
S58	(MH "Heart Defects, Congenital+")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	27,295
S57	TI "small for gestational" N0 age# OR AB "small for gestational" N0 age# OR TI ( SGA or LBW or VLBW ) OR AB ( SGA or LBW or VLBW ) OR TI low* N0 birth N0 weight# OR AB low* N0 birth N0 weight#	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	15,326
S56	(MH "Infant, Low Birth Weight+")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	14,444
S55	TI ( (preterm or "pre-term" or prematur* or (pre N0 matur*)) N3 (baby or babies or infant* or neonat* or newborn*) ) OR AB ( (preterm or "pre-term" or prematur* or (pre N0 matur*)) N3 (baby or babies or infant* or neonat* or newborn*) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	23,017



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S54	(MH "Infant, Premature")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	23,339
S53	(MH "Hypoxia-Ischemia, Brain, Neonatal")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	240
S52	TI ( (neonat* or newborn*) N3 (anoxi* or asphyxi* or hypoxi* or (respiratory N0 failure*)) ) OR AB ( (neonat* or newborn*) N3 (anoxi* or asphyxi* or hypoxi* or (respiratory N0 failure*)) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	1,807
S51	(MH "Asphyxia Neonatorum")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	1,174
S50	TI ( "cerebral vascular" N2 (accident* or arrest* or failure* or injur* or insufficienc* or insult*) ) OR AB ( "cerebral vascular" N2 (accident* or arrest* or failure* or injur* or insufficienc* or insult*) ) OR TI ( (isch#emic N0 seizure*) or (isch#emic N0 cerebral N0 attack*) ) OR AB ( (isch#emic N0 seizure*) or (isch#emic N0 cerebral N0 attack*) ) OR TI ( apoplex* or apoplectic* ) OR AB ( apoplex* or apoplectic* ) OR TI ( (brain or cerebral) N2 insult* ) OR AB ( (brain or cerebral) N2 insult* )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	1,119
S49	TI stroke# OR AB stroke# OR TI ( (cerebrovascular or "cerebro-vascular") N2 (accident* or arrest* or failure* or injur* or insufficienc* or insult*) ) OR AB ( (cerebrovascular or "cerebro-vascular") N2 (accident* or arrest* or failure* or injur* or insufficienc* or insult*) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	96,911
S48	(MH "Stroke+")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	70,982
S47	TI ( brain# N3 (injur* or commotio* or concuss* or damag* or trauma*) ) OR AB ( brain# N3 (injur* or commotio* or concuss* or damag* or trauma*) ) OR TI concussion* OR AB concussion* OR TI commotio OR AB commotio	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	34,826



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S46	(MH "Brain Injuries+")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	29,741
S45	TI ( angelman* or "happy puppet" or (puppet N0 child*) ) OR AB ( angelman* or "happy puppet" or (puppet N0 child*) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	270
S44	(MH "Angelman Syndrome")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	227
S43	TI "Fragile X" OR AB "Fragile X" OR TI ( FRAXA or FRAXE or "Fra(X)" ) OR AB ( FRAXA or FRAXE or "Fra(X)" ) OR TI ( "Mar (X)" or "Marker X" or "Martin-Bell" ) OR AB ( "Mar (X)" or "Marker X" or "Martin-Bell" ) OR TI "X-Linked" N2 "mental retardation" OR AB "X-Linked" N2 "mental retardation"	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	1,123
S42	(MH "Fragile X Syndrome")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	997
S41	TI ( (neonat* or newborn*) N2 (abstinen* or addiction* or withdrawal*) ) OR AB ( (neonat* or newborn*) N2 (abstinen* or addiction* or withdrawal*) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	954
S40	(MH "Neonatal Abstinence Syndrome")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	1,115
S39	TI ( "alcohol-related" N3 (neurodevelopment* or neuro-development*) N2 (deficit* or delay* or deviation* or disabil* or disabled or disorder* or disturb* or handicap* or impair*) ) OR AB ( "alcohol-related" N3 (neurodevelopment* or neuro-development*) N2 (deficit* or delay* or deviation* or disabil* or disabled or disorder* or disturb* or handicap* or impair*) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	42



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S38	TI ( (f#etal or f#etus*) N2 (alcohol N0 syndrome*) ) OR AB ( (f#etal or f#etus*) N2 (alcohol N0 syndrome*) ) OR TI FASD OR AB FASD OR TI ( "alcohol-related" N3 ((birth N0 defect*) or (birth N0 disorder*)) ) OR AB ( "alcohol-related" N3 ((birth N0 defect*) or (birth N0 disorder*)) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	1,072
S37	(MH "Fetal Alcohol Syndrome")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	1,851
S36	TI Down* N2 syndrome* OR AB Down* N2 syndrome* OR TI ( mongolism* or mongoloid* ) OR AB ( mongolism* or mongoloid* ) OR TI ( "trisomy 21" or "trisomy G1" or "trisomy (G)1" or "trisomy G-1" or "trisomy GM" or "trisomy G" or "21 trisomy" or "G1 trisomy" or "G(1) trisomy" or "G-1 trisomy" or "GM trisomy" or "G trisomy" ) OR AB ( "trisomy 21" or "trisomy G1" or "trisomy (G)1" or "trisomy G-1" or "trisomy GM" or "trisomy G" or "21 trisomy" or "G1 trisomy" or "G(1) trisomy" or "G-1 trisomy" or "GM trisomy" or "G trisomy" ) OR TI translocat* N1 DS OR AB translocat* N1 DS	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	7,373
S35	(MH "Down Syndrome")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	7,432
S34	TI ( cognitive* N2 (atypical* or a-typical* or deficit* or delay* or deviation* or disabil* or disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard*) ) OR AB ( cognitive* N2 (atypical* or a-typical* or deficit* or delay* or deviation* or disabil* or disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard*) ) OR TI ( cognition N2 (atypical* or a-typical* or deficit* or delay* or deviation* or disabil* or disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard*) ) OR AB ( cognition N2 (atypical* or a-typical* or deficit* or delay* or deviation* or disabil* or disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard*) ) OR TI ( mental* N2 (atypical* or a-typical* or deficit* or delay* or deviation* or disabil* or disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard*) ) OR AB ( mental* N2 (atypical* or a-typical* or deficit* or delay* or deviation* or disabil* or disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard*) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	64,967
S33	TI ( intellectual* N2 (atypical* or a-typical* or deficit* or delay* or deviation* or disabil* or	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases	18,411



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	disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard* ) OR AB ( intellectual* N2 (atypical* or a-typical* or deficit* or delay* or deviation* or disabil* or disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard* ) OR TI ( brain# N2 (atypical* or a-typical* or deficit* or delay* or deviation* or disabil* or disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard* ) ) OR AB ( brain# N2 (atypical* or a-typical* or deficit* or delay* or deviation* or disabil* or disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard* ) )		Search Screen - Advanced Search Database - CINAHL Plus with Full Text	
S32	(MH "Intellectual Disability")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	21,295
S31	TI spina# N0 bifida* OR AB spina# N0 bifida* OR ( (cleft N0 spine#) or (open N0 spine#) or rachischis* or schistorrhach* or spina? dysraphia* or status dysraphicus )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	1,904
S30	TI ( acrania# or craniorachischis* or diastematomyelia* or exencephal* or iniencephal* or (neurenteric N0 cyst#) or (neuroenteric N0 cyst#) or (spinal N0 dysraphism*) or ("spinal cord" N0 myelodysplasia*) or (tethered N2 cord N0 syndrome*) ) OR AB ( acrania# or craniorachischis* or diastematomyelia* or exencephal* or iniencephal* or (neurenteric N0 cyst#) or (neuroenteric N0 cyst#) or (spinal N0 dysraphism*) or ("spinal cord" N0 myelodysplasia*) or (tethered N2 cord N0 syndrome*) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	492
S29	TI neural N0 tube# N2 defect* OR AB neural N0 tube# N2 defect*	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	1,562
S28	(MH "Neural Tube Defects+")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	5,826
S27	(MH "Malformations of Cortical Development+")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search	303



