

The Impact of Pandemic Restrictions on Childhood Mental Health: A Review of the Literature

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Summary

Restrictions affecting mental health and well-being can affect many children and adolescents, as about half of all mental health disorders start by the age of 14.¹

Eight out of ten children and adolescents report worsening of behaviour or any psychological symptoms or an increase in negative feelings due to the COVID-19 pandemic. School closures contributed to increased anxiety, loneliness and stress; negative feelings due to COVID-19 increased with the duration of school closures. Deteriorating mental health was found to be worse in females and older adolescents.

Mental well-being protective factors include increasing socialisation that includes positive interactions and benefits for other people (prosocial behaviours), along with social connectedness based on experiences of feeling close and connected to others.

The quality of the review evidence was judged to be moderate: future high-quality longitudinal studies are required to assess the long term impact of covid restrictions on child and adolescent mental health.

The evidence shows the overall impact of COVID-19 restrictions on the mental health and well-being of children and adolescents is likely to be severe.

Main Recommendations

'In all actions concerning children undertaken by public institutions, the child's best interest shall be a primary consideration' ([Article 3.1 of the convention of human rights for children](#)).

Mental health should be a crucial consideration in deciding whether to increase social isolation and reduce prosocial behaviours for children and adolescents.

Several studies highlight the essential need to monitor the ongoing impact of mental health in children and the requirement for further long term studies.

¹ 1. Age of onset of mental disorders: a review of recent literature. *Curr Opin Psychiatry*. 2007 Jul;20(4):359-64. doi: 10.1097/YCO.0b013e32816ebc8c. PMID: 17551351; PMCID: PMC1925038.

Impact

We found 17 systematic reviews reporting child and adolescent mental health (three were preprints: Robinson 2021, Viner 2021 and Sun 2021).

Overall, we rated the impact as **SEVERE** on mental health and well-being based on the following main findings:

- Anxiety, depression, irritability, boredom, inattention and fear of COVID-19 were predominant new-onset psychological problems in children during the pandemic (Panda 2020)
- Pandemics can cause stress, worry, helplessness, as well as social and risky behavioural problems among children and adolescents (Meherali 2021)
- Thirteen studies report a negative association between the COVID-19 pandemic and its impact on mental health (Jones 2021)
- Eight out of ten children and adolescents report worsening of behaviour/any psychological symptoms (Panda 2020)
- School closures as part of broader social distancing measures may be associated with considerable harm to the psychological health and wellbeing of children (Viner 2021)
- School closure contributed to increased anxiety and loneliness and stress, sadness, frustration, indiscipline, and hyperactivity (Chaabane 2021)
- Worsening mental health was more marked in females and older adolescents (Chawla 2021, Samji 2021)
- Stressors for adolescents included the inability to see friends, arguments with parents, unresolvable disputes via social media, academic stress and feelings of isolation (John 2021)
- Social connectedness (i.e., family connectedness, school connectedness, social support), self-esteem, and prosocial behaviours were the most common protective factors for social isolation. (Preston 2021)
- Parent-child communication is potentially protective for anxiety and depression (Panchal 2021)
- The overall impact on suicide rates in children and adolescents remains uncertain (Minoozi 2021, Viner 2021)

Quality of the Evidence

Limitations in the evidence introduce uncertainty about the accuracy of the reported effects. There was considerable variation in outcome across studies, often due to the sampling methods, the outcome tools used to assess the psychological symptoms, and the timing of the studies in the pandemic. Ma 2021 documented 18 mental health-related scales used to assess anxiety or depression, which significantly contributed to the heterogeneity. No long-term follow-up data were available, and studies often used cross-sectional designs that limited causal inference. Chawla 2021 reported almost no studies attempting to address potential bias. In nearly half the included studies, the authors had no discrete objectives and neglected to comment upon the generalizability of their findings. The use of convenience samples also introduced other biases. [Selection bias](#) occurs when individuals in a study differ systematically from the population of interest, leading to a systematic error in the outcome. Future studies should thus consider the most appropriate scale, an appropriate

