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Office of Research – Innocenti



# LIFE IN LOCKDOWN

Child and adolescent mental health  
and well-being in the time of COVID-19



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A child studies his Class 6 textbooks. He cannot participate in online learning as his family has no mobile phone. “This is a pandemic,” says his mother, “and the measures are necessary, but a disaster for the kids.” Informal settlement of Mathare, Nairobi, Kenya, 2020.

# LIFE IN LOCKDOWN:

Child and adolescent  
mental health and well-being  
in the time of COVID-19





This study was conducted by the UNICEF Office of Research – Innocenti, in Florence, Italy.

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# ABBREVIATIONS

<b>ADHD</b>	attention deficit hyperactivity disorder
<b>ASD</b>	autism spectrum disorder
<b>COVID</b>	coronavirus disease
<b>DSM</b>	Diagnostic and Statistical Manual of Mental Disorders
<b>EVD</b>	Ebola virus disease
<b>GAD</b>	generalized anxiety disorder
<b>H1N1</b>	influenza A virus subtype H1N1
<b>HIV</b>	human immunodeficiency virus
<b>ICD</b>	International Classification of Diseases
<b>LMICs</b>	low- and middle-income countries
<b>MERS</b>	Middle East respiratory syndrome
<b>OCD</b>	obsessive compulsive disorder
<b>ODD</b>	oppositional defiant disorder
<b>PRISMA</b>	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
<b>PTSD</b>	post-traumatic stress disorder
<b>SAMHSA</b>	Substance Abuse and Mental Health Services Administration
<b>SARS</b>	severe acute respiratory syndrome
<b>SARS-CoV-2</b>	severe acute respiratory syndrome coronavirus 2
<b>WHO</b>	World Health Organization





# EXECUTIVE SUMMARY

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The COVID-19 pandemic is focusing global attention on child and adolescent mental health.

The COVID-19 pandemic has affected all levels of society globally. Government-imposed lockdowns and school closures in response to the disease have significantly disrupted the daily lives of children and adolescents, leading to them spending increased time at home, restricted freedom of movement, online learning, and limited or no physical social interaction with their peers. Despite the potential for greater connection within families, this isolation also risks loss of peer support and community networks, education and learning, social isolation

and uncertainty about COVID-19 and the future. The pandemic has had a significant impact, not only on the mental health of children and adolescents, but also on their caregivers, families and communities.

Before the pandemic, it was estimated that diagnosable mental health conditions affected about one in eight (13 per cent) children and adolescents aged 6–18 years. Further, it was also estimated that around 50 per cent of mental health conditions arise before the age of 14, and 75 per cent by the mid-20s.

## BEFORE THE PANDEMIC:

Mental health conditions affected about **1 in 8** children and adolescents aged **6–18** years.





Studies from previous epidemics, such as Ebola and HIV, and from humanitarian settings with similarities to the COVID-19 context – such as quarantine, isolation and stigma – have demonstrated enduring impacts on mental health. These include anxiety, depression and post-traumatic stress disorder (PTSD), although there is limited evidence for how these conditions have affected child and adolescent mental health during these epidemics.

Our first report in this series on child and adolescent mental health is entitled *Mind Matters: Lessons from past crises for child and adolescent mental health during COVID-19*. This second report looks at how the early stages of the global pandemic in 2020 affected the mental health of children and adolescents (those in the first two decades of life).

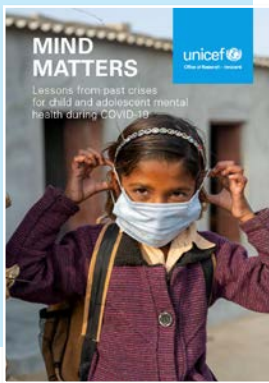
**Our rapid evidence review seeks to understand the immediate effects of COVID-19 on child and adolescent mental health from the initial wave of the pandemic, and apply lessons learned to mitigating these effects, as well as future health crises.** To assess the mental health and psychosocial impact of the COVID-19 pandemic on children and adolescents, UNICEF Innocenti conducted a rapid evidence review with a view to understanding two key research questions:

- *What has been the immediate impact of COVID-19 and associated containment measures on the mental health and psychosocial well-being of children and adolescents?*

- *Which risk and protective factors have affected the mental health of children and adolescents during the COVID-19 pandemic, and how have these factors varied across subgroups of children and adolescents?*

The conceptual framework guiding this rapid review is derived from three different instruments: the social-ecological systems model; the life-course perspective; and the social determinants of health approach. The framework places the child in the family, community and society, and explores the ramifications of COVID-19 on the child's intimate world, the world around them and the outer worlds of influence. The framework also emphasizes the importance of pre-existing and ongoing mediating and moderating risks and protective factors across various ages and developmental stages of the child.

Applying a continuum – from positive to negative – to assess mental health outcomes, we categorized our findings into *externalizing*, *internalizing*, and *lifestyle-related behaviours and reactions*. We also looked at *positive mental health outcomes* of the pandemic. Our research focused on key risk and protective factors including individual and family background characteristics, geographical location, and interpersonal and societal factors. It also sought evidence of the impact on some special populations and vulnerable groups: children with pre-existing mental health and neuro-developmental conditions, children in humanitarian settings and migrant children, and children facing discrimination because of their gender, sexual orientation, or disability.



... we categorized our **findings** into externalizing, internalizing, and lifestyle-related behaviours and reactions.



## Methodology and overview

**Our findings are based on systematic reviews and studies covering more than 130,000 children and adolescents across 22 countries.**

The review conducted systematic database searches of PubMed, PubCovid-19, the Cochrane Collaboration and the Wellcome Trust COVID-Minds Network, covering studies published between 1 November 2019 and 30 November 2020. We screened studies in two stages according to predefined inclusion and exclusion criteria. Out of a total of 4,323 studies identified, we included a final set of 84 peer-reviewed sources for data extraction and evidence synthesis. Four researchers undertook data extraction and evidence synthesis, with each researcher cross-checking the extraction and synthesis of another researcher to ensure quality control. A formal quality appraisal of included studies was not undertaken.

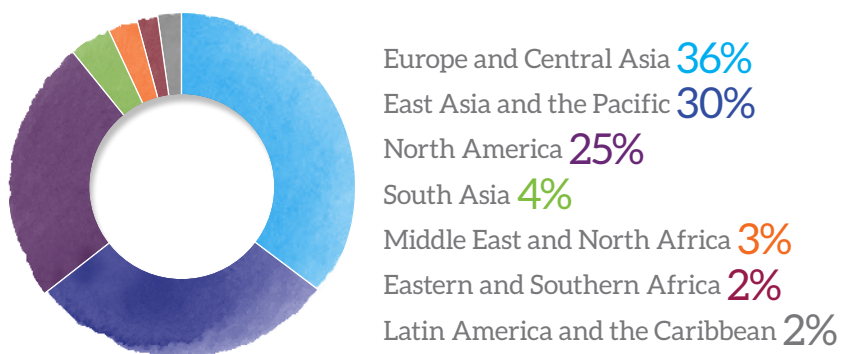
Of the 84 studies, the 77 primary studies reviewed include data from over 130,000 children and adolescents from 22 countries. The studies focused on children and adolescents aged 0–19 years, with about 50 per cent focusing on adolescents aged 10–19 years. The studies reviewed reported on data collected up to August 2020 during the early stages of the pandemic. Consequently, any longer-lasting mental health impacts – including during subsequent waves of the virus and phases of the lockdowns – are not fully captured. Moreover, the timing of government-imposed containment measures, including

lockdowns and school closures, varied considerably across countries, limiting the generalizability of specific findings.

**Most studies were from high- and upper-middle-income countries that were sharply affected by high infection and death rates early in the pandemic's trajectory.**

The largest share of studies reviewed was from China (26 per cent), followed by the United States (23 per cent) and Italy (13 per cent): all countries that witnessed high infection and death rates early in the pandemic. The distribution of studies by region was 36 per cent from Europe and Central Asia, followed by 30 per cent from East Asia and the Pacific, North America (25 per cent), South Asia (4 per cent), the Middle East and North Africa (3 per cent), Eastern and Southern Africa (2 per cent), and Latin America and the Caribbean (2 per cent). One study was conducted in multiple regions (Eastern and Southern Africa, West and Central Africa, and the Middle East and North Africa). Only one study was from a low-income country (Ethiopia), and most were from high- or upper-middle-income countries.

### Distribution of studies by region

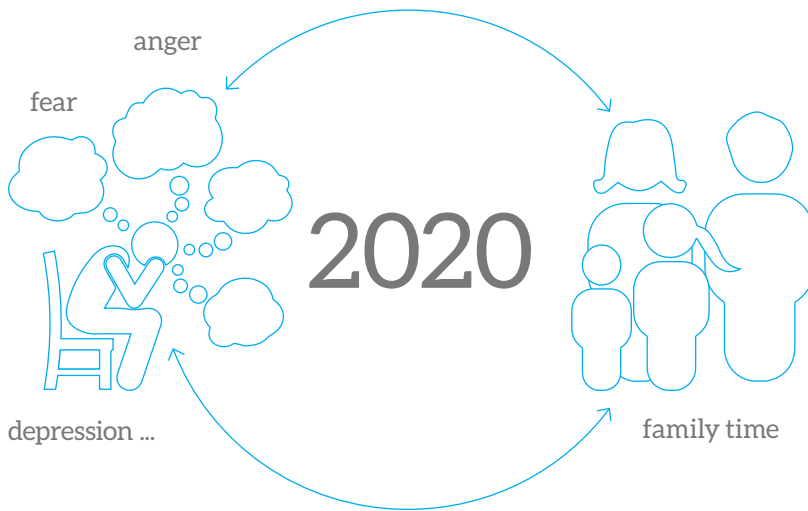


Note: Percentages add up to 102% due to rounding figures.



### KEY FINDINGS: attitudes, behaviours and mental health conditions

**Higher levels of depression, fear, anxiety, anger, irritability, negativity, conduct disorder, alcohol and substance use and sedentary behaviours compared with pre-pandemic rates were commonly reported in children and adolescents in 2020, but there were also positive perceptions of time spent with family.**



Most studies assessed the effects of COVID-19 and containment measures on mental health outcomes relating to anxiety, depression, behavioural issues and positive mental well-being (operationalized as life satisfaction, quality of life and self-esteem). Findings of specific outcomes in the early stages of the pandemic are summarized as follows:



**Depression:** Depressive symptoms (including sadness, loss of interest in activities, hopelessness, low energy, irritability and guilt) were commonly reported in children and adolescents during the COVID-19 pandemic. Moderate increase in depressive symptoms and sadness were reported, especially among older adolescents and females.



**Fear and anxiety:** Higher than pre-pandemic rates of mild and moderate anxiety were reported by children and parents across regions and age groups, especially because of disruptions to daily routines and school closures as well as to growing worry and concern over risk to their own health and that of their families.



**Suicidal behaviour:** Limited evidence from preliminary reports indicates that increases in suicide rates among children and adolescents in the context of COVID-19 should not be assumed, as there are also several protective factors that could arise in the context of this crisis.



**Trauma and post-traumatic stress:** Studies showed increased stress and adjustment issues among adolescents, especially because of fear of infection and uncertainty due to quarantine and disruptions to daily routines. Studies did not, however, find significantly higher PTSD rates in children and adolescents since the pandemic onset, and follow-up research is needed to assess the long-term impact of the pandemic on PTSD.



### Externalizing behavioural

**problems:** The living conditions brought upon by the response to the COVID-19 pandemic led to an increase in anger, negativity, irritability and inattention, particularly among children with attention deficit hyperactivity disorder (ADHD) and/or autism. Parents also reported worsening of conduct problems and disruptive behaviours among adolescents, as well as clinginess among younger children.



### Alcohol and substance use and

**abuse:** Studies indicated an increase in hazardous and problematic alcohol and substance use among adolescents since the outbreak of the pandemic and found this to be associated with behavioural problems (including anger and irritability), especially among boys.



### Lifestyle behaviours:

Studies identified associations between COVID-19 containment measures (e.g., home confinement and school closure) and increases in sedentary behaviour and lifestyle changes (e.g., less physical activity, higher exposure to screen time and irregular sleep patterns). Some of these lifestyle changes (especially irregular sleep and exercise) were associated with lower quality of life (e.g., low self-esteem) and increased psychological distress (e.g., anxiety and depression). Use of digital technology during the pandemic provided social connectedness, remote learning opportunities, and a way to cope with isolation and stress.



Photo: © UNICEF/UNI320964/




### Positive mental health outcomes:


Not all mental health consequences associated with the pandemic were negative. Children and adolescents reported perceived benefits from home confinement (e.g., increased quality time with family members) and school closure (e.g., respite from schoolwork, exam stress and school-related bullying) that seemed to positively correlate with life satisfaction. Engaging in positive coping strategies (e.g., physical and recreational activities), having more time for oneself or to spend with one's family and having more flexible schedules contributed to children's and adolescents' well-being during the COVID-19 outbreak.





## KEY FINDINGS: risk and protective factors

**This section highlights key risk and protective factors reported across studies that shaped the way in which the COVID-19 pandemic affected mental health outcomes for children and adolescents, including as mediating and moderating factors.**


 **Sex:** In most of the studies reviewed, females reported greater depressive symptoms, anxiety and externalizing behavioural symptoms than males, while males reported greater alcohol and substance use during COVID-19 than their female counterparts.


 **Age:** Older children and adolescents reported higher and more severe rates of depressive symptoms and anxiety than younger ones during the pandemic. Mixed results on age differences were reported for other mental health outcomes.


 **Location:** Children living in more-affected areas, rural areas, or near the epicentre of COVID-19 outbreaks were associated with stress symptoms, depressive symptoms, anxiety, alcohol and substance use, and increased sleep disturbance.

 **Socio-economic status:** Children living in poverty or in families with lower socio-economic status were found to be at greater risk of stress and depressive symptoms, whereas higher socio-economic status was found to be a protective factor for externalizing behavioural problems during the pandemic.

Moreover, the living conditions and livelihoods of families were adversely impacted by financial hardships during COVID-19, exacerbating sadness and worry in caregivers and children.

 **Pre-existing conditions:** Children and adolescents with pre-existing conditions were more significantly affected by pandemic-related changes. Children and adolescents with neurodevelopmental conditions (e.g., ADHD and autism spectrum disorder) and health conditions such as HIV, diabetes and cancer had greater fears relating to COVID-19 risk. Moreover, children living in low- and middle-income countries (LMICs) or conflict-affected settings who were exposed to widespread poverty, displacement and gender inequalities, experienced depression during the pandemic and struggled to adapt to online education. Mental health services and other services for children with pre-existing conditions were also disrupted during COVID-19, with grave consequences for children with pre-existing mental health conditions.

 **Adverse childhood experiences:** Children and adolescents who reported pre-existing adverse childhood experiences and maltreatment, including abuse, neglect and family dysfunction, were at increased risk of stress and anxiety symptoms since the pandemic onset.

 **Parenting:** Family conflict increased the risk of mental distress among children and adolescents, while separation from families and parental depression and anxiety were risk factors for stress and adjustment issues,



depressive symptoms, and externalizing behavioural problems among children and adolescents. Positive parenting and caregiver–child communication about the pandemic improved coping and well-being among children, adolescents and caregivers.

**Stigma and discrimination:**

Stigma based on ethnicity and all forms of racial discrimination (online, in-person and health care related) since the outbreak of the pandemic were associated with greater anxiety among these adolescents. In US studies, discrimination towards Chinese American adolescents was found to be particularly acute.

**Lockdown and isolation:**

Social isolation and loneliness during lockdowns contributed to a range of outcomes, including depression, irritability, anxiety, stress, alcohol use and sedentary behaviours. However, in some studies, children and adolescents reported perceived benefits from home confinement (such as spending time with family) and school closure (relief from academic stressors), which correlated positively with life satisfaction.

**Risk perception:**

Experience or fear of exposure to COVID-19 and perceived seriousness of the pandemic were predictive of stress and depressive symptoms, anxiety and hoarding behaviour, but they were also associated with health promotion and infection-prevention behaviours such as greater physical distancing, disinfecting and news monitoring.

**Coping strategies:**

Spending more time on physical activity and maintaining daily living routines protected against depressive symptoms and were associated with better mood states. Stress management, leisure-time activities (e.g., learning an instrument or cooking) and regular communication with loved ones were other proactive coping strategies used to deal with pandemic stressors and lockdowns.

**Social support and connectedness:**

Engaging in recreational activities, including using technology to communicate with loved ones, having more time for oneself or for one's family and having more flexible schedules, protected against anxiety and contributed to children's and adolescents' overall well-being during the pandemic. Adherence to stay-at-home orders and social support and connectedness protected against depressive symptoms and anxiety.



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## Implications of findings for policy and programming

The pandemic has impacted all areas of children and young people's lives. Our review found evidence of increased stress, anxiety and depressive symptoms, externalizing behavioural problems, and alcohol and substance use since the onset of the pandemic. Associations were also identified between COVID-19 containment measures and lifestyle dysregulation. However, children and adolescents also reported positive coping strategies, resilience, social connectedness through digital media, more family time and relief from academic stress. The influence of factors such as demographics, interpersonal relationships and pre-existing conditions is critical when considering the type of mental health outcomes reported since the COVID-19 outbreak.



Several primary recommendations emerge from the report that have strong implications for policy and programming.

- **Begin early to build mental health assets of children and adolescents.**

As positive mental health starts early and continues to grow over time with nurture and support, it is imperative to begin building mental health assets early in life, using proven approaches in the home, at school and in the community.

- **Foster family-friendly policies.**

Promoting positive action through play, support to parents and quality family time have proved helpful in alleviating stress and fear associated with the pandemic and mobility restrictions. The potential benefits of family-friendly interventions such as parenting programmes and social protection are increasingly clear and applicable across diverse contexts, including in countries and contexts with underinvested health systems, and they should be strengthened as the pandemic continues.

- **Invest in age- and gender-sensitive child and adolescent mental health care interventions and services.**

The COVID-19 crisis has underscored the depth of the global mental health crisis, including among children and adolescents. Mental health care must become an increasing priority when designing, implementing and expanding primary health care services for children and young people – particularly through building capacity of health professionals and other child-related frontline workers. In particular, it will be important for policymakers and practitioners to develop and scale age-appropriate and gender-sensitive interventions, and to adapt evidence-based activities that have proved beneficial in high-income contexts to those children and young people in resource-poor settings.

- **Promote physical activity and good nutrition for young people.**

Studies show that those children and adolescents who fared well for



## EXECUTIVE SUMMARY

positive mental health during the early stages of the pandemic had access to physical recreation and improved nutrition. Going forward, governments across the world should invest in individual, interpersonal and community mental health interventions that foster the holistic development and well-being of children and adolescents, including through promoting their physical health and social networks.

- **Make schools a safe space for positive mental health.** As millions of children and young people return to school, it is vital that families, frontline workers and governments listen to them and seek to address some of the mental distress that both the absence of school, and schooling itself, may cause them. Ways should be explored to help them catch up while also reducing exam stress to bolster their mental health, and avenues to make schools safer and more inclusive for all students should be found.
- **Focus on at-risk young populations.** Children and adolescents suffering from pre-existing child and adolescent mental health conditions – and those most affected by exclusion and discrimination based on income, gender, disability, ethnicity and other delineators – have been among those whose mental health has been most affected by the pandemic. Studies show clearly that children and adolescents facing the drivers of exclusion and discrimination have seen markedly increased risks. For policy and programming, it will be

essential to place greater emphasis on understanding even further the mental health stresses that these at-risk populations face, and on prioritizing interventions for them.

- **Address stigma and discrimination in mental health, including new and emerging forms.** The pandemic has coincided with a wider global discussion on mental health issues, on inequality, and on racism and discrimination based on ethnicity, and on ways to combat these challenges. Policies and programmes focused on child and adolescent mental health must address both generalized and continuing stigma related to mental health issues, and specifically stigma against certain groups as related to the pandemic.
- **Support digital technologies as a force for change.** The COVID era has underlined the essentiality both of access to digital technologies for young people to learn, communicate and grow, and of protective mechanisms to protect them from harm and abuse and safeguard their mental well-being. Digital technologies can also offer alternative and promising modes of delivering mental health psychosocial support services. Therefore, it will be important to develop innovative, evaluated and ethical strategies and interventions that can be scaled up to support the mental health of more children and adolescents, and their parents and caregivers.



## Implications of findings for research



Our report has noted **four key evidence gaps** to address in the rapidly growing body of research on COVID-19 and its mental and psychosocial impact on children and adolescents.



### **1 Build a wider body of research on child and adolescent mental health in LMICs**

Our findings are largely drawn from evidence of the countries most affected by COVID-19 disease early on in 2020 – especially China, Italy and the US. More evidence is needed of how it affects child and adolescent mental health in low- and middle-income regions and countries – and especially in those regions such as Latin America and Caribbean and South Asia where the pandemic has been particularly hard-hitting so far, and also sub-Saharan Africa and the Middle East, where the evidence base of child and adolescent mental health is nascent.



### **2 Examine how COVID-19 affects mental health in early and middle childhood**

In addition, more evidence is required of early (0–4 years) and middle childhood (5–9 years), as most of the research reviewed captured the situation of adolescents aged 10–19 years. Research on younger age groups could examine how COVID-19 affects the development

outcomes in early childhood and investigate any long-term implications of the suspension of primary health care services during the pandemic.



### **3 Widen the evidence base to include vulnerable populations of children and adolescents**

Our review did not find evidence of the impact of COVID-19 on the mental health of a wide array of vulnerable socio-economic groups of children and young people. These include child migrants and displaced persons, child labourers, adolescent parents/care-givers and adolescent pregnant girls, children facing domestic violence, children facing sexual and gender-based violence, children living in institutional care, children with disabilities, and youth with non-binary genders and LGBTQI+ youth. Future research should and must examine the impacts (especially the enduring impact) of the COVID-19 pandemic on the mental health of these vulnerable populations.



### **4 Investigate the longer-term impact of the pandemic on child and adolescent mental health**

Our findings are limited to studies published between 1 November 2019 and 30 November 2020. It should be noted that mental health conditions may change over time. For example, studies may have been undertaken too early in the pandemic to adequately assess a PTSD diagnosis. New findings have emerged in the different waves of infections and subsequent lockdowns, along with vaccination efforts and increased interventions over time, which were not

captured in this review because of its scope and search period. These developments may have far-reaching implications for the evidence presented here and will need to be addressed in future reviews.

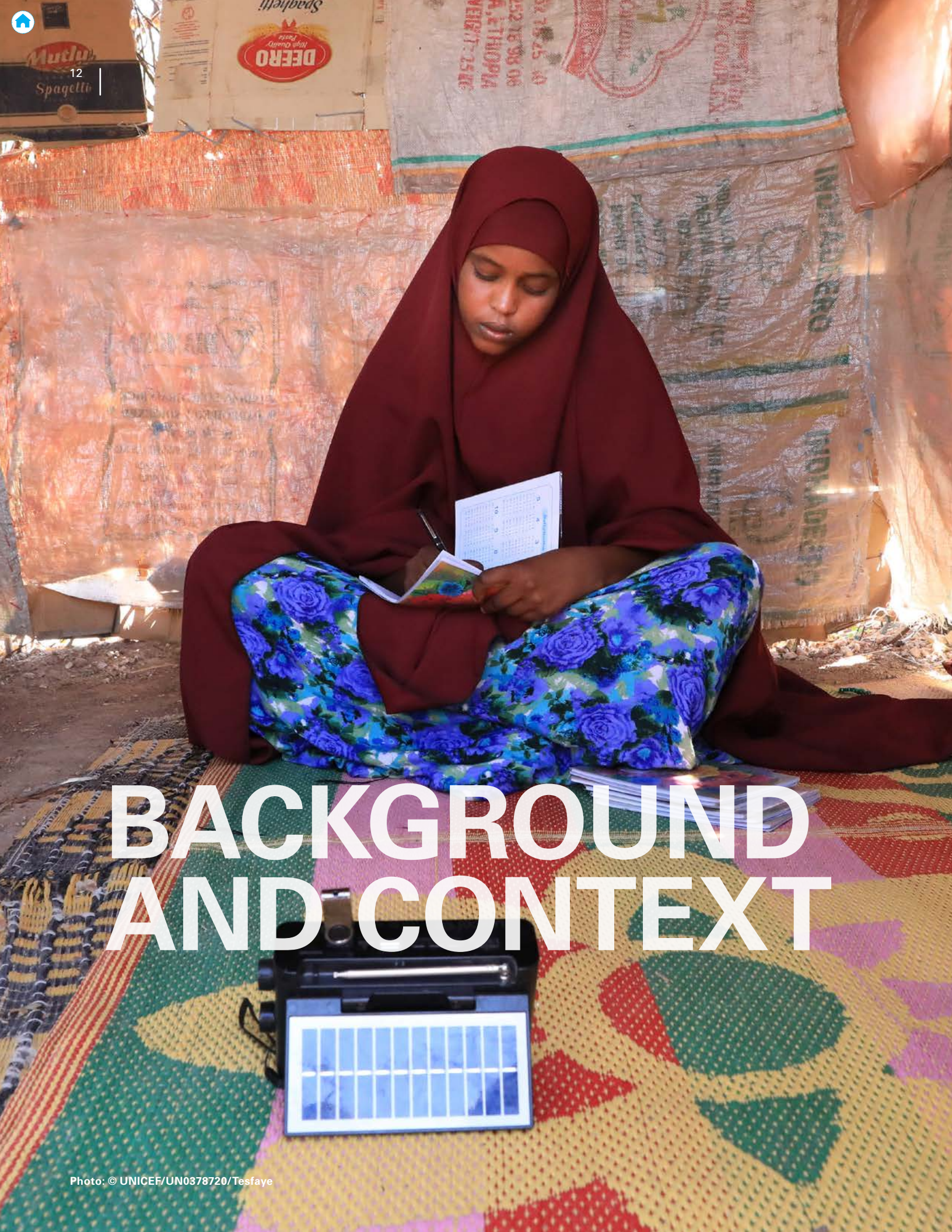
Through its Children and COVID-19 e-library – [UNICEF Innocenti: Children and COVID-19 Research Library](#) ([unicef-irc.org](http://unicef-irc.org)) – UNICEF Innocenti is committed to curating much of the best emerging evidence of the impact of the pandemic on the world’s youngest citizens, including their mental health. This report contributes to that evidence base. We intend to build on this contribution in the future to ensure that children and adolescents have the assets, skills and support they require to not only navigate through shocks and crises such as COVID-19 but also to address the challenges and ebbs and flows of their current and future lives.



