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REVIEW

The Lost Years: an Integrative Review of the Mental Health, Educational, and Social Impact of the Pandemic on Children and Adolescents From 2019 to 2022

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Abstract

The COVID-19 pandemic has been extremely stressful worldwide, impacting just about every facet of life. Its impact on children has been the subject of much research since it started in 2019, particularly since the "lockdown" in March 2020. We are only beginning to understand the widespread ramifications of the lockdown and subsequent practices of social distancing and quarantining to prevent the spread of the virus on children, adolescents, and families. This study aimed to present an integrative review of the mental health, academic achievement, and social functioning of children and adolescents since the initial lockdown. While much of the research was focused on the acute phases of the pandemic, we are still left with a lesser understanding of the long-term implications. We reviewed 50 studies examining the impact on youth's mental health, academic achievement, and social functioning, as well as the risk factors associated with poorer outcomes. We conclude that future research should adopt a broad conceptualization of the biopsychosocial, economic, and cultural impact of the pandemic on children and adolescents.

Keywords COVID-19 · Mental health · Social development · Academic achievement · Child maltreatment · Family functioning · Socioeconomic · Children · Adolescents

Abbreviations

ACEs	Adverse childhood experiences
ADHD	Attention deficit/hyperactivity disorder
APAV	Portuguese Association for Victims Support
ASD	Autism spectrum disorder
CES-DC	Center for Epidemiology Studies-Depression for Children Scale
CM	Child maltreatment
COH-FIT	Collaborative Outcomes Study on Health and Functioning During Infection Times
CRISIS	CoRonavIruS Health Impact Survey
EA	Emotional availability
ELS	Early life stress
EPII	Epidemic-Pandemic Impacts Inventory
GAD	Generalized anxiety disorder
HCP	Health care providers
HRQOL	Health-related quality of life
IDEA	Individuals with Disabilities Education Act
LT-CCC	Life-threatening complex chronic condition
LTT	Long-term trend
NAEP	National Assessment of Educational Processes
NCES	National Center for Education Statistics
PPP (Triple P)	Positive Parenting Program
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PTA	Parent-teacher associations
PTSD	Post-traumatic stress disorder

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PTSS	Post-traumatic stress symptoms
SEM	Special education needs
SES	Socioeconomic status
TD	Typical development
USOC	Understanding Society: COVID-19 Study 2020
WHO	World Health Organization

Introduction

Just before the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) viral strain was confirmed to cause the disease COVID-19 in early 2020, the world had begun to notice the severity of this extremely contagious virus. Previously, little was known about the virus, how it was transmitted, and the potential outcomes for the individuals who would be most affected. Measures to mitigate fatal outcomes were implemented in response to these unknowns. By March 11, 2020, over 4,000 people had died, which prompted the World Health Organization (WHO) to officially declare a pandemic (World Health Organization 2020). The USA began to see mandated closures of businesses, schools, universities, sporting events, and many other entities.

This worldwide "lockdown" period was prompted by increasing rates of transmission, which resulted in myriad lifestyle changes. For example, by March 25, 2020, all US public school buildings were closed and by May 6, nearly all states closed schools for the academic year (Education Week, 2020). Remote learning was implemented, placing a significant amount of strain on students, teachers, and parents. Children and adolescents were no longer able to engage in social activities, such as play dates, birthday parties, sporting events, and graduation ceremonies.

Aside from the effects of COVID-19 on those who contracted the disease, families experienced a myriad of stressors including loss of employment, loss of income, housing, food insecurity, and mental health issues. The present integrative review focuses on the immediate and lingering impact of social and academic development, family functioning, and mental health on children and adolescents after the lockdown. Discussion of risk factors such as pre-existing mental illness, chronic medical conditions, learning disabilities, and child maltreatment that predispose certain children and adolescents to negative outcomes is included in the context of the pandemic's lockdown period.

Method

A comprehensive literature search was conducted to identify the impacts of the COVID-19 pandemic on children and adolescents. This review is reported using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines for systematic reviews.

Search Strategy and Information Sources

The following databases were searched between the years 2020 and 2023: EBSCOhost Electronic Journals Service; Scopus; PubMed; Web of Science; MEDLINE; Social Sciences Citation Index; PsycINFO, PsychNet, Wiley Online Library; Embase. To collect all available data, this search focused on peer-reviewed articles discussing COVID-19 and children and adolescents. The following search terms were used: "COVID-19," "Pandemic," "children" OR "adolescent," "mental health," "learning OR achievement," "social," "family impact," "risk factors," "protective factors," AND "child maltreatment" OR "child abuse" OR "child neglect." Additional data were collected by searching reference lists of key sources.

Study Selection and Inclusion Criteria

Titles and abstracts of selected articles were screened by a panel of reviewers according to predefined inclusion and exclusion criteria. Inclusion criteria included observational studies using surveys or interviews before, during, or after the pandemic and lockdown; empirical studies; randomized control trials; clinical trials; longitudinal studies; and repeated cross-sectional studies. Exclusion criteria included review articles, papers, and letters; qualitative studies; studies with a sample size smaller than 30 subjects ($N < 30$); studies not completed in English; single cross-sectional studies; modeling studies to predict outcomes; and case studies, meta-analyses, and systematic reviews. A risk of bias analysis was conducted using the Newcastle—Ottawa Quality Assessment Scale for cohort studies (Wells et al., 2011; McPheeters et al., 2012) and a modified scale that has been utilized by other studies to appropriately rate the quality of cross-sectional studies (Modesti et al., 2016). Each study was rated by two authors independently, and where there was a discrepancy of categories (i.e., between good, fair, and poor), it was discussed among the authors to arrive at a consensus. Studies that were rated as "good" received 7–9 points, "fair" 4–6, and "poor" 0–3 (Fig. 1).

Results

Included studies are summarized in Table 1. Overall, the studies were conducted in North America ($n = 18$), South America ($n = 1$), Europe ($n = 18$), Asia ($n = 11$), or encompassed multiple countries ($n = 2$). In studies where all descriptive statistics were included, the mean age of child and adolescent subjects was 14.35 ranging from birth to 25,

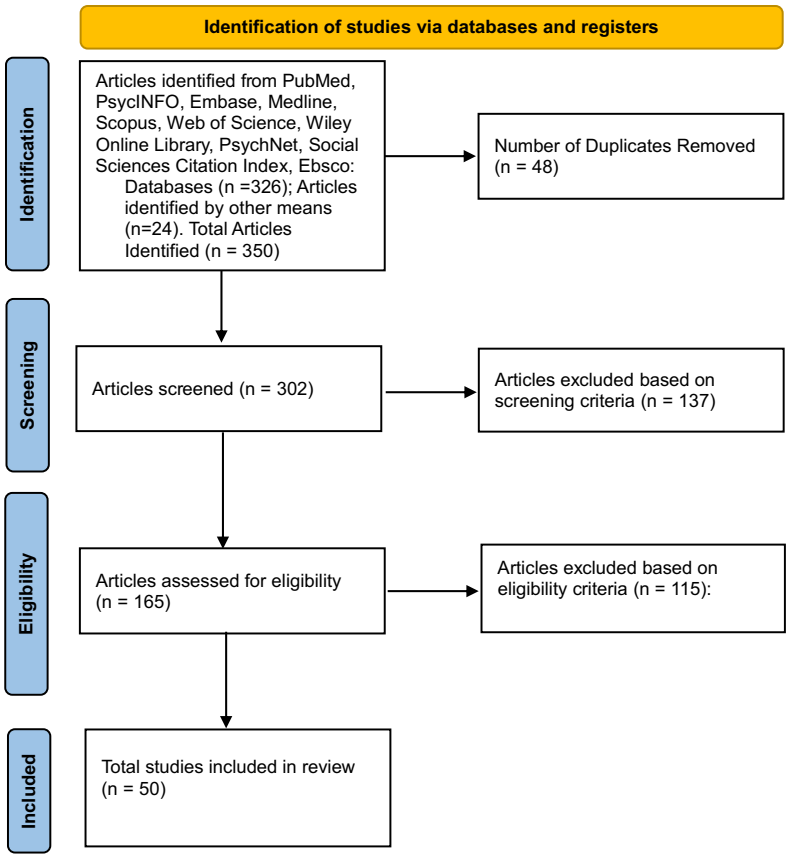

Fig. 1 Study selection flowchart

with a mean sample size of 2,404 subjects, ranging from 131 to 25,844 subjects. The mean quality score was 6.2 with a range of 4 to 9. Fifteen studies addressed pre-pandemic maltreatment and risk factors, nine addressed academic impact, and 26 addressed psychological, social, and family implications. Out of the 50 studies, 24 were of fair quality, and 26 were of good quality (Table 1).

Psychological, Social, and Family Implications

Children in general are a particularly vulnerable group for adverse psychological outcomes due to their underdeveloped abilities of comprehension. A child's capacity to understand significant life events—such as a pandemic—is immature, which leads to confusion and uncertainty. Children often reflect and model the moods and behaviors of the adults around them (Burstein et al. 2010). This has not necessarily aided the prevention of psychological sequelae in children after the pandemic, as a culture of increasing worry, loneliness, irritability, and stress was experienced by many throughout the COVID-19 pandemic (Ventura-León, et al., 2022).

Studies of previous outbreaks and natural disasters reveal increases in rates of child abuse, post-traumatic stress disorder (PTSD), boredom, irritability, sleep disturbances, and feelings of loneliness (Brooks-Gunn et al., 2013; Curtis et al., 2000; Morgul, 2020; Sprang & Silman, 2013). Much of the research evaluating the effects of the COVID-19 pandemic and lockdown on children and adolescents' mental health demonstrated overarching themes of increased feelings of fear, worry, sadness, depression, loneliness, and isolation (Avittan & Kustovs, 2023; Garcia-Rodriguez et al., 2023; Imran et al., 2020; Kauhanen et al., 2023), as well as increased stress, anxiety, and PTSD symptoms (Kaubisch et al., 2022). Across the research, trends show that girls tend to be at a higher risk than boys for developing anxiety and depression, with overall increases in rates of depression and anxiety during the pandemic compared to pre-pandemic (Madigan et al., 2023a, 2023b; Magson et al. 2021). Sleep disturbance was a prominent and recurring finding (Wearick-Silva et al., 2022). Results revealed more reports of fear and sleep disturbances in younger children. However, reports on older children and adolescents find amplified levels of depression, anxiety, and feelings of isolation (Samji et al., 2022).

Table 1 Summary of included studies

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Almhizai et al. (2021)	Saudi Arabia	Cross-sectional	Mar 2021	$N=454$ adolescents aged 0–18; $N=688$ parents of children	Online self-administered questionnaire	Older children showed less worry & restlessness, but higher sadness; being older was associated with sleep problems, uneasiness, and nervousness. Having relatives with COVID is associated with higher increases in anxiety, sadness, sleep problems, indecisiveness, and irritability. Children from divorced families showed higher anxiety, restlessness, and sleep problems	Worry; restlessness; sadness; sleep problems; anxiety, indecisiveness; irritability	6
Anderson et al. (2022)	United States	Cross-sectional survey study	January–June 2021	Nationally representative data from US public and private high school students in grades 9–12. $N=4390$ high school aged adolescents < 18 years old	Voluntary probability-based online Adolescent Behaviors and Experiences Survey	Nearly three of every four U.S. high school students reported at least one Adverse Childhood Experience (ACE) and one in 13 reported four or more ACEs during the COVID-19 pandemic	ACEs were common among adolescents in the United States during the pandemic and often resulted in acute consequences for mental health and suicidal behaviors	7
Augusti et al. (2023)	Norway	Cross-sectional; Online Survey	January 2019–June 2021; Pre- and post-lockdown	Two samples of Norwegian 12–16 y.o. ($n=9240$, M age (SD) = 14.11(0.88)) for prepandemic sample, ($n=3540$ M age (SD) = 4.5 (0.96)) 1 year into the pandemic	Online survey that was given during school establishing measures of violence and exposure to sexual abuse	There was a 1.4% increase in sexual assault committed by an adult and a 3.9% decrease in psychological violence committed by a parent during the pandemic compared to one year before. All other incidences of violence and sexual abuse remained stable	Increase in sexual assault among adults; decrease in psychological violence	6

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Birkelund et al. (2023)	Denmark	Retrospective Observational Study	2015–2021	$N = 200{,}000$ students per year in grades 2, 4, 6, and 8	Evaluated national test scores from The National Agency for IT and Learning containing results from standardized tests in reading conducted yearly between 2015 and 2021 among all Danish public school pupils in grades 2, 4, 5, and 8. This data was linked to the population-wide administrative registers at Statistics Denmark. The information obtained was demographic: gender, ethnic origin, family type, number of siblings, parental education, employment, and income	Results showed no evidence of major learning loss. However, among older children in Grade 8, results showed a decrease in reading performance of about 3 percentile points which corresponded to 7 weeks of learning loss using the World Bank benchmark for yearly learning progress	Results highlight that there may be evidence that the long school closures (14 weeks experienced by grade 8) may have a detrimental effect on children's learning compared to only eight weeks (which is what grades 2 and 4 experienced)	8
Barendse et al. (2023)	US, Netherlands, and Peru	Longitudinal	Assessments gathered before March 11 were considered pre-pandemic data, and data collected after was termed during-pandemic data	Data from 12 longitudinal studies, $N = 1{,}339$, 59% female, and participants were from 3 countries	Linear mixed-effect models were applied to the combined data. Scores were all converted to proportion of maximum scores (POMS)	The most negative impacts were observed in mixed-race individuals and those who experienced a lockdown period. Anxiety and depression symptoms were mediated by the strictness of the government restrictions in their area	Depression; interactions between race/ethnicity and depression and anxiety	5
Brock et. al (2022)	United States	Cross-sectional and longitudinal design	March 2020–2022	These families were already enrolled in a large-scale longitudinal study of child development ($N = 159$ families) and had completed assessments prior to the onset of the pandemic (March 31, 2018 to March 10, 2020)	Participants were instructed to consider each item since March 13, 2020 to capture functioning after the start of the pandemic	The results of this growing body of research suggest that there has been elevated risk for parental mental health difficulties, family dysfunction, and child maladjustment due to disruption and hardship	Immediate and pre-pandemic factors that impacted families with young children	5