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			Database - CINAHL Plus with Full Text	
S26	TI ( (brain or central* or cerebral*) N1 (paralys* or pares?s) ) OR AB ( (brain or central* or cerebral*) N1 (paralys* or pares?s) ) OR TI "encephalopathia infantilis" OR AB "encephalopathia infantilis"	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	91
S25	TI ( (brain# or central*) N1 palsy ) OR AB ( (brain# or central*) N1 palsy )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	80
S24	TI ( (cerebral N1 palsy) or (diplegia* N1 spastic) or (little N1 disease) ) OR AB ( (cerebral N1 palsy) or (diplegia* N1 spastic) or (little N1 disease) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	13,503
S23	(MH "Cerebral Palsy")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	12,322
S22	TI ( (language* or auditor* or semantic* or speech or speak* or talk* or verbal*) N3 (atypical* or a-typical* or deficit* or delay* or disabil* or disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard*) ) OR AB ( (language* or auditor* or semantic* or speech or speak* or talk* or verbal*) N3 (atypical* or a-typical* or deficit* or delay* or disabil* or disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard*) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	15,754
S21	(MH "Language Disorders+")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	22,214
S20	TI ( alexia* or alexic* or dyslexia* or dyslexic* or (reading N0 disab*) or "word blindness" or (verbal* N1 agnosi*) ) OR AB ( alexia* or alexic* or dyslexia* or dyslexic* or (reading N0 disab*) or "word blindness" or (verbal* N1 agnosi*) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	2,659
S19	TI ( learning N3 (atypical* or a-typical* or deficit* or delay* or disabil* or disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard*) ) OR AB ( learning N3 (atypical* or a-	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search	13,160



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	typical* or deficit* or delay* or disabil* or disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard* ) ) OR TI ( scholastic* N3 (atypical* or a-typical* or deficit* or delay* or disabil* or disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard* ) ) OR AB ( scholastic* N3 (atypical* or a-typical* or deficit* or delay* or disabil* or disabled or disorder* or disturb* or dysfunction* or handicap* or impair* or retard* ) )		Database - CINAHL Plus with Full Text	
S18	(MH "Learning Disorders+")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	10,154
S17	TI ADHD OR AB ADHD OR TI ( (hyperkinetic or kanner*) N0 syndrome* ) OR AB ( (hyperkinetic or kanner*) N0 syndrome* )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	12,926
S16	TI attention N0 deficit* OR AB attention N0 deficit*	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	7,986
S15	(MH "Attention Deficit Hyperactivity Disorder")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	16,665
S14	TI ( autis* or asperger* ) OR AB ( autis* or asperger* )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	26,725
S13	(MH "Child Development Disorders, Pervasive+")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	26,896
S12	TI global N2 delay* OR AB global N2 delay*	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	377



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S11	TI ( development* N2 (abnormal* or atypical* or a-typical* or deficit* or delay* or deviation* or disabil* or disabled or disorder* or disturb* or handicap* or impair* ) ) OR AB ( development* N2 (abnormal* or atypical* or a-typical* or deficit* or delay* or deviation* or disabil* or disabled or disorder* or disturb* or handicap* or impair* ) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	22,143
S10	(MH "Developmental Disabilities")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	10,119
S9	S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	28,158
S8	TI coronavirus* or (corona N0 virus*)	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	3,381
S7	TX ( (novel N0 coronavirus*) or ("novel corona" N0 virus*) ) OR TX ( (coronavirus* or (corona" N0 virus*)) N2 "2019" ) OR TX ( (coronavirus* or (corona" N0 virus*)) N2 "19" ) OR TX ( "coronavirus 2" or "corona virus 2" )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	15,523
S6	TX "2019-nCoV" OR TX ( nCoV or "n-CoV" ) OR TX "HCoV-19" OR TX ( "SARS-CoV-2" or "SARS-CoV2" or "SARSCoV-2" or SARSCoV2 )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	3,481
S5	TX Wuhan N0 virus*	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	10
S4	TX ( coronavirus* and (hubei or wuhan or beijing or shanghai) ) OR TX ( (corona N0 virus*) and (hubei or wuhan or beijing or shanghai) )	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	1,665
S3	TX "COVID-19" or COVID19	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen -	23,657



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			Advanced Search Database - CINAHL Plus with Full Text	
S2	(MH "Coronavirus Infections")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	8,433
S1	(MH "Coronavirus")	Search modes - Boolean/Phrase	Interface - EBSCOhost Research Databases Search Screen - Advanced Search Database - CINAHL Plus with Full Text	866

#### Web of Science

- # 30 [201](#) #28 OR #22  
**Refined by: PUBLICATION YEARS:** ( 2020 )  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 29 [202](#) #28 OR #22  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 28 0 #27 AND #4  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 27 [5,116](#) #26 AND #25  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 26 [805,394](#) **TOPIC:** (before NEAR/3 (birth\* or childbirth\* or "child birth" ) ) OR **TOPIC:** (prior NEAR/3 (birth\* or childbirth\* or "child birth" ) ) OR **TOPIC:** (baby or babies or infant or infants or infanc\* or neonat\* or newborn\*)  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 25 [299,959](#) #24 OR #23  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 24 [144,554](#) **TOPIC:** (drug NEAR/3 (abus\* or addict\* or dependen\* or disorder\* or habituat\* or misus\* or mis-us\* ) ) OR **TOPIC:** (drugs NEAR/3 (abus\* or addict\* or dependen\* or disorder\* or habituat\* or misus\* or mis-us\* ) ) OR **TOPIC:** (substance\* NEAR/3 (abus\* or addict\* or dependen\* or disorder\* or habituat\* or misus\* or mis-us\* ) ) OR **TOPIC:** (heroin\* NEAR/3 (abus\* or addict\* or dependen\* or disorder\* or habituat\* or misus\* or mis-us\* ) ) OR **TOPIC:** (hydrocodone NEAR/3 (abus\* or addict\* or dependen\* or disorder\* or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* ) ) OR **TOPIC:** (fentanyl NEAR/3 (abus\* or addict\* or dependen\* or disorder\* or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* ) ) OR **TOPIC:** (morphine NEAR/3 (abus\* or addict\* or dependen\* or disorder\* or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* ) ) OR **TOPIC:** (oxycodone NEAR/3 (abus\* or addict\* or dependen\* or disorder\* or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* ) ) OR **TOPIC:** (oxycontin NEAR/3