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# BACKGROUND AND CONTEXT



## An unprecedented global pandemic

**The coronavirus disease 2019 (COVID-19) has profoundly affected all levels of society globally, with both economic and human costs.**

Declared a global pandemic by the World Health Organization (WHO) in March 2020, many governments rapidly introduced public health measures and infection control strategies, including travel restrictions, school closures, lockdowns, curfews, quarantine, hand-washing and physical distancing. While a number of these measures were adopted during the 2003 severe acute respiratory syndrome (SARS) and 2014 Ebola outbreaks in affected locations, in the current crisis they are being implemented to an extraordinary extent and for unprecedented periods.<sup>1</sup>

**During the early stages of the pandemic, mental health and psychosocial concerns were high among global priorities,** prompting recommendations by the WHO on how to maintain psychosocial and emotional well-being.<sup>2</sup> However, resource-poor settings are being forced to divert already constrained health system resources away from mental health needs, towards the fight against COVID-19. While children and adolescents were initially deemed to be at lower risk of suffering from severe complications of COVID-19, the long-term ramifications of COVID-19 exposure at younger ages are yet to be understood. Nevertheless, their mental health may be affected in similar ways to adults, as well as in ways that are specific to their developmental stage, gender, humanitarian circumstances,

vulnerability and role in society. This may mean some groups are disproportionately affected.

## Effects on children's daily lives

**Children's and adolescents' daily lives have been significantly disrupted.** The closure of childcare facilities and creches, schools and universities imposed by governments has led to considerable learning and academic loss.<sup>3</sup> In some cases, increased time spent at home has strengthened bonds with parents and caregivers. In other cases, children facing domestic violence, abuse or maltreatment may feel trapped and lose access to support and safeguarding networks.<sup>4</sup> For younger children as well as adolescents, missing out on months of interactions with peers is likely to have long-lasting impacts on their social and emotional development. For older children, the pandemic comes at a critical time in terms of choosing future education or career options. Meanwhile, children spent more time online for social and educational purposes, keeping them connected to their friends and family, providing a means of coping with stress and maintaining learning through remote schooling. On the other hand, increased digital use is also linked to sedentary behaviours and may expose young people to anxiety-provoking media reports and other cyber-ills, such as gambling, cyberbullying and online predators. Access to digital media is uneven however, especially in the poorest areas, where connectivity issues may prevent children from enjoying the benefits of online learning and social networks.

...children spent more time online for social and educational purposes, keeping them connected to their friends and family, providing a means of coping with stress and maintaining learning through remote schooling ...

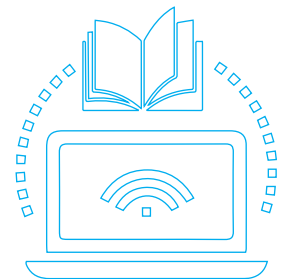




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## An already high burden of mental health issues in children and adolescents

### **Global prevalence rates of common mental disorders were already high and rising pre-COVID-19.**

Many of these mental health issues are, and will continue to be, exacerbated by COVID-19<sup>5</sup> and its response measures, because of loneliness, social isolation, pre-existing conditions, increased violence in the home, loss of family members, loss of family income and livelihoods, and increased inequalities, among other factors. Before the pandemic, it was estimated that mental health conditions affected

about one in eight (13 per cent) children and adolescents aged 6–18 years, and 14 per cent of adolescents aged 10–19 years. In addition, the global prevalence of mental health conditions among adolescent boys (15 per cent) was higher than among adolescent girls (13 per cent) according to Global Burden of Disease data in 2019.<sup>6</sup> In many parts of the world, children are already exposed to multiple and intersecting stressors that contribute to high levels of pre-existing vulnerability to mental health problems, including chronic poverty and subsistence living, child labour, protracted violence, and conflict and displacement. Coupled with weak health, education and protection systems, the pandemic measures could disproportionately impact the lives of children and adolescents globally.<sup>7</sup>

## Early onset of mental health issues

### **Exposure to the pandemic during their early years may mean that children will carry the mental and emotional costs from these adverse events for years to come.**

The first 1,000 days present a unique opportunity for unparalleled cognitive growth and early stimulation, which are central to healthy mental and emotional lives.<sup>8</sup> Adolescence provides a second window of opportunity, as a critical period in brain development, emotional regulation and identity formation.<sup>9</sup> However, 50 per cent of mental health conditions arise before the age of 14 and 75 per cent by the mid-20s. Suicide is the third leading cause of death globally among 15–19-year-old girls and the fourth leading cause of death among 15–19-year-old boys.<sup>10–12</sup>

**Stressors during adolescence, particularly on psycho-emotional and mental well-being, are recognized to be gendered in nature.**

Sources of stress for adolescent girls include increased time poverty because of unequal household responsibilities, early maternity, forced marriage and heightened exposure to sexual and gender-based violence risks. Caring responsibilities, which largely fall to women and girls, have increased during the COVID-19 pandemic. The impacts have become more prominent as economic and social stress, combined with quarantine and isolation, risk a global crisis in mental health that will disproportionately affect women and girls.

**At the same time, evidence highlights that adolescence is a time when girls and boys can develop resilience**, i.e., the learned ability to be better equipped to handle adversity, including through coping strategies and adaptive behaviours.<sup>13</sup> It is therefore important to understand the factors during the pandemic that build adolescents' resilience.

## Knowledge gaps

**While there has been a global rush to generate rapid evidence of COVID-19's impact on mental health outcomes, much of this has focused on impacts among adults**, and there are limited evidence syntheses of the potential impacts on children and adolescents of exposure to SARS-CoV-2 and of the related pandemic control measures. Among the existing systematic reviews on COVID-19, many are focused on specific outcomes of interest (e.g., depression or anxiety), rather than providing a landscape of impacts.<sup>14</sup>

## Previous pandemics, epidemics and disasters and mental health

**Previous pandemics and epidemics, such as HIV and Ebola, share some common elements with the COVID-19 pandemic, such as quarantine and isolation as protective public health measures, and outcomes of anxiety and depression.** However, there is limited evidence of their impact on child and adolescent mental health from which to derive insights relevant to the current pandemic. Unlike the physical health consequences of epidemics, the mental health burden is harder to directly observe, and therefore difficult to quantify. Nonetheless, physical health conditions (including infectious diseases and inflammatory processes) during children's developmental stages are being increasingly implicated as risk factors for psychosocial and neurocognitive vulnerabilities in children, which subsequently impact long-term mental disorders.<sup>15</sup>

**Box 1 summarizes findings from studies investigating the mental health impacts of previous epidemics and disasters.** More details on the impact of previous epidemics, pandemics and disasters, including HIV and AIDS, Ebola virus disease, SARS, Middle East respiratory syndrome (MERS) and Zika, are detailed in a recent report by the UNICEF Office of Research.<sup>16</sup> We will also discuss such findings in relation to the impact of COVID-19 on specific mental health outcomes in the Key Findings section. However, when comparing findings, it should be noted that the nature, severity, associated mortality rates and geographic scope of these previous epidemics differ from those of COVID-19.



## BOX 1: Key learnings from previous epidemics and lessons for COVID-19



### Perinatal HIV exposure

Children with perinatal HIV exposure were found to have higher rates of mental health issues than non-exposed children, regardless of whether they became HIV+.<sup>17–19</sup> In other studies, adolescents with HIV-positive status reported higher prevalence of mood disorders, phobias and substance abuse.<sup>20,21</sup>



### Zika virus

There is evidence of neurodevelopmental impacts as a result of children being perinatally infected with Zika virus.<sup>22–27</sup> However, apart from a single case of a 17-year-old male who presented with Zika virus and later first-episode psychosis,<sup>28</sup> there seems to be no evidence of the mental health impact of the Zika virus on children.



### Ebola virus disease

In countries affected by Ebola virus disease (EVD) outbreaks, individuals across all age groups reported wide-ranging prevalence rates for anxiety (28 per cent to 83 per cent) and depression (12 per cent to 75 per cent), indicating a large unaddressed burden of

mental health in these populations.<sup>29</sup> Overall, studies in the general population show that EVD-affected persons were more likely to present symptoms of psychological distress (sadness, fear, stress), sleep disorders, social anxiety, substance abuse, obsessive compulsive disorder (OCD) and PTSD.<sup>30–32</sup> There are limited studies on psychosocial functioning among children and adolescents.



### Natural disasters

In studies of natural disasters, the most frequently observed presentations reported are anxiety, depression, disturbed sleep and post-traumatic stress symptoms.<sup>33–35</sup> These mental health outcomes may present both in the short term and the long term and vary depending on age/developmental stage and other factors.<sup>36</sup> In the long term, prenatal disaster exposure has been linked with negative child/adolescent mental health outcomes, such as developmental regression, sleep problems, clinginess, separation anxiety, altered play, somatization/pains, or aggressiveness.<sup>37</sup> Older children and adolescents exposed to

disasters seem to be at higher risk of PTSD,<sup>38</sup> externalizing and internalizing disorders,<sup>39,40</sup> and poorer cognitive and social outcomes.<sup>41</sup> Other reactions comprise withdrawal, sadness, decreased activity, poorer school performance and preoccupation with the event.

Studies conducted among youth affected by HIV, EVD and natural disasters identified pre-exposure risk factors (such as pre-existing physical and mental health conditions, low socio-economic status, genetic risk, disability/special needs and prior trauma exposure) as predictors of long-term mental illness.<sup>29,35,42–44</sup> Studies also found that internalized as well as perceived stigma among those young people affected by HIV or EVD was associated with reduced self-worth, depression, anxiety, and anger and resentment.<sup>45–48</sup> Studies in HIV-affected populations revealed a host of shared risk factors among children with perinatal HIV exposure through their parents, including family history of mental illness, stigma and discrimination, limited social support, economic deprivation, family interpersonal violence and parental substance abuse.<sup>18,49,50</sup>



## Aims and objectives of the review

The overall aim of this report is to examine the immediate impact of the COVID-19 pandemic (direct infection and infection control measures) on the mental health of children and adolescents aged 0–19 years, by curating and synthesizing evidence from the literature. Two key research questions guide this review:



What are the **impacts** of the COVID-19 pandemic and associated containment measures (such as lockdowns and school closures) on the **mental health** of children and adolescents?

Which **risk and protective factors**<sup>a</sup> affect the mental health of children and adolescents during the COVID-19 pandemic, and how do these factors differ across subgroups of children and adolescents?



## Conceptual framework and definitions

**To help understand the direct and indirect effects of the COVID-19 pandemic on a broad range of child and adolescent mental health outcomes, a conceptual framework (Figure 1) was developed to guide this review.** The framework<sup>b</sup> presents a simple depiction of the potential impact of COVID-19 disease, prevention and mitigation factors on children and adolescent mental health and psychosocial well-being, adapting elements from other mental health and child-sensitive frameworks (Figure 1). Although the composite framework presents linear trajectories of mental health and illness, the reality is much more complex and dynamic. No child is completely vulnerable or resilient, but rather every child and their

family are influenced by interacting risk and protective factors that may impact their susceptibility to various forms of mental distress or their adaptability in varying degrees and at different points in their lives. These factors vary at different levels – individual, interpersonal, community, structural, policy and global levels.

**Recognizing children’s socio-ecology, children exposed to the pandemic are situated within families and communities and the society at large.**<sup>51</sup> We recognize risk and protective factors that contribute to vulnerabilities and resilience, both before (pre-existing) and during the pandemic. The framework places the child in the family, community and society, and explores the consequences of COVID-19 exposure for the

<sup>a</sup> Risk factors are characteristics at the biological, psychological, family, community, or cultural level that precede and are associated with a higher likelihood of negative outcomes. Protective factors are characteristics associated with a lower likelihood of negative outcomes or that reduce a risk factor’s impact. Protective factors may be seen as positive countering events. See <https://www.samhsa.gov/sites/default/files/20190718-samhsa-risk-protective-factors.pdf> for further details.

<sup>b</sup> The infographic is meant to be illustrative only. The impacts vary considerably depending on the context in which they occur, and the specific characteristics of exposures and impacts. These images do not imply strength of association or causality.



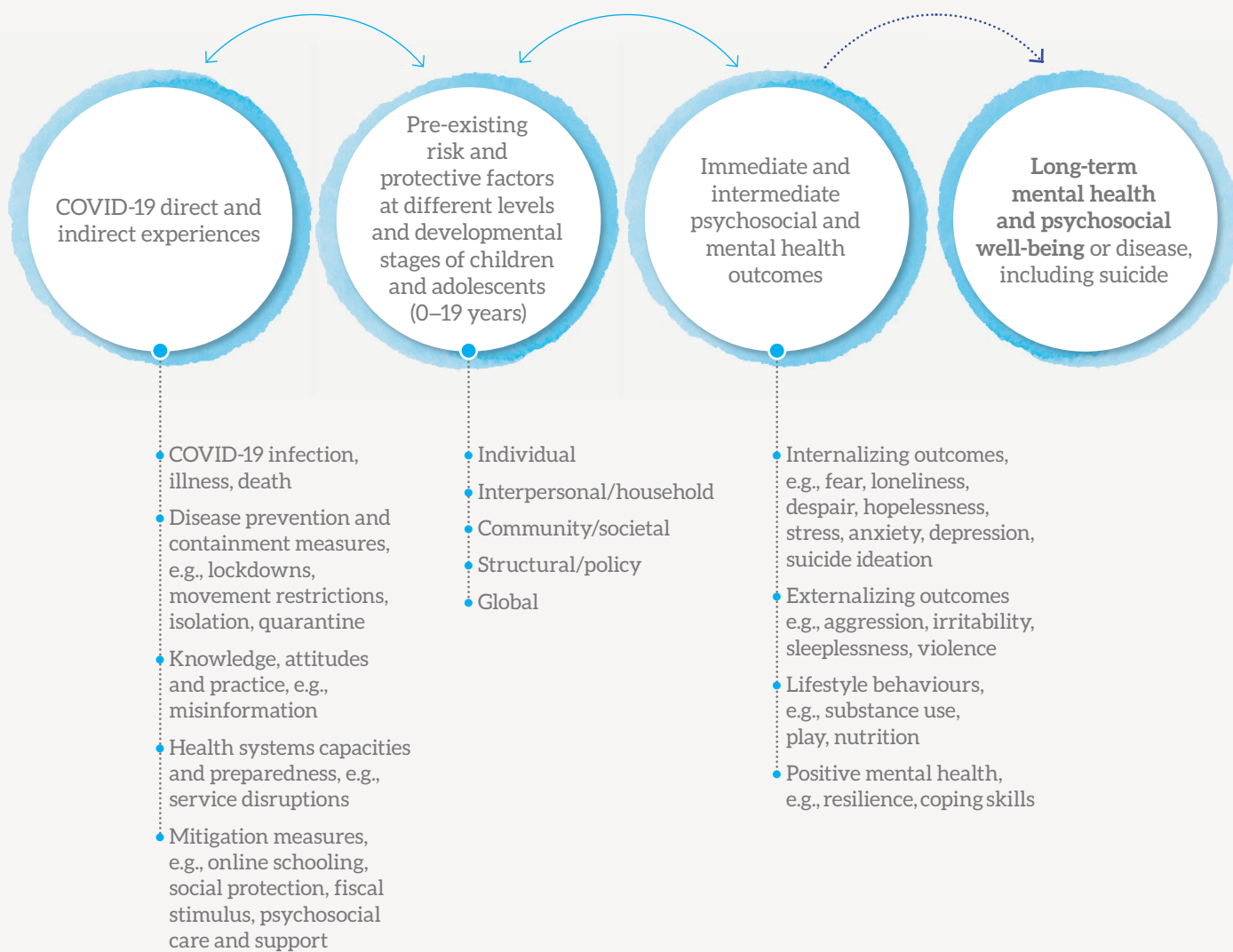


intimate world of the child, the world around the child and the outer worlds of influence (second circle).

**As this review was conducted during the early stages of the pandemic (within the first eight months of the pandemic onset), it considers only the immediate and some intermediate psychosocial impacts of the COVID-19 pandemic** (third circle). The enduring

impacts on children’s mental health and development are yet to be fully understood and are not reviewed in this report. We also recognize that the timing of increased infection rates and containment measures varies across countries and regions, and that this framework will need to be adapted to specific settings to provide a more accurate depiction of contextual factors.

**Figure 1: Impacts of COVID-19 on mental and psychosocial health of children and adolescents: A simplified conceptual framework**



.....> Not addressed in this study which only reviewed the immediate and some intermediate impacts of the COVID-19 pandemic in the first year of its spread

**The life course epidemiology approach has contributed to understanding the multiple influences on children over time and as the pandemic unfolds, giving rise to both positive and negative trajectories.**<sup>52</sup>

These move from the more immediate and intermediate impacts (third circle) and enduring impacts on the right (fourth circle). For example, the immediate experience of exposure to lockdown may result in low mood, followed by prolonged sadness in the intermediate stage and potentially leading to major depression in the enduring stage. However, the trajectories of mental health impacts are not necessarily linear in real life and the impacts observed at any stage (immediate, intermediate or long-term) may be mild, moderate or severe.

**The social determinants of mental health framework<sup>c</sup> recognizes that inequities do not arise by chance.**<sup>53</sup>

With structural determinants intersecting, action is required across multiple sectors and levels of the child's environment to tackle drivers of inequities and inequalities. A lack of action results in divergent experiences among children and ultimately increases mental health inequalities among children, adolescents and their families.

**The framework also emphasizes the importance of pre-existing and ongoing mediating and moderating influences, both in terms of risk and protective factors across various ages and developmental stages.**

The second circle describes these

factors at the individual, interpersonal, community and policy levels, recognizing that risk factors in one context may be protective factors in another. For example, while living at home could be considered a protective factor, it may be a risk factor if the child is instead exposed to violence or other adverse experiences at home. Although interventions for mental health are beyond the scope of this study, they are included in the first circle as they can also mediate the effects of the pandemic.

## Operationalizing mental health

The conceptual framework describes the impact of COVID-19 on immediate, intermediate and enduring mental health outcomes. However, as the review covers only the first eight months of the pandemic, analysis is limited to the immediate impacts.



### The findings focus on four broad outcome categories:

- 1) internalizing outcomes
- 2) externalizing outcomes
- 3) lifestyle behaviours
- 4) positive mental health.

**The terms 'internalizing' and 'externalizing' refer to internally and externally focused symptoms of negative mental health outcomes.**

These well-established and widely used groupings<sup>d</sup> describe behavioural,

<sup>c</sup> See Innocenti Insight: <https://www.unicef-irc.org/publications/708-tackling-structural-and-social-issues-to-reduce-inequities-in-childrens-outcomes.html>

<sup>d</sup> These groupings are derived from factor analysis of psychological issues in clinically referred children and adolescents.

**Internalizing conditions:**

depression, fear and anxiety, suicidal behaviour, and trauma and post-traumatic stress.

**Externalizing conditions:**

externalizing behavioural problems as well as alcohol and substance use and abuse.

**Irregularities in lifestyle behaviours:**

extreme changes in diet, physical activity, sleep and use of digital technology.

**Positive mental health outcomes:**

well-being, resilience, prosocial behaviours, social trust and connectedness.

**|con·tin·u·um|**

/kən'tɪnyoʊəm/ **noun**

a continuous sequence in which adjacent elements are not perceptibly different from each other, although the extremes are quite distinct.

emotional and social problems, and encompass a broad range of mental health issues and are not mutually exclusive.<sup>54</sup> The internalizing conditions included in this review include *depression* (sadness, grief, major depression); *fear and anxiety* (fear, panic, anxiety, social anxiety disorder, obsessive compulsive disorder (OCD) and hoarding disorder); *suicidal behaviour* (suicidal ideation, self-harm, suicidal attempts); and *trauma and post-traumatic stress* (trauma, acute stress disorder, PTSD and adjustment disorder). Externalizing conditions included in this report include *externalizing behavioural problems* (anger, aggression, oppositional disorders, impulse control, conduct disorder, attention deficit hyperactivity disorder (ADHD)) as well as *alcohol and substance use and abuse*. We also discuss irregularities in lifestyle behaviours, including extreme changes in diet, physical activity, sleep and use of digital technology, as these may be associated with mental health conditions. Positive mental health outcomes included in this review comprise well-being, resilience, prosocial behaviours, and social trust and connectedness.

**Mental health and well-being should be conceptualized as a continuum rather than as the presence or absence of a condition.**

On the positive end of the continuum, mental health encompasses various factors including happiness, autonomy, life satisfaction and a sense of flourishing such that people are able to feel positive and function optimally in society. The majority of children and adolescents will adjust, cope and respond appropriately to a stressor, especially with caregiver and community support and care. When

moving along the continuum, people start feeling poorly and experience mood fluctuations, sadness, fear or stress reactions, and further along the continuum everyday tasks become more difficult due to more severe mental health conditions. Finally, at the other end of the continuum are people suffering from diagnosed severe mental disorders (e.g., psychosis) and those with profound developmental disabilities.

**Importantly, children's and adolescents' position along this continuum is not fixed, hence they may require different age-appropriate forms of support at different times and different development stages.**

For instance, those suffering from severe psychopathology may experience discontinuation of critical mental health services during the pandemic and will require significant additional support to cope with COVID-19 containment measures such as lockdowns and school closures. It is also important to differentiate common reactions to sudden shocks and stressors brought upon by the pandemic from more severe reactions that impact on functioning and development. This is to avoid overmedicalization of psychosocial responses and to best use the limited mental health resources available during the pandemic.

## Understanding risks and protective factors

**To comprehensively understand the psychological impact of the pandemic, it is important to consider the risk and protective factors that shape the psychological and developmental trajectories of children and influence how COVID-19-related**



### **exposures affect their mental health.**

Subgroups of children and adolescents may be at heightened risk of poor mental health outcomes as a consequence of the outbreak of the COVID-19 pandemic because of pre-existing vulnerabilities.

These can range from pre-existing mental health problems, neurodevelopmental conditions and special needs to unstable housing, food insecurity, discrimination and challenging living conditions in humanitarian settings.

According to the Substance Abuse and Mental Health Services Administration (SAMHSA) of the US Department of Health and Human Services, risk factors are “characteristics at the biological, psychological, family, community, or cultural level that precede and are associated with a higher likelihood of negative outcomes.” Protective factors, on the other hand, “are characteristics associated with a lower likelihood of negative outcomes or that reduce a risk factor’s impact. Protective factors may be seen as positive countering events.”<sup>e</sup>

**These factors are not inherently positive or negative;** in fact, certain characteristics may be risk factors in one context and protective factors in another. For example, schools can be protective, providing social support, learning and access to resources. However, if the child is being bullied at school or experiencing learning difficulties, the



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**Risk factors** are “characteristics at the biological, psychological, family, community, or cultural level that precede and are associated with a higher likelihood of negative outcomes.”

- SAMHSA

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school environment can be challenging. Moreover, as our conceptual framework suggests, these factors exist in multiple interacting contexts and operate at the individual, household, interpersonal, community, societal and structural levels that children inhabit. Therefore, various risk and protective factors influence child and adolescent mental health in dynamic ways over time. Moreover, during certain developmentally sensitive periods, such as the first two decades of life, there is considerable cognitive plasticity where modifiable risk and protective factors can be harnessed for increasing mental well-being.<sup>55</sup>

**Risk and protective factors can be additive or cumulative.** For example, multiple risk factors may produce compounded adverse outcomes. A nuanced understanding of how these factors interact and how they affect psychological outcomes of children and adolescents is crucial when examining research evidence, programming and policy implications meant to promote mental health and well-being during the COVID-19 pandemic and beyond.

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<sup>e</sup> Available at: <https://www.samhsa.gov/sites/default/files/20190718-samhsa-risk-protective-factors.pdf>





# METHODOLOGY

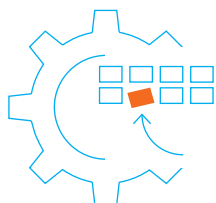


We conducted a systematic search of the literature, detailed screening and data extraction, and a comprehensive evidence synthesis to review the impact of COVID-19 on child and adolescent mental health.

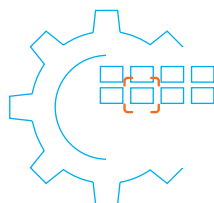
A rapid review methodology was chosen to respond to the immediate need for evidence-informed programming and policy advocacy as the COVID-19 crisis escalated. This method follows systematic search and extraction criteria but entails a more 'rapid' version of a systematic review: a rapid review is a

form of evidence synthesis conducted in a timely and cost-effective manner to inform policy and practice.<sup>56,57</sup> This rapid review follows UNICEF's methodological guidance for conducting and reporting evidence syntheses.<sup>58</sup> The following approaches were adopted:

**Step 1 –**  
systematic searches



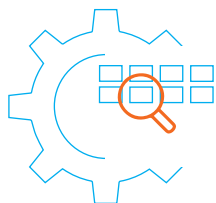
**Step 2 –**  
screening



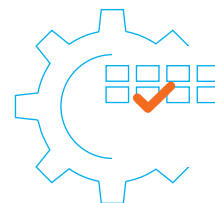
**Step 3 –**  
data extraction

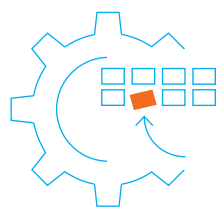


**Step 4 –**  
analysis/synthesis



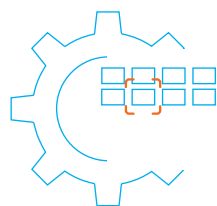
**Step 5 –**  
assessing for relevance, rigour and quality control





### Step 1 – systematic searches:

We limited our searches to peer-reviewed evidence reviews and studies that collected primary data (longitudinal, cross-sectional, qualitative and mixed-methods studies) on mental health, COVID-19 and children, adolescents and youth in a limited number of databases containing peer-reviewed literature.



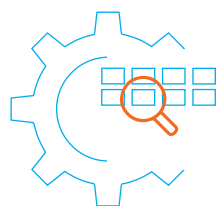
### Step 2 – screening:

We screened studies in two stages according to predefined inclusion and exclusion criteria. At the first stage, we screened title, abstract and keywords to identify key full texts that included mental health, COVID-19 and children, adolescents and youth. At the second stage, we applied additional criteria (for instance, related to participants' ages) to include relevant studies for data extraction.



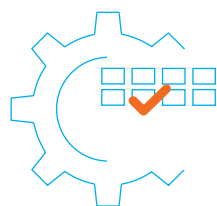
### Step 3 – data extraction:

We extracted key data including study type, methodology, authors, title, aim, sample size, age range, sex, geographical setting, data-collection period, pandemic containment measures, mental health outcomes, special populations and findings (quantitative estimates and qualitative themes).