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Buzzi et al. (2020)	Italy	Cross-sectional	Lockdown (2020)	2064 adolescents	Survey administered to adolescents, investigated four items: concerns and fears, information on the pandemic, provisions of public authorities, and impact on everyday life	36.8%—concerns about negative impact on education	Concerns and fears; information on the pandemic and impact on everyday life	4
Cauberghe et al. (2021)	Belgium	Survey Study	Lockdown	2165 adolescents between 13 and 19 years old	Survey study tested how feelings of anxiety and loneliness contributed to their happiness level and whether different social media coping strategies mediated these relations	Feelings of loneliness had a higher negative impact on adolescent's happiness than feelings of anxiety. Anxious participants also reported using social media more often to actively seek out how to adapt to the current situation, and to connect with friends and family to a lesser extent	Social media can be used as a constructive coping strategy for adolescents to deal with anxious feelings during the COVID-19 quarantine	4
Chen et al. (2020)	China	Cross-sectional	Not specified	1036 adolescents, age 6–15	Online questionnaire available from April 16, 2020 to April 23, 2020 for adolescents in Guiyang, China	18.9% prevalence of anxiety; 11.8% prevalence of depression	Depression; anxiety	4
Cooper et al. (2021)	United Kingdom	Cross-sectional, longitudinal study	First wave: during the first 11 weeks of the pandemic. Second wave: one month after 1st wave	$N = 894$ adolescents aged 11–16 years old (mean age = 13.37). 51.% boys, 70.7% had a household income of > £30,000	Participants were recruited from Twitter and Facebook; data was obtained from the COVID-19: Supporting Parents, Adolescents and Children during Epidemics (Co-SPACE) study. 2212 parents completed the Co-SPACE questionnaire providing demographics; self-report	Cross-sectional and longitudinal relationships between loneliness, social contact, and parent relationships and mental health were investigated; those with closer relationships with their parents reported less severe symptoms of mental illness. Higher loneliness was associated with more severe mental illness symptoms	Loneliness; mental illness; decreased social contact	7

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Craig et al. (2022)	Canada	Cross-sectional; Online Survey	June 17–July 31 2020; during lockdown	Adolescents 12–18 y.o. ($N=809$), M = 15.66, SD = 1.37, and 56.7% identified female. The second unrelated sample was $N=578$ self-identified caregivers of adolescents aged 12–18 (ages 30 to 67, M = 45.12, SD = 5.83 and majority White (85.6%))	All participants were recruited via social media advertisements. The Ontario Child Health Study Scales (OCHs) the COVID-19 Stress Scale reported on COVID-related stressors, the Conflicts Tactics Scale (CTS), and the Affect Regulation Checklist (ARC) were used. Scales were used on both parents and adolescents	Family stress from confinement was positively associated with physical and psychological maltreatment; adolescents and caregivers reported significant stress associated with being confined at home; over 40% of caregivers and youth reported CM at home. Affect dysregulation was identified as a key mechanism that accounts for the association between psychological maltreatment, adolescent mental health, and family stress	Affect dysregulation and suppression; decreased self-esteem; lower long-term wellbeing	6
De France et al. (2022)	Canada	2-Year Longitudinal Study	Waves 1–4 collected pre-pandemic, and Wave 5 was collected during the pandemic	Wave 1: $N=184$, mean age = 13.9, 50.3% female. Wave 2: $N=172$, Wave 3: $N=172$, Wave 4: $N=161$, Wave 5: 53.7% female, M age = 16.21	Multidimensional Anxiety Scale for Children (MASC), Children's Depression Inventory (CDI), Difficulties in Emotional Regulation Scale (DERS), and DERS-COVID were used in the data collection surveys	Anxiety and depression ratings in Wave 5 were much higher than the pre-pandemic model predicted	Anxiety; depression	6

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
de Oliveira et al. (2021)	Brazil	Cross-sectional; Retrospective Observational Study	2016–2020	609 reports of adolescents under 18 y.o, including all cases of sexual, physical, or self-inflicted violence against adolescents. All were either suspected or confirmed by clinical examination and were either family or self-reported	The review was conducted on victims assisted by the Pediatric Emergency Hospital Service in São Paulo between 2016 and 2020 using Individual Notifications for Interpersonal/Self-Inflicted Violence data. Analyses and linear regressions were performed on the data	A majority of the victims were white (52.9%), and female (76.7%). A majority of victims of physical violence were victimized in their homes, and sexual abuse was discovered in 63.2% of victims. There were no associations found between violence and socioeconomic or demographic factors	Increasing incidence of cases of sexual, physical, and self-inflicted violence in recent years	7
Ding et al. (2022)	China	Online Survey; Retrospective Observational Study	September 2019–January 2020; October 2020–January 2021	Baseline survey: September 2019–January 2020 (before the COVID-19 outbreak in China); $N=3636$ preschool children. Follow-up survey: October 2020–January 2021; $N=2340$, participants from baseline data collection were included	A longitudinal study including 1595 preschool children aged 3–6 years and their families was conducted in Anhui Province. The linear regression was applied to examine associations between the impact of COVID-19 pandemic on family life and emotional and behavioral health	Results of the multivariable linear regression indicated that the severe impact of COVID-19 pandemic on family life was significantly associated with more sleep problems, poor dietary behavior habits, more anxiety symptoms, and more problematic behaviors; and these effects exhibited gender and age differences	Risk of exacerbated emotional/behavioral health in preschool children	7

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Dion et al. (2022)	Canada	Longitudinal; prospective self-report survey	T1 data collected between October and December of 2019, T2 data collected November 2020 and June 2021	At T1, *N* = 1802 adolescents (mean age 14.74 years); at T2 *N* = 825 (ages 15–18, mean 15.84 years; SD = 0.73). 55.5% participants identified as boy, 42.2% as girl, and 1.5% as nonbinary	Students completed anonymous Qualtrat-ics survey, data used was collected from an ongoing longitudinal study considering participation in sports and resilience. Participants provided information on demographics, child maltreatment experience, pandemic-related stress, internalizing and externalizing behavior problems, self-esteem, and life satisfaction	COVID-19-related stress was associated with lower well-being (lower self-esteem and life satisfaction and higher internalizing and externalizing behavior problems). Having a history of CM had a moderating effect; the pandemic had a lesser impact on the outcomes of those who experienced CM. Those who reported CM were found to have lower levels of well-being than their counterparts, and those who experienced moderate-high COVID-19-related stress struggled more than their counterparts	CM is associated with more distress	5
Duan et al. (2020)	China	Cross-Sectional, convenient sampling	Not specified	*N* = 359 children and 3254 adolescents; 50.15% Males	Online survey	Smartphone and internet addiction, urban living, family/friends infected with the coronavirus, interrupted milestones due to the pandemic (e.g., high school graduation), separation anxiety, fear of physical injury, and emotion-focused coping styles associated with increased depressive symptoms	Depression	4

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Dungan et al. (2023)	United States	Cross-sectional; Online Survey	August 2020–May 2022	Mothers, fathers, and a child from their families are referred to as dyads ($n=43$ total; $n=25$ mothers; $n=18$ fathers). The parents were not necessarily from the same family and were highly educated; children's ages ranged from 4 months old to 17	The main recruitment method was via the university email distribution list of faculty staff and students. Participants were also recruited through word of mouth. The participants completed the study between August 2020 and May 2022	Results indicate that experiencing high COVID-19-related stressors is associated with lower EA for mothers, but not fathers. Having high levels of flourishing during the pandemic was predictive of higher EA for fathers, but not mothers	COVID-related stress; anxiety; depression	4
Ellis et al. (2020)	Canada	Cross-sectional	April 4–16, 2020. Three weeks after secondary schools in Ontario, Canada closed due to the pandemic	$N=1054$ participants ages 14–18; 76.5% Female; 65.7% White; 15.3% Asian, 3.9% Black, 3.1% Latino, 11.0% Other	Online survey; participants recruited from advertisements on Instagram	43% of participants were "very concerned" about the pandemic; 48% spent more than 5 h daily on social media; exercise was identified as a buffering factor	Grief over missed opportunities (milestones)	6
Ezpeleta et al. (2020)	Spain	Longitudinal; Survey	The first collection when kids were 12 years old was pre-COVID and second collection was post-COVID	$N=226$ parents of $N=117$ girls and $N=109$ boys. Mean age = 13.9. Participants were recruited from an existing longitudinal study. Participants were Caucasian (92%), American-Hispanic (3.6%), and other ethnicities (3.5%)	A survey of the Strengths and Difficulties Questionnaire was administered and stepwise regression analyses were conducted. Surveys were filled out by parents on the child's behalf	A worsened mental health during the pandemic was associated with more unhealthy activities, worsened relationships with others, and a dysfunctional parenting style	Worsened interpersonal relationships; dysfunctional parenting	8
Gotlib et al. (2020)	United States	Longitudinal	Pre-pandemic and during pandemic (April 2020)	$N=109$, 43 males, aged 13–20 years old. Participants all from the San Francisco area	Participants were interviewed at baseline (3–6 years before the pandemic started with a modified Traumatic Events Screening Inventory for Children (TESIC), and the Perceived Stress Scale and CES-DC were also used	Monitoring the mental health of high-risk adolescents is pertinent, and stress should be targeted for intervention in vulnerable youth. Severity if ELS scores pre-pandemic predicted depression during the pandemic	Early life stressors (ELS) linked to depression	7

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Guo et al. (2020)	China	Review; Online Survey	February 8th–February 27th 2020	$N=6196$ adolescents aged 11–18 selected via two-stage cluster sampling method	Multivariable linear regressions were used to analyze the survey data	More pre-pandemic Adverse Childhood Experiences (ACEs) predicted more Post Traumatic Stress Symptoms (PTSS) and more anxiety. Those with ACEs who were exposed COVID-19 also showed higher PTSS	Family abuse was strongest predictor of PTSS	6
Haelermans et al., (2022a, 2022b)	Netherlands	Cohort study; Online Survey	2016–2021	500,000 students from ~ 1900 primary schools	Compared the two cohorts of student test scores prior to the pandemic with the cohort since the pandemic. The variables evaluated were learning growth in reading, spelling, and mathematics	Results show a marked lower learning growth between the pandemic affected cohort of the school year 2019/2020 relative to the prior cohorts in all domains	Lower learning growth in the COVID affected cohort	7
Haelermans et al. (2022a, 2022b)	Netherlands	Observational Study	November 30th 2020–January 18th 2021	201,819 students in 1,178 schools	Compared the learning gain between the midterm and end-of-term test of the COVID-19 exposed cohort (2019/2020) on reading, spelling and math, to the learning gain of students from the two previous cohorts using OLS regressions	Results show large inequalities in the learning loss based on parental education and parental income, in addition to already existing inequalities	Results call for a national focus on interventions specifically targeting vulnerable students	7
Hawke et al. (2022)	Canada	Cross-sectional; survey	April 2020; during lockdown	$N=29$ transgender/gender diverse, and $N=593$ cisgender participants	Descriptive statistics, Fischer's Exact Tests, and logistical regression analysis were applied to data leveraged from four existing cohort studies	Transgender and gender-diverse youth are more affected by mental health challenges during the pandemic compared to cisgender youth	Mental health and substance use treatment disruptions; less family member support	8

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Hevia et al. (2022)	Mexico	Observational Study	2019 and 2021	2021 survey: 3161 students between 10- and 15-years old living in Campeche and Yucatan. 2019 survey: 2564 homes were selected in the states of Yucatan, Quintana Roo, and Campeche	The researchers used multistage, probabilistic, stratified cluster sampling. The sampling procedure involved four steps: the selection of clusters or primary sampling units, secondary sampling units (rural localities and primary geostatistical areas for urban areas), a random selection of blocks within the cluster, and the systematic selection of homes in the blocks	For reading, there was a learning loss for all items and at all ages and socioeconomic levels analyzed. Similar outcomes appeared for mathematics as well. Losses occurred in all items, at all ages, and at all socioeconomic levels. While there were already severe lags in fundamental learning in reading and mathematics according to the 2019 measurement, the loss that occurred after 12 months of school closures was evident, as was shown in the 2021 measurement	Educational emergency because of school closures as a result of the COVID-19 pandemic	7
Hu and Qian (2021)	United Kingdom	Longitudinal	USOC data obtained before March 2020 and in June 2020; pre-pandemic to post-lockdown period	$N = 886$ adolescents aged 10–16	The survey was distributed both before and during the pandemic. The Strengths and Difficulties Questionnaire was used to measure mental health, and nationally representative data from the Understanding Society COVID-19 were analyzed	Those with above-average mental health pre-pandemic experienced an increase in emotional problems, conduct problems, hyperactivity, and a decrease in prosocial tendencies during the pandemic. Those with below-average mental health pre-pandemic experienced opposing changes to the above-average group during the pandemic	Negative mental health impact; smaller increase in emotional problems in males	8