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- (abus\* or addict\* or dependen\* or disorder\* or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\*) )  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 23 [187,244](#) **TOPIC:** (alcoholis\* or alcoholic\*) OR **TOPIC:** (binge\* NEAR/2 (alcohol\* or drink\*)) OR **TOPIC:** (binging NEAR/2 (alcohol\* or drink\*)) OR **TOPIC:** (alcohol\* NEAR/3 (abus\* or addict\* or dependen\* or disorder\* or habituat\* or misus\* or mis-us\*)) OR **TOPIC:** (alcohol\* NEAR/3 (abus\* or addict\* or dependen\* or disorder\* or habituat\* or misus\* or mis-us\*)) OR **TOPIC:** (narcotic\* NEAR/3 (abus\* or addict\* or dependen\* or disorder\* or habituat\* or misus\* or mis-us\*)) OR **TOPIC:** (opioid\* NEAR/3 (abus\* or addict\* or dependen\* or disorder\* or habituat\* or misus\* or mis-us\*)) OR **TOPIC:** (opiate\* NEAR/3 (abus\* or addict\* or dependen\* or disorder\* or habituat\* or misus\* or mis-us\*)) )  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 22 [202](#) #20 AND #19  
**Refined by: PUBLICATION YEARS:** ( 2020 OR 2019 )  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 21 [212](#) #20 AND #19  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 20 [2,924,348](#) **TOPIC:** (baby or babies or infant or infants or infanc\* or neonat\* or newborn\* or preschool\* or pre-school\* or toddler\*) OR **TOPIC:** (adolescen\* or child\* or pre-adolescen\* or preteen\* or pre-teen\* or school-age\* or teen or teens or teenager\* or youth\*)  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 19 [1,163](#) #18 AND #4  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 18 [1,317,857](#) #17 OR #16 OR #15 OR #14 OR #13 OR #12 OR #11 OR #10 OR #9 OR #8 OR #7 OR #6 OR #5  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 17 [1,299](#) **TOPIC:** ("neonatal intensive care" NEAR/3 (discharg\* or graduat\* or surviv\*)) OR **TOPIC:** ("neonatal critical care" NEAR/3 (discharg\* or graduat\* or surviv\*)) OR **TOPIC:** ("neonatal ICU" NEAR/3 (discharg\* or graduat\* or surviv\*)) OR **TOPIC:** ("neonatal ICUs" NEAR/3 (discharg\* or graduat\* or surviv\*)) OR **TOPIC:** (post\* NEAR/2 (NICU or NICUs)) OR **TOPIC:** (NICU NEAR/3 (discharg\* or graduat\* or surviv\*)) OR **TOPIC:** (NICUs NEAR/3 (discharg\* or graduat\* or surviv\*)) )  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 16 [101,209](#) **TOPIC:** (cardiac\* NEAR/2 (abnormalit\* or anomal\* or atypical\* or a-typical\* or defect\* or deficien\* or deform\* or impair\* or malform\*)) OR **TOPIC:** (cardio\* NEAR/2 (abnormalit\* or anomal\* or atypical\* or a-typical\* or defect\* or deficien\* or deform\* or impair\* or malform\*)) OR **TOPIC:** (heart\* NEAR/2 (abnormalit\* or anomal\* or atypical\* or a-typical\* or defect\* or deficien\* or deform\* or impair\* or malform\*)) OR **TOPIC:** (tetralog\* NEAR/2 fallot\*) OR **TOPIC:** (cardiac\* NEAR/5 (congenital\* or inborn\* or hereditar\* or inherit\*)) OR **TOPIC:** (cardio\* NEAR/5 (congenital\* or inborn\* or hereditar\* or inherit\*)) OR **TOPIC:** (heart\* NEAR/5 (congenital\* or inborn\* or hereditar\* or inherit\*)) )  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 15 [22,278](#) **TOPIC:** ("small for gestational age" or "small for gestational ages") OR **TOPIC:** (SGA or LBW or VLBW) OR **TOPIC:** (low\* W/0 birth W/0 weight\*)



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Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020

- # 14 [81,978](#) **TOPIC:** (neonat\* NEAR/3 (anoxi\* or asphyxi\* or hypoxi\* or "respiratory failure" or "respiratory failures")) **OR TOPIC:** (newborn\* NEAR/3 (anoxi\* or asphyxi\* or hypoxi\* or "respiratory failure" or "respiratory failures")) **OR TOPIC:** (preterm NEAR/3 (baby or babies or infant\* or neonat\* or newborn\*)) **OR TOPIC:** ("pre-term" NEAR/3 (baby or babies or infant\* or neonat\* or newborn\*)) **OR TOPIC:** (prematu\* NEAR/3 (baby or babies or infant\* or neonat\* or newborn\*)) **OR TOPIC:** (pre-matur\* NEAR/3 (baby or babies or infant\* or neonat\* or newborn\*))  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 13 [504,173](#) **TOPIC:** (brain\* NEAR/3 (injur\* or commotio\* or concuss\* or damag\* or trauma\*)) **OR TOPIC:** (concussion\* or commotio) **OR TOPIC:** (stroke or strokes) **OR TOPIC:** (cerebrovascular NEAR/2 (accident\* or arrest\* or failure\* or injur\* or insufficienc\* or insult\*)) **OR TOPIC:** ("cerebro-vascular" NEAR/2 (accident\* or arrest\* or failure\* or injur\* or insufficienc\* or insult\*)) **OR TOPIC:** ("cerebral vascular" NEAR/2 (accident\* or arrest\* or failure\* or injur\* or insufficienc\* or insult\*))  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 12 [17,636](#) TS=(neonat\* NEAR/2 (abstinen\* or addiction\* or withdrawal\*)) **OR** TS=(newborn NEAR/2 (abstinen\* or addiction\* or withdrawal\*)) **OR** TS=("Fragile X" or FRAXA or FRAXE or "Fra(X)" or "Mar (X)" or "Mar ker X" or "Martin-Bell") **OR** TS=("X-Linked" NEAR/2 "mental retardation") **OR** TS=(angelman\* or "happy puppet" or (puppet W/0 child\*))  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 11 [162](#) **TOPIC:** ("alcohol-related") **AND TOPIC:** (neurodevelopment\* NEAR/2 (deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or handicap\* or impair\*))  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 10 [39,290](#) **TOPIC:** (Down\* NEAR/2 syndrome\*) **OR TOPIC:** (mongolism\* or mongoloid\*) **OR TOPIC:** ("trisomy 21" or "trisomy G1" or "trisomy (G) 1" or "trisomy G-1" or "trisomy GM" or "trisomy G" or "21 trisomy" or "G1 trisomy" or "G(1) trisomy" or "G-1 trisomy" or "GM trisomy" or "G trisomy") **OR TOPIC:** ((fetal or foetal or fetus or foetus) N2 "alcohol syndrome") **OR TOPIC:** ((fetal or foetal or fetus or foetus) N2 "alcohol syndromes") **OR TOPIC:** (FASD) **OR TOPIC:** ("alcohol-related" NEAR/3 ("birth defect" or "birth defects" or "birth disorder" or "birth disorders"))  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 9 [336,126](#) **TOPIC:** (intellectual\* NEAR/2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)) **OR TOPIC:** (brain\* NEAR/2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)) **OR TOPIC:** (cognitiv\* NEAR/2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)) **OR TOPIC:** (cognition NEAR/2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)) **OR TOPIC:** (mental\* NEAR/2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*))  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 8 [44,975](#) **TOPIC:** ((cerebral NEAR/1 palsy) or (diplegia\* NEAR/1 spastic) or (little NEAR/1 disease)) **OR TOPIC:** ((brain\* or central\*) NEAR/1 palsy) **OR TOPIC:** ((brain\* or central\* or cerebral\*) NEAR/1 paraly\*) **OR TOPIC:** ((brain\* or central\* or



- cerebral\*) NEAR/1 paresis) OR **TOPIC:** ((brain\* or central\* or cerebral\*) NEAR/1 pareses) OR **TOPIC:** (neural W/0 tube\* NEAR/2 defect\*) OR **TOPIC:** (acrania\* or craniorachischis\* or diastematomyelia\* or exencephal\* or iniencephal\* or (neurenteric W/0 cyst\*) or (neuroenteric W/0 cyst\*) or (spinal W/0 dysraphism\*) or ("spinal cord" W/0 myelodysplasia\*) or (tethered NEAR/2 cord W/0 syndrome\*)) OR **TOPIC:** ((spina\* W/0 bifida\*) OR ( cleft W/0 spine\*) or (open W/0 spine\*) or rachischis\* or schistorrhach\* or (spina\* W/0 dysraphia\*) or (status W/0 dysraphicus) )  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 7 [48,189](#) **TOPIC:** (language NEAR/3 (atypical\* or a-typical\* or deficit\* or delay\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)) OR **TOPIC:** (auditor\* NEAR/3 (atypical\* or a-typical\* or deficit\* or delay\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)) OR **TOPIC:** (semantic\* NEAR/3 (atypical\* or a-typical\* or deficit\* or delay\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)) OR **TOPIC:** (speech NEAR/3 (atypical\* or a-typical\* or deficit\* or delay\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)) OR **TOPIC:** (speak\* NEAR/3 (atypical\* or a-typical\* or deficit\* or delay\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)) OR **TOPIC:** (talk\* NEAR/3 (atypical\* or a-typical\* or deficit\* or delay\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)) OR **TOPIC:** (verbal\* NEAR/3 (atypical\* or a-typical\* or deficit\* or delay\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)) )  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 6 [61,201](#) **TOPIC:** (learning NEAR/3 (atypical\* or a-typical\* or deficit\* or delay\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)) OR **TOPIC:** (scholastic\* NEAR/3 (atypical\* or a-typical\* or deficit\* or delay\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)) OR **TOPIC:** (alexia\* or alexic\* or dyslexia\* or dyslexic\* or (reading W/0 disab\*) or "word blindness" or (verbal\* NEAR/1 agnosi\*)) )  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 5 [222,358](#) **TOPIC:** (development\* NEAR/2 (abnormal\* or atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or handicap\* or impair\*)) OR **TOPIC:** (global NEAR/2 delay\*) OR **TOPIC:** (autis\* or asperger\*) OR **TOPIC:** (attention NEAR/0 deficit\*) OR **TOPIC:** (ADHD) OR **TOPIC:** ((hyperkinetic or kanner\*) NEAR/0 syndrome\*)  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 4 [57,868](#) #3 OR #2 OR #1  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 3 [13,597](#) **TITLE:** (coronavirus\* or (corona W/0 virus\*)) )  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 2 [14,382](#) **TOPIC:** (coronavirus\* NEAR/2 "2019") OR **TOPIC:** ((corona W/0 virus\*) NEAR/2 "2019") OR **TOPIC:** (coronavirus\* NEAR/2 "19") OR **TOPIC:** ((corona W/0 virus\*) NEAR/2 "19") OR **TOPIC:** ((novel W/0 coronavirus\*) or ("novel corona" W/0 virus\*)) OR **TOPIC:** ("coronavirus 2" or "corona virus 2")  
Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020
- # 1 [49,208](#) **TOPIC:** ("COVID-19" or COVID19) OR **TOPIC:** (coronavirus\* and (hubei or wuhan or beijing or shanghai)) OR **TOPIC:** (Wuhan W/0 virus\*) OR **TOPIC:** ("2019-nCoV") OR **TOPIC:** (nCoV or "n-CoV") OR **TOPIC:** ("HCoV-19") OR **TOPIC:** ("SARS-CoV-2" or "SARS-CoV2" or "SARSCoV-2" or SARSCoV2)