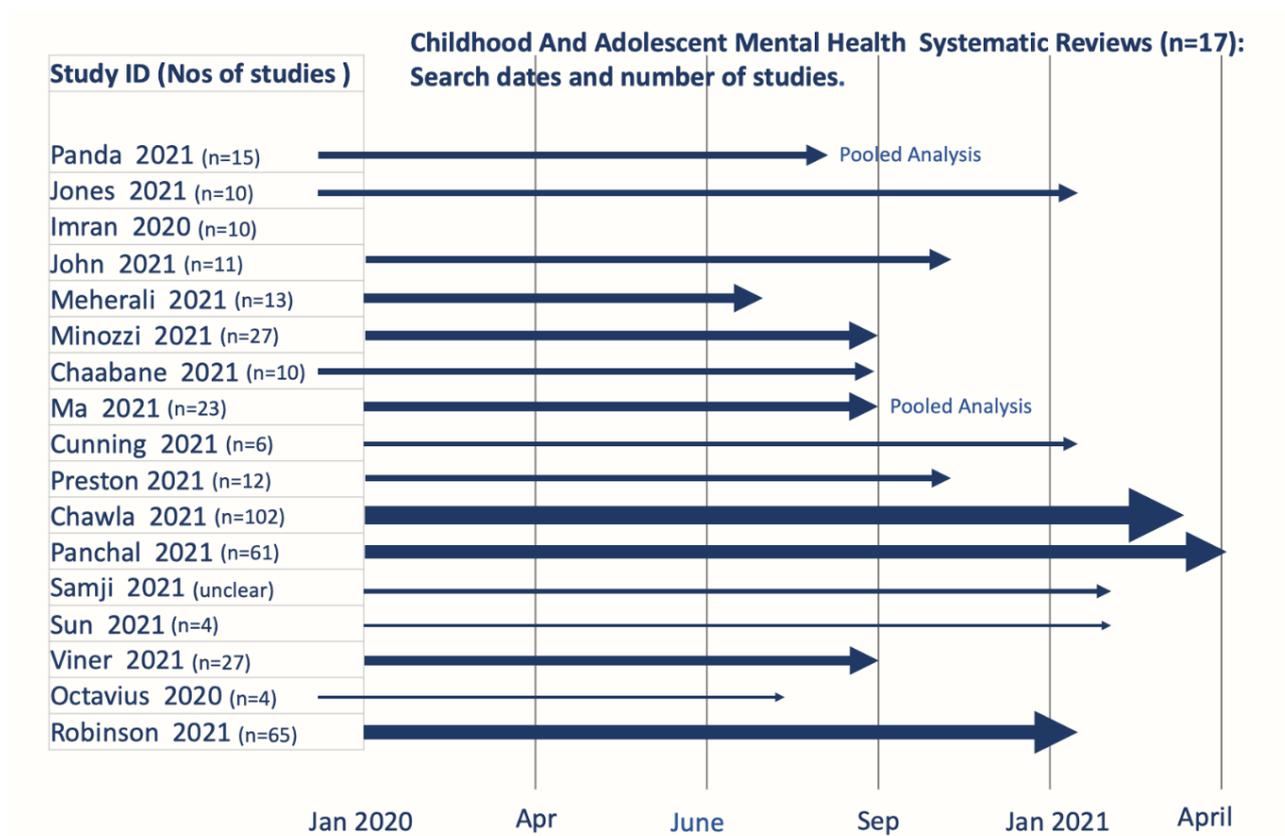
length of follow-up and whether random sampling would be more acceptable to obtain generalisable population estimates.

Methods

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| Records identified through database search (n=6,600) |
| Records Screened (n=107) |
| Full-text articles assessed for eligibility (n=79) |
| Studies included: systematic reviews (n=17); Gov't, NOG reports (n=4) |

We searched [LitCovid](#), the [WHO Covid-19 database](#), [Google Scholar](#) and bibliographies of retrieved articles for articles reporting mental health effects in children during the covid period of restrictions. We reviewed the title and abstract, including systematic reviews and relevant Gov't and NOG reports that included primary data. We excluded studies of college and university students and reviews that did not include extractable data on children. We extracted data on the outcomes, the number of included studies, the inclusion dates and the quality assessment. We tabulated the data and summarised the main findings and the quality of the evidence. We also provide recommendations, with an overall summary of the impact and the security of the evidence. Our review approach is available at [Collateral Global: What is a Rapid Review?](#)

The end search date for the reviews was April 2021 and the number of included studies in the reviews ranged from 4 to 102.