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Hussong et al. (2021)	United States	Longitudinal; self-report survey	Last data collection: May–June 2020; after lockdown	$N = 105$ parent–child dyads; 49% boys, 81% European American, 9% Asian, 4% Black/African American, 4% Latinx, 4% other; 87% mothers, 35% high school graduate with no college education	Parents completed surveys periodically when the child was aged 6–9, 8–12, 9–13, and 12–16 (four collection periods). Children completed self-report surveys at ages 11–16, self-efficacy, optimism, and coping were assessed	Increased mental health symptoms from before to after the pandemic outbreak when controlled for changes associated with maturation. Symptom increases were mitigated in children with more self-efficacy and were exacerbated in youth with more emotion-focused engaged and disengaged coping	Increased problematic mental health symptoms; higher self-efficacy mitigated symptomology in youth	8
Kalil et al. (2020)	United States	Cross-sectional; Online Survey	2020	Preschool children from low-income families in Chicago who were actively participating or had participated in research studies being conducted at UChicago	Low-income parents of preschool-age children in the Chicago area were surveyed about the impact of the COVID-19 pandemic. Data collection began on May 3 and ended July 20, 2020. Participants were chosen from existing studies being conducted	Analysis results can help us understand the broader impact of economic and social shocks on family dynamics. Policymakers and practitioners should support low-income families who are struggling with economic/social shocks now and in the future	Economic and social shocks on families	6

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Kuhfeld et al. (2023)	United States	Observational Study	Fall 2019, fall 2020, and fall 2021	5.2 million students in grades 3–8 in approximately 12,000 U.S. public schools	Student test scores from the NWEA Measures of Academic Progress (MAP) Growth reading assessments, called RIT scores, were used. To understand how overall reading achievement in fall 2020 and fall 2021 compared to fall 2019, researchers standardized the fall 2020 and fall 2021 test scores relative to the mean and standard deviations of the fall 2019 scores separately by grade level	Achievement declines relative to the 2019 averages are larger among students enrolled in high-poverty schools and students of color. The magnitude of achievement declines differed by grade. Upper elementary classrooms are not typically resourced to teach early literacy skills, so school leaders must consider providing additional training, resources, and personnel support to equip teachers to provide differentiated and clear instructions for groups of students who continue to demonstrate difficulties	Learning loss in elementary school students	7
Lerkkanen et al. (2023)	Finland	Large-scale Longitudinal First Steps Study	during lockdown; Spring 2020	Post-pandemic group of 198 Grade 3 children compared to pre-COVID sample of 378 children across grades 1, 2, and 4	Sample taken from longitudinal "First Steps Study" $N=2000$; children were tested in academic skills, parents were administered a questionnaire, and teachers rated their students' task-avoidant behavior. Sub-sample was randomly selected from the original sample ($N=378$; 48% girls)	Developmental trajectories of the COVID sample in reading comprehension did not differ from the pre-COVID sample before the pandemic. However, from Grade 2 to Grade 4, the development was slower in reading comprehension than the COVID sample. Similar evidence for learning loss was not found in math development	Learning loss in reading comprehension skills	7

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Liao et al. (2021)	China	Longitudinal	December 2019 and June 2020 (post-lockdown)	$N=2496$ adolescents recruited from 3 junior high schools	Self-report questionnaire was administered in two waves, depressive symptoms assessed with CES-DC scale, and sleep duration, demographics and COVID-19 exposure levels were also assessed	Significant decrease in sleep duration and increase in depressive symptoms during the pandemic. Those with depressive symptoms pre-pandemic were more prone to sleep loss during the pandemic	Decreased sleep duration; depressive symptomology	8
Long et al. (2022)	China	Prospective Two-Wave Study	Baseline survey: 22 September–25 October 2020; follow-up: 29 December 2020–16 January 2021	First survey; $N=2821$ surveyed 5 months after lockdown, second survey: $N=2470$ (mean age 15.48 years, SD = 1.76) conducted 8 months after lockdown. Participants range in age from 12–18	Participants completed surveys before, during and after the lockdown in order to identify risk factors	The impact of lockdown on CM was beneficial in the short-term but harmful in the long-term as the prevalence in sexual abuse rose to 2.9% from 1.6% ($p=0.002$). Being male, having depression, and experiencing anhedonia or psychotic symptoms at baseline were associated with increased sexual abuse after lockdown	Significant increase in prevalence of sexual abuse after the lockdown period	5
Maheux et al. (2021)	United States	Longitudinal study	October 2019, February 2020, October 2020, and January 2021	743 adolescents between 13 and 18	Online survey of the group before the pandemic and after the pandemic about their character development and social media use	Results show that gratitude and the importance adolescents attribute to using social media for meaningful interactions with friends are associated over time	Gratitude may be associated with using social media to foster social connection, but not necessarily all social use	6
Molnár and Hermann (2023)	Hungary	Rasch model	Pre- and post-lockdown	Approximately 80,000 students from grades 1 through 7	Compared assessments from at least 2 times for each student, measuring math, reading, and science	1st Graders showed greatest loss in numeracy skills; 2-7th graders showed greater loss in reading and science; those in lower SES schools also showed greater losses	Learning loss	7

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Oosterhoff et al. (2020)	United States	Cross-sectional; survey	Mar-20	683 adolescents; female (75.3%), with 77% white/Caucasian, 15.5% Hispanic/Latino, 5.6% African American, 11.1% Asian American/Pacific Islanders, 3.2% American Indian/Alaskan Native, and 5.6%	Participants recruited through social media	Social distancing associated with higher anxiety; those who preferred to stay home reported less anxiety and depressive symptoms	Anxiety	5
Ougrin et al., 2022	10 European Countries, 1 Asian country	Retrospective Cohort	2019–2020	1795 children and adolescents; aged < 18	EHR review	ER presentations decreased from 1239 in 2019 to 834 in 2020; proportion of subjects presenting with self-harm increased from 50% in 2019 to 57% in 2020; proportion presenting with emotional disorders increased from 58 to 66%	Self-harm; emotional disorders	7
Rauschenberg et al. (2021)	Germany	Cross-sectional	Lockdown	$N = 685$; Age 16–25, Mean age 21.3; 52% male	Recruited through the "Mental Health and Innovation During COVID-19 Survey" panel study	Subjective experiences of social isolation, lack of company, and COVID-19-related worries and anxiety were more likely to experience psychological distress; migrant and ethnic minority groups were more likely to experience psychological distress; psychological distress and high levels of COVID-19-related cognitive preoccupation, worries, and anxiety were associated with a more positive attitude toward the use of mHealth apps	Social isolation, lack of company, worrying, anxiety impacted mental health	7

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Ravens-Sieberer et al. (2022)	Germany	Longitudinal study	Three waves: Wave 1 (May 2020–June 2020), Wave 2 (December 2020–January 2021), Wave 3 (September 2021–October 2021)	Parent-reported data were collected from children and adolescents ages 7–17 years, and self-report data were gathered from adolescents aged 11–17 years. $N=2097$ families participated in at least one measuring point of the COPSY study	The German COVID-19 and Psychological Health (COPSY) study measured health-related quality of life and mental health. Researchers used three waves of data collection and measured factors such as sociodemographic, COVID-19 burden, quality of life, and mental health	HRQoL and mental health impairments increased in Waves 1 and 2, followed by a slight improvement in Wave 3. Internalizing problems remained high in Wave 3 while externalizing problems significantly decreased. There was no significant rise in depression levels from prepandemic to Wave 1 data, but a significant peak of depressive symptoms in Wave 2, decreasing again in Wave 3. A higher proportion of girls, and socially disadvantaged children and adolescents, reported low HRQoL, anxiety, depressive symptoms, and psychosomatic complaints both before and during the pandemic	A disproportionate amount of female and socially disadvantaged adolescents reported lower HRQoL scores; anxiety; depressive symptoms	9
Ribeiro et al. (2022)	Portugal	Cross-sectional study	2019–2020	Sample consists of 12,576 reported requests for help made to the Portuguese Association for Victims Support (APAV)	$N=5897$ help requests in 2019 (46.9%) and $N=6679$ requests in 2020 (53.1%). 88.8% of the sample were Portuguese and the remaining were different nationalities. Victims age ranged from 1 month old to 98 y.o. The majority of the sample was biologically female (82.9%)	There was a 13.3% increase in help requests mainly from adolescent victims in 2020 compared to 2019, with a 100.7% increase in requests for help during the lockdown alone. Adolescents registered an increase in 28.6% more requests for help	Requests for DV-related help increased during the pandemic year	5

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Rodriguez et al. (2021)	United States	Cross-sectional and longitudinal study	Study 1: April 14th 2020–April 17th 2020; Study 2: Unspecified for times 1–4, T5 data obtained April 20-May 31 2020	Study 1: 405 parents; participants had at least one child under 12 y.o. The mean age of participants was 34 y.o., with an average household income of $40,000–50,000. The majority of participants were cohabitating with a partner (80%) and most participants were white (71%) Study 2: $N = 106$ mothers. 60.4% of the mothers identified as white	Study 1: Online self-report survey Study 2: Following First Families (Triple-F) Study, assessments completed corresponding to baby's age (pre-natal, 6 mos., 18 mos., an in-person session, and during the first months of the pandemic	3% of mothers indicated they were hitting their kids more often, 33.3% indicated more yelling, and those who reported more yelling scored higher on the CTSPC Psychological aggression and BCAPI Abuse Scale. Parents that experience more loneliness also perceived a more adverse change in their parenting	The COVID-19 pandemic is undermining parenting	6
Saddik et al. (2021)	United Arab Emirates	Web-based cross-sectional survey, recruited through convenient sampling	March 24th–May 15th 2020	2200 self-selected volunteer participants, age 18 years and over	Structured questionnaire, GAD-7, SDQ	71% of respondents reported anxiety. Higher anxiety levels in parents = more likely to vaccinate children	Worry; fear	6
Salt et al. (2021)	United States	Cross-sectional study	During lockdown	579 encounters (469 unique patients) of abuse against adolescents age < 18, extracted from University of Kentucky's Clinical and Translational Science bioinformatics services. Ethnicity, race, gender and age data were extracted as well	ICD-10 diagnoses encounters were obtained and separated into those that occurred before the pandemic and those that occurred during. Descriptive statistics with means and standard deviations or frequency distributions were applied to summarize variables	Incidences of physical abuse and CM were not significantly difference before and after schools closed due to COVID-19 lockdown measures. However, the incidence of child sexual abuse increased by 85% after March of 2020	A significant increase in sexual abuse against children during the pandemic	7

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Saurabh et al. (2020)	India	Cross-sectional; Interview	Quarantined	121; 9–18 years; male (85.12%)	$N = 121$ children and adolescents who were quarantined either at home or in a facility and remained healthy were selected and $N = 131$ children/adolescents not quarantined were selected from the same sample neighborhood with similar family backgrounds. Detailed interviews were given	Significant majority expressed worry (68.59%), helplessness (66.11%), and fear (61.98%)	Worry; helplessness; fear	7
Schult et al. (2022)	Germany	Cohort study	2017–2019 compared to first lockdown 2020	N > 80,000–the study looked at mandatory tests for all 5th graders in the German federal state Baden-Württemberg	Mean competence scores computed for each cohort	Comparing results from test scores to pre-pandemic years (2017–2019), a downward trend was found after the first pandemic wave. Longer periods of school closures were associated with larger learning losses. Learning losses were larger for the group of low-achieving students and for schools with less sociocultural capital. Disadvantaged student groups are at a high risk of further substantial learning losses due to school closures	Longer periods of school closures were associated with larger learning losses	8

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Schuurman et al. (2021)	The Netherlands	Archival study	8 weeks of school closure during lockdown	886 primary school students from 13 schools from a large city in the middle of the Netherlands (approximately 350,000 inhabitants)	First conducted preliminary descriptive analyses to describe overall pattern of students' achievement growth before and after lockdown. Then estimated latent piecewise growth models using Mplus version 8.4 to examine significant discontinuity in students' learning growth	School closures due to the COVID-19 pandemic may contribute to educational inequality and students may need additional support to overcome the adverse consequences of the lockdowns. Within a sample of schools serving vulnerable students, the discontinuity in learning was strongest at schools with a greater amount of disadvantaged student populations and among students from lower grades	School closures may lead to educational inequality	8
Sibley et al. (2021)	United States	Cross-sectional	Lockdown	134 subjects with ADHD; Age 13–22, Mean age 17.11; 65.7% male; 85% Latinx, 10.4% Non-White; 4.5% White	Recruited from original trial	Parents reported motivation (27.9%, social isolation (26.7%, and difficulties engaging in online learning (23.3.%). A/YAs reported social isolation (41.5%), boredom (21.3%), and difficulties engaging in online learning (20.2%)	ADHD sample reported top concerns with social isolation, boredom, and difficulties engaging in online learning	4