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Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI  
Timespan=1900-2020

Cochrane Special Collection:

<https://www.cochranelibrary.com/collections/doi/SC000040/full>

Nothing relevant to this topic 2020 Oct 31

Cochrane

Database: EBM Reviews - Cochrane Central Register of Controlled Trials <September 2020>, EBM Reviews - Cochrane Database of Systematic Reviews <2005 to October 28, 2020>

Search Strategy:

- 
- 1 Coronavirus/ (2)
  - 2 Coronavirus Infections/ (367)
  - 3 (COVID-19 or COVID19).mp. (1563)
  - 4 ((coronavirus\* or corona virus\*) and (hubei or wuhan or beijing or shanghai)).mp. (126)
  - 5 Wuhan virus\*.mp. (2)
  - 6 2019-nCoV.mp. (65)
  - 7 (nCoV or n-CoV).mp. (80)
  - 8 HCoV-19.mp. (4)
  - 9 (SARS-CoV-2 or SARS-CoV2 or SARSCoV-2 or SARSCoV2).mp. (676)
  - 10 (novel coronavirus\* or novel corona virus\*).mp. (146)
  - 11 ((coronavirus\* or corona virus\*) adj2 "2019").mp. (402)
  - 12 ((coronavirus\* or corona virus\*) adj2 "19").mp. (95)
  - 13 (coronavirus 2 or corona virus 2).mp. (190)
  - 14 (coronavirus\* or corona virus\*).ti. (201)
  - 15 or/1-14 [COVID 19] (1687)
  - 16 Developmental Disabilities/ (629)
  - 17 (development\* adj2 (abnormal\* or atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or handicap\* or impair\*)).ti,ab,kw. (4043)
  - 18 (global adj2 delay\*).ti,ab,kw. (41)
  - 19 exp Child Development Disorders, Pervasive/ (1241)
  - 20 (autis\* or asperger\*).ti,ab,kw. (3785)
  - 21 Attention Deficit Disorder with Hyperactivity/ (2753)
  - 22 attention deficit\*.ti,ab,kw. (5292)
  - 23 ADHD.ti,ab,kw. (4810)
  - 24 hyperkinetic syndrome\*.ti,ab,kw. (37)
  - 25 (kanner\* adj syndrome?).ti,ab,kw. (0)
  - 26 exp Learning Disabilities/ (324)
  - 27 ((learning or scholastic\*) adj3 (atypical\* or a-typical\* or deficit\* or delay\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).ti,ab,kw. (1880)
  - 28 (alexia\* or alexic\* or dyslexia\* or dyslexic\* or reading disab\* or word blindness or (verbal\* adj1 agnosi\*)).ti,ab,kw. (413)
  - 29 exp Language Development Disorders/ (206)
  - 30 ((language or auditor\* or semantic\* or speech or speak\* or talk\* or verbal\*) adj3 (atypical\* or a-typical\* or deficit\* or delay\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).ti,ab,kw. (3142)
  - 31 Cerebral Palsy/ (1370)
  - 32 ((cerebral adj1 palsy) or (diplegia\* adj1 spastic) or (little adj1 disease)).ti,ab,kw. (3703)
  - 33 ((brain? or central\*) adj1 palsy).ti,ab,kw. (21)
  - 34 ((brain or central\* or cerebral\*) adj1 (paralys\* or pares#s)).ti,ab,kw. (43)
  - 35 encephalopathia infantilis.ti,ab,kw. (0)
  - 36 exp Malformations of Cortical Development/ (66)
  - 37 Neural Tube Defects/ (90)
  - 38 (neural tube? adj2 defect\*).ti,ab,kw. (267)



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- 39 (acrania? or craniorachischis\* or diastematomyelia\* or exencephal\* or iniencephal\* or neurenteric cyst? or neuroenteric cyst? or spinal dysraphism\* or spinal cord myelodysplasia\* or (tethered adj2 cord syndrome\*)).ti,ab,kw. (117)
- 40 spina? bifida\*.ti,ab,kw. (170)
- 41 (cleft spine? or open spine? or rachischis\* or schistorrhach\* or spina? dysraphia\* or status dysraphicus).ti,ab,kw. (5)
- 42 Intellectual Disability/ (739)
- 43 (intellectual\* adj2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).ti,ab,kw. (1253)
- 44 (brain\* adj2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).ti,ab,kw. (2057)
- 45 (cognitiv\* adj2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).ti,ab,kw. (16062)
- 46 (cognition\* adj2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).ti,ab,kw. (1181)
- 47 (mental\* adj2 (atypical\* or a-typical\* or deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or dysfunction\* or handicap\* or impair\* or retard\*)).ti,ab,kw. (10762)
- 48 Down Syndrome/ (343)
- 49 (Down\* adj2 syndrome\*).ti,ab,kw. (810)
- 50 (mongolism\* or mongoloid\*).ti,ab,kw. (6)
- 51 ("trisomy 21" or "trisomy G1" or "trisomy (G)1" or "trisomy G-1" or "trisomy GM" or "trisomy G" or "21 trisomy" or "G1 trisomy" or "G(1) trisomy" or "G-1 trisomy" or "GM trisomy" or "G trisomy").ti,ab,kw. (118)
- 52 "Chromosomes, Human, Pair 21"/ (26)
- 53 (translocat\* adj1 DS).ti,ab,kw. (0)
- 54 Fetal Alcohol Spectrum Disorders/ (75)
- 55 ((f?etal or f?etus\*) adj2 alcohol syndrome\*).ti,ab,kw. (77)
- 56 FASD.ti,ab,kw. (87)
- 57 (alcohol-related adj3 (birth defect\* or birth disorder\*)).ti,ab,kw. (3)
- 58 (alcohol-related adj3 (neurodevelopment\* or neuro-development\*) adj2 (deficit\* or delay\* or deviation\* or disabil\* or disabled or disorder\* or disturb\* or handicap\* or impair\*)).ti,ab,kw. (4)
- 59 Neonatal Abstinence Syndrome/ (90)
- 60 ((neonat\* or newborn\*) adj2 (abstinen\* or addiction\* or withdrawal\*)).ti,ab,kw. (228)
- 61 Fragile X Syndrome/ (90)
- 62 "Fragile X".ti,ab,kw. (181)
- 63 (FRAXA or FRAXE or "Fra(X)").ti,ab,kw. (16)
- 64 ("Mar (X)" or "Marker X" or "Martin-Bell").ti,ab,kw. (2)
- 65 ("X-Linked" adj2 mental retardation).ti,ab,kw. (2)
- 66 Angelman Syndrome/ (15)
- 67 (angelman\* or "happy puppet" or puppet child\*).ti,ab,kw. (34)
- 68 exp Brain Injuries/ (2151)
- 69 (brain\* adj3 (injur\* or commotio\* or concuss\* or damag\* or trauma\*)).ti,ab,kw. (8040)
- 70 concussion\*.ti,ab,kw. (645)
- 71 commotio.ti,ab,kw. (10)
- 72 exp Stroke/ (9666)
- 73 stroke?.ti,ab,kw. (54988)
- 74 ((cerebrovascular or cerebro-vascular) adj2 (accident\* or arrest\* or failure\* or injur\* or insufficienc\* or insult\*)).ti,ab,kw. (13438)
- 75 (cerebral vascular adj2 (accident\* or arrest\* or failure\* or injur\* or insufficienc\* or insult\*)).ti,ab,kw. (135)
- 76 isch?emic seizure\*.ti,ab,kw. (0)
- 77 isch?emic cerebral attack\*.ti,ab,kw. (5)
- 78 (apoplex\* or apoplectic\*).ti,ab,kw. (444)
- 79 ((brain or cerebral) adj2 insult\$2).ti,ab,kw. (81)
- 80 Asphyxia Neonatorum/ (209)
- 81 ((neonat\* or newborn\*) adj3 (anoxi\* or asphyxi\* or hypoxi\* or respiratory failure\*)).ti,ab,kw. (937)
- 82 Hypoxia-Ischemia, Brain/ (208)
- 83 exp Infant, Premature/ (3519)
- 84 ((preterm or pre-term or prematur\* or pre-matur\*) adj3 (baby or babies or infant\* or neonat\* or newborn\*)).ti,ab,kw. (12813)