### Step 4 – analysis/synthesis:

The research questions of this rapid review reflect our conceptual framework. They guided the analysis and synthesis of the data extracted from the studies.



### Step 5 – assessing for relevance, rigour and quality control:

A protocol providing a complete, detailed description of the review methodology was prepared in advance in order to reduce research bias and provide greater

transparency on the review process and scope. Screening and data extraction were conducted independently by four team members, following predetermined inclusion criteria and the data extraction framework. The lead researcher supervised this process and met the team twice a week to resolve doubts regarding screening and data extraction. Data extraction was cross-checked by another team member before each outcome was synthesized by one author and independently revised by a second author. These quality control steps were taken to ensure good inter-rater reliability (meaning the extent to which two or more individuals ['raters'] agree) during the screening and extraction processes. However, a formal quality appraisal of the studies reviewed was not conducted because of time constraints.

## Search strategy

**We conducted systematic database searches of PubMed, PubCovid-19, the Cochrane Collaboration and the Wellcome Trust COVID-Minds Network, covering studies published between 1 November 2019 and 30 November 2020.** The following

search terms were used to search and screen abstracts, titles and keywords: ((COVID\* OR coronavirus OR SARS-CoV-2) AND (mental disorder\* OR mental health OR psyc\* OR depression OR anxiety OR internalizing OR externalizing OR resilience) AND (child\* OR adolescent\* OR youth OR young people)) in PubMed and Cochrane Collaboration databases. For PubCovid-19 and the Wellcome Trust COVID-Minds Network databases, articles were filtered by topic, with a focus on mental health.

**Table 1. Rapid review inclusion and exclusion criteria**

Criteria	Details
Population	Children and adolescents (0–19 years)
Exposure	COVID-19 or SARS-CoV-2 and related public health containment measures
Outcomes	All mental health outcomes, including negative outcomes according to the ICD-11* and DSM-5** diagnostic criteria as well as positive mental health outcomes (including mental well-being and resilience)
Context	Global (including high-, middle- and low-income countries)
Study type	Systematic reviews; primary studies with longitudinal, cross-sectional, qualitative, or mixed-methods study designs  Searches were undertaken in English but without language restrictions.
Study type exclusion criteria	We excluded the following types of studies from data extraction: <ul style="list-style-type: none"> <li>• conceptual and theoretical studies</li> <li>• commentaries, editorials, or opinion pieces</li> <li>• dissertations or theses, unless published as peer-reviewed articles</li> <li>• guidance documents and policy briefs</li> <li>• entire books, unless a chapter was part of an edited book, which was both eligible and freely available</li> </ul> Commentaries, editorials and non-systematic reviews that provided insights to support the analysis were consulted but not included for data extraction.

**Note:** \* International Classification of Diseases 11th Revision

\*\* Diagnostic and Statistical Manual of Mental Disorders 5th Edition

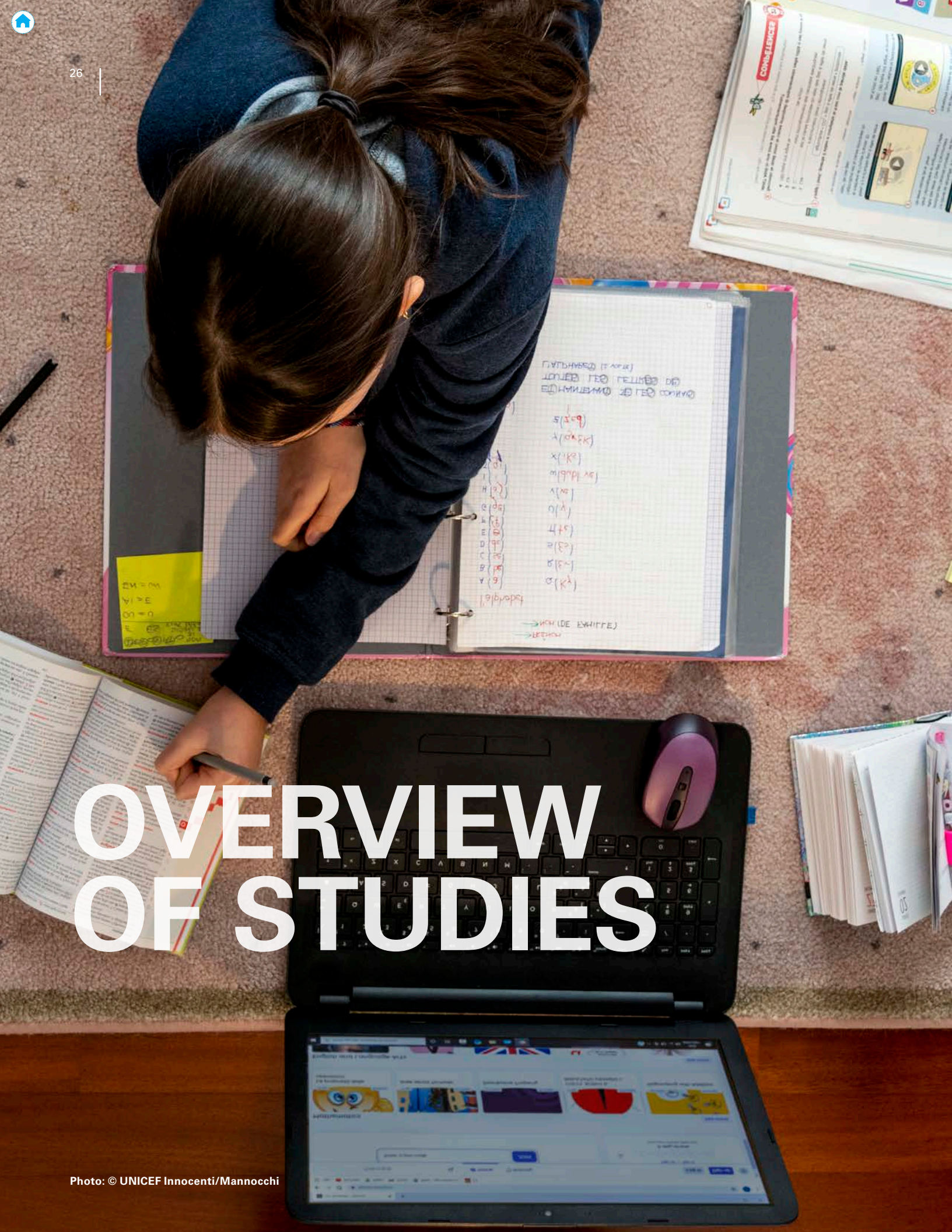
## Methodological limitations

- A selected set of databases had to be prioritized and searched.
- A formal quality appraisal exercise was not undertaken because of the rapid nature of the review.
- The search engines used and the search criteria may have limited the number of non-English articles screened.
- Some countries have evidence gaps on this topic.
- The search terms used focused on broad mental health outcomes in order to maximize the number of study results.
- This review focuses only on early research during the pandemic, as the studies reviewed reported on data collected up to August 2020. As a result, we encourage the reader to keep this context in mind when reading and applying the findings from the review.





# OVERVIEW OF STUDIES





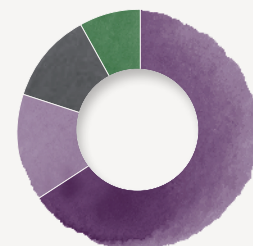
## Selection of studies and data disaggregation

A total of 4,323 titles were identified from the database searches and their abstracts were screened. Out of these, 373 full texts were assessed for inclusion. Upon screening completion, **84 studies from peer-reviewed sources met the criteria for inclusion and were taken forward for data extraction and analysis.**

Systematic reviews synthesized

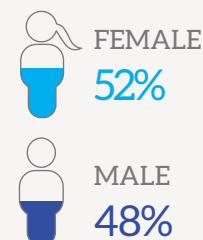
data from 137 publications, of which 50 studies were on COVID-19 and the others were on other epidemics and disaster settings. We focused on the COVID-19 specific studies in our synthesis.<sup>f</sup> See Annex 2: Overview of studies for the PRISMA flow chart (which shows how studies were included or excluded) and the COVID-19 measures and locations covered by the studies.

### Study type



### Sex

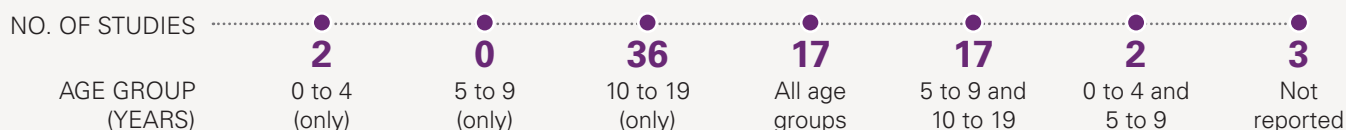
The average sex ratio in primary studies was balanced: 51 per cent female and 48 per cent male, with only seven studies sampling less than 30 per cent from each sex. Sixteen studies did not provide any disaggregation by sex.



### Age

Among the primary studies reporting on participant age (74 out of 77), most studies (49 per cent, n=36) investigated the impact of COVID-19 on children and adolescents aged 10–19 years.

Age groups (in years) represented by the 77 primary studies (excluding systematic reviews):



TOTAL: 77



<sup>f</sup> Systematic reviews include single studies also retrieved through our search. We manage this overlap by presenting findings from systematic reviews (n=7) and primary studies (n=77) separately.



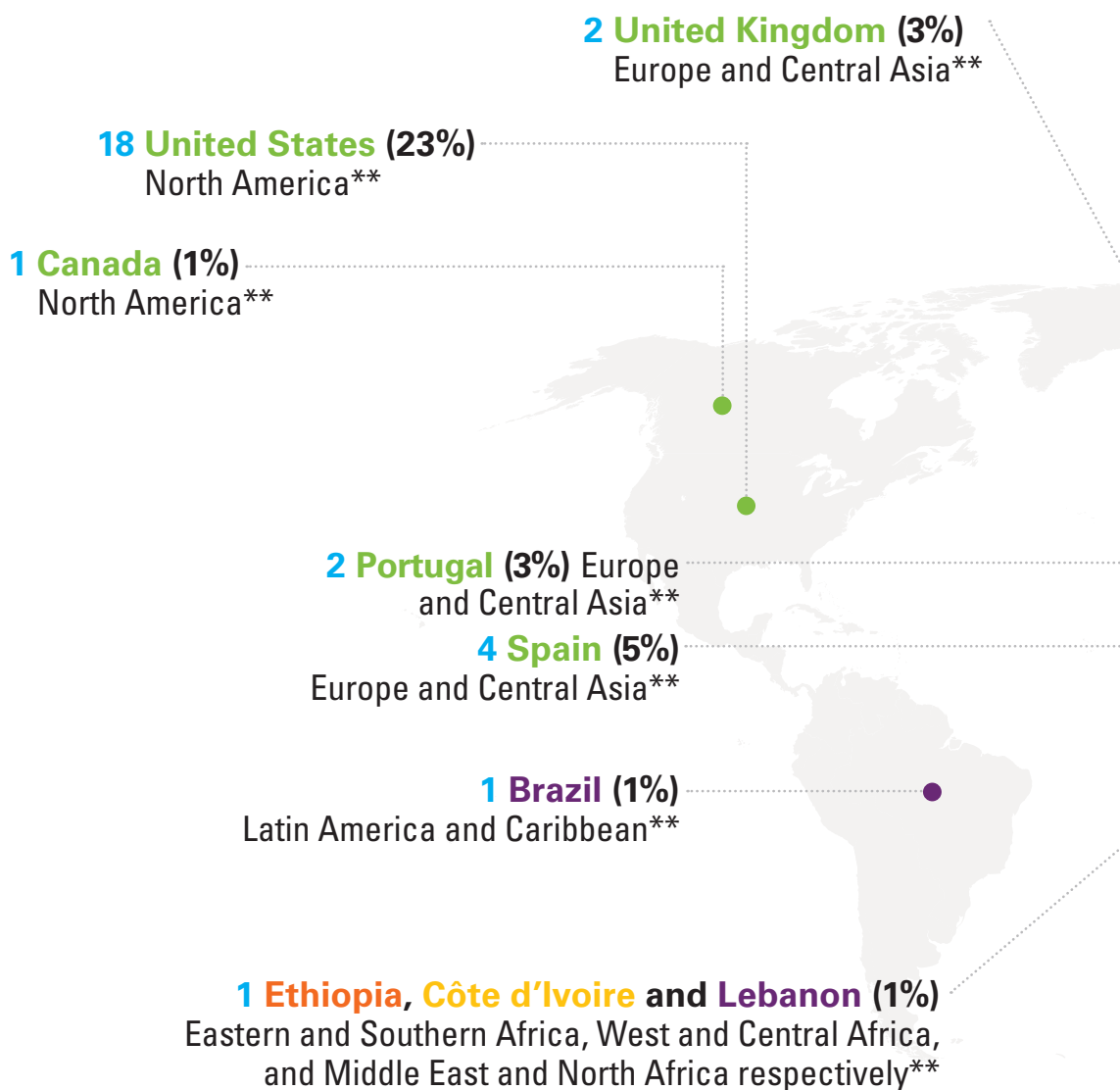
# Number of countries represented by primary studies (excluding systematic reviews)

no. of studies **1**

no. of countries **13**

### Country income category\*

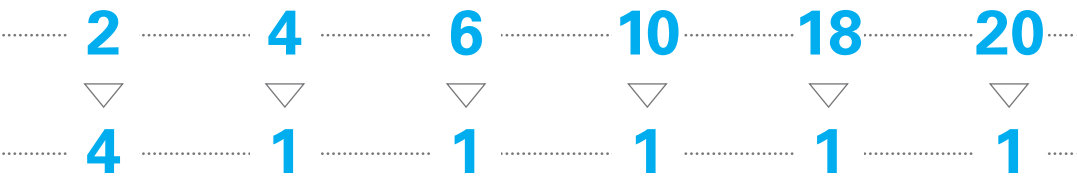
- High
- Upper middle
- Lower middle
- Low



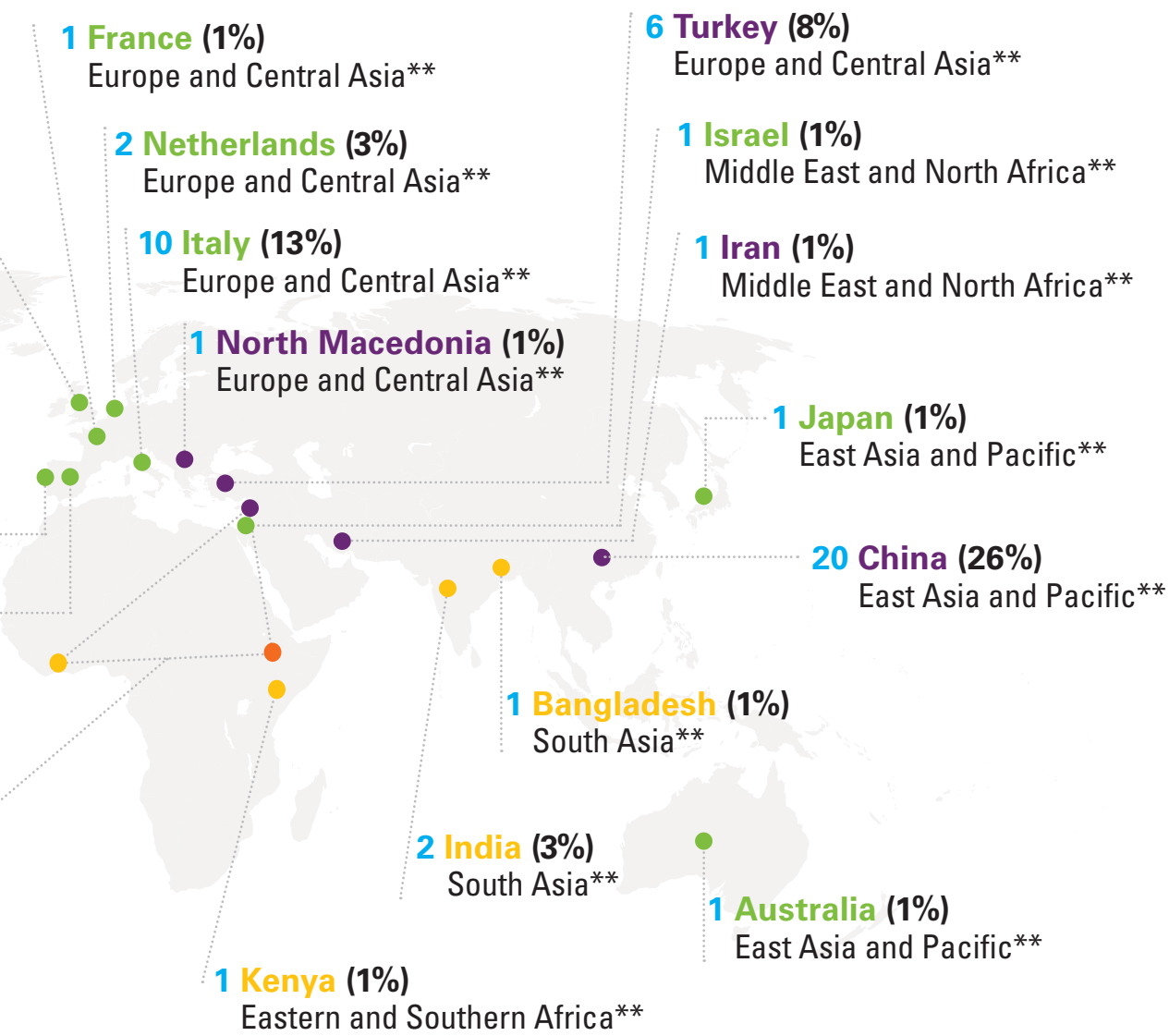
\* Based on the 2021 World Bank country classification: World Bank Country and Lending Groups – World Bank Data Help Desk.  
 \*\* Based on the UNICEF regional classification: <https://data.unicef.org/regionalclassifications/>.



OVERVIEW OF STUDIES



Total 77 studies from 22 countries





## Data-collection period

**Data were collected between January and August 2020**, with the exception of two longitudinal studies which also included data collected in **October 2019** in their analyses. Except for one study (12 time points), all other longitudinal studies collected pre-post data across two time points. April was the most active month in terms of data collection, with 55 per cent of studies collecting data within this month. Next were March (32 per cent) and May (31 per cent).<sup>9</sup>

## Location of studies

Out of the 84 studies, 77 primary studies (excluding the seven systematic reviews) reported on **data from 132,555 children and adolescents from 22 countries**.<sup>h</sup> Of these, 26 per cent of studies sampled children and adolescents in **China**, while 23 per cent and 13 per cent reported data from children and adolescents in the **US and Italy**, respectively. Only one low-income country was represented in the primary studies reviewed (Ethiopia), while half of the other countries represented were high-income.



Photo: © UNICEF/UN0375486/Kaur

<sup>9</sup> Some studies included multiple months of data collection, which is why the percentages add up to more than 100 per cent.

<sup>h</sup> Three studies did not include the number of participants. For those primary studies that reported on number of parents and/or families only, these were used as a proxy for number of children and adolescents. Among those primary studies that included some participants older than 19 years, we included only the number of participants if this was disaggregated by age, or if the age of the oldest participants was close to 19 years.



## Research into COVID-19 measures

Thirty-four per cent of primary studies researched the impact of containment measures (i.e., lockdown, ‘stay-at-home’ orders, quarantine, school closures and physical distancing) on the mental health and well-being of children and adolescents, and 23 per cent did not indicate a specific COVID-19 control measure under study. Specifically, 14 per cent of studies investigated the impact of lockdown and ‘stay-at-home’ orders, 10 per cent researched the impact of physical distancing, 10 per cent focused on school closures, while 8 per cent investigated the impact of being quarantined at home, in a clinic or a hospital. Although most studies investigated the impact of daily stressors associated with COVID-19 on children and adolescents, definitions and interpretations of these public health measures varied widely.



... **most studies** investigated the impact of daily stressors associated with COVID-19 on children and adolescents, definitions and interpretations of these public health measures varied widely.

In particular, the term ‘quarantine’ was commonly misused in studies published in the early stages of the pandemic and was used to refer to lockdown or ‘stay-at-home’ orders.

In 42 per cent of studies, data were self-reported by children while in 39 per cent of studies data were provided by their caregivers (includes parents and, in one study, health workers). In 19 per cent of studies, data were provided by both children and caregivers.

34%

of primary studies:

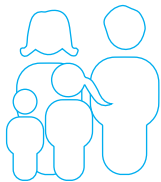


researched the impact of containment measures on the **mental health** and **well-being** of children and adolescents



42%  
39%  
19%

data provided by: **children**  
data provided by: **caregivers**  
data provided by: **both**



23%

did not indicate a specific COVID-19 **control measure**

14%

investigated the **impact of lockdown** and ‘stay-at-home’ orders

10%

researched the impact of **physical distancing**

10%

focused on **school closures**

8%

investigated the impact of **quarantine at home, in a clinic or a hospital**



# KEY FINDINGS

This section summarizes the findings of the effects of the COVID-19 pandemic on mental health and psychosocial outcomes in children and adolescents aged 0–19 years.

The effects of direct infection and infection control measures (such as lockdown and school closures) and key risk and protective factors that are associated with mental health outcomes during the pandemic, are described. The findings are organized into four broad outcome categories: 1) internalizing conditions; 2) externalizing conditions; 3) lifestyle behaviours; and 4) positive mental health outcomes. Please see the annexes for details of the type of studies reviewed for each symptom, their location and the scales used to measure all outcomes across the studies reviewed.

## Internalizing conditions

### • Depression

**This outcome comprises sadness, grief and depressive symptoms (including low mood, lack of interest or energy in activities, hopelessness and guilt), and major depression.**

Evidence from previous pandemics suggests that social isolation and loneliness, particularly length of loneliness, increase the already high risk for depression in children and adolescents several months to several years later.<sup>59–61</sup> In the context of COVID-19, the risk for depression in children and adolescents is high, because of social isolation, disruptions in daily life and uncertainty about the future.



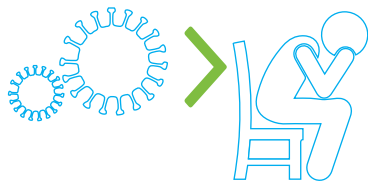
## Depression

### OUTCOME



STUDY TYPE		NO. OF STUDIES
CROSS-SECTIONAL	Bangladesh: 1 • China: 12 • India: 1 • Iran: 1 • Italy: 1 • Kenya: 1 Turkey: 1 • US: 2	20
LONGITUDINAL	Australia: 1 • Italy: 1 • Netherlands: 1 • Spain: 1 • US: 4	8
MIXED METHODS OR QUALITATIVE	Portugal: 1 • France: 2 • Ethiopia, Côte d'Ivoire and Lebanon: 1 US: 4 • Spain: 1	9
SYSTEMATIC REVIEW	China: 15 • India: 1 • Italy: 1 • Kosovo: 1 • Spain: 2 • Turkey: 1 UK: 2 • US: 2	6

**Note:** For systematic reviews, the number of studies reflects the number of systematic reviews, while the countries and corresponding numbers reflect the number of studies from each country included in these systematic reviews. All references to Kosovo in this review should be understood to be in the context of United Nations Security Council Resolution 1244 (1999).



...depressive symptoms and sadness among children and adolescents since the outbreak of COVID-19 ...

### Effect of COVID-19

**Overall, the studies reviewed found a moderate increase in depressive symptoms and sadness among children and adolescents since the outbreak of the COVID-19 pandemic, and a range of rates.**<sup>62–64</sup> In studies

reporting on the level of depressive symptoms, more participants had mild and moderate symptoms than those experiencing severe symptoms.<sup>63, 65–67</sup> Older adolescents and females reported depressive symptoms more frequently than other subgroups.<sup>63–79</sup> Other findings suggest that government measures to control the spread of the pandemic may be affecting children's and adolescents' experiences of depressive symptoms, including sadness, worry, helplessness and fear.<sup>80</sup> Findings specific to longitudinal studies conducted in the US, Spain and Australia included in the review presented mixed results regarding changes in depressive symptoms in the first few months since the COVID-19 pandemic (with data until April 2020).<sup>72,81–83</sup>

### Risk and protective factors for depression

**Sociodemographic characteristics:** In 20 of the 34 primary studies reviewed for this outcome,<sup>63–79,84–86</sup> age, sex and location played a key role in the prevalence or severity of depressive symptoms among children and adolescents during the pandemic: being female,<sup>64,67–70,72,73,76,77</sup> older<sup>63–71,74–76,78,79</sup> and/or living in rural<sup>64,66</sup> or in more-affected<sup>63,84,85</sup> areas constitute potential risk factors. However, some studies do not draw these conclusions.<sup>66,86,87</sup> The impact of COVID-19 on household living conditions and livelihoods played a role in exacerbating depression in parents and children, with hardships during the pandemic associated with increased feelings of sadness or worry in parents and children.<sup>82</sup>

**Pre-existing vulnerabilities:** Two studies considered the impact of the pandemic on children and adolescent depressive symptoms in the context of pre-existing vulnerabilities: living with HIV<sup>65</sup> or living in LMICs and conflict-affected settings, where many people who were already exposed to chronic poverty, displacement and gender inequalities experienced serious depression and struggled to adapt to online teaching because of the pandemic.<sup>7</sup>



## AT A GLANCE

**Pre-pandemic:** Depression is the fourth leading cause of illness and disability in adolescents aged 15–19 years, and fifteenth among those aged 10–14 years, with adolescent girls more likely to be diagnosed with depression than adolescent boys (especially after puberty).<sup>59,60</sup>

**During the pandemic:** Studies conducted in China showed a wide range of prevalence rates for general depression (12 per cent to 44 per cent across studies), compared with pre-pandemic prevalence of 17 per cent prior to 2018.<sup>62</sup>



**Perceived seriousness and risk of COVID-19 exposure:**

A higher perceived seriousness of the pandemic, a higher fear of getting COVID-19 and lower compliance with government measures predicted negative feelings,<sup>68</sup> while COVID-19 exposure (i.e., having been in compulsory isolation or under medical observation because of a COVID-19 diagnosis or close contact with a COVID-19-infected person) was associated with a higher prevalence of depression symptoms.<sup>64</sup>

**Loneliness and isolation:** The measures taken to contain COVID-19 – such as social distancing, home quarantine and school closures – have led to spikes in loneliness and isolation across the countries represented in this review: early studies during COVID-19 indicated that over one-third of adolescents reported high levels of loneliness.<sup>61</sup> In particular, quarantined adolescents experienced greater psychological distress, including sadness, than non-quarantined youth.<sup>61</sup> However, more lax community restrictions may make children and adolescents more prone to distress if family members' concerns about safety and infection increase.<sup>75</sup> Previous studies have shown that enduring loneliness and social isolation is predictive of depression severity over the child's life course and that the length of isolation is an important factor.<sup>88</sup>

**Recreational activities:** Family support and engagement in meaningful activities may be buffers against depressive symptoms,<sup>71</sup> while engaging in physical activity seems to be a protective factor associated with better mood states.<sup>76</sup>

**Parent- and family-related factors:** A study found links between parents who were regarded as a source of

stress and children's depression, while parental support was inversely related to depression.<sup>77</sup> Caregivers' depression and anxiety scores were significantly correlated with their children's emotional and behavioural difficulties (including sadness and depression).<sup>75</sup> Scores of depression, anxiety and sleep disturbance were higher among children who had poorer relationships with their parents and siblings.<sup>86</sup>

**Social support:** Higher prevalence of depression was recorded among adolescents with medium and low levels of social support, while adherence to stay-at-home orders and feeling socially connected during lockdown were protective factors against depression and anxiety.<sup>72</sup>

**Implications**

**As the onset of depression is typically around mid to late adolescence, with long-term consequences if untreated, it is critical to recognize the early warning signs of depression during the COVID-19 pandemic.**

Although data on the long-term effects of COVID-19 on depression are still emerging, a recent review of youth exposed to other crises (disasters, terrorism and political violence) revealed that depression was the most common outcome reported in humanitarian settings across ages and had enduring effects over time.<sup>89</sup> Short-term strategies to deal with depression symptoms during COVID-19 can mitigate the risk factors and promote the protective factors identified by this review. This includes interventions that support the well-being of parents, training/messaging on positive parenting during lockdown, instilling adaptive coping skills in children, conflict management within relationships and



resources for adolescents on managing conflict with parents. Moreover, our findings emphasize the importance of connectedness, collectivity and self-efficacy, as well as promoting useful individual actions, avoiding authoritarian messages and publicizing positive norms rather than punitive messages as more effective for public health messaging and positive mental health.<sup>88-90</sup>

### • Fear and anxiety

**This outcome comprises anxiety symptoms including fear, panic, social anxiety disorder, OCD and hoarding disorder.** Children are likely to experience fear and anxiety during the pandemic because of constantly changing containment measures and uncertainty, as well as worry and concerns related to the spread of the virus itself, especially the risk it poses to loved ones.