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Thorisdottir et al. (2023)	Iceland	Cross-sectional	October–November 2018 or February–March 2018, October–November 2020, February–March or October–November 2021, February–March 2–22	13–18 year olds enrolled in school in Iceland with 64,071 responses submitted	Survey study of Icelandic children aged 13–18 years who were enrolled in school that collected data on demographic variables, depressive symptoms, mental wellbeing, substance use, parental support, and average hours of sleep per night	Elevated depressive symptoms and decreased mental well-being across girls and boys aged 13–18 years were observed and were maintained up to 2 years post-pandemic. This increase in mental health issues persisted despite the easing of social restrictions and successful vaccination campaigns	Increase in mental health problems	8
Trucco et al. (2023)	United States	Cross-sectional study	Data collected in two waves, T1: Summer 2020 and T2: Fall 2020	Adolescents in the first or second year of high school ($N = 115$; mean age = 14.9; 54.8% female; 86.0% White, 7.8% Black, < 1% Pacific Islander, 5.2%, and 82.6% Latinx	Online survey focused on the impact of COVID-19 experiences on adolescents	Among adolescents who reported previous emotional abuse, those who experienced less isolation during the pandemic reported the least amount of anxiety symptoms, but among the adolescents who experienced previous physical abuse, those who experienced less isolation during the pandemic reported the greatest level of depression and anxiety symptoms	Adolescents with a history of maltreatment are more likely to develop psychological disorders, and COVID-19 exacerbates that predisposition	4

Table 1 (continued)

Reference	Location(s)	Study type; design	Period	Sample characteristics	Methods	Key findings	Outcomes	Risk of bias (NOS)*
Tso et al. (2022)	Hong Kong	Cross-sectional study	April 2020, during lockdown	Parents of children ages 2–12 with Special Education Needs (SEN) who study at special schools or childcare centers. Parents of 417 children with SEN (mean age 6.13 years, 71.2% males) were included along with parents of 25,427 children with Typical Development (TD) (mean age 6.37 years, 49% males) were included	Online questionnaire completed by parents. Statistical analyses and Chi-squared test performed on data in R	Out of children with SEN, 23.5% experienced 1 + episode of severe physical assault during the pandemic, 80.5% experienced psychological aggression, and those who had mental disorders had an increased risk of experiencing maltreatment compared to those without mental disorders. Comparing rates of maltreatment among children with SEN before the pandemic, there was a significant increase in rates of physical assault and psychological aggression during the pandemic (59.8% vs. 71.2% $p < .01$, and 53.7% vs. 80.5% $p < .01$, respectively)	Increased risk of CM among children with SEN	4
Zhou et al. (2020)	China	Cross-sectional	Not specified	$N = 8079$ junior and senior high school students, age 12–18; 46.5% male	An online survey administered via Wenjuanxing platform. Demographics and depressive and anxiety symptoms were assessed	7.4–37.4% prevalence of anxiety; 10.1–43.7% prevalence of depression; older adolescents reporting greater symptoms	Depression; anxiety	8

* Risk of bias (NOS): Good = 7 or more; Fair = 4–6; Poor = 3 or less

Children with pre-existing conditions such as autism spectrum disorder (ASD) and attention-deficit/hyperactivity disorder (ADHD) were at risk for increased symptomatology (Panda et al., 2021; Sibley et al., 2021). Further, those in rural areas and from minority populations are disproportionately affected (Schroeder et al., 2021; Thomeer et al., 2023). These major negative effects on mood and behavior experienced by children and adolescents tend to heavily impact familial and educational functioning. Due to the rapidly escalating demand for mental health services, a shortage of mental health workers, and confusion amidst the transition of health services to virtual spaces, the psychological complications brought about or enhanced by the pandemic appear likely to subsist to some degree due to a lack of available treatment (Kuehn, 2022). The long-term outcomes of the pandemic on psychological symptoms in youth remain unclear.

Depression and Anxiety

Buzzi et al. (2020) used a cross-sectional online survey of 13–19-year-old adolescents from a national sample in Italy of 2,064 subjects randomly selected based on a national database. Researchers found that most adolescents demonstrate significant "worry," concluding that COVID-19 significantly affected the emotional well-being of adolescents. In a study looking at the risk of depression, Chen et al. (2020) also used a cross-sectional online survey for 1,109 children and adolescents ages 6–15 during COVID-19. Furthermore, females exhibited an increased risk of depression compared to their male counterparts, and older adolescents reported more depression than younger adolescents (Chen et al., 2020). While the methodology of how the subjects were recruited was not specified, this survey also found that adolescents who lacked the company of having another individual at home during the day were at greater risk for developing anxiety and depression. However, physical exercise was correlated with the prevention of anxiety and depression.

In another study in China, Zhou and colleagues (2020) conducted a cross-sectional study with 8,079 subjects aged 12–18 years. Consistent with Chen et al. (2020), results revealed high rates of depression (43.7%), anxiety (37.4%), and both depression and anxiety (31.3%), with older adolescents reporting more significant symptoms compared to their younger counterparts.

Similarly, Duan et al. (2020) used a cross-sectional, convenient sampling method. They distributed online surveys to 359 children and 3,254 adolescents (50.15% males) in China, ages 7–12 (9.95%) and 13–18 years of age (90.05%). Results indicated higher levels of anxiety in adolescents compared to children. Smartphone and internet addiction, urban living, family and friends infected with the coronavirus, interrupted milestones due to the pandemic (e.g., high school graduation), separation anxiety, fear of physical injury, and emotion-focused coping styles were significantly associated with preponderant depressive symptoms.

Saddik et al. (2021), who initially published results in 2020 and re-published in 2021, conducted a web-based cross-sectional survey which included 2,200 self-selected volunteer subjects ages 18 and older between March 24 and May 15, 2020. Their study aimed to explore symptoms and severity of anxiety on a Likert-type scale of 0 to 3 among parents, teachers, and the general community during the pandemic in the United Arab Emirates, as well as identify anxiety symptoms in children. Researchers randomly selected and contacted 17 schools across the United Arab Emirates, and 4 schools responded. They utilized a structured 32-item questionnaire that was divided into 8 domains; demographics, knowledge, beliefs and perceived risk related to the pandemic, hygienic and health-protective behaviors, precautionary measures, worry and fear related to the pandemic, general health, validated self-reported anxiety screening scales, and coping mechanisms. Their findings showed that generalized anxiety disorder (GAD) was extremely prevalent in the general population, with a prevalence of 71% in this sample. Parents who were also teachers reported the highest percentage of emotional regulation problems in children at 26.7%. Using a multivariate logistic regression, their results showed that parents who had more severe anxiety levels were seven times more likely to report more emotional problems in their children.

Rosen et al. (2021) aimed to identify protective factors against psychopathology by utilizing two longitudinal samples of 224 children and adolescents evaluated prior to the pandemic, during the stay-at-home period, and 6 months later. Results indicated increases in internalizing and externalizing problems relatively early in the pandemic and at six months follow up. Protective factors, such as having structured routines, decreased exposure to the news, and good sleep hygiene, helped to reduce mental health distress (Rosen et al., 2021).

The German COVID-19 and Psychological Health (COPSY) study is one of the first longitudinal studies that is population-based and monitors health-related quality of life (HRQoL) and mental health in children and adolescents during the pandemic (Ravens-Sieberer et al., 2022). The study also aimed to identify groups of children and adolescents vulnerable to deteriorating mental health and HRQoL and was conducted in three waves: Wave 1 (Spring 2020), Wave 2 (Winter 2020/2021), and Wave 3 (Autumn 2021). At the beginning of Wave 1, subjects reported lower HRQoL and increased mental health problems at the start of the pandemic compared to pre-pandemic levels, indicating an acute reaction to the demands of the pandemic. The results also highlighted that a higher proportion of girls reported

elevated anxiety, depressive symptoms, and psychosomatic complaints, as well as low HRQoL, both before and during the pandemic. In addition, socially disadvantaged children were shown to be particularly at a high risk of experiencing low HRQoL, mental health problems, and depressive symptoms during the pandemic.

A study conducted in Iceland aimed to assess depressive symptoms, mental health well-being, and substance use in children and adolescents aged 13–18 years (Thorisdottir et al., 2023). A survey was administered in Icelandic schools that collected data on demographic variables, depressive symptoms, mental health well-being, substance use, parental support, and average hours of sleep per night. Results showed that the increase in depressive symptoms and the decrease in mental health well-being among 13–18-year-olds persisted 1–2 years into the pandemic. Further, sleep was found to be a moderator in that sleep duration (i.e., > 8 h per night) was associated with better mental health outcomes and less prevalence of substance use.

A cross-sectional survey using the CoRonavIruS Health Impact Survey (CRISIS; Merikangas et al., 2020) was conducted in early pandemic period, which included 29 transgender youth and 593 cisgender youth. Utilizing non-parametric tests to accommodate unequal sample sizes, results showed that transgender and diverse gender youth are more likely to be affected by mental health challenges during the pandemic than cisgender youth (Hawke et al., 2021), although there was not a significant difference in pre-pandemic distress levels compared to their cisgender peers. However, pre-morbid functioning was correlated with mental health challenges. Notably, transgender youth reported less support from their family during the COVID-19 period, although friends and significant other support remained unchanged (Hawke et al., 2021).

A well-designed longitudinal study in North Carolina, "Raising Grateful Children" (Hussong et al., 2018), which was originally intended to measure parental influences on their children's well-being and sense of gratitude, used two waves of data collected prior to and during the COVID-19 pandemic. Results from several measures indicated that children with increased self-efficacy showed smaller increases in symptoms, while those with low self-efficacy demonstrated increased symptoms of distress. Furthermore, reliance on emotion-focused coping exacerbated pre-existing mental health symptoms (Hussong et al., 2021).

Social Distancing, Isolation, and Quarantine Effects

In Canada, Ellis et al. (2020) conducted a cross-sectional online survey to assess adolescents ages 14–18 recruited from Instagram advertisements. The sample was primarily female (76.5%), of White/European descent (65.7%), Asian (15.3%), Black (3.9%), Latino (3.1%), and 11.0% identified as "other." The results revealed that 43% of respondents were "very concerned" about the pandemic, with 48% spending over 5 h daily on social media. Grief over missed opportunities, such as graduation ceremonies and other milestones, was common. Increased social media usage was associated with increased depression, but lower loneliness. Time spent with family was associated with less loneliness and depression, and as found by Duan and colleagues (2020), time spent exercising was expressed as a buffering factor for depressive symptoms.

Many studies have highlighted that the effects of social distancing have been associated with increased anxiety. Oosterhoff et al. (2020) recruited 683 adolescents through social media. The sample was primarily female (75.3%), with 77% White/Caucasian, 15.5% Hispanic/Latino, 5.6% African American, 11.1% Asian American/Pacific Islanders, 3.2% American Indian/Alaskan Native, and 5.6% who identified as "other." The findings exposed that social distancing due to concerns about contracting the virus was associated with higher anxiety. However, respondents who preferred to stay home for alternative reasons reported less anxiety and depressive symptoms.

In a high-quality longitudinal study that assessed a sample of adolescents aged 11–16 in the UK, data regarding mental health issues such as emotional problems, prosocial problems, and conduct issues were obtained both before the pandemic took place and during the pandemic from the same subjects. Hu and Qian (2021) compared the self-reported Understanding Society (USOC) COVID-19 survey data to the preceding USOC survey to extract the implications of the pandemic and its consequences on adolescent mental health. Using person fixed-effects models, Hu and Qian (2021) estimated the change in the adolescents' mental health from before to during the pandemic. They found that having higher prosocial tendencies made one more likely to have their mental health worsen over the pandemic, while the proportion of adolescents with conduct problems was very low mid-pandemic possibly due to increased adult supervision. Those with above average mental health pre-pandemic experienced increased hyperactivity, conduct and emotional problems and a decrease in their prosocial tendency. Conversely, those with below average mental health pre-pandemic experienced decreased hyperactivity, conduct, and emotional problems and increased prosocial tendency. These data outline the pandemic's varied impacts on mental health in youth, which was dependent on mental health history prior to the pandemic and demographic background.

Quarantine and isolation also contribute to mental health difficulties. Saurabh and Ranjan (2020) interviewed 121 children and adolescents ranging in age from 9 to 18 years who were quarantined in India. The subjects were primarily

male (85.12%). Results indicated that a significant majority expressed worry (68.59%), helplessness (66.11%), and fear (61.98%). Similarly, a study by Rauschenberg et al. (2021) explored the associations between social isolation; COVID-19-related cognitive preoccupation, worries, and anxiety; objective social risk indicators; and psychological distress. Additionally, this study aimed to investigate the use of and attitude toward mobile health interventions related to COVID-19 in youths. A cross-sectional panel study involving a representative sample of individuals aged 16–25 years from the German population was used to develop this study as part of the "Mental Health and Innovation During COVID-19" survey. The survey displayed that public health measures, such as social distancing and isolation, may be associated with poor mental health outcomes in youth. Individuals who reported subjective experiences of social isolation, lack of company, and COVID-19 related worries and anxiety were likely to experience psychological distress during the pandemic.