Line weights represent the number of included studies

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Chawla N, Tom A et al. Psychological Impact of COVID-19 on Children and Adolescents: A Systematic Review. *Indian Journal of Psychological Medicine*. 2021;43(4):294-299. doi:10.1177/02537176211021789

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Save the Children 2020, The hidden impacts of covid-19 on children's mental health.
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Study Impacts and Limitations

| Study ID (Author, initials, year) | Population and nos of studies | Impact | Limitations |
|-----------------------------------|---|---|--|
| Panda PK 2021 | Children < 18 yrs. 15 cross-sectional studies (n=22,996) | Pooled estimates % (95% CI) Anxiety 34.5% (33.8–35.1%) Depression 41.7% (40.8–42.3%) Irritability 42.3% (39.4–45.7%) Boredom 35.2% (32.9–39.1%) Sleep disturbance 21.3% (18.7–24.1%) Excessive fear 22.5% (19.3–25.4%) Inattention 30.8% (27.9–32.8%) Overall worsening of behaviour/any psychological symptoms 79.4 % (71.8–88.3%) | Ten studies were of fair quality, and five were of good quality. The certainty rating was of a moderate level. The parents were found to be suffering from stress and psychological problems and their perception might not be a true reflection. |
| Jones EAK 2021 | Adolescents 16 studies (n=40,078). | 13 studies reported a negative association between the COVID-19 pandemic and its impact on mental health. Social support, positive coping skills, home quarantining, and parent-child discussions seem to positively impact mental health. | None discussed |
| Imran N 2020 | Children & adolescents, 10 studies (3 in covid-19 period) | Three studies reported restlessness, irritability, anxiety, clinginess and inattention with increased screen time in children during quarantine. | Meta-analysis was not performed due to differences in the study designs, measurements tools and study outcomes. The psychological effects should be interpreted with caution as they could be due to the impact of disaster, disease or disaster containment measures or both. |
| John A 2021 | Adults or children of any ethnicities. 78 qualitative articles (64 cross-sectional surveys are excluded) 11 articles focussed on children & young people. | Isumi 2020 to May provided some reassurance about measures/school closures on suicide rates in children (<20 years) in Japan. Tanaka & Okamoto 2021 and Ueda 2021 flagged a concerning rise amongst students and young (<40 yrs.) people, particularly females and children and adolescents during the 2nd wave and during school closures. Zhang 2020 reported pre-pandemic comparison data, with increases seen in NSSI, suicidal thoughts, suicidal plans and suicide attempts | There was a paucity of research focusing or reporting on ethnic minorities within populations, children and young people, the representativeness of the sample was challenging to assess. |

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| | | <p>in primary and secondary school children post-pandemic. Jefsen 2020b and Jolly 2020 were case series that reported the stressors for adolescents that included the inability to see friends, arguments with parents, unresolvable arguments via social media, academic stress and feelings of isolation</p> | |
| | | <ul style="list-style-type: none"> • Isumi A, Doi S, Yamaoka Y, <i>et al.</i>: Do suicide rates in children and adolescents change during school closure in Japan? The acute effect of the first wave of COVID-19 pandemic on child and adolescent mental health. <i>Child Abuse Negl.</i> 2020; 110(Pt 2): 104680. Article Link • Jefsen OH, Rohde <i>et al.</i>: Editorial Perspective: COVID-19 pandemic-related psychopathology in children and adolescents with mental illness. <i>J Child Psychol Psychiatry.</i> 2020b. Article Link • Jolly TS, Batchelder E, Baweja R: Mental Health Crisis Secondary to COVID-19-Related Stress: A Case Series From a Child and Adolescent Inpatient Unit. <i>Prim care companion CNS disord.</i> 2020; 22(5): 20102763. Article Link • Tanaka T, Okamoto S: Increase in suicide following an initial decline during the COVID-19 pandemic in Japan. <i>Nat Hum Behav.</i> 2021; 5(2): 229–238. Article Link • Ueda M, Nordström R, Matsubayashi T: Suicide and mental health during the COVID-19 pandemic in Japan. <i>J Public Health (Oxf).</i> 2021; fda113. Article Link • Zhang L, Zhang D <i>et al.</i>: Assessment of mental health of Chinese primary school students before and after school closing and opening during the COVID-19 pandemic. <i>JAMA Netw Open.</i> 2020; 3(9): e2021482. Article Link | |
| Meherali S 2021 | <p>School-age children & adolescents (5 to 19 yrs.) in LMICs</p> <p>18 articles (13 covid)</p> | <p>Pandemics can cause stress, worry, helplessness, and social and risky behavioural problems among children and adolescents</p> | <p>Heterogeneity in the outcome measures prevented meta-analyses. The majority of the studies were based on online self-reports and the studies cannot provide conclusions about the long-term impact</p> |
| Minozzi S 2021 | <p>Young people: 64 studies, of which 27 assessed psychological well-being. Most were conducted in the UK (38%) and China (27%).</p> | <p>Two studies reported an increase in suicides and two a reduction in access to the psychiatric emergency room. The prevalence of anxiety in adolescents ranged from 19%-64% and depression from 22%-44%. In children aged 5-12, the prevalence of anxiety ranged from 19%-78% and depression from 6.3%-23%. In preschool children, some studies showed a worsening of behavioural and emotional disturbances while others showed no changes. In the UK, there was a non-significant increase in suicides compared with 2019. Similar results were reported in a Japanese</p> | <p>42% of the studies were judged to be of high quality. The main limitation is that all the studies included were conducted during the pandemic first wave. Most studies were cross-sectional and were unable to assess the long-term impact of restrictive measures and the cumulative effect of numerous sources of stress and anxiety, such as financial difficulties, loss of parental job, family conflicts or fear of illness.</p> |