Fear and worry could potentially develop into psychological problems, including anxiety disorders and OCD.

### Effect of COVID-19

**Overall, children and adolescents reported fear and worry about the pandemic, and this was linked to higher than pre-pandemic rates of anxiety across regions,<sup>10</sup>** as longitudinal studies attested.<sup>72,90</sup> Nevertheless, prevalence rates varied between studies and regions – ranging from 13 per cent<sup>60</sup> to 37 per cent<sup>67</sup> in China compared with 29 per cent in the general population (aged under 68 years).<sup>60</sup> Most studies were conducted in China and included 10–19-year-old participants. They reflect the high volume of studies on the mental health impacts of COVID-19 coming from China, as well as the range of anxiety-related outcomes and variations found across subgroups of children and adolescents in China.



## Fear and anxiety

### OUTCOME



STUDY TYPE		NO. OF STUDIES
CROSS-SECTIONAL	Bangladesh: 1 • Brazil: 1 • China: 13 • India: 2 • Iran: 1 • Italy: 2 Portugal: 1 • Turkey: 5 • UK: 1 • US: 7	34
LONGITUDINAL	Australia: 1 • Italy: 1 • Netherlands: 1 • US: 3	6
MIXED METHODS OR QUALITATIVE	Portugal: 1 • France: 2 • Ethiopia, Côte d'Ivoire and Lebanon: 1 US: 4 • Spain: 1	9
SYSTEMATIC REVIEW	China: 18 • India: 1 • Italy: 1 • Kosovo: 1 • Spain: 2 • Turkey: 1 UK: 3 • US: 4	7

**Note:** For systematic reviews, the number of studies reflects the number of systematic reviews, while the countries and corresponding numbers reflect the number of studies from each country included in these systematic reviews. All references to Kosovo in this review should be understood to be in the context of United Nations Security Council Resolution 1244 (1999).



## AT A GLANCE

**Pre-pandemic:** Anxiety is the most commonly reported mental health issue among children and adolescents globally, and is more commonly diagnosed in girls than in boys. Global prevalence rates for anxiety in children and adolescents (5–17 years) are estimated to be 3 per cent, which includes combined burden estimates for multiple anxiety disorders.<sup>10</sup>

**During the pandemic:** A cross-sectional survey conducted in March 2020 with Chinese adolescents revealed self-reported anxiety symptoms in 37 per cent of the sample<sup>67</sup> while a study among Brazilian children and adolescents surveyed in April–May 2020 found anxiety reports in 19 per cent of children, and more for those whose parents had essential jobs (31 per cent) or who physically distanced without parents (36 per cent).<sup>91</sup>

### Risk and protective factors for fear and anxiety

#### **Sociodemographic characteristics:**

Age, sex and location were key moderators of the pandemic's impact on child and adolescent anxiety, and across studies. In several studies, anxiety symptoms were more frequently reported in females than in males<sup>67,87</sup> and higher anxiety was found in rural areas than in cities.<sup>67,92</sup> In one study, younger children (aged 3–6 years) displayed greater clinginess and worry about family members getting infected with COVID-19 than older children.<sup>93</sup> However, overall the directionality of findings for these demographic factors yielded mixed results.

#### **Pre-existing vulnerabilities:**

Pre-pandemic maltreatment experiences (such as family abuse, neglect and household dysfunction) predicted greater anxiety. Moreover, greater increases in negative outcomes because of fear of exposure to COVID-19 were explained by pre-pandemic adverse childhood experiences, especially family neglect.<sup>94</sup>

### **Perceived seriousness and risk of**

**COVID-19 exposure:** Fear of COVID-19 and perceived severity of the pandemic were associated with increased anxiety, hoarding behaviours and OCD symptoms, but knowledge about the containment and spread of COVID-19 played a protective role in mitigating child and adolescent anxiety.<sup>67</sup> Overall, those who worried more about getting infected with COVID-19 and its consequences<sup>95</sup> and adolescents exposed to COVID-19 (i.e., those who have been in compulsory isolation or under medical observation because they were diagnosed with COVID-19 or had close contact with a person infected with COVID-19) had a higher prevalence of anxiety symptoms.<sup>67</sup>

#### **Loneliness and isolation:**

A cross-sectional study from the US indicated that an individual's reasons for socially distancing may affect their mental health outcomes.<sup>96</sup> Greater length of loneliness because of COVID-19 containment measures was associated with increased anxiety levels.<sup>97</sup> Contact with family members or peers online was associated with fewer anxiety symptoms than among those who spent time alone or watching films.<sup>98</sup>



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**Internet and digital technology:**

Although greater anxiety was often associated with increased usage of digital technology and social media during the pandemic, such technology may in fact be a coping mechanism for children experiencing anxiety while confined to their homes.<sup>99,100</sup>

**Parent- and family-related factors:**

Tensions may arise or be exacerbated when families are exposed to each other for such unprecedented periods during home quarantine and lockdown. Certain parenting styles (hostile parenting, parental inflexibility and harsh discipline) have been associated with increased child and adolescent anxiety.<sup>101,102</sup>

**Stigma and discrimination:** Stigma and discrimination (including racial discrimination – racism) are known contributors to mental disorders.<sup>103</sup> The COVID-19 pandemic has, in particular, refuelled racist tropes against persons of Asian descent in the US, which is associated with anxiety symptoms among Chinese American adolescents.<sup>104</sup>

**Implications****It is important to monitor anxiety symptoms related to COVID-19 over time.**

COVID-19 has brought about significant disruptions to daily life, uncertainty about the future, fear of infection and/or ill health of loved ones, isolation and decreased contact with peers, parenting challenges and financial instability and an increase in sedentary behaviours, all of which may contribute to panic and anxiety among children and adolescents. The situation may stabilize as the pandemic evolves and families adapt to the 'new normal'. Opportunities for alleviating anxiety and stress through play, family time, stress management, digital media use and telepsychiatry can be harnessed.

**• Suicidal behaviour****Suicidal behaviour (suicidal ideation, self-harm, attempt and death by suicide) is a critical public health issue among children and adolescents.**

COVID-19, accompanying containment measures and the pressures and stress they impose on families worldwide are unprecedented and raise questions as to *whether* and *how* they affect suicide rates and suicidal ideation in children and adolescents.





## Suicidal behaviour

### OUTCOME



STUDY TYPE		NO. OF STUDIES
CROSS-SECTIONAL	Japan: 1	1
LONGITUDINAL	US: 1	1
MIXED METHODS OR QUALITATIVE	Ethiopia, Côte d'Ivoire and Lebanon: 1	1
SYSTEMATIC REVIEW	UK: 1 • China: 1	2

**Note:** For systematic reviews, the number of studies reflects the number of systematic reviews, while the countries and corresponding numbers reflect the number of studies from each country included in these systematic reviews.

### Effect of COVID-19

**We found limited evidence of the impact of COVID-19 on this outcome.**<sup>7,81,105</sup> Preliminary reports indicate that increases in suicide rates among children and adolescents in the context of COVID-19 should not be assumed as several protective

factors could increase in the context of this crisis. Suicides are severely under-reported for cultural and religious reasons (in some regions, a suicide attempt is considered a legal offence punishable by law), as well as owing to different classification and ascertainment procedures.<sup>106</sup>



### AT A GLANCE

**Pre-pandemic:** Suicide is the third leading cause of death among adolescent girls and the fourth leading cause among adolescent boys aged 10–19 years, estimated to account for 6 per cent of all deaths among this population.<sup>106,107</sup> For older adolescents (15–19 years), it is the fourth most common cause of death globally. Even for younger adolescents, suicide remains in the top 10 causes.

**During the pandemic:** No changes in national child and adolescent suicide rates were noted in Japan. An overall decrease in suicidal behaviour among children and adolescents was noted among patients presenting for emergency services in the US in the context of the COVID-19 pandemic and related measures.<sup>81,105</sup> Thoughts of suicide may be used as a negative coping strategy among children and adolescents in the context of COVID-19 in Ethiopia, Côte d'Ivoire and Lebanon.<sup>7</sup> Despite early findings, research is scarce and it could be too early to tell how suicide rates have changed in the context of the pandemic.<sup>108,109</sup>



### Risk and protective factors for suicidal behaviour

#### There is limited evidence of the risk and protective factors of suicidal behaviour in the context of COVID-19.

The key risk factor is pre-existing vulnerability, specifically comorbid mental health issues.

**Pre-existing vulnerabilities:** In the repeated cross-sectional study among children and adolescents in the US, there were no significant differences in age, sex, ethnicity, relationship status or living situation between the pre-COVID-19 cohort (1 January to 28 February 2020) and the COVID-19 (1 March to 30 April 2020) cohort.<sup>81</sup> However, participants seen during the pandemic period were significantly less likely to have a previous psychiatric history or outpatient psychiatric treatment.<sup>81</sup> Overall, the key risk factor is pre-existing vulnerability, specifically comorbid mental health issues. The pandemic has raised concerns regarding shortages of psychotropic medicines in LMICs which may result in treatment discontinuation, a risk factor for suicidal behaviour.<sup>110</sup>

**Social support:** Lockdown and 'stay-at-home' orders internationally have led to physical and social distancing and reports of social isolation, raising concerns about their influence on suicidal behaviour, as loneliness is a well-recognized risk factor for suicidal behaviour.<sup>111</sup> However, social support and connectedness during the pandemic may be a protective factor, whereby staying at home may relieve pressure from stressors, including those at school,<sup>108,112</sup> and create time for family bonding. This may help reduce anxiety and distress, prevent depression and, in turn, reduce the risk of suicide among

children and adolescents. Nevertheless, increases in domestic violence during lockdowns have been reported globally, and call centres for psychological support being overwhelmed with calls from people suffering from suicidal thoughts.<sup>113</sup> Thus, support from communities, peer networks and social services may be critical at this time to prevent suicidal behaviour.

### Implications

**The pandemic and associated stressors provide an opportunity and imperative to increase investment in mental health services generally, and strengthen political will and public awareness on suicide prevention specifically.**<sup>109</sup> Such efforts can provide a foundation for addressing suicide risk generally and during future crises.

**Efforts to tackle suicide and suicidal behaviour among adolescents are critical.** There are five recognized areas of suicide prevention: 1) education and awareness programmes for the general public, professionals and school-based programmes; 2) screening methods for self-harm and suicidal ideation among high-risk persons; 3) treating psychiatric disorders; 4) restricting access to lethal means, including gun control legislation; and 5) safe media reporting of suicide.<sup>114</sup> COVID-19-specific strategies include: supporting and checking in on those living alone; maintaining, supporting and increasing the workforce of crisis hotlines; targeted and consistent messages regarding safe alcohol consumption; and ensuring access and support to services for victims of domestic violence.<sup>109</sup> Using different synergistic strategies that address different aspects of suicidal behaviour is a recognized successful approach.<sup>115</sup>

Lockdown and 'stay-at-home' orders



Social support and connectedness

### • Trauma and post-traumatic stress

**Adjustment issues and post-traumatic stress symptoms are commonly reported mental health reactions to humanitarian emergencies, including pandemics, disasters and armed conflict.**<sup>116–118</sup>

Untreated, these can develop into more serious mental health conditions such as PTSD, acute stress disorder and adjustment disorders.<sup>i</sup>

### Effect of COVID-19

**Overall, some studies indicated increased stress and adjustment issues among adolescents, especially because of fear of infection, uncertainty because of quarantine and disruptions to daily routines.**

Studies did not, however, find significantly elevated PTSD symptoms in children and adolescents, perhaps because it was too early in the pandemic to adequately assess a PTSD diagnosis.



## Trauma and post-traumatic stress

### OUTCOME



STUDY TYPE		NO. OF STUDIES
CROSS-SECTIONAL	China: 6 • Iran: 1 • Italy: 1 • US: 1	9
LONGITUDINAL	US: 1	1
MIXED METHODS OR QUALITATIVE	Ethiopia, Côte d'Ivoire and Lebanon: 1 • France: 2 • US: 1	4
SYSTEMATIC REVIEW	China: 7 • Italy: 1 • Spain: 1 • UK: 2	5

**Note:** For systematic reviews, the number of studies reflects the number of systematic reviews, while the countries and corresponding numbers reflect the number of studies from each country included in these systematic reviews.

<sup>i</sup> As such diagnoses indicate specific timeframes of emergence and duration of symptoms, they should be used with caution for populations facing acute daily stressors and sudden life changes, as have been brought on by the COVID-19 pandemic. Given that the studies included in this review assessed symptoms related to an ongoing pandemic, most used broader terms to refer to this mental health outcome, particularly 'acute stress', 'adjustment issues', 'post-traumatic stress symptoms' and '(acute) stress symptoms'.



**Stress:** The most commonly reported symptom across studies was stress related to COVID-19, especially stress from fear of getting infected, uncertainty because of quarantine and school closures, as well as issues with adjusting to the 'new normal'.

**PTSD:** Five studies<sup>81,94,119–121</sup> also included results on adjustment disorders and PTSD. In most cases, participants did not score beyond the cut-off score for probable PTSD. Similar rates were observed across studies and were lower than the pre-pandemic pooled prevalence of PTSD (47 per cent) among children exposed to humanitarian emergencies.<sup>122</sup> The true PTSD burden of COVID-19 in children and adolescents and its aftershocks may only be fully understood in the years to come. Moreover, symptoms such as hyper-arousal may be adaptive reactions to extreme stressors that resolve with time, rather than progressing to PTSD.<sup>123</sup>

**Adjustment problems:** The adjustment issues reported in studies conducted during the pandemic were to be expected, given the sudden changes in daily routines, school closures, disruptions of peer relationships and social confinement, and the need to adapt to a 'new normal' globally.<sup>81</sup>

### Risk and protective factors for trauma and post-traumatic stress

#### **Sociodemographic characteristics:**

Although age and sex played a role in child and adolescent distress, the direction of associations across studies was mixed,<sup>68,71,120,124</sup> suggesting that the impact of these factors may be context-dependent and/or influenced by the type of measurement tool used (as certain tools are more sensitive at different ages).

**Pre-existing vulnerabilities:** Traumatic stress related to the COVID-19 situation may exacerbate trauma from pre-existing adverse childhood experiences and previous exposure to traumatic events.<sup>94</sup> Results corroborate previous research showing that adverse childhood experiences predict mental health issues in adolescents within traumatic contexts, such as natural disasters.<sup>125</sup> Moreover, the COVID-19 pandemic seems to have exacerbated pre-existing inequalities in LMICs (particularly among populations already affected by poverty, conservative gender norms, disability and displacement), which can lead to increased stress.<sup>7</sup> However, other adolescents reported positive coping strategies in dealing with stress, such as playing football.<sup>7</sup>



## AT A GLANCE

**Pre-pandemic:** Pre-pandemic pooled prevalence of PTSD (47 per cent) among children exposed to humanitarian emergencies.<sup>122</sup>

**During the pandemic:** A study conducted in Italy during lockdown showed that students aged 13–20 reported difficulties eating (14 per cent), disturbances in heartbeat (19 per cent), crying frequently (34 per cent), or other symptoms of pathological stress. These symptoms tended to be more significant in females and adolescents living in red zones (areas with a strict lockdown).<sup>68</sup> A Chinese study with adolescents and young people (14–35 years) during the pandemic showed that 14 per cent of the overall sample reported PTSD symptoms, and 40 per cent reported psychological problems.<sup>120</sup>



## KEY FINDINGS

**Perceived seriousness and risk of**

**COVID-19 exposure:** Across studies, experienced or feared exposure to COVID-19, and perceived seriousness of the pandemic more generally, were predictive of stress symptoms in children and adolescents.<sup>68,81,94,119,126</sup>

**Parent- and family-related factors:**

Child–parent closeness and child–parent conversations about the pandemic were negatively associated with child and adolescent stress and parents’ perceived stress in their children.<sup>71,124</sup> However, parents’ higher levels of depression and anxiety were associated with higher perceived child stress, as reported by caregivers themselves.<sup>124</sup>

**Loneliness and social isolation:**

COVID-19 containment measures seem to have had both positive and negative effects on stress-related symptoms in children and adolescents, owing to the conditions of confinement. Children who were isolated because they tested positive for COVID-19 suffered from post-traumatic stress symptoms.<sup>126</sup> Moreover, children separated from their families or having caregivers who were COVID-19-positive were at risk of acute stress, adjustment disorders and grief, which corroborates previous research on child mental health after health-related disasters (e.g., H1N1 and SARS).<sup>127</sup>

**Social support:** Contact with parents because of home confinement could constitute a moderating factor of experiences of stress.<sup>121,126</sup> Successfully managing stress and ongoing challenges could contribute to resilience, personal growth and development which act as protective factors for coping with future stressors.<sup>112</sup>

**Implications**

**With waves of the virus continuing worldwide, children and adolescents may be particularly vulnerable to cumulative trauma, whose role in the development of PTSD has been well-researched.**<sup>128–130</sup> Prior adversities may interact with ongoing daily stressors and hardships to exacerbate mental health symptoms<sup>131</sup> because of the broader effects of COVID-19, such as violence in the home or the community, witnessing suffering in the community (e.g., as a result of poverty), or exposure to extreme events such as human trafficking. It is therefore critical to consider pre-existing vulnerabilities or previous exposure to trauma when designing trauma management interventions.

 **Externalizing conditions****• Externalizing behavioural problems**

**The externalizing behavioural problems explored here relate to anger, aggression, irritability, inattention, hyperactivity, impulsivity and violence.** Many of these symptoms are associated with conditions such as attention deficit hyperactivity disorder (ADHD), oppositional defiant disorder (ODD) and conduct disorder, which are primarily diagnosed in childhood or adolescence, and more frequently diagnosed in boys than in girls. Externalizing behavioural problems can have a significant impact on a child’s emotional and cognitive development and may go on to develop into more enduring mental health issues over time.



## Externalizing behavioural problems

### OUTCOME



STUDY TYPE		NO. OF STUDIES
CROSS-SECTIONAL	Bangladesh: 1 • China: 2 • India: 1 • Italy: 2 • North Macedonia: 1 Portugal: 1 • Spain: 1 • UK: 1 • US: 2	12
LONGITUDINAL	Spain: 2 • US: 1 • Italy: 1	4
MIXED METHODS OR QUALITATIVE	France: 2 • Spain: 1	3
SYSTEMATIC REVIEW	China: 4 • Italy: 2 • Spain: 2	3

**Note:** For systematic reviews, the number of studies reflects the number of systematic reviews, while the countries and corresponding numbers reflect the number of studies from each country included in these systematic reviews.

### Effect of COVID-19

**Most studies showed that overall, negative emotions and behaviours (including anger, irritability, negativity, hostility and aggressive behaviour) in children and adolescents were worsened by new living conditions introduced by COVID-19 containment measures** such as lockdowns and school closures<sup>132,133–136</sup> and the resulting changes in their sleep patterns, diet, routines, weight and increased usage of electronic screens.<sup>137</sup> Specifically, changes in daily routine, disruption to ongoing mental health and other services, the shift to remote

schooling, overall uncertainty and more restrictive living conditions significantly affected emotional management and worsened behaviours.

Increased difficulties with self-control among young children (2–5 years)<sup>133</sup> and more intense and more frequent behaviour problems in children of all ages – with a high association among those with pre-existing behaviour issues<sup>138</sup> – were reported. These had an impact on family life, with increased frequency of uncooperative behaviour,<sup>82</sup> increased family discord and arguments<sup>102,139</sup> and decreased prosocial behaviour.<sup>136</sup>



## AT A GLANCE

**Pre-pandemic:** These conditions may be underestimated in studies on global disease burden, which are largely skewed towards adults. They are challenging to measure comparatively because of diversity in diagnostic criteria, testing and data sources.

**During the pandemic:** A cross-sectional study in India revealed that parents reported that 73 per cent and 51 per cent of children were showing signs of increased irritation and anger, respectively, and that these symptoms were worsened by changes in their sleep patterns, diet, routines, weight and increased usage of electronic screens.<sup>137</sup> In an Italian study, 36 per cent and 42 per cent of sampled children of all ages were showcasing more intense and more frequent behaviour problems respectively, with a high association among those with pre-existing behaviour issues.<sup>138</sup> Overall, girls seemed more vulnerable than boys to mood disturbance and emotion symptomatology.<sup>41</sup>

### Risk and protective factors for externalizing behavioural problems

#### **Sociodemographic characteristics:**

Age and sex appeared to moderate the effects of COVID-19 containment measures on externalizing behaviours. In one study, girls reported significantly higher scores for tension, anger and confusion than boys,<sup>76</sup> and girls with autism spectrum disorder had higher emotional symptomatology than their male counterparts.<sup>135</sup> Older female students showed higher levels of mood disturbance,<sup>76</sup> yet older age was also found to serve as a protective factor for problem behaviour in China<sup>136</sup> and in Italy for children with autism spectrum disorder.<sup>138</sup> Family socio-economic status, hardships and challenging living conditions (such as caregiving burden of parents and household illness) were observed to have the most significant influence on behavioural problems and externalizing mental health outcomes since the onset of COVID-19. Family

risk, established on the basis of lower socio-economic status and worsened work conditions, was associated with children's mood instability or negativity,<sup>140</sup> uncooperative behaviour<sup>82</sup> and anger and irritation.<sup>137</sup> Higher family socio-economic status was reported to be a protective factor.<sup>136</sup>

**Pre-existing vulnerabilities:** Children with pre-existing vulnerabilities, including autism spectrum disorder and ADHD, were found to be more vulnerable to changes in daily routine and more restrictive living conditions related to COVID-19 than their peers with no such conditions.<sup>135,141,142</sup> For example, children with ADHD were reported to have more conduct problems, while children with autism spectrum disorder were reported to have lower prosocial behaviours than prior to the pandemic.<sup>143</sup> Similar findings were reported for children with special educational needs and pre-existing health conditions, which were strongly linked to behaviour problems.<sup>136</sup>





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**Parent- and family-related factors:**

Most studies reported a significant association between family functioning (including parenting style – e.g., authoritarian versus permissive parenting and which may vary in terms of parental warmth and control – quality of relationship, and parents' emotions and mental health) and children's worsening or increased frequency of difficult behaviour since the start of the pandemic.<sup>134,136</sup> Parental divorce/separation and parental mental health problems<sup>136</sup> and lenient or permissive parenting (characterized by providing few guidelines or rules and indulging children's behaviours) worsened relationships with family members, and tensions around homework<sup>134</sup> during the pandemic were all risk factors.

**Recreational activities:** Some studies reported links between the type of activities children and adolescents engaged in and their behaviour,<sup>134</sup> such as links between: 1) physical exercise and improved mood;<sup>93,95</sup> 2) the use of electronic devices for gaming (6–12-year-olds) and behaviour problems;<sup>136</sup> and 3) delays in going to bed and increased behavioural issues.<sup>133</sup> Maintaining daily routines, communicating online with friends and sharing time together at home during quarantine were protective against externalizing behavioural problems.<sup>134</sup>

**Implications**

**Given the high prevalence of externalizing behavioural problems (especially autism spectrum disorder<sup>143</sup> and ADHD<sup>10,144</sup>) in children and adolescents, it is important to monitor the effects of the pandemic on these populations.**

Moving forward, ensuring access to mental health services for these children, as well as maintaining daily routines and regular sleep, diet and physical activity will be important.

- **Alcohol and substance use and abuse**

Alcohol and/or substance use and abuse commonly begins during adolescence. Although experimentation may be a common risk-taking behaviour, early, frequent and excessive use may lead to dependency issues and psychological problems over time. The conditions for alcohol and substance use in young people vary widely, depending on their personal characteristics, family history, social context and drug access.<sup>145,146</sup>





## Alcohol and substance use and abuse

### OUTCOME



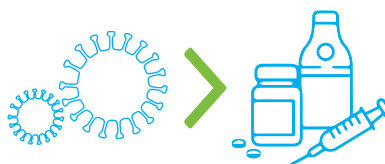
STUDY TYPE		NO. OF STUDIES
CROSS-SECTIONAL	China: 1	1
LONGITUDINAL	US: 1	1
MIXED METHODS OR QUALITATIVE	Portugal: 1 • Ethiopia, Côte d'Ivoire and Lebanon: 1	2
SYSTEMATIC REVIEW	China: 1	1

**Note:** For systematic reviews, the number of studies reflects the number of systematic reviews, while the countries and corresponding numbers reflect the number of studies from each country included in these systematic reviews.