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- 85 exp Infant, Low Birth Weight/ (2072)  
 86 small for gestational age?.ti,ab,kw. (963)  
 87 (SGA or LBW or VLBW).ti,ab,kw. (2522)  
 88 low\* birth weight?.ti,ab,kw. (4620)  
 89 exp Congenital Heart Defects/ (2212)  
 90 ((cardiac\* or cardio\* or heart?) adj2 (abnormalit\* or anomal\* or atypical\* or a-typical\* or defect\* or deficien\* or deform\* or impair\* or malform\*)).ti,ab,kw. (2835)  
 91 (tetralog\* adj2 fallot\*).ti,ab,kw. (286)  
 92 ((cardiac\* or cardio\* or heart?) adj5 (congenital\* or inborn\* or hereditar\* or inherit\*)).ti,ab,kw. (2493)  
 93 Intensive Care Units, Neonatal/ and (Survivors/ or Survivorship/ or "Patient Discharge"/) (25)  
 94 (neonat\* adj2 (critical care or intensive care or ICU or ICUs) adj3 (discharg\* or graduat\* or surviv\*)).ti,ab,kw. (105)  
 95 (post\* adj2 (NICU or NICUs)).ti,ab,kw. (32)  
 96 ((NICU or NICUs) adj3 (discharg\* or graduat\* or surviv\*)).ti,ab,kw. (191)  
 97 or/16-96 [BRAIN/HEART DISABILITIES] (135121)  
 98 exp Substance-Related Disorders/ (15039)  
 99 (alcoholis\* or alcoholic\*).ti,ab,kw. (9447)  
 100 ((binge? or binging) adj2 (alcohol\* or drink\*)).ti,ab,kw. (793)  
 101 (alcohol\* adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\*)).ti,ab,kw. (8436)  
 102 ((narcotic\* or opioid\* or opiate\*) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).ti,ab,kw. (4722)  
 103 ((drug? or substance?) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or "non-medical use?" or "nonmedical use?" or "non-prescribed use?" or "nonprescribed use?" or "non-prescription use?" or "nonprescription use?" or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).ti,ab,kw. (19169)  
 104 (heroin\* adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).ti,ab,kw. (962)  
 105 ((hydrocodone or bekadid\$2 or codinovo\$2 or dico\$2 or dicodid\$2 or dihydrocodeinone\$2 or hycodan\$2 or hycon\$2 or hydrocodeinonebitartrate\$2 or hydrocodon\$2 or hydrocon\$2 or hydrocodonum\$2 or robidone\$2) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).ti,ab,kw. (35)  
 106 ((fentanyl or alfentanil\$2 or alfenta\$2 or alfentanil\$2 or beta hydroxymefentanyl or brifentanil\$2 or carfentanil\$2 or duragesic\$2 or fanaxal\$2 or fentanest\$2 or fentora\$2 or hypnorm\$2 or limifen\$2 or lofentanil\$2 or mefentanil\$2 or mirfentanil\$2 or ofcentanil\$2 or phentanyl\$2 or R-39209 or R-4263 or rapifen\$2 or remifentanil\$2 or sublimaze\$2 or sufenta\$2 or sufentanil\$2 or sulfentanil\$2 or trefentanil\$2) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).ti,ab,kw. (111)  
 107 ((morphine or anpec\$2 or duramorph\$2 or epimorph\$2 or miro\$2 or morfin\$2 or morfine\$2 or morphin\$2 or morphinium\$2 or morphium\$2 or MS contin or morphia\$2 or opso\$2 or oramorph\$2 or SDZ 202-250 or SDZ202-250 or skenan\$2 or transmorphine\$2 or trans-morphine\$2) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using) adj2 (illicit\* or illegal\*))).ti,ab,kw. (442)  
 108 ((oxycodone or bionine\$2 or bionone\$2 or bolodorm\$2 or broncodal\$2 or bucodal\$2 or cafacodal\$2 or cardanon\$2 or codenon\$2 or codix 5 or "col 003" or col003 or DETERx\$2 or dihydrohydroxycodone or dihydrohydroxydodeinone or dihydroxycodone\$2 or dinarkon\$2 or endone\$2 or eubine\$2 or eucodal\$2 or eucodale\$2 or eucodalum\$2 or eudin\$2 or eukdin\$2 or eukodal\$2 or eumorphal\$2 or eudodamine\$2 or eutagen\$2 or hydrocodal\$2 or hydroxycodone\$2 or ludonal\$2 or m-oxy or medicodal\$2 or narcobasina\$2 or narcobasine\$2 or narcosin\$2 or nargenol\$2 or narodal\$2 or nsc 19043 or nucodan\$2 or opton\$2 or ossicodone\$2 or oxanest\$2 or oxaydo\$2 or oxepta\$2 or oxicone\$2 or oxicontin\$2 or oxiconum\$2 or oxikon\$2 or oxy ir or oxycod\$2 or oxycodone\$2 or oxycodonehydrochloride or oxycodone hydrochloride or oxycodonehydrochlorid or oxycodyl\$2 or oxycone\$2 or oxycontin\$2 or oxydose\$2 or oxyfast\$2 or oxygesic\$2 or oxyir\$2 or oxykon\$2 or oxynorm\$2 or pancodine\$2 or pavinal\$2 or percolone\$2 or pronarcin\$2 or remoxy\$2 or roxicodone\$2 or roxicodone\$2 or sinthiodal\$2 or stupenal\$2 or supeudol\$2 or tebdal\$2 or tekodin\$2 or thecodin\$2 or xtampa\$2 or xtampa\$2) adj3 (abus\* or addict\* or dependen\* or disorder? or habituat\* or misus\* or mis-us\* or non-medical\* or nonmedical\* or non-