Several systematic reviews provide support that the social implications of the COVID-19 pandemic may have a significant effect on the mental health of children and adolescents. The prolonged social distancing measures of the COVID-19 pandemic introduced insecurity and increased psychological discomfort in children and adolescents, including an overall increase in anxiety and depression (Loades et al., 2020; Viola & Nunes, 2021). Similar reviews also found that increased social isolation due to the pandemic leads to an increase in sedentary behaviors, resulting in negative impacts on overall mental health in children and adolescents (Scapaticci et al., 2022). Shocking increases in levels of anxiety, depression, worry, loneliness, and behavioral problems were reiterated in systematic reviews by Kauhanen et al. (2023) and Meherali (2021). Additionally, similar reviews support that girls appear to be more susceptible to depression and anxiety symptoms, although boys were more apt to act out in behavioral ways (Chen et al., 2020).

Social Media Contributions

Many studies reviewed the impact of social media on youth and adolescents during the COVID-19 pandemic and how social media impacted feelings of social isolation. A study by Cauberghe et al. (2021) of 2165 Belgian adolescents (ages 13–19) found that subjects who felt lonely due to social isolation were inclined to use social media to cope with the lack of social contact. Additionally, Meherali et al. (2021) found that the pandemic has resulted in a significant increase in the amount of time that children and adolescents spend online and on social media, which is already known to potentially lead to decreases in real-life social interactions as well as neglect of personal life and well-being. However, other studies found that social media use during the pandemic may be associated with gratitude, as social media provided a way to foster social connection during social distancing measures (Maheux et al., 2021).

Overall, the studies reviewed are consistent with systematic reviews that found an overall deterioration of young people's mental wellness during the COVID-19 pandemic. Difficulties with concentration, stress, and increased anxiety symptoms such as worry, fear, or nervousness due to isolation have been consistently reported; the adolescent population generally was found to have higher levels of stress, depression, and anxiety than younger children and had more severe symptoms, including post-traumatic stress symptoms (PTSS) (García-Rodríguez et al., 2023; Imran et al., 2020; Kauhanen et al., 2023; Meherali et al. 2021). Disturbances in sleep and appetite were common (García-Rodríguez et al., 2023; Imran et al., 2020). The primary symptoms for children under age 13 included irritability, argumentativeness, aggressiveness, and rebellious behaviors (García-Rodríguez et al., 2023; Imran et al., 2020). Furthermore, systematic reviews continuously echo that girls were at greater risk than boys for depression and anxiety symptoms (García-Rodríguez et al., 2023; Meherali et al. 2021). Children with pre-existing conditions such as ADHD and oppositional defiant disorder were likely to endure intensified and aggravated symptomatology (García-Rodríguez et al., 2023). Additionally, systematic reviews emphasize that children spent substantial amounts of time online and on social media during the pandemic, which likely further compounded adverse mental health outcomes since information that youth are bombarded with through social media and other news outlets may aggravate or intensify mental distress (Imran et al., 2020; Meherali et al. 2021).

Family Functioning and Socioeconomic Resources

Ding et al. (2022) investigated the impact of family functioning during the COVID-19 pandemic on the emotional and behavioral health of preschool children in China. The study, conducted through an ongoing longitudinal study in the Anhui province, showed that families played a pivotal role in security and stability for children during COVID-19. This research was based on an initial pre-pandemic single-question survey along with a mid-pandemic survey that assessed changes in the emotional and behavioral health of families. The authors purport that the highly negative effects of the COVID-19 pandemic on family life were associated with increased sleep problems in children (with a more significant effect observed in boys and older children), poor dietary behavior habits (especially in boys), and higher levels of anxiety symptoms and problematic behaviors in children. Families whose lives were severely impacted by the pandemic saw more persistent and prevalent problematic behaviors and anxiety symptoms in children. The study's

longitudinal design led to a better understanding of the long-term negative impacts posed by the pandemic. The study overall highlights the significant impact of the COVID-19 pandemic on the emotional and behavioral health of preschool children, particularly in families experiencing severe pandemic-related hardships. It also emphasizes the need for targeted interventions and support for vulnerable families to mitigate the emotional and behavioral problems faced by preschool children during and after the pandemic.

Family resiliency during the pandemic provides a buffer for dysfunction. Brock et al. (2022) report that families adapting and learning from adversities experienced during COVID-19 promoted the importance of family resiliency. Subjects received $50 for completing surveys on behalf of their young children. All 159 families that participated were already enrolled in a longitudinal study spanning from March 2018 to March 2020. Parents were tasked with answering 92 questions from the Epidemic-Pandemic Impacts Inventory (EPII) (Grasso et al. 2020) to evaluate the pandemic's impact on their homes. The EPII also helps develop actionable guidelines to preserve strong family relationships during times of adversity. The findings show that parental psychopathology and conflict between parents positively correlate with high stress levels among children and adolescents and unanticipated family routine changes. Families with secure co-parenting relationships before the pandemic more easily adapted to sudden changes posed by the lockdown and pandemic-related economic downturns. Families with higher socioeconomic backgrounds were more likely to participate in the survey, with 87–89% of the subjects identifying as white and 74% as having incomes of $50,000 or greater.

Similarly, a study by Kalil et al. (2020) aimed to compare socioeconomic hardships resulting from the pandemic and its influence on children's behavior, parent–child dynamics, and parental mental health in a sample of families with preschool children. The survey, conducted in the Chicago area among low-income parents of preschool-age children, revealed that the COVID-19 virus was more likely to impact low-income families, leading to increased anxiety about mental and physical health. The quarantine and health-related concerns were heavily correlated with social isolation. On average, social isolation detrimentally affected low-income and less-educated families. Specifically, economic stressors, such as losses in jobs and income, worsened mothers' mental health and increased tension in parent–child interactions. However, some families who maintained financial stability through means such as subsidies, despite job loss, reported improved family and parent–child interactions, highlighting the importance of time spent with children. In general, the exposure to COVID-19 was associated with lower positive interactions, higher parental stress, diminished hope, and behavioral issues in children. The study underscores the enduring impact of economic and social traumas on family life—mid- and post-pandemic—making it a crucial area of future research and policy focus.

To evaluate parent–child relationships during the COVID-19 pandemic using the observational emotional availability (EA) scales, observed parent–child interactions were coded for emotional availability, considering the following six dimensions: sensitivity, structuring, non-intrusiveness, non-hostility, child responsiveness, and child involvement (Dungan et al., 2023). Researchers found that parents, especially mothers, experiencing higher levels of COVID-19-related negative stressors would demonstrate lower emotional availability (EA). Comparatively, parents experiencing positive changes during COVID-19 would exhibit higher EA, irrespective of adverse childhood experiences (ACEs) in this low-risk sample. In addition, parents reporting higher levels of flourishing (i.e., social-psychological prosperity including feelings of self-esteem, fulfillment, and optimism) would show higher EA. Notably, gender-specific effects were not postulated and child age did not significantly moderate the relationships between COVID-19 stress, flourishing, and EA. Results further indicated that higher COVID-19-related negative stressors were associated with lower EA in mothers, but not fathers. However, experiencing positive changes during the pandemic was not significantly related to EA for either mothers or fathers. In contrast, higher levels of flourishing during the pandemic predicted higher EA in fathers, while no significant relationship was found for mothers. The study highlights the importance of observational data in understanding parent–child relationships during the pandemic, as most prior research relied solely on self-reported data. Dungan et al. (2023) also emphasizes the potential impact of COVID-19 on parent–child interactions, finding that mothers were more affected by negative stressors while fathers' flourishing was associated with higher EA. The authors are aware of several drawbacks, such as the limited sample size and lack of dyadic assessments of parents who co-parent.

Consistent with other reviews, findings of empirical studies support the development of trauma-associated symptoms, such as sleep problems, anxiety, depression, negative self-concept, somatization, and hostility, which have a detrimental effect on overall family functioning (Kaubisch et al., 2022). Risk factors that may heighten these processes include history of domestic violence, parental stress, and lower socioeconomic status (Dahal et al., 2020; Hamadani et al., 2020; Prime et al., 2020). However, resilience in families, such as positive family interactions, remote learning opportunities, and positive coping strategies, have been found to mitigate these symptoms (Prime et al., 2020).

A multi-site global online survey, the Collaborative Outcomes Study on Health and Functioning During Infection Times (COH-FIT–www.coh-fit.com), aims to measure

the physical, personal, social, and overall functioning of children, adolescents, and families. This collaborative study is collecting data on the health and well-being of children, adolescents, and adults, utilizing self-report and parent ratings. As this project unfolds in the context of the COVID-19 pandemic, the impact on family functioning and how it affects individual coping and well-being will be a significant contribution to the literature (Solmi et al., 2022).

Academic Impact

The COVID-19 pandemic created unprecedented shifts in many students' education with the abrupt transition into distance learning, interrupting the learning of nearly 1.6 billion students worldwide (United Nations, 2020). In the past, school disruptions have had a negative impact on academic functioning and learning (Alexander et al., 2007; Belot & Webbink, 2010). Zhdanov et al. (2022) posit that several factors contributed to learning losses, including less time for learning, changes in instruction (i.e., in-person to distant learning), opportunities to access education (i.e., having access to the internet and computers), less control and feedback during distant learning sessions, and emotional factors. The students hit hardest with decreased learning experiences were those from lower socioeconomic backgrounds (Azubuike et al., 2021; Drane et al., 2020; Pillay, 2021; Van Lancker and Parolin 2020), those from rural locations (Zhao et al., 2022), and those with pre-existing mental health conditions such as Autism (Mutluer et al., 2020; Stenhoff et al., 2020) and ADHD (Sibley et al., 2021; Tessarollo et al., 2022). Further, in the United States (U.S.), the National Center for Education Statistics (NCES) reported that the number of students enrolled in public education dropped by 3% overall and varied by state (National Center for Education Statistics 2023).

To evaluate academic performance in the U.S. during the COVID-19 pandemic, the NCES conducted a long-term trend (LTT) assessment in 2022, utilizing mathematics and reading assessments administered by the National Assessment of Educational Progress, and summarized by Irwin et al. (2022). According to the NCES, a sample of students in every state across the U.S. were selected based on their statistical representativeness, which was established by ethnicity, school size, economic background, gender, and more (Irwin et al., 2022). In the 2022 LTT assessment, the NAEP compared mathematics and reading scores from 4th-grade students in 2022 to scores from all previous years of test administration, particularly emphasizing the score differences to 2020.[1] In mathematics, average scores for these 9-year-old students in 2022 decreased by seven points compared to 2020, to which the NAEP reported the "first ever score drop in mathematics" since the first administration of the mathematics series in 1973. For reading, average scores for students of age nine in 2022 decreased by five points compared to 2020. The NAEP highlights this reading score as the largest decline since 1990. This LTT assessment also reports that lower-performing students (10th and 25th percentiles) suffer greater score declines in mathematics and reading than higher-performing students (75th and 90th percentiles) compared to 2020. The NAEP 2022 LTT assessment revealed math score declines were higher among Black students (13 points) compared to White students (5 points). The NAEP 2022 LTT assessment also evaluated students' access to resources during remote learning. The NAEP found that 70% of 9-year-old students recalled learning remotely in the 2020–2021 academic year, during the height of the COVID-19 pandemic. Among these students who experienced remote instruction, higher-performing students had better access to technological resources (e.g., computer or tablet), a quiet environment to work or study, and a teacher available to help them with schoolwork related to reading and mathematics compared to lower-performing peers. Based on questions assessing confidence in remote learning abilities, the NAEP also found that higher-performing students reported greater confidence when identifying learning topics they do not understand, asking for academic support when needed, and seeking learning resources online for extra help compared to lower-performing peers. The significant difference in score declines between lower-performing and higher-performing students for mathematics and reading may be attributed to the disparities in access to resources for online learning as well as confidence level navigating remote instruction. The authors conclude that this relationship between score decline and access to learning resources must further be established in future studies, as the statistical information provided by this LTT assessment does not offer comprehensive reasoning or concrete correlational relationships for these results.

Academic changes were most notable among children from high-poverty schools and students of color (Kuhfeld et al. 2023). This study evaluated changes in achievement across the first 2 years of the pandemic in the U.S. using reading test scores from approximately 5.2 million students in grades 3–8 in approximately 12,000 U.S. schools. Specifically, they investigated the extent to which reading test

[1] For reading and mathematics at grades 4 and 8, the NAEP uses a 0–500 scale for measuring achievement. The NAEP also reports results as percentages in three levels: Basic, Proficient, and Advanced.

scores in the U.S. changed during the first two years of the pandemic, and how these trends compare to what has been observed in mathematics. Additionally, they explored the impact of learning disruptions on reading achievement, potential differences by grade level, and which groups of students had the most and least change in test scores. In addition to the findings above, the magnitude of achievement declines differed by grade. Their study also adds that grade-level differences in the magnitude of decline are dependent on the school poverty level.

Similarly, disadvantaged student groups are at a higher risk of further substantial learning losses due to school closures (Schult et al., 2022). This study evaluated the academic achievement of all incoming fifth graders in Baden-Württemberg, Germany, before and during the pandemic using large-scale education assessment results in reading and mathematics. The study's goal was to determine how academic achievement was affected by the COVID lockdown in terms of basic reading and mathematical competencies. This study provided insights from one of the largest educational assessments in Germany that took place before COVID-19 and continued throughout the pandemic. When comparing the results from these scores to pre-pandemic years (2017–2019), the study found a downward trend after the first pandemic wave in 2020 that came to a halt in the domain of reading and continued at a slower rate in the domain of mathematical operations. Longer periods of school closures were associated with larger learning losses. Additionally, learning losses were larger for low-achieving students and for schools with less socio-cultural capital. Overall, disadvantaged student groups are at a high risk of further substantial learning losses due to factors such as school closures.