### Effect of COVID-19

**Studies indicated increased alcohol and substance use and abuse among adolescents and young people during the COVID-19 pandemic and found this to be associated with other negative mental health issues.** Reports from China show higher-than-usual hazardous alcohol use among adolescents during

lockdown, although the authors note that none were found to be dependent users.<sup>63</sup> Meanwhile, psychiatric hospital admissions in the US revealed substance use as a comorbid presentation during the pandemic among adolescents with pre-existing psychiatric conditions,<sup>81</sup> indicating increased propensity to self-medicate as a coping mechanism.



... frequent and excessive use may lead to dependency issues and psychological problems over time.



## AT A GLANCE

**Pre-pandemic:** Young people are noted as a high-risk group in both the WHO global strategy on alcohol (endorsed by a consensus at the 63rd World Health Assembly) and the WHO Framework Convention on Tobacco Control (with 168 member signatories), attesting to concern over the consumption of alcohol, tobacco and illegal substances among children and adolescents. Boys generally report greater alcohol and substance use than girls.

**During the pandemic:** In one cross-sectional study from China, 26 per cent of respondents below 20 years of age reported hazardous alcohol use and 5 per cent reported harmful alcohol use, although none were found to be dependent users.<sup>63</sup> These findings show higher harmful alcohol use in this sample compared with the national Chinese 12-month prevalence of 2 per cent and lifetime prevalence of 4 per cent for alcohol use disorders.<sup>147</sup> Ahmed et al. found significantly higher substance and alcohol use and abuse among males than females (33 per cent of males compared with 25 per cent of females were hazardous users).<sup>63</sup>

### Risk and protective factors for alcohol and substance use and abuse

#### **Sociodemographic characteristics:**

Males and those with greater proximity to the outbreak epicentre (Hubei province) are at greater risk of alcohol and substance abuse.<sup>63</sup> This is in line with pre-pandemic findings that adolescent boys engage in higher alcohol use than adolescent girls, which could also be driven by social and cultural gender norms.<sup>145,146,148</sup>

**Pre-existing vulnerabilities:** Findings suggest that alcohol and substance use during COVID-19 may be a coping mechanism to deal with the pandemic,<sup>70</sup> including among adolescents with pre-existing or exacerbated mental health symptoms during this period.<sup>81</sup> This is in line with prior research with children and adolescents in armed conflict settings (which share similarities with the COVID-19 crisis) into increased substance use as an avoidance coping mechanism, especially in

dealing with stressors over which they have little control, allowing them to temporarily 'escape'.<sup>149,150</sup>

**Loneliness and isolation:** Findings suggest that COVID-19 containment measures – particularly lockdown and subsequent social isolation – were a risk factor for alcohol consumption. This supports findings from prior research of the role of social isolation in predicting problematic alcohol use.<sup>151</sup>

### Implications

**Emerging findings from our rapid review taken together with prior research in this area should be used to inform policies and programmes, especially among adolescents during lockdown, who may be particularly vulnerable.** This review highlights the propensity for adolescents to consume alcohol during periods of social isolation, limited social support, and increased anxiety, depression and uncertainty such as during the COVID-19 pandemic. This period may lead to a substantial

shift between types of drinking, e.g., from social drinking to drinking alone, with the latter being an issue of concern that may indicate – or lead to – dependency. As this outcome is often under-reported among people below the legal drinking age, its true burden and long-term effects may not be fully understood until a much later date.

### Lifestyle behaviours

Irregularities in lifestyle behaviours (including physical activity, sleep, diet and screen time) can affect child and adolescent mental health. Short or inconsistent sleep duration is associated with a wide range of negative physical, social, emotional and cognitive

outcomes during childhood and adolescence, including depression and suicide ideation.<sup>152</sup> Evidence points to consistent cross-sectional associations between unhealthy dietary patterns and negative mental health outcomes among children and adolescents (e.g., depression, anxiety, eating disorders), although the direction of the relationship has not been clearly established.<sup>153</sup> Young people are the largest demographic users of social media and online content. Depending on the type of activities children and adolescents engage in online, these can be beneficial or harmful to their mental health.<sup>99,154,155</sup> On the other hand, engaging in healthy lifestyle behaviours can protect their mental well-being.



## Lifestyle behaviours

### OUTCOME



STUDY TYPE		NO. OF STUDIES
CROSS-SECTIONAL	Turkey: 1 • China: 7 • Iran: 1 • US: 2 • Italy: 1 • Bangladesh: 1 North Macedonia: 1	14
LONGITUDINAL	Italy: 1 • Israel: 1	2
MIXED METHODS OR QUALITATIVE	Portugal: 1 • US: 1 • France: 1 • Canada: 1	4
SYSTEMATIC REVIEW	China: 3 • UK: 2 • Italy: 2 • Spain: 1 • India: 1 • Turkey: 1	5

**Note:** For systematic reviews, the number of studies reflects the number of systematic reviews, while the countries and corresponding numbers reflect the number of studies from each country included in these systematic reviews.



## Effects of COVID-19

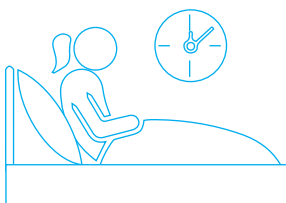
**Overall, studies identified associations between COVID-19 containment measures and an increase in sedentary behaviour and lifestyle changes, many of which were associated with lower quality of life and increased psychological distress among children and adolescents.** We found that sleep disturbances,<sup>79,121,156</sup> reduced physical activity,<sup>67</sup> and disruption of daily routines acted as risk factors for child and adolescent mental health problems including post-traumatic stress,<sup>121</sup> depressive symptoms<sup>79,67,121</sup> and psychological distress.<sup>156</sup>

**Sleep:** Studies examined changes in sleep patterns and found sleep disturbances and associated mental health issues across all age groups during COVID-19 home confinement, with evidence pointing to changes in sleep patterns and general worsening of sleep quality.<sup>68,86,157,133,136,158,159</sup> Moreover, sleep quality seems to be the factor that most affects children's psychological well-being,<sup>133</sup> with associations identified between anxiety and reduced sleep quality.<sup>160</sup> Associations were also identified between increases in various sedentary behaviours after school closures and low self-esteem<sup>159</sup> and sleep problems.<sup>157</sup>

**Physical activity:** Lower levels of physical activity during the pandemic (when movement was restricted and children and adolescents were often confined to their homes) were significantly associated with higher levels of anxiety<sup>161</sup> and depression.<sup>67</sup>

**Digital technology and screen use:** For many children around the world, internet use and screen use increased during the lockdown, with figures showing it more than doubled in Europe.<sup>162</sup> This was because it was providing online schooling activities and social and recreational activities for children and adolescents unable to leave their homes. The type of activity that children and adolescents engage in online is important. There are concerns that, for some children, certain activities may be associated with psychological distress, and unhealthy usage patterns can contribute to insomnia and poor quality of life.<sup>99</sup> To better understand these issues and if they were exacerbated or reduced during the COVID-19 pandemic, it is important to comprehensively understand the various types of healthy and problematic internet activities that young people engage in and how these affect mental health outcomes.

Increased screen time is not necessarily problematic.<sup>99,154,155</sup> Digital media use may in fact be one of the few ways for



“He is more **anxious**, he **sleeps badly** ... which results in more aggressiveness”; “Confinement has upset daily routines: bedtime has shifted (...) late wake-up times, little physical activity”; “He falls asleep very late at night”; “His sleep pattern is completely upset”.

– Quotes from parents in Bobo et al. (2020) study<sup>157</sup>



young people to maintain a sense of normalcy during lockdown. For example, it can be used to engage in coping strategies, including regular communication with loved ones through video calling,<sup>70</sup> and has been the primary means for education and remote learning in many places. Watching television was seen as an opportunity to engage in healthy routines, including being informed about healthy eating and watching programmes with family members.<sup>70</sup>

**Eating disorders:** We did not identify any studies investigating the effects of COVID-19 and accompanying

containment measures on children and adolescents with eating disorders. Only a small percentage (13.7 per cent) of Italian adolescents reported changes in food habits such as forgetting or skipping meals.<sup>68</sup> However, as discussed elsewhere, the adverse emotional and social effects of confinement are likely accentuated in children with eating disorders who have pre-existing anxiety, depression and feelings of isolation.<sup>116</sup>

### Risk and protective factors for lifestyle behaviours

#### Pre-existing vulnerabilities or comorbid mental health issues:

While lifestyle behaviours are key risk factors for other mental health issues, pre-existing vulnerabilities or comorbid mental health issues influenced how COVID-19 affected lifestyle behaviours. This finding therefore corroborates the reciprocal relationship between mental health and irregularities in lifestyle behaviours.

Mental health outcomes can be risk factors for changes in lifestyle behaviours or can include symptoms related to lifestyle behaviours. For instance, depression and other mental health problems can be a risk factor for sleep problems and inactivity.



Photo: © UNICEF/UNI320740/Frank Dejongh



## AT A GLANCE

**During the pandemic:** During the pandemic: In one study of Turkish pre-adolescents (7–13 years), parents reported increases in various sedentary behaviours after school closures, including increased sleep duration (34.2 per cent), child weight (45.1 per cent) and internet use (69.3 per cent).<sup>159</sup> By comparing the scores of the children whose sedentary behaviours did not change after school closures, the authors identified an association between sedentary behaviour and low self-esteem, as reported by both parents and children.



Overall, a large body of evidence shows that poor sleep hygiene and sedentary behaviours tend to precede psychological distress and low quality of life,<sup>163</sup> after which the association may be reciprocal.<sup>164,j</sup> In addition to being considered a symptom of depression, insomnia has been established as a risk factor associated with development of future depression during adolescence.<sup>165</sup>

Similarly, parents and children with higher levels of anxiety were more likely to increase their technology use and to use social media and phones to connect with others during lockdown, indicating that this might be one way in which they are trying to cope with isolation or maintain a sense of normalcy in their lives.<sup>100</sup>

#### **Modifiable behavioural practices:**

These practices (e.g., reduced screen use, regular diet and sleep patterns, engaging in physical activity, maintaining daily routines) and specific parenting practices (harmonious family atmosphere, firm parenting style and good parent–child communication) were associated with better outcomes.<sup>158</sup>

#### **Implications**

**The modifiable behavioural practices mentioned above and, particularly among more well-off families, optimal lockdown life conditions (e.g., sufficient space at home, having a garden) may help improve children’s behaviours and moods.**<sup>157</sup> Helping children balance their screen use with offline activities can ensure that the internet and digital technology are effectively utilized to build coping skills, social relationships, hobbies, learning opportunities and overall well-being. The increase in screen time also has key implications for the delivery of psychosocial support services, including web-based provision and virtual platforms such as e-mental health to children, adolescents and caregivers.

#### **Positive mental health outcomes**

**The WHO Constitution emphasizes the positive dimension of mental health: “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”**

Keyes<sup>166</sup> identified three components of mental well-being: emotional well-being, psychological well-being and social well-being. Emotional well-being includes happiness, interest in life and satisfaction; psychological well-being includes self-worth and contentment, management of daily life activities, positive interpersonal relationships, adaptive coping and autonomy; social well-being refers to positive functioning involving contribution to society, community acceptance and self-actualization through social coherence.



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<sup>j</sup> It should be noted that most studies for depression adopted cross-sectional methodologies, hindering our ability to establish direction of causality.

A related concept is that of psychological resilience, which has been defined in a number of ways in child and adolescent development literature, including as successful coping over time, especially following adverse events; or as having good developmental and mental health outcomes despite exposure to adversity.<sup>77,167</sup>

**In our rapid review, ‘positive mental health’ includes outcomes related to well-being, resilience, prosocial behaviours, and social trust and connectedness.** These outcomes are considered ‘positive’ because they lie on the positive end of the mental health continuum. This should be taken into account even when decreases in some of these outcomes are reported, thereby indicating ‘negative’ results for these positive mental health outcomes.

## Effect of COVID-19

**Most studies we reviewed found mixed results on the impact of the pandemic on children’s and adolescents’ positive mental health outcomes.** Despite studies indicating that COVID-19 and associated containment measures had a negative impact on their well-being and, to some extent, life satisfaction, perceived benefits from home confinement (e.g., increased quality time with family members<sup>168</sup>) and school closure<sup>70,71</sup> (e.g., respite from schoolwork, exam stress and bullying) positively correlated with life satisfaction. Children and adolescents also showed resilience,<sup>169</sup> demonstrated positive coping strategies<sup>7,70,170,171</sup> and engaged in (albeit fewer) prosocial behaviours<sup>k,134,135</sup> during this time of uncertainty and upheaval.



## Positive mental health outcomes



### OUTCOME

STUDY TYPE		NO. OF STUDIES
CROSS-SECTIONAL	China: 5 • Iran: 1 • Italy: 5 • Kenya: 1 • Spain: 1 Turkey: 1 • UK: 1 US: 2	17
LONGITUDINAL	Spain: 1 • Australia: 1 • Netherlands: 1	4
MIXED METHODS OR QUALITATIVE	US: 4 • Portugal: 1 • France: 2 Ethiopia, Côte d’Ivoire and Lebanon: 1	9
SYSTEMATIC REVIEW	China: 6 • UK: 2 • US: 1 • Italy: 1 • Turkey: 1	7

**Note:** For systematic reviews, the number of studies reflects the number of systematic reviews, while the countries and corresponding numbers reflect the number of studies from each country included in these systematic reviews.

<sup>k</sup> Prosocial behaviours<sup>134–136,168</sup> are measured in terms of whether the child is considerate of other people’s feelings, shares readily with other children, is helpful when someone is hurt, is kind to younger children, and often volunteers to help others.



## AT A GLANCE

**During the pandemic:** Tang and colleagues<sup>71</sup> found that, despite one quarter of the sample of Chinese children and adolescents reporting anxiety and depression symptoms, 21 per cent of students also reported becoming more satisfied with life during school closure. In Italy, despite a minority of parents (18 per cent) reporting negative effects of the confinement measures on the parent–child relationship, most parents (49 per cent) reported positive changes in their relationship with their children (e.g., spending more time together).<sup>168</sup> Interviews conducted with adolescents (10–19 years) in Ethiopia, Lebanon and Côte d’Ivoire identified some sex differences in the positive coping strategies used by boys and girls.<sup>7</sup>

### Risk and protective factors for positive mental health

#### **Sociodemographic characteristics:**

One study found no significant difference between different grade groups,<sup>76</sup> whereas another found that being in senior grades was negatively correlated with life satisfaction,<sup>71</sup> although older children may show more adaptive capabilities.<sup>132,172</sup> Some sex differences were identified, whereby boys reported playing more football to release stress, while girls took up new hobbies such as photography, meditation and dance.<sup>7</sup> Autistic females were particularly vulnerable to increased emotional symptoms.<sup>135</sup>

#### **Perceived seriousness and risk of**

**COVID-19 exposure:** Another key factor across studies was the perceived risk and severity of COVID-19 exposure. Adolescents’ greater perception of the severity of COVID-19 was associated with greater physical distancing, disinfecting and news monitoring but also hoarding behaviour, with generally moderate effect sizes.<sup>96</sup> Greater social responsibility was associated with more disinfecting and news monitoring, and both greater social responsibility and trust with less hoarding. By contrast, greater self-interest values were associated with less physical distancing and more hoarding. Therefore,

greater perceived seriousness of the pandemic was associated with greater social trust and responsibility and acted as a protective factor in socially responsible behaviours.<sup>96</sup> In turn, adherence to stay-at-home orders and perceiving a high level of social connectedness during lockdown were protective factors against mental health difficulties.<sup>70</sup>

**Pre-existing vulnerabilities:** One study found that children with special needs and health issues had significantly more psychosocial problems, fewer prosocial behaviours and poorer quality of life since the COVID-19 pandemic began.<sup>136</sup> Similarly, children and adolescents with neurodevelopmental disorders in the UK were found to have a higher prevalence of emotional symptoms and conduct problems, and fewer prosocial behaviours, compared with neurotypical controls, as reported by their parents.<sup>135</sup>

However, home confinement could also be beneficial for some children with neurodevelopmental conditions. For example, some parents reported improvements in their children’s anxiety as a result of less exposure to school-related strain and the adoption of flexible schedules that could be more personalized to their children’s own rhythms.<sup>157</sup>



## KEY FINDINGS

**Parent- and family-related factors:**

Parent-related factors (including parenting styles, parents' mental health issues, parent-child relationships, communication and support) appeared to be either risk or protective factors for children's and adolescents' positive mental health in five studies.<sup>71,134,140,159,173</sup>

Parents' confidence in managing parental tasks<sup>140</sup> and focused, soothing, structured and avoidant parenting<sup>173</sup> could be protective factors for children's emotional well-being during the COVID-19 outbreak.<sup>140</sup> Overall, children's and adolescents' perception of home quarantine was more positive than negative, because of increased time spent with parents and/or caregivers (including parent-child discussions about COVID-19).<sup>71,168</sup> This positively correlated with life satisfaction.<sup>71</sup>

On the other hand, increased parental stress and changes in parents' behaviours in response to the COVID-19 crisis, in addition to reduced adolescent engagement in family activities, may explain in part a decrease in positive outcomes such as prosocial behaviours in children since the onset of the pandemic.<sup>134</sup>

**Recreational activities:** Studies indicated that recreational and physical activities, as well as being socially connected, contributed to children's and adolescents' well-being during the pandemic.<sup>169,174</sup> However, in one study physical and emotional well-being, self-esteem, and family and school functioning scores were lower for those whose internet use increased and those who gained weight during lockdown.<sup>159</sup>

**Implications**

**Overall, while these studies show emerging evidence of the positive impact of the pandemic, 'well-being' is often discussed in terms of mental health symptoms – such as "being worried, being stressed, feeling isolated, being less social and more anxious"<sup>175</sup> – rather than in positive terms.** Additionally, terms for specific indicators of positive mental health such as 'happiness', 'optimism' and 'life satisfaction' were not included in the search. Other papers that may have focused on these outcomes may have been missed for this reason.<sup>1</sup> Nevertheless, facilitating physical activity, better maintenance of daily living routines, stress management, leisure-time activities and regular communication with loved ones could help children and adolescents deal with pandemic stressors and lockdowns. In addition, youth could be further engaged in health promotion strategies in some LMIC contexts (such as through volunteering and raising awareness through social media) to improve their positive mental health outcomes.



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"I try to occupy my time with tidying up, studying, learning new music on the guitar, cooking, making video calls."  
*(17-year-old female, secondary school)*

"I've never been as happy as I am now with schools closed."  
*(16-year-old female, secondary school)*

"Physically, I even find positive points: I can rest more, study, watch my series, play sports, eat well."  
*(19-year-old female, university)*

– Quotes from adolescents in the Branquinho et al. (2020) study<sup>70</sup>

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<sup>1</sup> This is true of all other outcomes, whereby broad mental health terms were included, rather than specific indicators.



# THE WAY AHEAD:

IMPLICATIONS FOR POLICY,  
PROGRAMMING AND RESEARCH

This report has examined the impact of the early stages of the pandemic – i.e., much of 2020 – on child and adolescent mental health. Key findings, largely from high-income contexts, suggest that the pandemic early on had an increased negative effect on child and adolescent mental health, mostly because of rising anxiety and isolation related to both the COVID-19 disease itself and the isolating public health measures used to check the virus's spread. This section briefly summarizes these findings and then outlines important programming, policy and research implications.

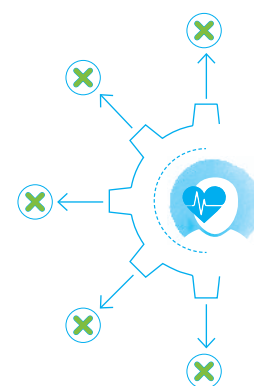
## Summary of key research findings<sup>m</sup>

### **The pandemic itself and its associated health containment measures such as lockdowns and school closures have generated clear negative outcomes for child and adolescent mental health**

The report collated findings related to child and adolescent mental health in the early stages of the pandemic that have important implications for research, policy and programming. While many of these are likely to have been anticipated, particularly considering previous reports on the impact of sudden and slow onset crises on child and adolescent mental health,<sup>16</sup> this report lends evidence to these assumptions and demonstrates the ubiquity of the mental health distress prompted or exacerbated by the pandemic.

The key negative implications for child and adolescent mental health (0–19 years) in the early stages of the pandemic identified in this report included:

- increase in stress and anxiety symptoms
- moderate increase in depressive symptoms and sadness
- moderate increase in anger, irritability and inattention, particularly among children with ADHD and/or autism
- increased alcohol and substance use and abuse among adolescents and young people, especially among adolescent boys
- decreased physical activity and irregular sleep patterns associated with COVID-19 containment measures such as lockdowns and school closures

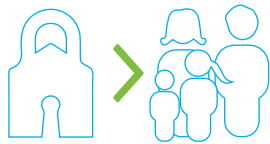


<sup>m</sup> Early results in the immediate or during the height of COVID-19 spread and lockdowns may present inflated rates, given the sudden onset of the pandemic as well as methodological differences and non-representative sampling strategies employed by studies.





- fewer prosocial behaviours and, in some studies, decreased life satisfaction compared with the pre-pandemic period – particularly among those with pre-existing neurodevelopmental conditions and mental health issues
- mixed results – albeit based on limited evidence – related to the impact of COVID-19 on self-harm and suicide
- limited or no evidence of special populations of children and adolescents – those in humanitarian settings, migrant children, children in institutional care, children facing discrimination because of their gender, sexual orientation, or disability, and those with comorbidities.



**Pandemic containment measures have also resulted in greater family time and lower school pressures and led to improved quality of life among children and adolescents.**

As mental health lies on a continuum ranging from positive mental health to mental disorders, we also sought to investigate the positive psychosocial impacts of the pandemic. Our findings suggest that new considerations for improving child and adolescent mental health and life quality have arisen since the outbreak of the COVID-19 pandemic. Many of these were related to children spending more time in the home and included:

- increased quality time with family members
- respite from exam stress and school-related bullying
- having more time for oneself

- having more flexible schedules
- improved coping skills.

**The risks and protective factors for child and adolescent mental health during the pandemic are the same as those that pre-dated COVID-19.**



A range of risk and protective factors, some of which are common across outcomes, played a significant role in shaping child and adolescent mental health outcomes during the early phase of the COVID-19 pandemic. These are largely the same as those that influenced the mental well-being of children and adolescents prior to the crisis.

- **Individual level factors** include sociodemographic characteristics such as age and sex; pre-existing mental health conditions, disabilities and adverse childhood experiences; perceived seriousness and risk of COVID-19 disease exposure; sedentary behaviours; and engaging in recreational activities. Positive coping strategies such as spending more time on physical or recreational activities, better maintenance of daily living routines and regular communication with loved ones protected against some negative mental health outcomes.











- **Interpersonal level factors** include parent- and family-related factors; loneliness and social isolation; and social support. Separation from families and parental depression and anxiety were risk factors for children's stress and adjustment issues, depressive symptoms and externalizing behavioural problems. While family conflicts increased the risk of mental distress among children and adolescents, positive parenting, parent-child closeness and communication about the pandemic and parental support protected against stress and depression, and contributed to better coping and well-being. Social isolation and (duration of) loneliness also contributed to stress, depression, anxiety, irritability, alcohol use and abuse and sedentary behaviours, while adherence to stay-at-home orders and social support and connectedness protected against mental distress (stress, depression, anxiety) in children and adolescents.
- **Community and structural level factors** include pre-existing inequalities and stigma and discrimination. Stigma based on ethnicity, especially towards Chinese American adolescents in the US, as well as all forms of racial discrimination (online, in person and health care related) since the outbreak of the pandemic were associated with greater anxiety among children and adolescents. Children living in LMICs and conflict-affected settings (where many people are already exposed to chronic poverty, displacement and gender inequalities) experienced stress, depressive symptoms and suicidal ideation. Although these structural factors were not adequately examined across studies, they are key drivers of individual, interpersonal and community behaviours and warrant increased scientific inquiry to make systemic changes.



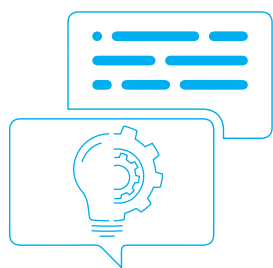
Photo: © UNICEF/UNI336263/Ma

**Table 2. Summary of risk and protective factors across mental health outcomes**

	 Depression	 Fear and anxiety	 Suicidal behaviour	 Trauma and post-traumatic stress	 Externalizing behavioural problems	 Alcohol and substance use and abuse	 Lifestyle behaviours	 Positive mental health outcomes
<b>Sociodemographic</b>								
Age	X	X		X	X			X
Sex	X	X		X	X	X		
Location (urban/rural)	X							
Location (proximity to outbreak area)	X	X		X	X	X	X	
Socio-economic status	X							
<b>Pre-existing vulnerabilities</b>								
Adverse childhood experience		X		X				
Disability or illness	X			X				X
Displacement				X				
Poverty	X			X				
Pre-existing mental health issues			X		X	X	X	X
<b>Perceived seriousness and risk of COVID-19 exposure</b>	X	X		X				X
<b>Loneliness and isolation</b>	X	X		X		X		
<b>Stigma and discrimination</b>		X						X
<b>Digital technology and screen use</b>		X			X		X	X
<b>Sense of social responsibility</b>		X						
<b>Physical activity</b>	X				X		X	
<b>Parent- and family-related factors</b>								
Parental mental health	X			X	X			X
Parenting style	X	X			X			X
Interpersonal conflict	X	X			X			
Parent-child communication	X			X			X	X
<b>Social support</b>	X	X	X	X				X

## Implications for programming and policy

The report's findings are in line with our existing understanding of child and adolescent mental health overall: it is complex, contextual and holistic. There are no magic fixes or one-size-fits-all solutions. Child and adolescent mental health in the early stage of the pandemic has proved to be both fragile and resilient; our policies and programmes need to look at the risk and protective factors and adjust accordingly.



Several primary recommendations emerge from the report.

**Begin early to build mental health assets among children and adolescents.** A key finding from this and other reports is that positive mental health starts early and continues to grow and develop with care and support, including in children and adolescents with pre-existing conditions. We must begin to acknowledge mental health as a key component of child development, beginning in the first decade of life and continuing into the second and subsequent decades. Mental health assets can be built at any age and there are multiple proven ways to do so in the home, at school and in the community.