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prescrib\* or nonprescrib\* or non-prescription\* or nonprescription\* or withdrawal\* or ("use" or used or uses or using)  
adj2 (illicit\* or illegal\*))).ti,ab,kw. (95)  
109 or/98-108 [SUBSTANCE/ALCOHOL DISORDERS] (42419)  
110 exp Infant/ (31489)  
111 exp Child/ (55679)  
112 Adolescent/ (104934)  
113 (baby or babies or infant? or infanc\* or neonat\* or newborn\* or preschool\* or pre-school\* or toddler?).ti,ab,kw.  
(73357)  
114 (adolescen\* or child\* or pre-adolescen\* or preteen\* or pre-teen\* or school-age\* or teen or teens or teenager?  
or youth\*).ti,ab,kw. (176301)  
115 exp Pediatrics/ (675)  
116 p?ediatric\*.ti,ab,kw. (35594)  
117 or/110-116 [INFANTS/CHILDREN/ADOLESCENTS] (304921)  
118 97 and 117 [BRAIN DISABILITIES - CHILDREN/ADOLESCENTS/YOUNG ADULTS] (42949)  
119 15 and 118 [COVID-19 - BRAIN DISABILITIES - CHILDREN/ADOLESCENTS/YOUNG ADULTS] (10)  
120 Prenatal Exposure Delayed Effects/ (349)  
121 (prenatal\* or pre-natal\* or preterm\* or antenatal\* or ante-natal\* or antepartum\* or ante-partum\*).ti,ab,kw.  
(22051)  
122 ((before or prior) adj3 (birth\* or childbirth\* or child birth\*).ti,ab,kw. (408)  
123 (baby or babies or infant? or infanc\* or neonat\* or newborn\*).ti,ab,kw. (64169)  
124 or/120-123 [PRENATAL EXPOSURE/NEWBORNS] (70883)  
125 109 and 124 [SUBSTANCE ABUSE - PRENATAL EXPOSURE/NEWBORNS] (976)  
126 15 and 125 [COVID-19 - SUBSTANCE ABUSE - PRENATAL EXPOSURE/NEWBORNS] (0)  
127 119 or 126 [ALL CONDITIONS OF INTEREST] (10)  
128 (2020041\* or 2020042\* or 2020043\* or 202005\* or 202006\* or 202007\* or 202008\* or 202009\* or  
202010\*).up. (124470)  
129 127 and 128 [UPDATE PERIOD] (10)  
130 129 use cctr [CENTRAL RECORDS] (9)  
131 129 use coch [DSR RECORDS] (1)

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## Appendix 2. Other Sources and Grey Literature

### List of websites consulted

**Total number of sources:** 18

Consulted between November 5<sup>th</sup> to November 13<sup>th</sup>, 2020

Note: Many of resources above drawn from CADTH's Grey Matters

<https://www.cadth.ca/resources/finding-evidence/grey-matters>

<p><b>Organization:</b> Health Canada  <b>Country:</b> Canada  <b>Description:</b> Epidemiological summary of COVID-19 cases in Canada  <b>Link:</b> <a href="https://www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19.html">https://www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19.html</a>  <b>Dates consulted:</b> 2020-04-17, 2020-04-23, 2020-11-05</p>
<p><b>Organization:</b> Canadian Agency for Drugs and Technologies in Health (CADTH)  <b>Country:</b> Canada  <b>Description:</b> Reports section  <b>Link:</b> <a href="https://www.cadth.ca/">https://www.cadth.ca/</a>  <b>Date consulted:</b> 2020-04-17, 2020-11-05</p>
<p><b>Organization:</b> Canadian Medical Association (CMA)  <b>Country:</b> Canada  <b>Description:</b> Clinical resources  <b>Link:</b> <a href="https://www.cma.ca/cma-update-coronavirus?_ga=2.90503450.1438667280.1587060765-763235055.1585752221">https://www.cma.ca/cma-update-coronavirus?_ga=2.90503450.1438667280.1587060765-763235055.1585752221</a>  <b>Date consulted:</b> 2020-04-17, 2020-11-05</p>
<p><b>Organization:</b> Health Clarity from Wolters Kluwer (global information services company)  <b>Country:</b> Multiple  <b>Description:</b> Covid-19 Resources &amp; Tools  <b>Link:</b> <a href="http://healthclarity.wolterskluwer.com/coronavirus-resources.html">http://healthclarity.wolterskluwer.com/coronavirus-resources.html</a>  <b>Date consulted:</b> 2020-04-17, 2020-11-05</p>
<p><b>Organization:</b> Canadian Pediatric Society  <b>Country:</b> Canada  <b>Description:</b> Covid-19 information and resources for paediatricians  <b>Link:</b> <a href="https://www.cps.ca/en/tools-outils/covid-19-information-and-resources-for-paediatricians">https://www.cps.ca/en/tools-outils/covid-19-information-and-resources-for-paediatricians</a>  <b>Date consulted:</b> 2020-04-17, 2020-11-09</p>
<p><b>Organization:</b> Evidence Aid (not-for-profit organisation)</p>



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<p><b>Country:</b> UK  <b>Description:</b> Covid-19 Evidence Collection  <b>Link:</b> <a href="https://www.evidenceaid.org/coronavirus-covid-19-evidence-collection/">https://www.evidenceaid.org/coronavirus-covid-19-evidence-collection/</a>  <b>Date consulted:</b> 2020-04-17, 2020-11-09</p>
<p><b>Organization:</b> World Health Organization  <b>Country:</b> Multiple  <b>Description:</b> Global literature on coronavirus disease  <b>Link:</b> <a href="https://search.bvsalud.org/global-literature-on-novel-coronavirus-2019-ncov/">https://search.bvsalud.org/global-literature-on-novel-coronavirus-2019-ncov/</a>  <b>Date consulted:</b> 2020-04-17, 2020-11-10</p>
<p><b>Organization:</b> National Institute for Health and Care Excellence (NICE)  <b>Country:</b> UK  <b>Description:</b> Coronavirus (COVID-19) Rapid guidelines and evidence summaries  <b>Link:</b> <a href="https://www.nice.org.uk/covid-19">https://www.nice.org.uk/covid-19</a> and  <a href="https://www.nice.org.uk/guidance/published">https://www.nice.org.uk/guidance/published</a>  <b>Date consulted:</b> 2020-04-22, 2020-11-10</p>
<p><b>Organization:</b> National Institute for Health Research (NIHR)  <b>Country:</b> UK  <b>Description:</b> Innovation Observatory  <b>Link:</b> <a href="http://www.io.nihr.ac.uk/report/">http://www.io.nihr.ac.uk/report/</a>  <b>Date consulted:</b> 2020-04-22, 2020-11-11</p>
<p><b>Organization:</b> National Health Service (NHS) England  <b>Country:</b> England  <b>Description:</b> Coronavirus guidance for clinicians and NHS manager  <b>Link:</b> <a href="https://www.england.nhs.uk/coronavirus/">https://www.england.nhs.uk/coronavirus/</a>  <b>Date consulted:</b> 2020-04-22, 2020-11-11</p>
<p><b>Organization:</b> International Resource for Infection Control (NRIC)  <b>Country:</b> UK  <b>Description:</b> Resources section  <b>Link:</b> <a href="https://www.nric.org.uk/resources">https://www.nric.org.uk/resources</a>  <b>Date consulted:</b> 2020-04-22, 2020-11-11</p>
<p><b>Organization:</b> Centre for Evidence-Based Medicine (CEBM)  <b>Country:</b> UK  <b>Description:</b> Oxford COVID-19 Evidence Service  <b>Link:</b> <a href="https://www.cebm.net/covid-19-evidence-service/">https://www.cebm.net/covid-19-evidence-service/</a>  <b>Date consulted:</b> 2020-04-22, 2020-11-11</p>
<p><b>Organization:</b> Centers for Disease Control and Prevention (CDC)  <b>Country:</b> US  <b>Description:</b> COVID-19 Guidance Documents and MMWR report on Covid-19 in children  <b>Link:</b> <a href="https://www.cdc.gov/coronavirus/2019-ncov/communication/guidance-list.html">https://www.cdc.gov/coronavirus/2019-ncov/communication/guidance-list.html</a>  and <a href="https://www.cdc.gov/mmwr/volumes/69/wr/mm6914e4.htm">https://www.cdc.gov/mmwr/volumes/69/wr/mm6914e4.htm</a> and  <a href="https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/groups-at-higher-risk.html">https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/groups-at-higher-risk.html</a></p>