In contrast, a longitudinal study found that developmental trajectories in reading comprehension did not differ from the pre-COVID sample, although reading development among younger students appeared to be somewhat affected by the pandemic (Lerkkanen et al. 2023). This Finnish study aimed to quantify the possible learning losses in reading skills and math skills among a sample of 198 third-grade children. They conducted this study by evaluating these skills when the pandemic began in the Spring of 2020, a period in which these children spent eight weeks in distance learning. The researchers compared reading and math skill development trajectories across grades 1, 2, and 4 to a pre-COVID sample of 378 children. In addition to evaluating the development of reading and math skills, this study evaluated how factors such as gender, parental education, maternal involvement in homework, and a child's task-avoidant behavior predict academic skills at grade 4 differently in the pre-COVID sample than in the COVID sample when accounting for previous skill level. The pre-COVID sample was part of a large-scale longitudinal First Steps study where 2000 children were followed from kindergarten to grade 9 in four municipalities. Overall, their results supported that development was slower in reading comprehension for Grade 2 to Grade 4 in the COVID sample. Similar evidence for learning loss was not found in math development.

School closures due to the COVID-19 pandemic may contribute to educational inequality. In the Netherlands, Schuurman et al. (2021) examined the impact of the first school closure for vulnerable student groups among 886 grades 3–5 students from 13 schools. A large percentage of these students came from schools that primarily served disadvantaged backgrounds. The study used anonymized achievement data, demographic information, and school information from the school boards. Using piecewise growth analyses, the results indicated that the school closures caused a discontinuity in students' achievement growth on national standardized tests. The results also indicated that the closures led to an average learning loss of 2.47 months in mathematics and 2.35 in reading comprehension, exceeding the duration of the school closures. They concluded that certain students may need additional support to overcome the adverse consequences of the lockdowns. Additionally, within a sample of schools serving many of these vulnerable students, the discontinuity in learning was strongest at schools with a greater amount of disadvantaged student populations and among students from lower grades.

These findings were confirmed by Haelermans et al. (2022a, 2022b). The authors aimed to evaluate the effect of two school closures and 1.5 years of the COVID-19 pandemic on standardized learning growth for mathematics, reading, and spelling in Dutch primary education. The study used a large dataset of around 500,000 students from around 1900 schools. Their findings suggest that school closures have a negative effect on standardized learning growth, specifically amounting to an annual average of 5.5 weeks of learning loss. Additionally, they found the negative effects to be larger for more vulnerable students when analyzing differential effects such as socioeconomic status, parental education, household income, household structure, household size, and migration status.

In contrast, Birkelund and Karlson (2023) found that the long school closures may have a detrimental effect on children's learning compared to only 8 weeks among children from grades 2 to 4, who did not demonstrate any learning loss. To conduct the study, they used nationwide data on reading test scores and family background 14 months into the pandemic, with a sample size of 200,000 per year. Controlling for cohort differences in family background and prior performance, they compared test scores from mid-2021 to expected test score trajectories in the years prior to the pandemic. Their analysis was conducted using Danish national test score data available by the National Agency for IT and Learning under the Ministry of Children and Education.

Their study found no evidence of a major learning loss. They also found little evidence of widening learning gaps by family background. However, among older children in Grade 8, their results highlighted a decrease in reading performance of about 3 percentile points which corresponded to seven weeks of lost learning using the World Bank benchmark for yearly learning progress.

These losses are more significant in children from lower socioeconomic status backgrounds (Hevia et al., 2022). For example, a survey of 3161 students 10–15 years of age in 2019 and a representative sample in 2021 sought to evaluate the estimated learning loss in reading and numeracy. The study also investigated learning poverty, or the inability to read and understand a simple text by 10 years of age, in southern Mexico. Results found significant learning loss at all ages in both reading and math, with more severe losses in those from lower SES backgrounds.

Utilizing the Rasch model, a psychometric model for analyzing categorical data, Molnár and Hermann (2023) examined the effects of remote learning in Hungary. Their sample consisted of 1st through 8th graders who completed at least one assessment before their statistical analysis and included a robust sample of approximately 80,000 students from grades 1 through 7. Math instruments varied, with 1st graders evaluated on counting and basic numeracy skills, precursors of reading skills, and inductive reasoning. Students from grades 2–8 were measured on their reasoning, application, and disciplinary dimensions. Students completed a training session to ensure the ability to use basic keyboarding and computer mouse, instructions were provided aurally and in writing, and students in grades 1–3 received time prior to the assessment to ensure mastery of tasks. Testing time was 45 min on the eDia system (Csapó & Molnár, 2019), and students were supervised by trained teachers. Results indicated the greatest loss in numeracy skills among 1st graders, with greater losses among students from lower SES schools. Among the 2nd–8th grade students, differences in math, reading, and science were noted, with the greatest changes in students from low SES schools. They conclude that there is empirical evidence of both the amount and type of learning losses as a result of school closures.

Overall, school closures and the implementation of distance learning resulted in differential outcomes, mediated by urban settings, socioeconomic status, and pre-existing learning challenges (Chaabane et al., 2021). Indeed, these findings are consistent with the systematic reviews that found decreased performance in mathematics especially with students who were not performing well before the pandemic, those with pre-existing learning difficulties and special education placement, and those younger in age (Panagouli et al., 2021; Becker et al., 2020; Bobo et al., 2020).

Pre-Pandemic Maltreatment and Risk Factors

Examining the susceptibility of young children and adolescents to maltreatment during the COVID-19 pandemic is crucial for understanding the pandemic's impacts on the mental health of youths during and following this collective trauma experience. Child maltreatment (referred to hereafter as CM) is defined as abuse or neglect inflicted on children/adolescents (i.e., individuals under 18), including physical, emotional, and sexual abuse or neglect (World Health Organization 2022a; World Health Organization 2022b). The World Health Organization (WHO) guidelines also specify that these acts result in actual or potential harm to the child's health, development, or survival in relation to trust, power, and responsibility (WHO 2020). We now know that children who endure CM are more likely to develop mental illnesses later in life (Norman et al., 2012), and will likely have to endure long-term consequences such as poorer developmental outcomes and a perception of lower quality of life (Brooks-Gunn et al., 2013; Magson et al., 2021; Norman et al., 2012). Certain populations of youths were especially at risk for CM throughout the pandemic, namely those with pre-existing mental illness (e.g., depression, general anxiety), a history of being a victim of CM, having special education needs (SEN), and having a life-threatening complex chronic condition (LT-CCC) (Cleveland et al., 2022; Dion et al., 2022; Guo et al., 2020; Salt et al., 2021; Trucco et al., 2023). Parents who experienced more stress due to changes that the pandemic inflicted were more likely to utilize harsher parenting strategies more frequently and were found to be at a higher risk of committing CM (Craig et al., 2022; Griffith, 2022). Some studies have found an increase in maltreatment showcased by increases in reports made to victims' support organizations (Ribeiro et al. 2022), and others emphasize the impact that isolation had in decreasing the contact children normally have with teachers and social workers, who are the largest reporters of CM, and on the prevalence of maltreatment during the pandemic.

Adolescents with previous experiences of CM reported lower life satisfaction during the pandemic (Trucco et al., 2023), and the stress that one experiences in relation to the pandemic was also identified as a factor in how the pandemic negatively affected the mental health of adolescents—especially those with previous exposure to CM (Dion et al. 2022). Overall, there was a decrease in reported CM during the pandemic (Augusti et al., 2023; Kourti et al., 2023). It is important to note that female adolescents were the most at-risk demographic for sexual violence (Augusti et al., 2023; de Oliveira et al. 2021) and adolescent males were found to be most at risk for experiencing an increase in sexual

maltreatment over the course of the pandemic (Long et al., 2022).

Trucco et al. (2023) discovered that adolescents with a history of emotional or physical abuse may be disproportionately affected by the consequences of the lockdown period in March 2020 (i.e., social restrictions and confinement to homes). Those who have previously experienced CM or exhibit existing depression or anxiety symptoms are predisposed to become negative when experiencing a collective trauma such as the COVID-19 pandemic, which was traumatic for both individuals and society as a whole. Physical and emotional abuse were both found to correlate with exhibiting symptoms of anxiety during periods of collective stress (e.g., during the pandemic). Overall, adolescents with a history of experiencing emotional or physical abuse are more negatively affected by the social restrictions meant to stop the spread of the virus and have more difficulty adjusting to the challenges that the pandemic imposed.

Concurring with Trucco and colleagues, two factors that Dion et al. (2022) identified to be crucial to understanding the effects of the pandemic on the mental health and psychological adaptation skills of adolescents were antecedents of CM, and the extent of stress one experienced concerning the pandemic. They aimed to evaluate the mental well-being of Canadian adolescents before the pandemic and one year after the pandemic, as well as the roles of moderating factors: child maltreatment (e.g., sexual, emotional, and physical abuse, neglect, and exposure to domestic violence) and COVID-19-related stress. Child maltreatment was shown to be associated with lower levels of life satisfaction, more distress, and more externalized and internalized behaviors. Those who experienced child maltreatment also consistently reported lower life satisfaction and self-esteem both before and during the pandemic compared to those who had not experienced CM. Those who experienced more COVID-related stress also reported a decrease in well-being. Life satisfaction surprisingly did not diminish during the pandemic due to previous or ongoing CM and only boys experienced a decline in self-esteem and well-being throughout the pandemic.

Family support systems were interrupted during the pandemic, affecting the ability of the medical community to intervene when needed (Cleveland et al., (2022). Healthcare providers (HCPs) were interviewed with open-ended questions about medical neglect to generate themes of what HCPs consider affecting rates of medical neglect among children with life-threatening complex chronic conditions (LT-CCCs). Out of 20 HCPs across disciplines, 9 spontaneously mentioned the COVID-19 pandemic possibly influencing medical neglect cases. The themes analytically generated revealed that HCPs believe the incidence of medical neglect could be affected by the pandemic due to the distance generated between the family and medical care team and that changes to care procedures impair the HCPs' collective ability to support families. This exposes how vulnerable the population of children with LT-CCCs is. Since medical neglect is likely to be identified by medical professionals first, lockdown measures enforcing sheltering-in-place could contribute to an increased likelihood of medical neglect in children with LT-CCCs. The first theme uncovered was that the pandemic led to distance between a family and its support systems. Interviewees voiced that school is a crucial support to those with LT-CCCs, and also provides more eyes to identify possible neglect. The second theme of concern involved changes to medical care delivery made in response to COVID-19 which affected the medical care team's ability to support families. For example, many appointments were canceled or moved to telehealth, thus the connection between the HCP and the patient was disrupted. Concerns for transmission of the virus to patients with LT-CCCs also led some parents to discontinue complex care visits from nurses at home, leading parents to provide care with minimal support.

Children with a history of neurodevelopmental disorder and children with special education needs (SEN) were found to be more at risk for CM than their counterparts (Tso et al., 2022). In a cross-sectional study, parents of children with SEN and children with typical development (TD) completed surveys during April 2020, reporting on their children's daily activities, their social/emotional difficulties, parental stress, and conflict between child and parent. Out of the 417 children with SEN, 45.8% had neurodevelopmental disorders (e.g., ADHD, ASD), 19.18% had physical disabilities, 20.38% had intellectual disabilities, and 19.42% had multiple disabilities. Many children with SEN were negatively affected during the pandemic by the inability to receive rehabilitation training and difficulties in attending appointments. Sadly, during the COVID-19 lockdown, 23.5% of children with SEN experienced at least one encounter of severe physical assault, and 80.5% became victims of psychological aggression. Children with SEN also had an overall poorer quality of life compared to those without SEN, and the risk for CM against those with SEN increased during the pandemic. In line with other studies, parental stress was found to be correlated with an increased risk of CM and a main concern that decreased contact between CM reporters and children produces decreased chances of recognizing CM.

Adverse childhood experiences, or ACEs, are another hardship related to CM that are also found to be associated with poor mental health outcomes and suicidal behavior. Investigated by Anderson and colleagues in 2022, data from the Adolescent Behaviors and Experiences Survey (ABES) revealed that 3 in 4 high school students had experienced at least one ACE during the pandemic. ACEs are possibly traumatic events occurring to youths between the ages of 0–17 and include neglect, experiences or witnessing

violence, or having a family member attempt or die from suicide; many of these inclusions overlap with the definition of CM (Anderson et al., 2022). The probability of poor mental health outcomes and suicidal behavior was found to increase with every ACE experienced, yielding a dose-dependent relationship. Experience of at least one ACE resulted in the acute increase in suicidality and mental health symptomology and concern about poor adolescent mental health has increased during the pandemic compared to before the spread of the COVID-19 virus. The need for ACE prevention and intervention was expressed and these findings are consistent with those of Guo et al. (2020) and Trucco et al. (2023).