### Foster family-friendly policies.

Children and adolescents who were well supported by their families to cope with the mental stress, isolation and loss of schooling caused by the pandemic often reported more positive mental health outcomes, or a lesser impact on their mental health. Our findings highlight the importance of nurturing environments in fostering positive mental health and relationships. This follows a pattern in other aspects of their well-being that is being reinforced by ongoing research on family-friendly policies including child-care, child benefits and parental support. Other complementary interventions that are low cost and effective include developing coping skills in children, building capacity in conflict management within households and avoiding authoritarian messaging within families. Promoting positive action through play and quality family time have proved helpful in alleviating stress and fear associated with the pandemic and mobility restrictions. The potential benefits of family support such as parenting programmes and social protection are increasingly clear and applicable across diverse contexts, including in countries and contexts with underinvested health systems.

With the pandemic set to continue to spread, particularly in LMICs that still have very low access to vaccines, it is imperative that policymakers begin to recognize the value of family-friendly policies in support of child and adolescent mental well-being, and invest accordingly. It will also be important to support parent and caregiver mental health during the pandemic and provide strategies for parenting that maximize the well-being of their children.





**Invest in age- and gender-sensitive child and adolescent mental health care interventions and services.** The COVID-19 crisis has highlighted the depth of the global mental health crisis, including among children and adolescents. Children and adolescents with mental health conditions pre-dating the pandemic have suffered most, including from a lack of mental health care. As countries continue to address the pandemic, and some begin to emerge from it, mental health care must increasingly be prioritized when designing and implementing primary health care services for children and young people. In turn, this implies not only the wider application of existing services but also increased investment in capacity-building of health care professionals and other child-related frontline workers (e.g., teachers, social workers) to recognize and address youth mental health distress and actively promote positive youth mental health.

In particular, it will be important for policymakers and practitioners to develop and scale age-appropriate and gender-sensitive interventions, and to adapt evidence-based activities that have proved beneficial in high-income contexts to those children and young people in marginalized and lower-income settings. Attention should also be paid to the cumulative impact of the pandemic on child and adolescent mental health through regular monitoring of well-being, as there is solid evidence that stress from crises accumulates over time and can manifest itself externally in the longer term, even if there are few or no symptoms in the short term. Finally, in areas where specialized local care is not available, consideration should be given

to extend care through cross-border mechanisms such as e-mental health and telepsychotherapy programmes.

**Promote physical activity and good nutrition for children and young people.** The report's findings show that those children and adolescents who fared well for positive mental health during the early stages of the pandemic had access to physical recreation and improved nutrition. Both have long been associated with positive mental health, and are backed by a robust body of evidence, yet they remain either underinvested in or largely absent from many government mental health interventions. As governments and other stakeholders begin to 'build back better' from the pandemic, a key aspect of doing so will be to complement investments in community, family and individual care for children and adolescents with interventions to support them holistically through promoting their physical well-being and social networks.

**Make schools a safe place for positive mental health.** While many, or perhaps even most, children and adolescents have been negatively affected by school closures in diverse ways – including loss of and setbacks in learning and opportunities for growth, sport and social interaction – others have reported relief from exam stress and school-related bullying, more flexible scheduling and time at home with family. As millions of children and young people return to school, it is vital that we not only accentuate the positives of in-person schooling but also listen to them and seek to address some of the mental distress schooling may cause them.



Ways to reduce exam stress and learning pressures – which [UNICEF Innocenti's Report Card 16](#) has already cited as having negative impacts on young people in Organisation for Economic Co-operation and Development (OECD) and European Union (EU) countries – should be explored to bolster youth mental health. Avenues to make schools safer and more inclusive for all students should also be found. In addition, children and young people should be included as part of COVID-19 response strategies, programmes and evaluation to support their own mental well-being.

### **Focus on at-risk young populations.**

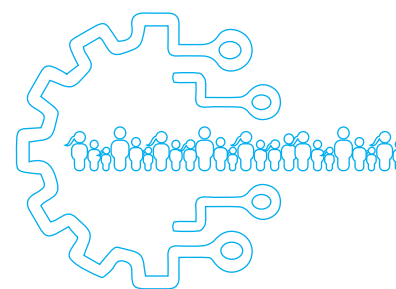
Our study shows that those suffering from pre-existing child and adolescent mental health conditions have been among the most affected by the pandemic. It also reinforces our understanding that the inequities that undermine child physical and cognitive well-being – exclusion based on extreme poverty and income inequality, gender discrimination and disability – also affects their mental well-being, particularly during a crisis such as the COVID-19 pandemic. While COVID-19 has affected the mental health of children and adolescents irrespective of their family income status, studies show clearly that those facing drivers of exclusion and discrimination have seen markedly increased risks. For policy and programming, it will be essential to place greater emphasis on understanding even further the mental health stresses that these at-risk populations face and on prioritizing interventions for them.

**Address stigma and discrimination in mental health, including new and emerging forms.** The report underscored the profound stigma and discrimination associated with mental

health conditions experienced by children and young people. Discrimination follows the pattern established in other areas of child development, along the lines of sex, gender and sexual orientation, disability, ethnicity, HIV, migrant status, displacement, institutionalization and socio-economic status, among other delineators. Moreover, the report also shows that stigma based on ethnicity and racial discrimination – which has risen during the pandemic, notably against Asian communities within some high-income countries – is associated with greater anxiety among the children and adolescents affected.

The pandemic has coincided with a wider global debate on racism and discrimination based on ethnicity, and ways in which to combat this scourge. It will be important for policies and programmes focused on child and adolescent mental health to address both generalized and continuing stigma related to negative attitudes towards these issues, and specifically to address stigma against certain groups as related to the pandemic. Solutions related to stigma associated with previous crises, notably HIV and Ebola, may be instructive in helping to design anti-discrimination programmes for the COVID-19 era.

**Support digital technologies as a force for change.** More than ever, digital technologies are shaping children's lives. The COVID-19 era has underlined the essentiality of access to digital technologies for young people to learn, communicate and grow, and of protective mechanisms to safeguard their mental well-being, combat misinformation and falsehoods, and protect them from harm, abuse and exploitation both online and offline.



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Digital technologies can also offer alternative and promising modes of delivery of psychosocial support services including web-based provision, and virtual platforms such as e-mental health to deliver interventions. Family telepsychotherapy, including virtual problem-solving and parenting training, has been shown to be effective and acceptable for children with neurological conditions. Such interventions have been applied in high-income contexts and will need to be adapted to low- and middle-income settings, considering issues of digital access and affordability. Innovation and adaptation of new digital technologies needs to consider the ethical constraints of working with children and adolescents dealing with sensitive mental health issues.

### Implications for research

During our review, we noted the following evidence gaps that should be addressed in the rapidly growing body of research on COVID-19 and its mental and psychosocial impact.

**Build a wider body of research on child and adolescent mental health, particularly in LMICs.** As our analysis focuses on the early stages of the pandemic, our findings are strongly related to published evidence emerging from the countries most affected by COVID-19 at that time – especially

China, Italy and the USA. However, as the pandemic has spread across the world, more evidence is rapidly needed on its impact on child and adolescent mental health in low- and middle-income regions and countries – and especially in those regions such as Latin America and Caribbean and South Asia where the pandemic has been particularly hard-hitting so far, and also sub-Saharan Africa and the Middle East, where the evidence base on child and adolescent mental health is nascent. UNICEF Innocenti is undertaking an evidence-gap map to identify the key elements of child and adolescent mental health that can be rapidly scaled up and those that require urgent research, with a view to publishing these findings in early 2022.

### Examine the mental health impact of COVID-19 on early and middle childhood.

In addition, more evidence is required on early (0–4 years) and middle childhood (5–9 years), as most of the research reviewed captured the situation of adolescents aged 10–19 years. Psychological outcomes in early and middle childhood may need to be better defined and measured, as diagnostic criteria for mental disorders may not apply in the same way to this age group. Research on younger age groups could examine COVID-19's impact on child development outcomes and investigate any long-term implications of the suspension of services during the pandemic, including antenatal and reproductive health care, mother–baby groups, child health preventive and promotive care, infant and young child feeding, nurseries and kindergartens.

### **Widen the evidence base to include vulnerable populations of children and adolescents.**

We did not find evidence pertaining to pandemic-related mental health among child migrants and displaced persons, child labourers, adolescent parents/ caregivers and adolescent pregnant girls, children facing domestic violence, children facing sexual and gender-based violence, and children in institutional care, and children with disabilities. There was also limited evidence of how the pandemic affected non-binary genders and LGBTQI+ youth. One study explored the mental health needs and challenges of LGBTQI+ youth, revealing themes of anxiety, frustration, sadness, isolation, and reduced access to in-person services and safe spaces. Overall, future research should examine the mental health impacts (especially the enduring impact) on vulnerable children and adolescents.

### **Investigate the longer-term impact of the pandemic on child and adolescent mental health.**

Our findings are limited to studies published between 1 November 2019 and 30 November 2020. New findings have emerged in the different waves of infections and subsequent lockdowns, along with vaccination efforts and increased interventions over time, which were not captured in this review because of its scope and search period. These developments may have far-reaching implications for the evidence presented here.

Future studies should build on this rapid review to assess how mental health outcomes in children and adolescents have changed in subsequent phases of the pandemic, especially since

vaccinations began and after prolonged school closures. It will also be important to capture the longer-term impacts on children as they grow, as well as opportunities for increasing their resilience. Through its Children and COVID-19 e-library ([UNICEF Innocenti: Children and COVID-19 Research Library \(unicef-irc.org\)](https://www.unicef-irc.org/)), UNICEF Innocenti is committed to curating much of the best emerging evidence of the impact of the pandemic on the world's youngest citizens, including their mental health.



### **Building back better through strengthening child and adolescent mental health systems**

The second year of the pandemic has seen a widening division between those countries with ample access to vaccines and those without. Many of the former – which are also the nations with ample evidence of the impacts on child and adolescent mental health – are beginning to re-open their economies and societies. Evidence is emerging that some of the initial – and possibly temporal – impacts on youth mental health from the initial stages of COVID-19 may be beginning to subside, but more studies are needed to understand this phenomenon and ascertain which residual effects might become prevalent in the longer term. In addition, the emergence of variants

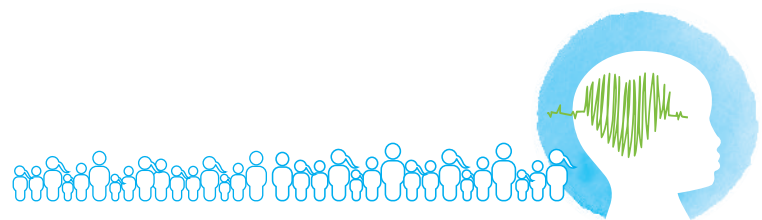


and outbreaks means that respite from COVID-19 containment measures is reversible, and the cumulative impact of this and prolonged restrictions will need to be carefully monitored for its longer-term impact on young lives.

For other countries with less ample access to vaccines, and where the pandemic may still be rising, there is an urgent need to understand the impact of COVID-19 on child and adolescent mental health. Millions of children and young people remain out of education, with many at risk of permanent exclusion, while others remain under lockdown or mobility restrictions. Still others face the prospect of becoming infected with COVID-19, particularly if variants become more transmissible and vaccine roll-outs do not keep pace with the spread of the virus in less affluent contexts. In most of these contexts, there is minimal or non-existent capacity within the health system to respond to child and adolescent mental health distress. Regular monitoring of and research on youth mental health will therefore be critical to understand the scale of challenge, lessons learned and

best programming practices, and to build strategic and policy initiatives that can strengthen and enhance mental health care systems for children and youth.

The phrase ‘building back better’ has become strongly associated with efforts to strengthen social, economic and health systems in the COVID-19 era and beyond. But going back is not an option for mental health. We need to build forward better. Our study shows that, while there are massive gaps in knowledge about the pandemic’s impact on child and adolescent mental health, there is also a strong and growing body of evidence that can show how the pandemic may be affecting them, at least in the short term. However, we are at the beginning of this process and have a long way to go to fully understand how this unprecedented crisis is affecting the mental and psychosocial well-being of children and young people. We require a strategy that puts children at the centre and considers and makes decisions based on how we address their evolving mental health needs – both short term and long term.



**With the right support,** many children will have the resilience, flexibility and energy to not only overcome the mental health impacts of COVID-19, but also to maintain **positive mental health beyond the pandemic.**







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## Annex 1. Supplemental tables for primary studies

### 1. Cross-sectional studies

Authors, year	Sample (n) (% female)	Study period	Age range - years	Countries	Reporting source	Outcomes	Results
Adibelli et al 2020	597 (55.8%)	March 30–April 20, 2020	7–13	Turkey	Child, Parent	Lifestyle-related mental health outcomes, Alcohol and substance use and abuse, Positive mental health resilience	Parents reported increases in various sedentary behaviours after school closures, including increased sleep duration (34.2%), child weight (45.1%), and internet use (69.3%). Association between sedentary behaviour and low self-esteem, as reported by both parents and children. Good quality of life reported by participants. However, physical and emotional well-being, self-esteem, and family and school functioning scores were lower for those whose internet use increased and those who gained weight during lockdown.
Ahmed et al 2020	1,074 (46.8%)	March 2020	14–68	China	Child	Fear and anxiety outcomes, Depressive outcomes, Alcohol and substance use and abuse, Positive mental health and resilience	10% rate of mild depression using self-report measures in Chinese adolescents during March 2020. More participants had mild and moderate depressive symptoms than those experiencing severe depressive symptoms. Higher prevalence or severity of depressive symptoms among participants living in Wuhan elsewhere in the Hubei province (i.e., the pandemic epicentre). 26% of respondents below 20 years of age reported hazardous alcohol use and 5% reported harmful alcohol use, although none were found to be dependent users. Significantly higher substance and alcohol use among males than females (33% males compared with 25% females were hazardous users, and 7% males compared with 1% females were dependent users). Significantly higher alcohol use among respondents closer to the epicentre of the outbreak in China (Hubei province) than elsewhere.
Alves 2020	65 (61.5%)	April 20–June 26, 2020	9–15	US	Child	Fear and anxiety outcomes, Lifestyle-related mental health outcomes	5% of children with gestational diabetes mellitus (GDM) engaged in vigorous physical activity (VPA), versus 30% of children without GDM. Children engaging in VPA reported lower levels of anxiety (n=10). Children reporting more time engaging in VPA also had lower anxiety. Lower levels of physical activity were significantly associated with higher levels of anxiety. Less engagement in VPA explained 75% of the association between GDM and anxiety levels.
Alves 2020b	64 (63%)	April 22–July 29, 2020	9–15	US	Child	Fear and anxiety outcomes	Both positive affect and VPA associated with less anxiety in adjusted and unadjusted models. Sedentary time, VPA, and leisure screen time not associated with state anxiety levels in adjusted or unadjusted models. Both affect score and physical activity remain associated with state anxiety when adjusting for each other. Negative affect correlated with sedentary time and leisure screen time before and after adjustment. Positive affect not associated with any physical activity measures.

## ANNEXES

Authors, year	Sample (n) (% female)	Study period	Age range - years	Countries	Reporting source	Outcomes	Results
Amorim 2020	99 (68.7%)	NR	Mean age 10	Portugal	Parent, Caregiver	Fear and anxiety outcomes, Externalizing behavioural problems	Just over 40% of parents of children with autism spectrum disorder (ASD) reported that their child's behaviour had changed because of increased irritability, obsession and hostility. 72% of the parents of children with ASD reported behaviour change in their child compared with no change reported by the control group (parents of children without ASD). Children with ASD who did not maintain routine had higher levels of anxiety and lower adaptability than those who did.
Buzzi 2020	2,064 (NR)	March 9–20, 2020	NR	Italy	Child	Fear and anxiety outcomes, Positive mental health and resilience	Respondents worried more in the first four days since the restrictions came into place. This worry trended downward after the fourth day. Participants from central and southern regions were more concerned than peers from the north of Italy (where infection and spread were significantly worse). However, this might have been related to longer exposure to the threat by the northern respondents. In the rest of the country, where the virus was more under control, concern/fear was still high. The authors associate this with the fear of the unknown. Girls reported greater worry than boys (18% vs 8% in 'worry a lot' category). Adolescents in the age groups 14–16 years (49%) and 17–19 years (55%) reported higher levels of worry about the pandemic than under-13s (5%).
Cakiroglu 2020	48 (47.9%)	April 4–20, 2020	12–18	Turkey	Child	Fear and anxiety outcomes	Children with haematology-oncology disease reported significantly higher trait anxiety levels than their healthy peers ( $p=0.01$ ).
Cheah 2020	230 (48.3%)	March 14–May 31, 2020	10–18	US	Child, Parent	Fear and anxiety outcomes, Positive mental health and resilience	Moderate levels of anxiety symptoms in 8% and high levels in 3% of Chinese American youth sampled, and anxiety symptoms were associated with all types of racial discrimination (online, in person and health care related).
Chen 2020a	1,036 (48.7%)	April 16–23, 2020	6–15	China	Child	Fear and anxiety outcomes, Depressive outcomes	While being without company on work days was associated with higher rates of depression, physical exercise played a protective role in the mental health of children and adolescents.
Chen 2020b	7,772 (52.2%)	Feb 22–March 8, 2020	12–18	China	Child	Fear and anxiety outcomes, Depressive outcomes	No differences in prevalence or severity of depressive symptoms because of geographical location were identified. Anxiety symptoms were more frequently reported in females than males (58% vs. 43%), middle schoolers than high schoolers (56% vs. 44%), and among adolescents from Beijing/Hangzhou compared with Wuhan (61% vs. 39%).
Colizzi 2020	527 (NR)	April 6–20, 2020	Mean age 13	Italy	Parent, Caregiver	Externalizing behavioural problems	Of the sampled children of all ages, 36% and 42% were showcasing more intense and more frequent behaviour problems respectively, with a high association among those with pre-existing behaviour issues. Older age was found to serve as a protective factor for problem behaviour among children with ASD.



## 1. Cross-sectional studies (cont'd)

Authors, year	Sample (n) (% female)	Study period	Age range - years	Countries	Reporting source	Outcomes	Results
Commodari 2020	978 (65.3%)	April 22–May 1, 2020	13–20	Italy	Child	Depressive outcomes, Trauma and stress-related outcomes, Lifestyle-related mental health outcomes	Living in areas with higher prevalence of COVID-19 cases was correlated with negative feelings (including feeling tenser and sadder) and depressive symptoms among adolescents. A higher perceived seriousness of the pandemic, a higher fear of getting COVID-19 and lower compliance with government measures predicted negative feelings. Students reported difficulties eating (14%), disturbances in heartbeat (19%), crying frequently (34%), or other symptoms of pathological stress. Females and adolescents living in a red zone (areas with strict lockdown) tended to have more significant difficulties in this regard. Females and older adolescents reported more negative feelings, on average, during the pandemic. This was particularly the case for adolescents living in northern Italy, which was more affected in the first wave of the pandemic. High prevalence of self-reported sleep difficulties was identified, with female adolescents living in regions with stricter containment measures reporting higher disturbances. Only a small percentage (13.7%) of Italian adolescents reported changes in food habits such as forgetting or skipping meals during the pandemic.
Cui 2020	33 hospitals (NR)	March 2020	NR	China	Health worker	Fear and anxiety outcomes, Depressive outcomes, Suicidal behaviour, Externalizing behavioural problems, Lifestyle-related mental health outcomes	The total number of outpatient visits dropped to 53% of that of the pre-COVID-19 outbreak. Inpatient referrals declined by 50% and nearly 25% of hospitals closed inpatient wards. 85% of the hospitals prepared isolation wards to receive newly hospitalized patients to avoid potential contagion of already admitted youths. More than 10% of children who have experienced trauma because of the infection and its consequences may be diagnosed with post-traumatic stress disorder (PTSD).
Cusinato 2020	463 (43.8%)	April 25–May 8, 2020	5–17	Italy	Parent	Positive mental health and resilience	Despite a minority of parents (18%) reporting negative effects of the confinement measures on the parent–child relationship, most parents (49%) reported positive changes in their relationship with their children (e.g., spending more time together).
Daks 2020	742 (50%)	March 27–End of April, 2020	5–18	US	Parent	Fear and anxiety outcomes, Depressive outcomes, Externalizing behavioural problems	Stress associated with the new demands placed on parents from the stay-at-home orders associated with the COVID-19 pandemic predicted higher levels of family discord, which in turn predicted parents using more harsh discipline and correspondingly higher levels of child distress. Parent inflexibility showed small to moderate associations with COVID-19 stressors, co-parenting discord (i.e., co-parent conflict, co-parent triangulation, and co-parent disagreement), harsh parenting (i.e., hostile and reactive parenting, inconsistent discipline, and aggressive parenting/use of physical discipline), and child distress (i.e., anxiety/depressive symptoms, attention problems, and aggressive behaviour) while parent flexibility was not associated with these sets of variables.





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Authors, year	Sample (n) (% female)	Study period	Age range - years	Countries	Reporting source	Outcomes	Results
Dong 2020	2,050 (48.4%)	February 19–March 15, 2020	6–18	China	Child	Fear and anxiety outcomes, Depressive outcomes, Trauma and stress-related outcomes, Lifestyle-related mental health outcomes, Alcohol and substance use and abuse	Male gender, mild to moderate anxiety, and severe depression and stress were all significantly associated with problematic internet use.
Drouin 2020	260 (NR)	March 20–25, 2020	0–19	US	Parent	Fear and anxiety outcomes, Lifestyle-related mental health outcomes, Alcohol and substance use and abuse	Greater anxiety among children and adolescents (0–19 years) during COVID-19 in the US associated with increased usage of digital technology and social media. Conversely, children with high anxiety used technology more frequently to connect with others. This implies that the use of social and digital media may in fact be a coping mechanism for children experiencing anxiety during the pandemic.
Duan 2020	3,613 (49.85%)	NR	7–18	China	Child	Fear and anxiety outcomes, Depressive outcomes	Higher prevalence or severity of depressive symptoms among participants living in Wuhan or elsewhere in the Hubei province (i.e., the pandemic epicentre).
Dyer 2020	486 (65%)	NR	10–24	Kenya	Child	Depressive outcomes, Positive mental health and resilience	More participants had mild and moderate depressive symptoms than those experiencing severe depressive symptoms. 9% of participants (n=45) were found to have mild depression symptoms, and 1% (n=3) moderate-to-severe depression symptoms. Adolescents and young people with HIV in Kenya were found to have resilience scores during COVID-19 comparable to those of other students and young adults in pre-pandemic research. Across age groups, there were no statistical differences in mean resilience scores.
Fazeli 2020	1,512 (43.6%)	May 22–August 26, 2020	13–18	Iran	Child, Parent	Fear and anxiety outcomes, Depressive outcomes, Trauma and stress-related outcomes, Lifestyle-related mental health outcomes, Alcohol and substance use and abuse, Positive mental health and resilience	Depression, anxiety and stress were significant mediators in the association between internet gaming disorder and insomnia, adolescent-reported quality of life, and parent-reported quality of life.
Garcia de Avila 2020	289 (54.3%)	April–May, 2020	6–12	Brazil	Child, Parent	Fear and anxiety outcomes	Anxiety reports in 19% of children, and higher among those whose parents had essential jobs (31%) or who physically distanced without parents (36%).



## 1. Cross-sectional studies (cont'd)

Authors, year	Sample (n) (% female)	Study period	Age range - years	Countries	Reporting source	Outcomes	Results
Guo 2020	6,196 (52.1%)	February 8–27, 2020	11–18	China	Child	Fear and anxiety outcomes, Trauma and stress-related outcomes	Fear of both COVID-19 exposure and pre-pandemic maltreatment experiences (such as family abuse, neglect, and household dysfunction) predicted greater anxiety, with stronger association for maltreatment. Greater increases in negative outcomes because of fear of exposure to COVID-19 were explained by pre-pandemic adverse childhood experiences, especially family neglect. 59% of the sample had experienced some form of adverse childhood experiences (18%, 45%, and 30% for family abuse, neglect, and dysfunction, respectively), and 14% of participants had experienced four or more adversities. Experienced or feared exposure to COVID-19 predicted statistically significant variance in post-traumatic stress symptoms, and adolescents with more adverse childhood experiences were most at risk of post-traumatic stress symptoms when exposed to COVID-19.
Hepkaya 2020	60 (35%)	April 20–May 15 2020	3–18	Turkey	Child	Fear and anxiety outcomes	Positive correlation between the exposure to television and social media and the anxiety level of the children and their parents ( $r=0.303$ , $p=0.007$ ).
Isumi 2020	suicides/month (NR)	Jan 2018–May 2020	0–19	Japan	NR	Suicidal behaviour	No changes in national child and adolescent suicide rates were noted in Japan.
Kang 2020	4,898 (52%)	March 8–15, 2020	Mean age 16	China	Child	Depressive outcomes, Externalizing behavioural problems, Lifestyle-related mental health outcomes, Positive mental health and resilience	Engaging in physical activity seemed to be a protective factor against depression. One study found that higher levels of physical activity were associated with better mood states among Chinese adolescents who completed an online questionnaire. Girls reported significantly higher scores for tension, anger and confusion than boys, and older female students showed higher levels of mood disturbance. No significant difference found in the total scores for positive mental health outcomes (including vigour and self-esteem) in different grade groups.
Kilincel 2020	745 (69.5%)	NR	12–18	Turkey	Child	Fear and anxiety outcomes	About 88% of adolescents followed the developments in the COVID-19 process and obtained the most information from the television. 56% of the adolescents stated that their level of anxiety did not change after the information on COVID-19 they obtained. In the quarantine process, 58% reported that they had health concerns. Most chose the "I am a little concerned" option regarding future school life, while 15% stated they were "very worried". 15% chose the "I am very worried" option regarding social and economic life. A positive correlation was detected between loneliness and state anxiety scale ( $r: 0.175$ , $p<0.001$ ), and the trait anxiety scale ( $r: 0.194$ , $p<0.001$ ).
Li 2020	1,172 (58.3%)	Jan 31–Feb 8, 2020	8–18	China	Child	Fear and anxiety outcomes, Trauma and stress-related outcomes	Participants (8–18 years) reporting severe comorbidities for PTSD and generalized anxiety disorder (GAD) displayed heightened perceived threat, defined as perceived susceptibility to COVID-19 and perceived seriousness of the condition, as well as increased courtesy stigma.