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<b>Date consulted:</b> 2020-04-22, 2020-04-24, 2020-04-25, 2020-11-12
<b>Organization:</b> Publons (commercial website for academics) <b>Country:</b> Multiple <b>Description:</b> COVID-19 related publications <b>Link:</b> <a href="https://publons.com/publon/covid-19/?sort_by=date">https://publons.com/publon/covid-19/?sort_by=date</a>
<b>Date consulted:</b> 2020-04-22, 2020-11-13
<b>Organization:</b> China Centers for Disease Control and Prevention (CCDC) <b>Country:</b> China <b>Description:</b> The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) in China, 2020 <b>Link:</b> <a href="http://weekly.chinacdc.cn/en/article/id/e53946e2-c6c4-41e9-9a9b-fea8db1a8f51">http://weekly.chinacdc.cn/en/article/id/e53946e2-c6c4-41e9-9a9b-fea8db1a8f51</a>
<b>Date consulted:</b> 2020-04-22, 2020-04-25, 2020-11-13
<b>Organization:</b> Robert Koch Institute <b>Country:</b> Germany <b>Description:</b> Covid-19 Daily Situation Report <b>Link:</b> <a href="https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Situationsberichte/Gesamt.html">https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Situationsberichte/Gesamt.html</a>
<b>Date consulted:</b> 2020-04-24, 2020-04-25, 2020-11-13
<b>Organization:</b> Korea Centers for Disease Control and Prevention (KCDC) <b>Country:</b> Republic of Korea <b>Description:</b> Press Release section <b>Link:</b> <a href="https://www.cdc.go.kr/board/board.es?mid=a30402000000&amp;bid=0030">https://www.cdc.go.kr/board/board.es?mid=a30402000000&amp;bid=0030</a>
<b>Date consulted:</b> 2020-04-22, 2020-11-13
<b>Organization:</b> Google and Goggle Scholar Search Engines <b>Country:</b> Multiple <b>Description:</b> - <b>Link:</b> -
<b>Date consulted:</b> 2020-04-22, 2020-11-13

### Ongoing systematic reviews (source: PROSPERO)

Author	Title
Md Asiful Islam	Prevalence of symptoms and comorbid conditions in novel coronavirus (COVID-19)-infected adult and paediatric patients: a systematic review and meta-analysis of first three-month data of the outbreak.
Zeyong Yang	A systematic review and meta-analysis of the CNS comorbidities, neurotoxicity in the young, intervention treatment and clinical evolutions of patients with coronavirus disease 2019 (COVID-19)
Prateek Kumar Panda	Neurological complications in children with COVID-19.



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### Ongoing clinical trials (source: WHO-ICTRP)

Author	Title
Lydia A Spurr	Perceptions of the Clinical and Psychosocial Impact of Covid-19 in Patients With Neuromuscular and Neurological Disorders
Dr S Ramakrishnan	COVID-19 and Children with congenital heart disease
Jason G. Newland, MD	Supporting the Health and Well-being of Children With Intellectual and Developmental Disability During COVID-19 Pandemic

### Preprint articles (sources: MedRxiv, BioRxiv & SSRN)

Author	Title
Luise Marino	No official help is available - experience of parents and children with congenital heart disease during COVID-19
Anke Hüls	An international survey on the impact of COVID-19 in individuals with Down syndrome
Stankovic, Miodrag	The Serbian Experience of Challenges of Parenting Children with Autism Spectrum Disorders During the COVID-19 Pandemic and the State of Emergency with the Police Lockdown

### Reviews (sources: bibliographic database searches)

Author	Title
Alsaied, T.	Coronavirus Disease 2019 (COVID-19) Pandemic Implications in Pediatric and Adult Congenital Heart Disease
Gordon, M.	Rapid systematic review of neonatal COVID-19 including a case of presumed vertical transmission
Kim, Y.	A Comprehensive Review of Neurologic Manifestations of COVID-19 and Management of Pre-existing Neurologic Disorders in Children
Malviya, A.	COVID -19 pandemic and paediatric population with special reference to congenital heart disease
McGowan, G.	51.2 Challenges with Managing Children and Adolescents with Adhd during the Covid-19 Pandemic: A Review of the Literature
Sanna, G.	Children's heart and COVID-19: Up-to-date evidence in the form of a systematic review
Yagnik, P. J.	Pediatric Characteristics of 2019 Novel Coronavirus: Review of Available Published Literature
Yoon, S. H.	Clinical outcomes of 201 neonates born to mothers with COVID-19: a systematic review



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## **Grey literature results**

The CDC stated that people with developmental and behavioral disorders (e.g. ADHD, autism, cerebral palsy) and with underlying conditions could be at risk of developing severe COVID-19 (CDC : <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-developmental-behavioral-disabilities.html> ).

The UK government classified adults with Down syndrome in clinically extremely vulnerable groups, meaning they are at high risk of developing a severe illness course (Public Health England website, <https://www.gov.uk/government/publications/guidance-on-shielding-and-protecting-extremely-vulnerable-persons-from-covid-19/guidance-on-shielding-and-protecting-extremely-vulnerable-persons-from-covid-19#cev> ).

Furthermore, the Royal College of Paediatrics and Child Health in the UK also stated that adults with Down syndrome were at risk and that children with Down syndrome sometimes have comorbidities that may put them at risk.

(<https://www.rcpch.ac.uk/sites/default/files/generated-pdf/document/COVID-19---guidance-on-clinically-extremely-vulnerable-children-and-young-people.pdf> )

The World Health Organisation stated that public health authorities should put more considerations in individual with disabilities when delivering public health messages since they may be at high risk of developing severe COVID-19

(<https://www.who.int/docs/default-source/documents/disability/covid-19-disability-briefing.pdf> ).



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## Excluded articles (sources: bibliographic database searches)

Notes: These articles were interesting but were excluded, mostly because they were not studies with primary data (e.g. commentary), or because they focused on aspect not included in our PICO (ex: psychosocial impact of COVID-19)

Author	Title
Aishworiy, R.	Including Children with Developmental Disabilities in the Equation During this COVID-19 Pandemic
Amorim, R.	The impact of COVID-19 on children with autism spectrum disorder
Becker, S. P.	Remote Learning During COVID-19: Examining School Practices, Service Continuation, and Difficulties for Adolescents With and Without Attention-Deficit/Hyperactivity Disorder
Been, J. V.	Impact of COVID-19 mitigation measures on the incidence of preterm birth: a national quasi-experimental study
Bellomo, T. R.	The impact of the COVID-19 pandemic on children with autism spectrum disorders
Block, Martin E.	Helping Your Child with Autism Spectrum Disorder Be Physically Active and Reduce Stress at Home
Blumfield, E.	Imaging Findings in Multisystem Inflammatory Syndrome in Children (MIS-C) Associated with COVID-19
Bobo, E.	How do children and adolescents with Attention Deficit Hyperactivity Disorder (ADHD) experience lockdown during the COVID-19 outbreak?
Cahapay, M. B.	How Filipino parents home educate their children with autism during COVID-19 period
Cahapay, Michael B.	Ushering children with disabilities in the 'new normal' post-covid-19 period: Collective actions in the philippines
Callea, M.	COVID-19 and Down syndrome
Caporali, C.	Challenges and opportunities for early intervention and neurodevelopmental follow-up in preterm infants during COVID-19 Pandemic
Cetin, F. H.	Chronotypes and trauma reactions in children with ADHD in home confinement of COVID-19: full mediation effect of sleep problems
Colizzi, M.	Psychosocial and Behavioral Impact of COVID-19 in Autism Spectrum Disorder: An Online Parent Survey
Colizzi, M.	51.18 the Covid-19 Outbreak Impact on Well-Being among People with Autism Spectrum Disorder in Italy: An N = 527 Web-Based Survey
Cortese, S.	ADHD management during the COVID-19 pandemic: guidance from the European ADHD Guidelines Group
Degli Espinosa, F.	A Model of Support for Families of Children With Autism Living in the COVID-19 Lockdown: Lessons From Italy
Dilli, D.	Perioperative care of the newborns with CHDs in the time of COVID-19
Echavarría-Ramirez, L.	Autism Spectrum Disorder: Guidelines for management during the period of Social Isolation by Coronavirus (COVID-19)
Farias, E. C. F.	Multisystem Inflammatory Syndrome in a Child Associated with Coronavirus Disease 19 in the Brazilian Amazon: Fatal Outcome in an Infant
Fung, A.,	Rethinking 'essential' and 'nonessential': the developmental paediatrician's COVID-19 response
Grossi, E.	Exceptionally high COVID-19 viral load and very long duration of shedding in a young paucisymptomatic child with autism resident in an Italian nursing home
Giordano, R.	Congenital heart disease in the era of COVID-19 pandemic