Related to ACEs, another impactful experience is early life stress (ELS) which has been linked to depression in adolescents. To investigate this linkage under the context of the pandemic, Gotlib and colleagues (2020) recruited subjects from an existing longitudinal study to obtain measurements of ELS and depressive symptoms before and during the pandemic. At baseline, 221 subjects ages 9–13 were evaluated with questionnaires on ELS and mental health symptoms between 2013 and 2016, then 109 of them were re-assessed in April of 2020. Additionally, subjects were interviewed with a modified Traumatic Events Screening Inventory for Children. To assess the effect of the pandemic and lockdown measures, the Center for Epidemiology Studies-Depression for Children Scale (CES-DC), Perceived Stress Scale, and the Coronavirus Health Impact Survey (CRISIS) questionnaire were administered in 2020. The severity of ELS experienced was predictive of depressive symptom levels during the pandemic, with depressive symptoms being higher in females. This association between ELS and depression was found to be mediated by the adolescent's perceived stress.

Considering the role of stress on the risk of CM by assessing family dynamics, Craig et al. (2022) discovered that family stress due to confinement during the pandemic's lockdown phase was associated with physical and psychological maltreatment of adolescents. In examining the associations between family stress due to confinement, maltreatment, and adolescent mental health, affect regulation (i.e., the ability to regulate or tolerate negative emotional experiences) was considered to be a moderator. Bivariate analyses showed that affect dysregulation is a key mechanism that accounts for associations between family stress, psychological maltreatment, and adolescent mental health. Adolescents suffering from CM were found to experience affect dysregulation, wherein youths experience difficulty in regulating negative emotions and suppression or avoidance of negative emotions. Affect regulation normally develops in the context of dynamic relationships between youth and caregiver, but the family dynamic changes under the added stress of family confinement due to lockdown. Both affect dysregulation and suppression were found to be predictors of associations between family confinement, CM, and internalizing and externalizing symptoms in adolescents and caregivers. As the caregiver's ability to empathize with the adolescent's emotional experiences is thought to be the foundation on which affect regulation is built, caregivers' inability to lend emotional support leads to affect dysregulation/suppression. Limiting freedom to leave the household increases contact between family members, which highlights differing lifestyles and may generate conflict. Combined with increased stress on caregivers (e.g., finances, loneliness, or health anxieties), parents may be more likely to use harsher strategies to influence their adolescents to meet school or other obligations.

Rodriguez et al. (2021) conducted both a cross-sectional and longitudinal study to investigate how various ontogenic and exogenic factors influence parental mental health at the personal level, and how they affect social isolation and economic turmoil at the level of the community during the pandemic. This investigation was conducted in the context of a welfare system that reacts to maltreatment cases; maltreatment risk was gathered via self-reported statistics from parents. However, parents have been known to underreport the maltreatment of their children (Kourti et al., 2023). Both studies revealed that parents perceived an increase in parent–child conflict during the pandemic and that the mother's perception of using physical or verbal aggression was associated with child abuse risk. They also revealed a correlation between parental loneliness and perceiving more adverse changes in their parenting style, but loneliness was not found to be associated with child abuse risk alone. Notably, the cross-sectional study showed that financial concerns and loneliness were related to increased odds of parents reporting perceived changes in parenting, and loneliness was associated with a 176% increase in the odds of neglecting their children. Mothers in the longitudinal study who experienced a family employment loss were also likely to score higher on child abuse risk scales.

The aim of Long et al. (2022) retrospective study was to identify potential predictors of CM during the COVID-19 pandemic, and while more than half of the adolescent response pool reported no change in maltreatment during the lockdown compared to before, there was a delayed increase in sexual abuse reported 8 months after lockdown measures were lifted where the prevalence of sexual abuse rose to 2.9% compared to 1.6% in 2019. The demographic factors associated with increased sexual abuse from pre-pandemic to during the pandemic were being male, having depression, having psychotic symptoms, or state anhedonia. This study's results align with concurrent research at this time that overall, there was a decrease in all types of CM reporting during the pandemic. However, it is acknowledged that

this assessment may not be the whole truth due to decreased contact with social workers or schools where most cases of CM get noticed and reported. COVID-19 was thus found to be beneficial for decreasing child maltreatment in the short term but was detrimental in the long term as the prevalence of sexual assault increased.

Following the increase in requests for domestic violence-related help, Ribeiro et al. (2022) sought to explain the change in help requests in 2020 compared to 2019. Using data from the Portuguese Association for Victims Support (APAV), they defined requests for help as calls made to the association, physical visits and reports made, and online requests. The study included intimate partner violence (IPV), elder abuse, and adolescent abuse. Considering rates of victim and abuser demographics, there was a 24.7% increase in general requests for help, and a 190% increase in phone calls during the lockdown period (i.e., March 22, 2020, through May 3, 2020) compared to 2019 (Ribeiro et al., 2022). Both psychological and physical violence increased during the pandemic year for adolescents; therefore, an increase in remote support given over the telephone and their website was seen. The increase could be due to an increased likelihood of reaching out to victims' help associations rather than reporting domestic violence crimes, along with a considerable increase in help requests from children/adolescents. An increased prevalence of domestic violence during 2020 was found on a global scale (30% increase in France, 25% increase in Argentina, 10–18% increase in U.S. states recording domestic violence calls, and an increase of 18–27% was reported when comparing March 2019 to March 2020 in U.S. states). This increase affects adolescents because witnessing IPV or elderly abuse inflicts CM; maltreatment is not reserved to just acts committed against the child themselves.

A Norwegian-based study conducted by Augusti et al. (2023) looked specifically at sexual abuse and violence committed against youths from pre-pandemic years to 1 year after the pandemic began. A representative sample of 9240 12–16-year-old teens were considered for the pre-pandemic surveyed reports of violence or sexual abuse and 3,540 responses were taken 1 year into the pandemic. There was a 1.4% increase in sexual abuse committed by an adult against an adolescent, as well as a 3.9% decrease in psychological violence committed by a parent compared to 2019. However, violence and sexual abuse rates remained unchanged otherwise. Girls reported a higher incidence of violence and abuse exposure 1 year into the pandemic compared to boys, and there was a significant reduction in all types of violence experienced by boys during the pandemic compared to the previous year. These findings partially align with those of de Oliveira et al. (2021) who all identified that the most prevalent victim profile was female. This study's longitudinal nature allows for direct comparisons to pre-pandemic baseline data, even with the decrease in subjects from 2019 to 2020.

To identify the most prevalent profiles of adolescents experiencing violence and their aggressors, de Oliveira et al. (2021) considered reports made by Brazilian pediatric emergency services from pre- to mid-pandemic. Correlations between contributing factors such as family socioeconomic status and demographics were also identified. This cross-sectional retrospective observational study found that the prevalence of sexual violence in the research pool of 609 reports collected from July 2016 through December 2020 was 63.7%, the most prevalent adolescent victim profile was female (76.7%), the most prevalent perpetrator profile was a male (82.4%) and lived as a member of the family (62%). Most violence committed against adolescents also occurred in the home (58.9%). Domestic abuse has been found to be on an upward trajectory—especially sexual abuse—in recent years. This study did not explicitly investigate the involvement of the pandemic itself in these upward trends, but these findings corroborate with the rest of the research at this time.

Disabled children and children who rely on accommodations are a subgroup particularly vulnerable to the negative psychological impacts of disasters as well (Rath et al., 2007). Children with a neurodevelopmental disorder, such as autism or learning disabilities, may miss their regular intervention, and affected children may react more negatively to changes in their daily routines than children without pre-existing conditions. They are likely to have problematic behaviors, such as irritability, aggression, and social withdrawal (Buonaguro & Bertelli, 2021). Previous mental health diagnoses such as depression and anxiety can worsen. When children are quarantined because of possible COVID-19 exposure, they are likely to develop mental health disorders such as anxiety, stress, and adjustment disorders (Liu et al., 2020). Studies have shown that the negative psychological impact of quarantine can be detected after months and years. One study displayed a four-fold increase in diagnoses of post-traumatic stress disorder (PTSD) in quarantined children compared to non-quarantined children, and results indicated that 30% of children quarantined in other pandemics fulfilled the criteria for PTSD (Sprang & Silman, 2013). This risk of increased symptomatology that causes more distress in an already vulnerable population enforces the danger that children suffering from mental disorders are more at risk for CM than those without mental illness (Tso et al., 2022).

Findings from systematic reviews confirmed much of the above. For example, Huang et al. (2023) found that the lockdown measures and resulting consequences (e.g., home isolation, online school, inability to see friends, etc.) were the greatest risk factors contributing to CM during the pandemic. Pandemic rates of abuse were also higher than the highest rates of CM in 2019 (Huang et al., 2023). Consistent with the variable explored in the above studies,

it was discovered that there are three categories of factors that contribute to the risk of CM: enduring factors (e.g., demographic, socioeconomic, history of violence and drug abuse, mental illness, and cultural), transient factors (e.g., risk perception, mental/physical factors, family dynamics, social isolation, economic loss, and social support), and main risk factors (e.g., the lockdown measures and its side effects) (Huang et al., 2023). Domestic violence also increased from 2019 to 2020, while reports of domestic violence decreased across Africa, North America, Europe, and Asia–Pacific regions. This discrepancy in reporting could be explained by the decrease in contact between adolescents and the main reporters of CM (i.e., teachers, social workers, counselors, etc.) and the increase in contact with the perpetrator in the home (Kourti et al., 2023). It is well known that parents underreport the frequency of CM in self-report surveys (Huang et al., 2023; Kourti et al., 2023; Rodriguez et al., 2021).

In summary, this review confirmed that while increased CM over the pandemic was predicted by previous increases in CM following natural disasters or large economic crises (Brooks-Gunn et al., 2013; Curtis et al., 2000), there was only conclusive evidence of an increase in sexual abuse specifically throughout the pandemic (Augusti et al., 2023; The European Union, 2020; Long et al., 2022; Salt et al., 2021). Data from Europol suggests that the distribution of child sexual abuse material (CSAM) and the market on the dark web for this content has expanded during the pandemic due to isolation, making it more difficult for perpetrators to abuse children themselves resulting in an increase in demand for CSAM (e.g., videos taken via webcam, live streams of abuse taking place, spycam footage, etc.), and distribution on dark web forums (The European Union, 2020). This increase in cyber-distribution of sexual abuse is concerning, as this allows the abuse to perpetuate, and also represents another facet of the general increase in sexual abuse during the pandemic described by the studies above. A major protective factor for CM, however, was found to be social support. Families who received more support from their community, friends, and maintained contact with others during the pandemic were at a lower risk for CM (Huang et al., 2023). This further stresses the importance of relying on a social support system during unprecedented times of stress, such as the collective traumatic experience that was the COVID-19 pandemic lockdown period.

Virtual Health Services Implications

The prevalence of Telehealth, defined as "health care services involving all health care professions" (Doraiswamy et al., 2020) has increased significantly amidst the COVID-19 pandemic. Many studies have been attempting to examine the effects of switching pediatric populations to telehealth psychology appointments rather than in-person appointments. Hoffnung et al. (2021) conducted an internal review of data from 2520 unique clients across multiple outpatient mental health sites at a Certified Community Based Health Clinic in New York to evaluate the effect of Telehealth on mental health treatment in children. The general model of all Telehealth services displayed a significant decline in the amount of child telehealth services compared to adult telehealth services. However, this effect was not consistent across service types. For example, psychotherapy sessions showed a similar effect, with child psychotherapy sessions decreasing by 19% when moved to Telehealth and adult sessions increasing by 14%. However, psychiatry sessions increased with telehealth services for both children and adult patients. These statistics demonstrate the nuanced effect of telehealth on pediatric mental health treatment over the pandemic.

The use of Telehealth may overcome barriers that inhibited previous treatment among pediatric populations (Curfman et al., 2021). The use of Telehealth allows for visual assessments of the child's home environment. Providers may then be able to identify psychosocial concerns more easily, such as food insecurity, that might not be recognized in a traditional face-to-face setting. Additionally, Telehealth visits may be more convenient for families that typically face many barriers in providing mental health services for their children. Up to 80% of youth with behavioral health challenges do not have adequate access to mental health services. In evaluating this issue, Ros-DeMarize et al. (2021) highlighted that Telehealth is one attempt at using technology to improve access to services, improve delivery of care, and reduce unmet mental health needs, particularly for rural and traditionally underserved communities. This study examined the treatments of both externalizing and internalizing disorders through Telehealth with pediatric populations. The results showed an improvement in symptoms for both externalizing and internalizing disorders among children across various types of treatment, including Cognitive Behavioral Therapy, Triple-P (Positive Parenting Program), and Parent–Child Interaction Therapy (Ros-DeMarize et al., 2021).

There are significant benefits of using Telehealth among pediatric populations for mental health care (Cunningham et al., 2021). These benefits include continuity of care and increased access to treatment for patients who have barriers to in-person treatment. However, some aspects of care may not always be suitable for a Telehealth platform. These aspects include comprehensive assessment and treatment of those with severe psychopathology.

Additional limitations to Telehealth care for pediatric populations include safety and privacy concerns, access to internet and technology support tools, and limited provider access to protocols. Cunningham and colleagues (2021) found that Telehealth was more common for patients who engaged in preventive care in the prior year, younger children aged 0–2 years, and children who identified as non-Hispanic White. These factors suggest that there may be barriers to using Telehealth to provide care for minority populations. In inner-city mental health clinics, immigrant and refugee youth faced several challenges when remotely receiving care. These challenges included increased distress among children and their families, internet access difficulties, lack of technological devices to receive care, and a lack of a secure and private space to receive care.