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Authors, year	Sample (n) (% female)	Study period	Age range - years	Countries	Reporting source	Outcomes	Results
Liang (b) 2020	130 (NR)	January 30, 2020	14–20	China	Child	Trauma and stress-related outcomes	Median PTSD scores for 14–20-year-old participants was lower than in the other age ranges. Although age did not have a significant effect on post-traumatic stress symptoms, males scored significantly higher than females in post-traumatic stress symptoms.
Liu 2020	1,619 (51.1%)	February 17–19, 2020	4–6	China	Parent, Caregiver	Lifestyle-related mental health outcomes	Changes in sleep patterns among preschoolers (2–6 years) reported online by parents or caregivers. Modifiable behavioural practices (i.e., reduced screen use, regular diet and sleep patterns, engaging in physical activity, maintenance of daily routines) and specific parenting practices (harmonious family atmosphere, firm parenting style and good parent–child communication) were associated with better outcomes.
McElroy 2020	698 children (50%)	March 30 –April 29, 2020	m 13.42	UK	Child	Fear and anxiety outcomes	Females and older adolescents were more likely to worry about the consequences of the pandemic. Adolescents with chronic conditions were more likely to be worried about the disease itself.
McGuine 2020	13,002 (53.1%)	May 2020	13–19	US	Child	Fear and anxiety outcomes, Depressive outcomes	Females reported a higher mean score for GAD, a higher prevalence of moderate to severe anxiety symptoms, and higher prevalence of depression symptoms than males. Athletes in Grade 12 reported the highest GAD score and highest prevalence of moderate to severe anxiety compared with athletes in Grades 9, 10 and 11. Older students reported higher prevalence of moderate to severe depression. Team sport athletes reported the highest GAD scores and highest prevalence of moderate to severe anxiety, while individual sport athletes reported the lowest GAD scores and lowest prevalence of moderate to severe anxiety. Athletes from counties with the highest poverty levels reported the highest GAD scores and the highest prevalence of moderate to severe anxiety and moderate to severe depression.
Morelli 2020	277 (52%)	April 2020	6–13	Italy	Parent	Externalizing behavioural problems, Positive mental health and resilience	Family risk, established on the basis of lower socio-economic status and worsened work conditions, was associated with children’s mood instability or negativity. Parents’ confidence in managing parental tasks could be a protective factor for their children’s emotional well-being during the COVID-19 outbreak.



## 1. Cross-sectional studies (cont'd)

Authors, year	Sample (n) (% female)	Study period	Age range - years	Countries	Reporting source	Outcomes	Results
Nonweiler 2020	371 (29.4%)	April–June 2020	4–15	UK	Parent	Externalizing behavioural problems, Positive mental health and resilience	Girls with ASD found higher emotional symptomatology than their male counterparts. Children with comorbidity of ASD and attention deficit hyperactivity disorder (ADHD) showed increased difficulties with their conduct and prosocial behaviour. Children and adolescents with neurodevelopmental disorders were found to have a higher prevalence of emotional symptoms (42% vs. 15%) and conduct problems (28% vs. 9%), and fewer prosocial behaviours (54% vs. 22%), compared with neurotypical controls, as reported by their parents. All groups had worse emotional symptoms than before COVID-19, and while those with ADHD showed increased conduct problems, autistic children and adolescents had decreased prosocial behaviours. Children with ADHD and ASD comorbidity showed particular impairment in conduct and prosocial behaviours, and autistic females were particularly vulnerable to increased emotional symptoms.
Oosterhoff 2020	770 (74.7%)	March 20–22, 2020	13–18	US	Child	Fear and anxiety outcomes, Positive mental health and resilience	Greater perceived social responsibility and social trust were associated with more disinfecting and news monitoring and less hoarding behaviours. On the flip side, greater self-interest values were associated with less distancing and more hoarding. 69% of participants did not engage in pure physical distancing, which means that they did have in-person contact with those outside their household; 89% monitored the news, 88% disinfected daily, and 20% engaged in hoarding. Adolescents' greater perception of the severity of COVID-19 was associated with greater physical distancing, disinfecting, and news monitoring but also hoarding behaviour, with generally moderate effect sizes. Greater social responsibility was associated with more disinfecting and news monitoring and less hoarding; greater social trust was also associated with less hoarding. By contrast, greater self-interest values were associated with less physical distancing and more hoarding. Therefore, greater perceived seriousness of the pandemic was associated with greater social trust and responsibility and acted as a protective factor in socially responsible behaviours.
Passanisi 2020	204 (42.2%)	April 15–May 1, 2020	5–18	Italy	Child, Parent	Alcohol and substance use and abuse, Positive mental health	46% of participants reported that the quarantine was an additional heavy burden on their perspective of diabetes. Among these, 36% reported a relevant impact and 9% reported an extreme impact. On the contrary, 16% of the study participants declared that the quarantine did not affect their psychological and practical approach to diabetes, and 38% of patients partially suffered the consequences caused by the lockdown measures. Most children and adolescents with type 1 diabetes developed high levels of resilience and excellent coping skills by using technology in a proper way.



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Authors, year	Sample (n) (% female)	Study period	Age range - years	Countries	Reporting source	Outcomes	Results
Patrick 2020	1,011 (NR)	June 5–10, 2020	0–18	US	Caregiver	Externalizing behavioural problems	The rates of worsening parental mental health and child behavioural health were similar among many sociodemographic groups (e.g., race, income). However, results suggest that some populations have been disproportionately affected, including single-parent families and those with younger children.
Qi 2020a	9,554 (NR)	February 20–27, 2020	11–20	China	Child	Fear and anxiety outcomes	19% of the sample reported anxiety symptoms. The prevalence of mild, moderate, and severe anxiety was 15%, 3% and 2% respectively in the sample. Female gender, senior secondary school students, adolescents with sleep duration <6 hours a day, being concerned about graduation, and having more homework than before were all significantly associated with an increased risk for anxiety.
Qi 2020b	7,202 (53.6%)	March 8–15, 2020	14–19	China	Child	Fear and anxiety outcomes, Depressive outcomes	COVID-19 exposure (i.e., having been in compulsory isolation or under medical observation because of a COVID-19 diagnosis or a history of close contact with a COVID-19 infected person) was associated with a high prevalence of depression symptoms (45%) and anxiety symptoms in Chinese adolescents during March 2020. Low social support, female gender, rural residence, and exposure to COVID-19 were associated with higher prevalence of depression and anxiety symptoms.
Ren 2020	1,487 (50%)	April 19–26, 2020	10–17	China	Child	Depressive outcomes, Lifestyle-related mental health outcomes	Living in areas with higher prevalence of COVID-19 cases was correlated with negative feelings (including feeling tenser and sadder) and depressive symptoms among adolescents.
Romero 2020	1,049 (50%)	April 2020	3–12	Spain	Parent	Externalizing behavioural problems, Positive mental health and resilience	Parents' distress and emotional problems were more correlated with child-negative outcomes, while focused, soothing, structured, and avoidant parenting were more correlated with child-positive outcomes.
Russell 2020	392 (NR)	April 27–28, 2020	0–18	US	Caregiver	Trauma and stress-related outcomes	Parents of older children (12–18 years) perceived less child stress than parents of younger children (0–5 and 6–11 years). Parents' higher levels of depression and anxiety were associated with higher perceived child stress, as reported by caregivers themselves.
Sama 2020	310 (42%)	NR	NR	India	Parent	Fear and anxiety outcomes, Externalizing behavioural problems	73% and 51% of children were reported by their parents as showing signs of increased irritation and anger, respectively. These symptoms were worsened by changes in their sleep patterns, diet, routines, weight and increased usage of electronic screens. Children's negative mental health outcomes, including anger and irritation, were linked to lower family socio-economic status and mother's qualification.
Saurabh 2020	121 (14.9%)	NR	9–18	India	Child, Parent	Fear and anxiety outcomes, Depressive outcomes	Worry (69%), helplessness (66%) and fear (62%) were the most common symptoms of psychological distress experienced by Indian children and adolescents (9–18 years) in home quarantine or at quarantine centres instituted by the Ministry of Health and Family Welfare.



## 1. Cross-sectional studies (cont'd)

Authors, year	Sample (n) (% female)	Study period	Age range - years	Countries	Reporting source	Outcomes	Results
Secer 2020	598 (61.6%)	NR	14–18	Turkey	Child	Fear and anxiety outcomes, Depressive outcomes	Fear of COVID-19 is a strong predictor of obsessive compulsive disorder (OCD). Its impact on OCD was mediated by emotional reactivity, experiential avoidance and depression-anxiety.
Senkalfa 2020	45 (48.9%)	April 15–20, 2020	0–18	Turkey	Child, Parent	Fear and anxiety outcomes	State anxiety scores for children aged 13 to 18 years in the control group (“healthy”) were found to be higher than for the age-matched children with cystic fibrosis.
Smirni 2020	149 (53%)	April 15–May 15, 2020	17–19	Italy	Child	Fear and anxiety outcomes, Positive mental health and resilience	The most commonly reported symptoms of anxiety were breathing difficulties. Anxiety scores reported by female adolescents were significantly higher than those of males.
Spinelli 2020	849 (50%)	April 2–7, 2020	2–14	Italy	Parent	Externalizing behavioural problems	Quarantine’s impact on children’s behavioural and emotional problems is mediated by parents’ individual and dyadic stress, with a stronger effect from the latter. Emotional difficulties, hyperinattention, and conduct problems were positively correlated with difficulties experienced by parents during the pandemic.
Tang (a) 2020	4,342 (49%)	March 13–23, 2020	6–17	China	Child	Fear and anxiety outcomes, Depressive outcomes, Trauma and stress-related outcomes, Positive mental health and resilience	10% of Chinese children and adolescents (6–17 years) experienced depressive symptoms in March 2020. Children’s and adolescents’ overall perception of home quarantine was more positive than negative, because of increased time spent with parents and on personal activities, indicating that family support and engagement in meaningful activities may be buffers against depressive symptoms. Despite anxiety and depression symptoms reported by one quarter of the sample, 21% of students also reported becoming more satisfied with life during school closure. Overall, children’s and adolescents’ perception of home quarantine was more positive than negative, because of increased time spent with parents and/or caregivers and on personal activities. Being in senior grades was positively correlated with psychopathological symptoms (depression, anxiety, and stress) and negatively correlated with life satisfaction. The perceived benefit from home quarantine and school closure and parent–child discussions about COVID-19 were negatively correlated with psychopathological symptoms (depression, anxiety, and stress) and positively correlated with life satisfaction.
Tang (b) 2020	2,485 (60.8%)	February 20–27, 2020	16–27	China	Child	Fear and anxiety outcomes, Trauma and stress-related outcomes, Lifestyle-related mental health outcomes	Children’s and adolescents’ perceived benefits from home quarantine and school closure were negatively correlated with stress and positively correlated with life satisfaction. Short sleep duration was strongly associated with post-traumatic stress and depressive symptoms among older adolescents (16–19 years) in China undergoing home confinement.



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Authors, year	Sample (n) (% female)	Study period	Age range - years	Countries	Reporting source	Outcomes	Results
Tso 2020	29,192 (48.6%)	March 2020	2–12	China	Parent	Externalizing behavioural problems, Lifestyle-related mental health outcomes, Alcohol and substance use and abuse, Positive mental health and resilience	Increased psychosocial problems and decreased prosocial behaviour, compared with a reference sample of studies prior to the COVID-19 pandemic. Older age was found to serve as a protective factor for problem behaviour. Special educational needs and pre-existing health conditions were strongly linked to increased behaviour problems in children during the pandemic. Both children's behavioural problems and parental stress were associated with parental divorce/separation and parental mental health problems. Use of electronic devices for gaming (6–12-year-olds) associated with behaviour problems. Changes in sleep patterns among preschoolers (2–6 years) reported online by parents or caregivers. Compared with pre-pandemic reference samples, this study found that children with special needs and health issues had significantly more psychosocial problems, fewer prosocial behaviours and poorer quality of life since the COVID-19 pandemic began.
Xie 2020	1,784 (43.3%)	February 28–March 5, 2020	NR (Grades 2–6 primary school)	China	Child	Fear and anxiety outcomes, Depressive outcomes, Positive mental health and resilience	Higher prevalence or severity of depressive symptoms among participants living in Wuhan or elsewhere in the Hubei province (i.e., the pandemic epicentre). Older age (being in senior grades) was positively correlated with psychopathological symptoms, including stress, and negatively associated with life satisfaction.
Yeasmin 2020	384 (40.9%)	April 25–May 9, 2020	5–15	Bangladesh	Parent	Fear and anxiety outcomes, Depressive outcomes, Externalizing behavioural problems, Lifestyle-related mental health outcomes	Depression, anxiety, and sleep disorder scores were higher among children and adolescents (5–15 years) living in urban areas, as reported by their parents, than among those in rural areas. Parents needing to go to the workplace during the lockdown in Bangladesh (April–May 2020), being smokers, and having a chance of losing their job were all factors positively correlated with children's scores of depression, anxiety, and sleep disturbance. Such scores were also higher among children who fought more frequently with their siblings, those who watched cartoons and played games on electronic devices two to four hours per day, those whose parents did not take any action to keep them busy, those who complained their parents were busy or whose parents called them names they did not like (e.g., 'lazy'), those whose parents threatened them with punishment, and those whose parents screamed at and hit them when in home quarantine. A higher prevalence of sleep disorders was reported by parents of Bangladeshi children and adolescents (5–15 years) living in urban areas and areas with a higher prevalence of COVID-19.



## 1. Cross-sectional studies (cont'd)

Authors, year	Sample (n) (% female)	Study period	Age range - years	Countries	Reporting source	Outcomes	Results
Zhou 2020	4,805 (100%)	February 20–27, 2020	11–18	China	Child	Depressive outcomes, Lifestyle-related mental health outcomes	More participants had mild and moderate depressive symptoms than those experiencing severe depressive symptoms. 11–18-year-old female adolescents living in areas of China with $\geq$ 1,000 infected people were found to be less likely to develop depression than those in less-affected provinces. The authors explained that this counter-intuitive finding may be because there was clear communication and regular and accurate updates about COVID-19 in more-affected areas, leading to less uncertainty and depression. Physical inactivity was identified as a risk factor for depression in this national online survey of female Chinese adolescents (11–18 years).
Zhou 2020b	8,079 (53.5%)	March 8–15, 2020	12–19	China	Child	Fear and anxiety outcomes, Depressive outcomes	Mild and moderate depressive symptoms were more common (26% and 10%, respectively) than severe depressive symptoms among 12–19-year-olds in China in March 2020. Self-reported anxiety symptoms in 37% of the sample. Mild anxiety (27%) and moderate anxiety (7%) levels reported. Adolescents in the study exposed to COVID-19 (i.e., those who have been in compulsory isolation or under medical observation because they were diagnosed with COVID-19 or had a history of close contact with COVID-19 infection person) had a higher prevalence of anxiety symptoms. Higher anxiety was found in rural areas than in cities (40% vs. 33%) and among female than male adolescents (38% vs. 36%). Irritability and extensive worry symptoms spiked in a short period (early to mid-March 2020) among Chinese middle and high school students, but knowledge about the containment and spread of COVID-19 played a protective role in mitigating their anxiety. There was an alarming rise in anxiety-related symptoms such as irritability and extensive worry during the second week of March 2020.
Zorcec 2020	72 (NR)	May–July, 2020	Mean age 7 years	North Macedonia	Parent	Externalizing behavioural problems, Lifestyle-related mental health outcomes	Among the most frequently parent-reported behavioural problems were getting into arguments with siblings (64%) and with the parent (38%) more often than before the pandemic. The sample of children also had a significant reduction in their physical activity and an increase in the number of hours they spent watching TV.



## 2. Qualitative studies

Authors, year	Sample (n) (% female)	Study period	Age range	Countries	Reporting source	Outcomes	Results
Branquinho 2020	617 (69.5%)	April 14–May 18, 2020	16–24yo	Portugal	Child	Fear and anxiety outcomes, Depressive outcomes, Lifestyle-related mental health outcomes, Alcohol and substance use and abuse, Positive mental health and resilience	Findings suggest that alcohol and substance use during COVID-19 may be a coping mechanism to deal with the pandemic and other mental health issues. Adolescents and young people reported increased screen time, but also used this to engage in coping strategies, including regular communication with loved ones through video calling. Watching television was seen as an opportunity to engage in healthy routines, including being informed about healthy eating recipes and watching programmes with family members. Some participants were happier since schools had closed, they reported feeling less tired and more relaxed, they had more time for fun activities (e.g., physical exercise), and they thought that the lockdown offered opportunities for personal growth. To cope with the impact of the pandemic, participants had adopted strategies such as having a positive perspective, carrying out pleasurable activities, keeping in touch with family and friends, and establishing routines.
Fish 2020	31 (NR)	March 23–April 10, 2020	13–19yo	US	Child	Fear and anxiety outcomes, Depressive outcomes, Trauma and stress-related outcomes, Positive mental health and resilience	LGBTQI+ adolescents reported stress, frustration, anxiety, depression, and general struggles with mental health. Comments frequently referenced loss of routine and ongoing difficulties with sleep and schoolwork. Several participants shared that having free time to “just think” led to rumination regarding their sexuality and/or gender, which was burdensome. However, some respondents also identified positive aspects of opportunities to think about their identity without outside intrusions. LGBTQI+ youth expressed concern about being “stuck at home with unsupportive parents”, some of whom are “super-religious and homophobic”. Many grieved the loss of “safe spaces”.
Idoigga 2020	228 (52.2%)	March 30–April 13, 2020	3–12yo	Spain	Child	Fear and anxiety outcomes, Depressive outcomes, Externalizing behavioural problems, Positive mental health and resilience	Words were clustered in five groups: 1) “Our enemy the virus” (16%) where children described COVID-19 with words such as bug, bad, or enemy, but also mentioned words such as doctors, win, brave, balcony, or clap, praising the work of the doctors to tackle the virus and stressing that they must stay at home. These terms were mainly elicited by young children (2–5 years; $p < 0.02$ ); 2) “Fear of coronavirus” (20%) describing emotions such as fear, concern, sadness, nervousness, or fright created by this health crisis, especially the possibility of infecting their grandparents. These terms were mainly elicited by mid-age children (6–9 years; $p < 0.01$ ) and older children (10–12 years; $p < 0.05$ ); 3) “Safe at home” (21%), using words such as safe, protected, calm, home, parents, or mother, children describe how they feel safe and protected at home and are happy with their family; 4) “Emotions regarding lockdown” (23.8%), displaying conflicting emotions: bored, angry, overwhelmed, tired, and lonely because of lockdown on one hand, but also expressing happiness and excitement about being with their family; 5) “When is this going to end?”, wanting to know when they will be able to return to school and to their normal life. These terms were mainly elicited by the oldest children (10–12 years; $p < 0.001$ ).

## 2. Qualitative studies (cont'd)

Authors, year	Sample (n) (% female)	Study period	Age range	Countries	Reporting source	Outcomes	Results
Tereshchuk 2020	10 (NR)	NR	NR (kindergarten Grade 6)	Canada	Parent	Fear and anxiety outcomes, Depressive outcomes, Trauma and stress-related outcomes, Externalizing behavioural problems, Positive mental health and resilience	Parents expressed concern about the mental health of their children during the transition into lockdown and the consequences of such experiences in the future, especially as students return to school and the new school environment upon their return. This includes adapting to new social norms and a certain apprehension about how school hygiene and safety measures in place will prevent a new coronavirus outbreak in schools.
Banati 2020	119 Ethiopia (NR), 349 Côte d'Ivoire (46.7%), 100 Lebanon (50%)	April–May 2020 (Ethiopia and Lebanon), May–June 2020 (Côte d'Ivoire)	15–19yo Ethiopia, 10–19yo Côte d'Ivoire, 15–19yo Lebanon	Ethiopia, Côte d'Ivoire and Lebanon	Child	Fear and anxiety outcomes, Depressive outcomes, Trauma and stress-related outcomes, Suicidal behaviour, Alcohol and substance use and abuse	Interviews showed that participants were coping negatively with the consequences of the pandemic. A number of young people reported experiencing serious depression, especially in Lebanon, which has seen the exacerbation of a serious economic and political crisis. Some adolescents had struggled to adapt to online teaching and reported lack of support from teachers, which had caused stress and depression. In Côte d'Ivoire, in particular, many adolescents reported that they were feeling demotivated about their studies and training. Suicidal ideation was identified as a negative coping strategy in the context of COVID-19 and was most commonly reported among the Lebanese sample. In Ethiopia, adolescents reported that the shift to distance and online learning has caused stress overall, along with increasing inequalities in education. While in urban centres, efforts have been put in place to ensure a smooth transition to online learning, this option was not available to adolescents interviewed in this study, for whom school closure was a strong source of stress, especially during the exam period. Increased economic hardship during the pandemic has led to increased stress among Syrian refugee boys in Lebanon as they are often the family breadwinners. Adolescents also raised the concern that financial hardship may lead them to engage in exploitative or risky work, particularly drug dealing and cultivation among boys in Lebanon, and work exposing Ethiopian girls to unwanted sexual attention. Positive coping strategies among adolescents included playing football, volunteering to distribute hand sanitizers and food packages and actively sharing public health messaging about physical distancing in Ethiopia, and reducing smoking in Lebanon, in part as a consequence of financial pressure. Some sex differences were identified, whereby boys reported playing more football to release stress, while girls took up new hobbies such as photography, meditation and dance.

### 3. Mixed-method studies

Authors, year	Sample (n) (% female)	Study period	Age range	Countries	Reporting source	Outcomes	Results
Fitzpatrick 2020	133 (NR)	April 20–July 3, 2020	1–19yo	US	Caregiver	Fear and anxiety outcomes, Depressive outcomes	Depression was one of the issues that caregivers reported most often about adolescents' mental health problems. Contrary to other findings, adoption of more lenient quarantine policies in the regions where participants resided was associated with greater caregiver-reported child and adolescent internalizing and externalizing problems. The authors explained that this may be because family members' concerns about safety and infection may increase in settings with more lax community restrictions, making children more prone to distress. Caregivers' self-reported depression and anxiety scores were significantly correlated with caregiver reports of their children's emotional and behavioural difficulties (including sadness and depression).
Lee 2020	NR (NR)	April 20, 2020	0–12yo	US	Parent	Fear and anxiety outcomes, Depressive outcomes, Lifestyle-related mental health outcomes, Positive mental health and resilience	More than one third (35%) of parents said their child's behaviour had changed since the pandemic, including being sad, depressed and lonely. Compared with parents with minimal or mild anxiety, parents with moderate or severe anxiety reported higher child anxiety scores. Parenting stress was also positively associated with higher child anxiety scores. Parents indicated that school closures were a significant disruption, followed by lack of physical activity, and social isolation. However, 8% of parents reported observing a positive change in their child's behaviour (e.g., expressing gratitude, feeling more relaxed) during the pandemic.
Nelson 2020	151 (0%)	March 2–May 8, 2020	14–17yo	US	Child	Positive mental health and resilience	The majority (57%) of participants reported being worried about COVID-19 and almost all (91%) were physically distancing. Respondents said that COVID-19 had reduced their ability to socialize and had a deleterious effect on their mental health in terms of increased stress, anxiety, depression. In the past three months, participants reported seeing sexual partners in person less often, masturbating and viewing pornography more often, and sexting and messaging on men-seeking-men websites/phone applications about the same amount.
Luthar 2020	2,196 (51.6%)	NR	NR (Grades 9–12)	US	Child	Fear and anxiety outcomes, Depressive outcomes, Positive mental health and resilience	Significant links found between depression and participants reporting that their parents were a source of stress. Parental support was inversely related to depression.
Bobo et al 2020	435 (13.3%)	Responses received between days 20 and 30 of lockdown	M 10.5yo	France	Parent	Fear and anxiety outcomes, Depressive outcomes, Trauma and stress-related outcomes, Externalizing behavioural problems, Lifestyle-related mental health outcomes, Alcohol and substance use and abuse, Positive mental health and resilience	More than 65% of parents of children with attention deficit hyperactivity disorder (ADHD) reported no changes in behaviour. An increase in sleep problems and decrease in physical activity was reported by parents or caregivers of children with ADHD. Maintaining optimal lockdown life conditions (e.g., sufficient space at home, having a garden) may help improve children's behaviours and moods. 31% of the sampled children with ADHD in France (mean age 10.5 ± 2.9 years) were doing better after school closure (compared with 35% that were doing worse, and 34% who showed no changes). In particular, parents reported improvements in their children's anxiety as a result of less exposure to school-related strain and the adoption of flexible schedules that were more personalized to children's own rhythms.

#### 4. Longitudinal studies

Authors, year	Time-points (gap)	Sample (n) (female %) at end line	Study period (during COVID-19)	Age range (during COVID-19)	Countries	Reporting source	Outcomes	Results
Chahal 2020	2 (m5.2 years)	85 (57.6%)	April 3 –20, 2020	13–19yo	US	Child	Fear and anxiety outcomes, Depressive outcomes	Participants reported an average internalizing severity of 2.33 (on a scale of 1–5) in the three months before COVID-19 (pre-COVID-19) and an average 0.42 increase in internalizing severity in the recent two weeks (peri-COVID-19). There was a statistically significant increase in means between the pre-and peri-COVID-19 internalizing scores. Participants in more advanced stages of puberty at the first time point (controlling for age) reported greater increases in internalizing severity from pre-to peri-COVID-19. Girls reported greater internalizing severity pre-and peri-COVID-19.
Ezpeleta 2020	12 (1 year)	226 (NR)	09 June 20	13yo	Spain	Parent	Externalizing behavioural problems	While parent-reported emotional problems and prosocial behaviours decreased in adolescents, conduct problems increased after the lockdown in Spain. The study provided key insights into predictors of increased psychopathology since COVID-19 in Spain. Emotional problems were significantly associated with fear of contagion, parental stress, worsened relationship with parents, boredom, somatic complaints, sleep problems and frustration. Increases in conduct problems and hyperactivity/inattention were associated with lenient parenting, worsened relationships with family members and tensions around homework. Hyperactivity was also associated with somatic complaints and sleep problems. However, maintaining daily routines, communicating online with friends and sharing time together at home during quarantine were protective against these problems. Links were found between the type of activities children and adolescents engaged in and their behaviour. Parent reports indicated a decrease in positive outcomes such as prosocial behaviours in their children since the onset of the pandemic. This seemed to be in part the result of increased parental stress and changes in parents' behaviours, in addition to reduced adolescent engagement in family activities, the fact that adolescents did not share their feelings and fears about the future, and that they went outside less.