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Hemphill, N. M.	Reduced Physical Activity During COVID-19 Pandemic in Children With Congenital Heart Disease
Jeste, S.	Changes in access to educational and healthcare services for individuals with intellectual and developmental disabilities during COVID-19 restrictions
Kaushik, S.	ECMO support in SARS-CoV2 multisystem inflammatory syndrome in children in a child
Kaushik, S.	Multisystem Inflammatory Syndrome in Children Associated with Severe Acute Respiratory Syndrome Coronavirus 2 Infection (MIS-C): A Multi-institutional Study from New York City
Kawabe, K.	Making a brochure about coronavirus disease (COVID-19) for children with autism spectrum disorder and their family members
Lara Alvarez, M. A.	Down's syndrome, breast cancer and COVID-19
Lim, T.	Autism Spectrum Disorder and COVID-19: Helping Caregivers Navigate the Pandemic
Malviya, A.	COVID -19 pandemic and paediatric population with special reference to congenital heart disease
McGowan, G.	51.2 Challenges with Managing Children and Adolescents with Adhd during the Covid-19 Pandemic: A Review of the Literature
McGrath, J.	ADHD and Covid-19: current roadblocks and future opportunities
Miller, S.	Suspension of Hip Surveillance for Children with Cerebral Palsy During the COVID-19 Outbreak: The Benefit of Hip Surveillance Does Not Outweigh the Risk of Infection
Minocha, P. K.	Cardiac Findings in Pediatric Patients With Multisystem Inflammatory Syndrome in Children Associated With COVID-19
Narzisi, A.	Phase 2 and Later of COVID-19 Lockdown: Is it Possible to Perform Remote Diagnosis and Intervention for Autism Spectrum Disorder? An Online-Mediated Approach
Nct	Parent Telehealth Intervention for Children With Autism
Neece, C.	Examining the impact of COVID-19 in ethnically diverse families with young children with intellectual and developmental disabilities
Nonweiler, J.	Prevalence and Associated Factors of Emotional and Behavioural Difficulties during COVID-19 Pandemic in Children with Neurodevelopmental Disorders
Parenteau, C. I.	51.1 a Qualitative Analysis: The Experience of Parents of Children with Autism Spectrum Disorder during the Covid-19 Pandemic
Pellecer-Gonzalez, L. C.	Recommendations and actions for the anesthetic management of pediatric cardiac surgery during the SARS-CoV-2 pandemic. [Spanish]
Protopapas, E. M.	Early Impact of the COVID-19 Pandemic on Congenital Heart Surgery Programs Across the World: Assessment by a Global Multi-Societal Consortium
Provenzi, L.	Italian parents welcomed a telehealth family-centred rehabilitation programme for children with disability during COVID-19 lockdown
Sabatino, J.	Women's perspective on the COVID-19 pandemic: Walking into a post-peak phase
Smile, S. C.	Supporting children with autism spectrum disorder in the face of the COVID-19 pandemic
Steinman, G.	COVID-19 and autism
Tarbox, C. M.	Taking ACTION: 18 Simple Strategies for Supporting Children With Autism During the COVID-19 Pandemic
Tromans, S.	Patterns of use of secondary mental health services before and during COVID-19 lockdown: observational study
Turan, B.	Your country is your routine: The evacuation, quarantine, and management of behavioral problems of a child with autism during COVID-19 pandemic



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Turkoglu, S.	The relationship between chronotype, sleep, and autism symptom severity in children with ASD in COVID-19 home confinement period
Yagnik, P. J.	Pediatric Characteristics of 2019 Novel Coronavirus: Review of Available Published Literature
Yang, R.	Pregnant women with COVID-19 and risk of adverse birth outcomes and maternal-fetal vertical transmission: a population-based cohort study in Wuhan, China
Zhang, J.	Acute stress, behavioural symptoms and mood states among school-age children with attention-deficit/hyperactive disorder during the COVID-19 outbreak



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## Appendix 3. Included Medical Conditions

1. Attention deficit disorder; attention deficit hyperactivity disorder
2. Autism; Autistic spectrum disorder
3. Cerebral palsy
4. Childhood/developmental disability; neurodevelopmental disability
5. Congenital heart defect/disease
6. Developmental delay; global delay
7. Fetal alcohol spectrum disorder
8. Intellectual disability; Down syndrome (Trisomy 21)
9. Learning disability
10. Neonatal abstinence syndrome (opioid)
11. Neonatal encephalopathy
12. Neonatal intensive care unit survivors / graduates
13. Perinatal/neonatal asphyxia
14. Preterm, premature
15. Small for gestational age
16. Specific language impairment

# Appendix 4. Quality assessment

## Quality assessment of case reports

CASE REPORTS (n=13)	Abasse	Bezerra	Cook	Danley	Elbehery	Gupta	Kohli	Needleman	Olfe	Piersigilli	Rodriguez	Sisman	Sumarni
1. Were patient's demographic characteristics clearly described?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2. Was the patient's history clearly described and presented as a timeline?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3. Was the current clinical condition of the patient on presentation clearly described?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4. Were diagnostic tests or assessment methods and the results clearly described?	Y	Y	Y	Y	Y	Y	N	Y	N	Y	N	Y	Y
5. Was the intervention(s) or treatment procedure(s) clearly described?	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
6. Was the post-intervention clinical condition clearly described?	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
7. Were adverse events (harms) or unanticipated events identified and described?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8. Does the case report provide takeaway lessons?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<b>MEAN: 95%</b>	100%	100%	100%	100%	100%	88%	88%	100%	75%	100%	88%	100%	100%

Legend: Y, Yes (green); N, No (red).

## Quality assessment of case series

CASE SERIES (n=7)	Eghbali	Krishnan	Newman	Sagheb	Schwartz	Simpson	Zhu
1. Were there clear criteria for inclusion in the case series?	Y	Y	Y	Y	Y	Y	Y
2. Was the condition measured in a standard, reliable way for all participants?	Y	Y	Y	Y	Y	Y	Y
3. Were valid methods used for identification of the condition for all participants?	Y	Y	Y	Y	Y	Y	Y
4. Did the case series have consecutive inclusion of participants?	?	?	?	?	N	Y	?
5. Did the case series have complete inclusion of participants?	?	?	?	?	N	Y	?
6. Was there clear reporting of the demographics of the participants in the study?	Y	Y	Y	Y	Y	Y	Y
7. Was there clear reporting of clinical information of the participants?	Y	Y	Y	Y	Y	Y	Y
8. Were the outcomes or follow up results of cases clearly reported?	Y	Y	Y	Y	Y	Y	Y
9. Was there clear reporting of the presenting site(s)/clinic(s) demographic information?	Y	Y	Y	Y	Y	Y	Y
10. Was statistical analysis appropriate?	NA	NA	NA	NA	NA	NA	NA
<b>MEAN: 81%</b>	78%	78%	78%	78%	78%	100%	78%

Legend: Y, Yes (green); N, No (red); ?, Unclear (orange); NA, not applicable (grey).

## Quality assessment of cohort studies

COHORT STUDIES (n=5)	Blumfield	Desai	Götzinger	Kanburuglu	Turk
1. Were the two groups similar and recruited from the same population?	Y	Y	Y	Y	Y
2. Were the exposures measured similarly to assign people to both exposed and unexposed groups?	Y	Y	Y	Y	Y
3. Was the exposure measured in a valid and reliable way?	Y	Y	Y	Y	Y
4. Were confounding factors identified?	NA	NA	NA	NA	NA
5. Were strategies to deal with confounding factors stated?	NA	NA	NA	NA	NA
6. Were the groups/participants free of the outcome at the moment of exposure?	Y	Y	Y	Y	Y
7. Were the outcomes measured in a valid and reliable way?	Y	Y	Y	Y	Y
8. Was the follow up time reported and sufficient to be long enough for outcomes to occur?	Y	Y	Y	Y	?
9. Was follow up complete, and if not, were the reasons to loss to follow up described and explored?	Y	Y	Y	N	?
10. Were strategies to address incomplete follow up utilized?	NA	NA	NA	N	NA
11. Was appropriate statistical analysis used?	NA	?	Y	Y	Y
<b>MEAN: 88%</b>	100%	88%	100%	78%	75%

**Legend:** Y, Yes (green); N, No (red); ?, Unclear (orange); NA, not applicable (grey).