Discussion

The impact of the pandemic on child and adolescent mental health and academic functioning is inarguably significant. Prior to the pandemic, concern regarding the increasing mental health needs in children and adolescents grew, in the context of increased barriers to access, particularly among rural and marginalized populations (Blackstock et al., 2018; Hodgkinson et al., 2017; Lo et al., 2020; Perrin, 2018; Pfuntner et al., 2013; Tkacz & Brady, 2021). Since the pandemic, the mental health crisis has affected the availability of mental health professionals due to increased demands (American Psychological Association, 2021). On October 19, 2021, the American Academy of Pediatrics declared a national emergency in child and adolescent mental health (American Academy of Pediatrics, 2021). This integrative review of the available research on the impact of COVID-19 on the mental health, social, and academic functioning of children and adolescents highlights the need for improved access to mental health services, academic remediation, and support for families.

Within the area of risk factors for children and adolescents, it is clear that children who had experienced abuse prior to the pandemic experienced increased abuse (Strathearn et al., 2020). However, due to the nature of the pandemic and the period of time when children and adolescents were not engaged in many social or academic activities, identifying the abuse proved difficult as there was limited exposure to other responsible adults who could have identified said abuse and initiated the interventions that could have followed (Rodriguez et al., 2021). This may have accounted for the decrease in abuse reports to child protective services but does not mean that child abuse decreased; in fact, this review found that it likely increased in the context of decreased reporting (Jonson-Reid et al., 2020; Kourti et al., 2023; Salt et al., 2021). It is unclear as to what the long-lasting impact of this trauma will have on children's future mental health, but based upon previous research, child abuse is one of the key variables that lead to adult anxiety, depression, substance abuse, and physical health problems (Herrenkohl et al., 2013). There were also observed gender differences in reported life satisfaction during the pandemic in multiple studies (Dion et al., 2022; Hawke et al., 2021; van der Laan et al., 2021), as well as an identification of gender diverse and transgender adolescents being subject to difficulties in receiving services (e.g., substance abuse or mental illness treatment) during the pandemic (Hawke et al., 2021). A decrease in life satisfaction during the pandemic was experienced, especially by boys, highlighting how social disturbances influence children. This introduces another subgroup of at-risk youth—queer and gender queer individuals who face social impediments constantly, not only during the period of social isolation and uncertainty that was the lockdown period of the pandemic.

This review also highlights the importance of a strong family support system, as it mitigates the negative effects of isolation (Griffith, 2022). The support of neighbors also has mitigating effects on mental health (Robinette et al., 2021), and families who had minimal social support were perceived as using harsher parenting strategies with their children (Craig et al., 2022). The findings suggest that strong social support, reliable healthcare accessibility, and adaptability contribute to family resilience during such times as the COVID-19 pandemic. One interesting finding is that mothers appear to have been more affected by negative stressors, and fathers' level of flourishing (or social-psychological prosperity) was linked to higher emotional availability, highlighting the impact of the pandemic on parent–child interactions (Dungan et al., 2023; Rodriguez et al., 2021). One study to follow with regards to family functioning is a multi-site global online survey, the Collaborative Outcomes study on Health and Functioning during Infection Times (COH-FI—www.coh-fit.com), which aims to highlight those factors, including overall well-being, physical, personal, and social functioning of children, adolescents, and families. As this project unfolds in the context of the COVID-19 pandemic, the knowledge gained on the impact on family functioning and how it affects individual coping and well-being will be a significant contribution to the literature (Solmi et al., 2022).

From a psychological and mental health perspective, this review, much like many other reviews, found that depression and anxiety in the form of worries and fears were most prevalent during the pandemic for both offspring and parents (Craig et al., 2022; Griffith, 2022; Long et al., 2022). Grief over missed opportunities due to the pandemic and lockdown resulting in social distancing measures was a key driver in this psychological impact. The experiences of

social isolation and loneliness contributed to these increased experiences of depression and anxiety. Externalizing disorders and neurodevelopmental disorders showed a decrease in outpatient clinic admissions, while those with internalizing disorders and other diagnoses showed an increase (Turan & Akıncı, 2023). Indeed, self-harm appeared to be more prevalent as evidenced by the increased number of emergency room visits for self-harm and suicide attempts (Madigan et al., 2023a, 2023b). Overall, many of the harmful social impacts of the COVID-19 pandemic are likely related to the effects of quarantine and isolation. As children are in the process of developing their social awareness and cognition, this isolation may have increased the risk of depression and anxiety. It is not clear as to whether this continues to persist, and research should address this in the future. One variable that was identified as a risk factor was a sedentary lifestyle. Therefore, it will be important for healthcare workers to query patients in the coming years on their level of activity both during and after the pandemic.

When evaluating the long-term social impact of the COVID-19 pandemic on children and adolescents, many of the harmful social impacts are related to the effects of quarantine and isolation due to school closures and other social distancing measures. The harmful psychological effects that were most prevalent were elevated levels of depression and anxiety (Oosterhoff et al., 2020; Saurabh and Ranjan 2020; Rauschenberg et al., 2021). In addition, sedentary behaviors that occur as a result of school closures and social distancing measures may also contribute to poor mental health outcomes in children and adolescents (Ellis et al., 2020; Scapaticci et al., 2022; Imran et al., 2020). In addition to these factors, the use of social media to cope with feelings of loneliness and isolation was also prevalent and may have been used to cope with feelings of social isolation and loneliness among children and adolescents (Cauberghe et al., 2021; Meherali et al., 2021; Imran et al., 2020). The pandemic has resulted in a significant increase in the amount of time that youth are spending online and on social media, which can lead to a decrease in real-life social interactions and potential neglect of their personal lives (Meherali et al., 2021). Social media and an increase in time spent on the internet have also proved to be a hidden threat to the well-being of children due to the influx in the distribution of child pornography and similar forms of sexual abuse committed against minors (The European Union, 2020).

This review also highlighted the negative impact of the pandemic on a child's learning in key academic areas of reading and math. Some children were not able to adapt well to online learning and, as previously discussed, those children in rural, impoverished areas or low socioeconomic backgrounds may not have had as much support as children of higher means (Van Lancker & Parolin, 2020). This has always been the case that children from lower SES backgrounds and those who live in rural communities do not typically have access to the enrichment activities that children from more affluent neighborhoods have (Battle, 1999; Peng & Kievit, 2020). It will be important that school districts, parent-teacher associations (PTAs), and community service projects ensure that they provide increased opportunities for children who may not otherwise have access to effective teaching methods and remediation interventions. Schools will need to identify those students who need foundational reading and math skills and consider evidence-based programs that directly address these deficits in grades K-5, whether it be classwide, small group, individualized, or tangible and feasible lessons that parents can provide in the home. While this may be considered a financial burden on schools, partnering with the PTA and community projects can help to offset these costs and involve the larger community as a partner in addressing this urgent need.

Limitations

Generalizability

Limitations discovered in these cited studies include the restricted ability to draw causative conclusions from data due to the cross-sectional nature of the majority of the studies' methods. However, some studies were longitudinal in design, giving the conclusions drawn from them more power to explain the relationships that the researchers uncovered. In the study by Augusti et al. (2023), children under 12 were not included, which excludes an important part of the population who are most affected by witnessing or experiencing violence, sexual or otherwise. Recruitment through social media may be particularly skewed, thereby limiting the ability to generalize to the greater population (Craig et al., 2022; Oosterhoff et al., 2020). The Canadian study conducted by Dion et al. (2022) focused mostly on Caucasian and cishet individuals, limiting the scope of analysis such that variable associations for non-binary and POC individuals could not be included. Cultural differences may also have an effect on the individual studies' data as each country's leadership embodied varying levels of COVID measure strictness—there were varying lengths in lockdown periods making it difficult to standardize the "lockdown measures." Cultural differences may also contribute to differences in how children are raised and integrated into society in general, adding another layer of complexity to the effect that the restrictive COVID measures may have had.

Data Gathering

Due to parent-reported instances of parent–child conflicts, underreporting may have skewed results due to social

desirability bias (Craig et al., 2022; Ribeiro et al., 2022; Rodriguez et al., 2021). In the exploratory study done by Ribeiro et al. in 2023, only descriptive analyses were used on interviews with victims of domestic abuse, which improve the data collected supporting that the pandemic has a negative impact on causing crime. The interview-based study by Cleveland et al. (2022) also only drew thematic qualitative data from HCPs, so no quantitative conclusions can be drawn about the real quantitative effect of COVID-19 on medical neglect cases. Further, many studies relied on social media for recruitment, which may have naturally excluded those individuals who did not have social media accounts (Cauberghe et al., 2021; Craig et al., 2022; Ellis et al., 2020; Oosterhoff et al., 2020). Many studies relied on parent-reported data when the child was considered too young to complete the questionnaire adequately, which may have resulted in skewed reporting based on what the parents perceived instead of what the child felt (Almhizai et al., 2021; Barendse et al., 2023; Chen et al., 2020; Cooper et al., 2021; Guo et al., 2020; Ravens-Sieberer et al., 2022: Rodriguez et al., 2021; Saurabh and Ranjan, 2020; Tso et al., 2022).

Other Pitfalls

Drawbacks in all studies include that child maltreatment is hard to standardize and diagnose (Augusti et al., 2023; Craig et al., 2022; de Oliveira et al., 2021; Guo et al., 2020; Huang et al., 2023; Kourti et al., 2023; Long et al., 2022; Ribeiro et al., 2022; Rodriguez et al., 2021; Trucco et al., 2023), and only studies conducted in English were included, excluding research from journals published in other languages. The full extent of child abuse, child maltreatment (CM), or violence is difficult to consider (Rodriguez et al., 2021) adequately, and in many studies, CM is limited to only physical, sexual, and psychological abuse—neglecting other forms of abuse. Many studies neglected to examine how cultural norms, marginalization, and health disparities affected subjects' responses to the health crisis. Just as important, the time of data gathering was largely restricted to the first 6 months of the pandemic, and we do not yet know the long-term ramifications on the mental health, social, and academic functioning of children and adolescents (Brock et al., 2022; Buzzi et al., 2020; Cauberghe et al., 2021; Chen et al., 2020; Craig et al., 2022; Duan et al., 2020; Ellis et al., 2020; Guo et al., 2020; Hawke et al., 2021; Kalil et al., 2020; Lerkkanen et al., 2023; Oosterhoff et al., 2020; Ougrin et al., 2022; Rauschenberg et al., 2021; Rodriguez et al., 2021; Saddik et al., 2021; Salt et al., 2021; Saurabh and Ranjan, 2020; Schult et al., 2022; Schuurman et al., 2021; Sibley et al., 2021; Trucco et al., 2023; Tso et al., 2022; Zhou et al., 2020).

Future Directions

Future research on the impact of COVID-19 on children and adolescent's mental health should include a careful examination of the disparities in available resources and how that impacts mental health in the long term. Communities should also consider providing specific services for the underserved and marginalized communities to help mitigate any long-term difficulties. For example, programs that provide free tutoring for children after school could be expanded, especially for lower SES and rural communities. For those children with significant learning deficits, school districts are bound by Sect. 300.111 Child Find of the Individuals with Disabilities Education Act (IDEA) to ensure that all children with disabilities are identified, evaluated, and provided with any needed remediation or special educational services. Communities at large are also an excellent way to address shortages of social programs that address economic inequality to ensure that families with decreased resources and access to mental health treatment, academic tutoring, and other supportive services receive equitable care. An excellent resource for school districts to help identify evidence-based academic interventions can be found through the National Center on Intensive Intervention, a data-driven process to determine the level of intervention needed for students and considers both the academic and behavioral needs of students to help schools develop the most efficacious interventions for their students (National Center and for Intensive Intervention, 2023). Studying the effectiveness of specific learning strategies can be used to help mitigate the losses incurred during the pandemic. Further, Australia has a long-established distance education program (Stacey, 2005), and comparing the achievement of children who were previously taught in a traditional setting with those who have been involved in distance learning prior to the pandemic would shed some light into the factors that may have contributed to poor academic achievement during the pandemic. Finally, investigating the impact that teacher experience and/or training in the technological aspects of distance learning has on academic achievement would be helpful in designing appropriate teacher training models for the future. In summary, recommendations for intervention may include remote learning, parent and teacher training, counseling and mental health support, and community-based initiatives for all children, especially those considered vulnerable and at higher risk.

Conclusion

It is clear that the impact of the COVID-19 pandemic, lockdown, quarantine, and extended social distancing measures have had a deleterious effect on children and

adolescents' mental health, interpersonal relations, social skills development, and academic achievement. Many studies helped to elucidate these findings and provide researchers with a pathway through which we can begin to examine the long-term effects of the pandemic. We now know that depending on the variable (i.e., mental health, academic achievement, and the like), the effects will vary depending on age during the pandemic, socio-economic influences, and access to mental health care. It would behoove researchers to adopt a biopsychosocial-economic-cultural lens while examining these variables. Both the mental health and academic communities should be identifying evidence-based interventions for those who are at-risk and most impacted and begin to develop innovative ways to deliver services and instruction at the earliest possible time. Hopefully, should something like this occur again, we will not only be better prepared to anticipate the difficulties that children and adolescents face in the context of social isolation and decreased access to academic instruction, but also have the resources and mechanisms in place to intervene early.

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Declarations

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