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Authors, year	Time-points (gap)	Sample (n) (female %) at end line	Study period (during COVID-19)	Age range (during COVID-19)	Countries	Reporting source	Outcomes	Results
Ferrando 2020	2 (2 months)	65 (58.5%)	March 1–April 30, 2020	m13.7 ± 2.7yo	US	Child	Fear and anxiety outcomes, Depressive outcomes, Trauma and stress-related outcomes, Suicidal behaviour, Alcohol and substance use and abuse	An overall decrease in suicidal behaviour among children and adolescents was identified among patients presenting for emergency services in the US in the context of the COVID-19 pandemic and related measures. There were no significant differences in age, sex, ethnicity, relationship status or living situation between the pre-COVID-19 cohort (1 January to 28 February 2020) and the COVID-19 (1 March to 30 April 2020) cohort. However, participants seen during the pandemic period were significantly less likely to have a previous psychiatric history or outpatient psychiatric treatment. They were also less likely to have symptoms of agitation or aggression, and more likely to have a presentation of psychosis and report substance use. Increased psychosis and substance use among children and adolescents in the study may have led to under-reporting of suicidal behaviour. A significantly greater number of child and adolescent patients were hospitalized for inpatient psychiatric care after evaluation during the COVID-19 period. Despite an overall decline in emergency psychiatric admissions at Westchester Medical Center Health System in New York City since the pandemic began, adjustment disorders were among the most common disorders for children and adolescents accessing psychiatry emergency services. However, the increase between the study participants pre-pandemic and since COVID-19 was only two percentage points (33% versus 35%). The study compared characteristics of 65 children and adolescents seen for emergency psychiatric evaluation across two time points: before COVID-19 lockdowns (January–February 2020) and during COVID-19 lockdowns (March–April 2020). They found that there was no primary diagnosis of substance use disorder among children and adolescents reporting to emergency care since COVID-19. However, there was a significant increase in the number of children and adolescents with prior psychiatric history who presented with psychiatric emergencies that also reported comorbid substance use as a secondary condition.





## 4. Longitudinal studies (cont'd)

Authors, year	Time-points (gap)	Sample (n) (female %) at end line	Study period (during COVID-19)	Age range (during COVID-19)	Countries	Reporting source	Outcomes	Results
Gassman-Pines 2020	2 (NR)	645 (50%)	February 20– April 27, 2020	2–7yo	US	Parent	Depressive outcomes, Externalizing behavioural problems	Parents in hourly service industry positions in retail, food service, or hotel business, reported an increase in their children's (2–7 years) feelings of sadness or worry after COVID-19 restrictions were imposed. Most families experienced hardships during the pandemic, including job losses (60% of families), household income declines (69%), increased caregiving burden (45%), and illness (12%). Most of them experienced more than two hardships, and multiple hardships associated with worse parental and child mental health. Parents reported increased frequency of uncooperative behaviour and worry from the start of the pandemic. Family risk, established on the basis of lower socio-economic status and worsened work conditions, was associated with children's uncooperative behaviour. Hardship and challenging living conditions brought upon by infection control measures (in particular by caregiving burden of parents and household illness, as experienced by 45% of families and 12% of families respectively) were linked to uncooperative behaviours.
Gimenez-Dasi 2020	2 (approx 2 months)	167 (42%)	March 11– April 25, 2020	3–11yo	Spain	Parent	Depressive outcomes, Externalizing behavioural problems, Positive mental health and resilience	No significant differences in depression scores before and during confinement in Madrid were reported. Scores before confinement were rather low, and even during the pandemic they were not very concerning.
Giorgio 2020	2 (approx 1 week)	245 (NR)	April 1–9, 2020	2–5yo	Italy	Parent	Externalizing behavioural problems, Lifestyle-related mental health outcomes	It was reported that, since the pandemic, children went to bed on average about 53 minutes later, woke up about 66 minutes later. An increased sense of boredom in children was reported during lockdown, especially among children whose mothers worked remotely. The proportion of children with self-control difficulties increased from 14% before lockdown to 21% during lockdown. Parents reported increased emotion symptoms, conduct problems and hyperactivity/inattention issues among their children during the lockdown, regardless of the mother's work arrangements.
Janssen 2020	2 (approx 1 year)	34 (64.7%)	April 14–28, 2020	11–17yo (at pre-COVID-19 baseline)	Netherlands	Child, Parent	Depressive outcomes, Positive mental health and resilience	The top five helpful activities identified by adolescents during lockdown were 'chilling' (13%); watching television/series (11%); online contact with relatives or friends (11%); listening to music (11%); and being together with the family (10%).





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Authors, year	Time-points (gap)	Sample (n) (female %) at end line	Study period (during COVID-19)	Age range (during COVID-19)	Countries	Reporting source	Outcomes	Results
Magson 2020	2 (approx 1 year)	248 (51%)	May 5 –14, 2020	12–16yo	Australia	Child	Fear and anxiety outcomes, Depressive outcomes, Positive mental health and resilience	Adherence to stay-at-home orders and feeling socially connected during lockdown were protective factors against depression and anxiety among 12–16-year-old Australian adolescents. Increases in symptoms of anxiety between the pre-pandemic period (2019) and since the onset of the pandemic (April–May 2020). While COVID-19 related worries, difficulties in switching to online learning, and increased conflict with parents and siblings predicted increases in mental health problems in May 2020 as compared with 2019, adherence to stay-at-home orders and perceiving high level of social connectedness during lockdown were protective factors against mental health difficulties.
Rogers 2020	2 (6 months)	407 (50%)	Apr-20	14–17yo	US	Child	Fear and anxiety outcomes, Depressive outcomes	Increases in symptoms of anxiety, depression and loneliness between the pre-pandemic period (2019) and since the onset of the pandemic (April–May 2020). Girls perceived greater increases in friend conflict than boys during the COVID-19 pandemic. White adolescents perceived greater increases in family conflict than Latino adolescents and less family support than African-American adolescents. Adolescents from urban communities perceived more pronounced declines in positive affect and greater time spent with family than adolescents residing in rural communities. Adolescents from lower-income households perceived greater increases in negative affect and more pronounced decreases in positive affect. They also perceived greater conflict with parents and less support from friends during the COVID-19 pandemic.
Zreik 2020	2 (1–2 months)	264 (54%)	Apr-20	6–72 months	Israel	Parent	Lifestyle-related mental health outcomes	Almost 29% of mothers reported a negative change in their child's sleep quality during home confinement, while 59% reported no change and 12% reported a positive change. A total of 35% of the mothers reported a decrease in their child's sleep duration during home confinement, while 40% reported no change and 25% reported an increase. A total of 19% of the mothers reported a change in their child's sleeping arrangement, and 26% reported a change in the way the child falls asleep. Mothers who reported that their child's sleep improved during the COVID-19 crisis (quality and duration) were more likely to report a decrease in their own insomnia symptoms during the crisis. Mothers with an increase in insomnia symptoms showed significantly higher levels of COVID-19 acute anxiety.





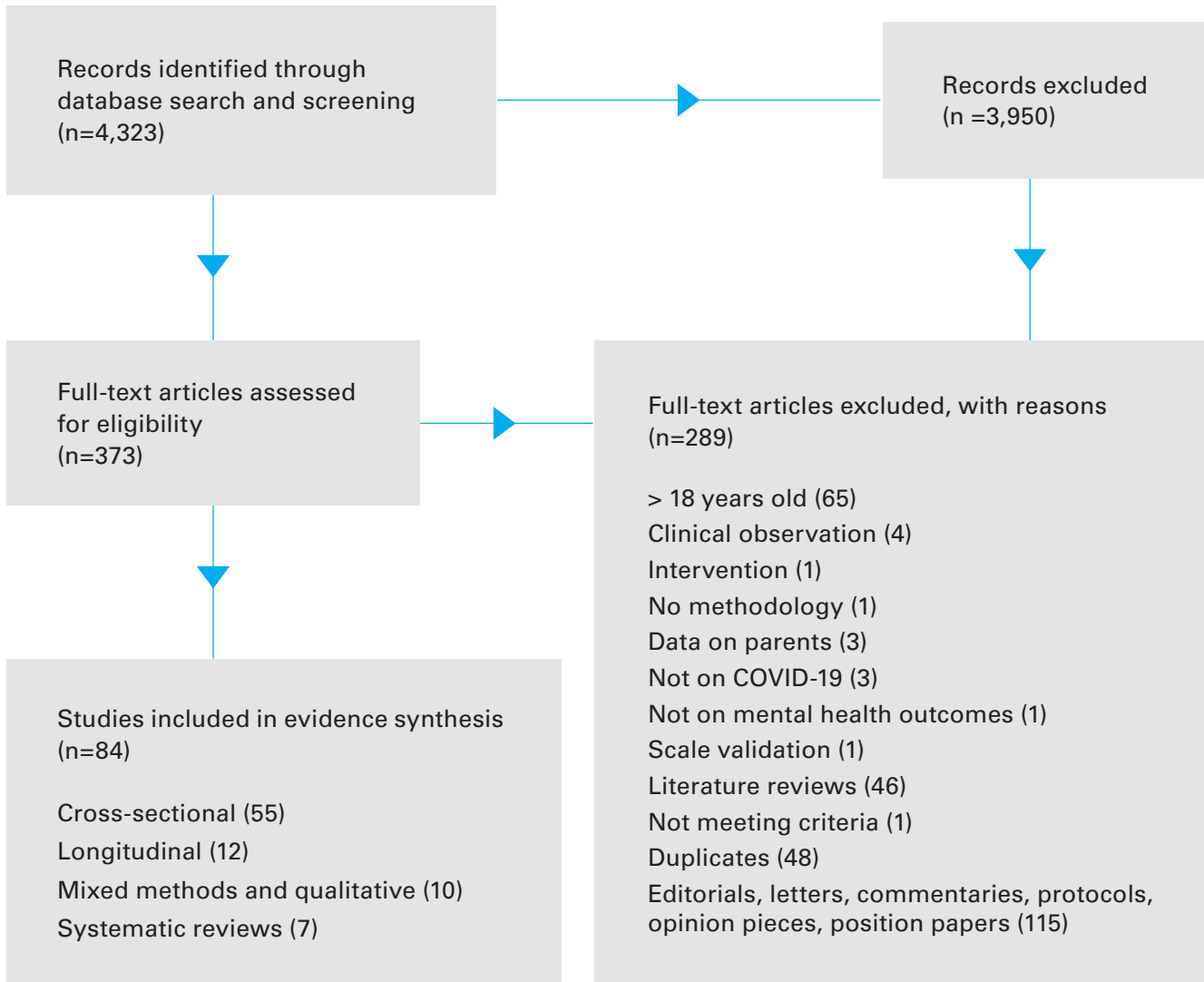
## 4. Longitudinal studies (cont'd)

Authors, year	Time-points (gap)	Sample (n) (female %) at end line	Study period (during COVID-19)	Age range (during COVID-19)	Countries	Reporting source	Outcomes	Results
Abawi 2020	2 (NR)	40 (NR)	Apr-20	m 10.5yo	Netherlands	Parent	Fear and anxiety outcomes	Self-imposed strict quarantine measures were taken by 25% of families. During follow-up, several families reported that the previous COVID-19 exposure alleviated their anxiety. Most of the children with reported anxiety were afraid to be at increased risk for COVID-19 infection.
Crescentini 2020	2 (approx 6 months)	271 (48.4%)	April 16–May 07, 2020	6–18yo	Italy	Parent	Fear and anxiety outcomes, Depressive outcomes	Specific demographic characteristics (i.e., sex and age) and psychological factors of children and parents, such as fear of contagion and the opportunity to think about possible secondary positive effects of the pandemic, had a predictive value on the presence of internalizing symptoms of both parents and children. Moreover, parents' behaviours during the lockdown period (i.e., employment status and sport practised) were significantly related to their own internalizing symptoms. These symptoms, in turn, had a strong and positive predictive value on children's internalizing problems.



## Annex 2. Overview of studies

### PRISMA\* flow chart



\* PRISMA stands for Preferred Reporting Items for Systematic Reviews and Meta-Analyses. We applied this methodology to report the process of our rapid review methodology.



## Annex 3. Individual-level factors and mental health outcomes

Sex	Age	Geographical location	Family situation	Pre-existing vulnerabilities	Perceived seriousness and risk of COVID-19 exposure
<p>Higher alcohol and substance use among boys.</p> <p>Greater depressive symptoms, anxiety and externalizing behavioural symptoms among girls.</p>	<p>Older children and adolescents reported higher rates of, and more severe, depressive symptoms and anxiety than younger ones.</p> <p>Assessments of other mental health outcomes showed mixed results on age differences.</p>	<p>Proximity to the outbreak epicentre and living in rural areas or in areas more affected by COVID-19 were factors associated with stress symptoms, depressive symptoms, anxiety, alcohol and substance use and increased sleep disturbances.</p> <p>This may be because of harsher containment measures in these areas.</p>	<p>Children living in poverty or in families with lower socio-economic status were found to be at risk of depressive symptoms and externalizing behavioural problems.</p> <p>Children and adolescents with adverse childhood experiences and maltreatment (including abuse, neglect and family dysfunction) were more at risk of stress and anxiety symptoms.</p>	<p>Children and adolescents with pre-existing vulnerabilities were more significantly impacted by pandemic-related changes.</p> <p>This includes children and adolescents with neurodevelopmental conditions (e.g., attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder) and health conditions (e.g., HIV, diabetes, cancer) who experienced depressive symptoms and had greater fears relating to COVID-19 risk perception.</p> <p>Children with neurodevelopmental conditions were found to be particularly impaired in terms of prosocial behaviours during the pandemic.</p>	<p>Higher perceived seriousness and risk of COVID-19 exposure were predictive of stress and depressive symptoms, anxiety and hoarding behaviour.</p> <p>They were also associated with positive outcomes such as greater physical distancing, disinfecting and news monitoring.</p>



## Annex 4. UNICEF Office of Research background resources

### Child protection

Impacts of Pandemics and Epidemics on Child Protection: <https://www.unicef-irc.org/publications/1104-working-paper-impacts-of-pandemics-and-epidemics-on-child-protection-lessons-learned.html>

Lifting Barriers to Education During and After COVID-19: <https://www.unicef-irc.org/publications/1190-lifting-barriers-to-education-after-covid-19-improving-education-for-migrant-and-refugee-children-in-lac.html>

A Lifeline at Risk: <https://www.unicef-irc.org/publications/1157-a-lifeline-at-risk-covid-19-remittances-and-children.html>

### Education

Learning at a Distance: <https://www.unicef-irc.org/publications/1182-learning-at-a-distance-childrens-remote-learning-experiences-in-italy-during-the-covid-19-pandemic.html>

COVID-19: Trends, promising practices and gaps in remote learning for pre-primary education: <https://www.unicef-irc.org/publications/1166-covid-19-trends-promising-practices-and-gaps-in-remote-learning-for-pre-primary-education.html>

COVID-19: Effects of school closures on foundational skills and promising practices for monitoring and mitigating learning loss: <https://www.unicef-irc.org/publications/1144-covid19-effects-of-school-closures-on-foundational-skills-and-promising-practices.html>

### General


Supporting Families and Children Beyond COVID-19: <https://www.unicef-irc.org/publications/1165-supporting-families-and-children-beyond-covid-19-social-protection-in-high-income-countries.html>

Leading Minds Report: <https://www.unicef-irc.org/article/1938-leading-minds-2019-on-child-and-adolescent-mental-health-concludes.html>

Innocenti Report Card 16: <https://www.unicef-irc.org/publications/1140-worlds-of-influence-understanding-what-shapes-child-well-being-in-rich-countries.html>




## Annex 5. Measures of mental health outcomes

Outcome	Scales used	Most common scales	Adapted versions	Notes
<b>Depression</b> 	<ul style="list-style-type: none"> <li>• Patient Health Questionnaire (PHQ-9)</li> <li>• Depression, Anxiety, and Stress Scale (DASS-21)</li> <li>• Behaviour and Feelings Survey</li> <li>• Well-Being Index</li> <li>• Child and Adolescent Evaluation System (SENA) scale</li> <li>• Short Mood and Feelings Questionnaire – Child Version</li> <li>• Children’s Depression Inventory (CDI)</li> <li>• Beck Depression Inventory (BDI)</li> <li>• Warwick–Edinburgh Mental Well-being Scale (WEMWBS)</li> <li>• Depression Self-Rating Scale for Children (DSRS-C)</li> <li>• Short Egna Minnen Beträffande Uppfostran (S-EMBU)</li> <li>• Child Behaviour Checklist (CBCL)</li> <li>• Profile of Mood States</li> <li>• Revised Child Anxiety and Depression Scale</li> <li>• Center for Epidemiologic Studies Depression Scale for Children (CES-DC)</li> </ul>	<ul style="list-style-type: none"> <li>• PHQ-9 (which has high clinical reliability and validity among the Chinese population) and the DASS-21</li> <li>• Two studies used the Chinese version of the DASS-21, which has good validity and reliability among the Chinese population, while one study used the Persian version of the DASS-21, which has very good to excellent internal consistency among adolescents.</li> </ul>	<p>Some studies used adapted versions of the scales, including:</p> <ul style="list-style-type: none"> <li>• a validated version of the SENA scale in the Spanish population</li> <li>• a validated version of the Children’s Depression Inventory in the Chinese population, which has demonstrated satisfactory levels of reliability and validity</li> <li>• the Chinese version of the BDI</li> <li>• the Chinese version of the WEMWBS</li> <li>• the Chinese version of the S-EMBU, which has proven to have good psychometric properties</li> <li>• the Chinese version of the Profile of Mood States</li> <li>• the Revised Child Anxiety and Depression Scale, adapted to the Turkish culture</li> <li>• the version of the Center for Epidemiologic Studies Depression Scale for Children that has been validated in Chinese adolescent samples.</li> </ul>	<p>Four studies designed and employed their own questionnaires,<sup>7,68,70,157</sup> and one cross-sectional study<sup>80</sup> did not report on measurement tools.</p>



## ANNEXES



Outcome	Scales used	Most common scales	Adapted versions	Notes
<b>Fear and anxiety</b> 	<ul style="list-style-type: none"> <li>• Beck Anxiety Inventory (BAI)</li> <li>• State-Trait Anxiety Inventory for Children (STAIC)</li> <li>• Children’s Anxiety Questionnaire (CAQ)</li> <li>• Screen for Child Anxiety-Related Emotional Disorders</li> <li>• Child Stress Disorders Checklist (CSDC)</li> <li>• Generalized Anxiety Disorder (GAD-7) scale</li> <li>• Patient-Reported Outcomes Measurement Information System (PROMIS) anxiety scale</li> <li>• Screen for Child Anxiety Related Disorders (SCARED)</li> <li>• Depression, Anxiety and Stress Scale (DASS-21)</li> <li>• Child Behaviour Checklist (CBCL)</li> <li>• Obsessive Compulsive Inventory – Child Version</li> <li>• Spence Child Anxiety Scale for Parents (SCAS-P)</li> <li>• Zung Self-Rating Anxiety Scale (SAS)</li> <li>• 2-item Generalized Anxiety Disorder (GAD-2) scale</li> <li>• Fear of COVID-19 Scale</li> <li>• Pandemic Anxiety Scale (PAS)</li> <li>• Kessler Psychological Distress Scale (K6)</li> <li>• Hospital Anxiety and Depression Scale (HADS)</li> <li>• Top Problems Assessment (TPA)</li> </ul>	The GAD-7, SCARED and DASS-21 scales were used in multiple studies.	There were culturally adapted versions, such as the Chinese version of the GAD-7.	









## Annex 5 (cont'd)

Outcome	Scales used	Most common scales	Adapted versions	Notes
<b>Suicidal behaviour</b> 	<ul style="list-style-type: none"> <li>Banati et al. (2020) drew on qualitative semi-structured interviews conducted via telephone, WhatsApp and/or in person to explore the psycho-emotional consequences of the COVID-19 pandemic and coping strategies of adolescent girls and boys.</li> <li>Ferrando et al. (2020) compared records from psychiatric emergency evaluations of patients seen before and during the COVID-19 period.</li> <li>Isumi et al. (2020) obtained mortality and population estimates to examine whether suicide rates among children and adolescents increased or decreased during school closures of the COVID-19 pandemic.</li> </ul>			
<b>Trauma and post-traumatic stress</b> 	<ul style="list-style-type: none"> <li>Depression, Anxiety and Stress Scale (DASS-21)</li> <li>The eight-item Children's Revised Impact of Event Scale (CRIES-8)</li> <li>PTSD Checklist – Civilian Version (PCL-C)</li> <li>Self-report PTSD Checklist for DSM-5 (PCL-5)</li> <li>Perceived Stress Scale – Child form</li> </ul>	<ul style="list-style-type: none"> <li>The DASS-21 was the most used across studies.</li> <li>Two studies used the Chinese version, which has good validity and reliability in the Chinese population, even in adolescents, and one study used the Persian version, which has reported very good to excellent internal consistency, including among adolescents.</li> </ul>	One study used the Chinese version of the CRIES-8, which shows good internal consistency and construct validity.	Three studies designed and employed their own questionnaires, <sup>7,68,157</sup> and one study used hospital records. <sup>81</sup>





## ANNEXES

Outcome	Scales used	Most common scales	Adapted versions	Notes
<b>Externalizing behavioural problems</b> 	<ul style="list-style-type: none"> <li>• Strengths and Difficulties Questionnaire (SDQ)</li> <li>• Child Behaviour Checklist (CBCL)</li> <li>• Chinese Profile of Mood States (POMS)</li> <li>• Emotion Regulation Checklist</li> <li>• Difficulties in Emotion Regulation Scale (DERS)</li> <li>• Swanson, Nolan, and Pelham scale (SNAP-IV) – parent form</li> <li>• Inattention/Overactivity with Aggression Conners Rating Scale (only one item)</li> <li>• Preschool Behaviour Questionnaire (only one item)</li> <li>• Behaviour Rating Inventory of Executive Function (BRIEF-P, particularly the Inhibit and Emotional Control scales which constitute the Inhibitory Self-Control Index (ISCI))</li> <li>• Chinese Parent–Child Interaction Scale (CPCIS)</li> <li>• Paediatric Quality of Life Inventory 4.0 Generic Core Scales (PedsQL)</li> </ul>	The most commonly used measure was the SDQ, which was also adapted for use in China.	<ul style="list-style-type: none"> <li>• Three studies used validated versions of the following scales: SDQ for Spain and Hong Kong; Chinese CPCIS, 18-item Paediatric Quality of Life Inventory 4.0 Generic Core Scales validated for Hong Kong; DERS validated for Italy.<sup>176</sup></li> <li>• One study used an adapted version of the Chinese POMS.</li> <li>• One study used only one item from the Inattention/Overactivity with Aggression Conners Rating Scale and only one item from the Preschool Behaviour Questionnaire.</li> </ul>	Most of the measures assessed behavioural and emotional problems related to inattention, hyperactivity, conduct issues, peer conflict, irritability and emotion regulation.
<b>Alcohol and substance use and abuse</b> 	<ul style="list-style-type: none"> <li>• The cross-sectional study used the Chinese version of the 10-item Alcohol Use Disorders Identification Test (AUDIT), which shows good internal consistency reliability.</li> <li>• Psychiatrists used screening and hospital records for the longitudinal study conducted in emergency psychiatric hospitals.</li> <li>• One qualitative study used its own interview questionnaires, and the other qualitative study did not report on measurement tools.</li> </ul>			





Annex 5 (cont'd)

Outcome	Scales used	Most common scales	Adapted versions	Notes
<b>Lifestyle-related mental health outcomes</b> 	<ul style="list-style-type: none"> <li>• Insomnia Severity Index (ISI)</li> <li>• Children's Sleep Habits Questionnaire (CSHQ)</li> <li>• Child Routines Inventory, Sleep Disturbance Scale for Children (SDSC)</li> <li>• International Physical Activity Questionnaire – Short Form (IPAQ-SF)</li> <li>• Patient Health Questionnaire (PHQ-9)</li> <li>• Parent-reported Child Behaviour Checklist (CBCL)</li> <li>• Young's Internet Addiction Test (IAT) – Chinese version</li> <li>• Internet Gaming Disorder Scale – Short Form (IGDS9-SF)</li> </ul>	<p>Three scales were used across multiple studies:</p> <ul style="list-style-type: none"> <li>• SDSC</li> <li>• PHQ-9 and</li> <li>• the Child Routines Inventory.</li> </ul>		<ul style="list-style-type: none"> <li>• Two studies developed their own questionnaires, but details of the instruments were not available.</li> <li>• Psychiatrists employed screening and diagnostic testing for the longitudinal study conducted in emergency psychiatric hospitals.</li> </ul>
<b>Positive mental health outcomes</b> 	<ul style="list-style-type: none"> <li>• Strengths and Difficulties Questionnaire (SDQ)</li> <li>• Paediatric Quality of Life Inventory 4.0 (PedsQL 4.0)</li> <li>• Warwick–Edinburgh Mental Wellbeing Scale (WEMWBS)</li> <li>• Conner–Davidson Resilience Scale (CD-RISC)</li> <li>• Emotion Awareness Questionnaire</li> <li>• Child and Youth Resilience Measure – Revised (CYRM-R)</li> <li>• Well-Being Index</li> <li>• Student Resilience Survey</li> <li>• Student's Life Satisfaction Scale</li> <li>• Child Behavior Checklist/4–18</li> <li>• Generic Health-related Quality of Life Questionnaire for Children (Kid-KINDL)</li> <li>• Profile of Mood States (POMS)</li> <li>• Emotional Regulation Checklist</li> <li>• Ryff's 18-item Psychological Well-Being Scale</li> <li>• Positive and Negative Affect Schedule for Children (PANAS-C)</li> </ul>	<ul style="list-style-type: none"> <li>• The most used scale was the SDQ.</li> <li>• One study used the Italian version, which has good psychometric properties, and one study used a version validated with the Chinese population.</li> </ul>	<p>Some studies used adapted versions of some of the scales:</p> <ul style="list-style-type: none"> <li>• a validated version of the Paediatric Quality of Life Inventory 4.0 in the Chinese population</li> <li>• the Chinese version of the Warwick–Edinburgh Mental Wellbeing Scale (WEMWBS)</li> <li>• the Italian version of the Emotion Awareness Questionnaire</li> <li>• the Italian version of the Child and Youth Resilience Measure (CYRM-R)</li> <li>• the Chinese version of the Profile of Mood States (POMS).</li> </ul>	<ul style="list-style-type: none"> <li>• Nine studies designed and employed their own questionnaires.<sup>7,71,85,89,157,169,171,173,175</sup></li> <li>• One qualitative study<sup>70</sup> did not report on measurement tools.</li> </ul>



for every child, answers



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