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| | | <p>study of aged <20 years and made a comparison between the months of March-May 2020 and the same months of 2018-2019. The UK study reported that 48% of deaths in 2020 were associated with the pandemic or restrictive measures.</p> | |
| Chaabane S 2021 | <p>Child & Adolescents and school closures 10 studies</p> | <p>School closure was associated with a significant decline in hospital admissions and pediatric emergency department visits. A number of children and adolescents lost access to school-based healthcare services, special services for children with disabilities and nutrition programs. Widening educational disparities due to lack of support and resources for remote learning were also reported among poorer families and children with disabilities. School closure contributed to increased anxiety and loneliness in young people and child stress, sadness, frustration, indiscipline, and hyperactivity.</p> | <p>All included studies were observational and hence considered as low-level evidence. a limited number of studies are available reporting health consequences of the COVID-19 school closure, the psychological aspect seems to be the standout issue confronting child and adolescent health.</p> |
| Ma L 2021 | <p>Children & adolescent. 23 studies (n= 57,927)</p> | <p>Pooled prevalence Depression 29% (95%CI, 17%-40%) 12 studies, (all China) Sub-group Depression age 13-18 years was 34% (18%-51%) higher than age ≤ 12 years, 12% (1.3%-22%). Gender showed depression in females at 34%, (25%- 43%) was higher than males at 29% (14%-44%) Anxiety among children and adolescents was 26% (16%, 35%) 13 studies (all China) Subgroup Anxiety in adolescents age 13-18 years was 29%, (17%-41%) higher than ≤ 12 years at 15.7% (9.0%-22%). Gender: Anxiety of females was 27% (20%-35%) was higher than males at 22% (14%-30%).</p> | <p>18 mental health-related scales were used in the questionnaire for the assessment of anxiety or depression which significantly contributed to the Heterogeneity. All the studies in the meta-analysis were done in China. Most studies used an online survey method and nonprobability sampling, which further limit generalizability. Only two studies focused on children <6 years.</p> |

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| Cunning C 2021 | Young people <21 6 studies | Five articles showed COVID-19 causing an increase in obsessive-compulsive symptoms in young people. The one which showed an improvement in symptoms was from a sample size of 29 subjects. | The quality of the studies was poor. Due to the Heterogeneity of study characteristics and instruments used no meta-analysis was performed and no long-term follow-up was available. |
| Preston AJ 2021 | Adolescents age 10-19 yrs. 12 studies | Social connectedness (i.e., family connectedness, school connectedness, social support), self-esteem, and prosocial behaviours were the most common protective factors for social isolation. | Six studies scored 7/8 and six studies scored 8/8 on the checklist (most reductions related to failure to explain controls for confounding variables). The studies were mainly developed countries. |
| Chawla N 2021 | Children & Adolescents 102 studies | Studies assessing emotional distress showed variable levels of anxiety and depressive symptoms, with greater severity among females and older adolescents. Reduced physical activity; delayed sleep time; increased sleep duration, screen time, internet use, and sedentary habits, poor quality of life often correlated with anxiety/depression. | Almost none of the studies reported any attempts to address potential bias. In almost half of the included studies, the authors had not specified discrete objectives and failed to comment upon the generalizability of their findings. |
| Panchal U 2021 | Children & adolescents 61 articles (n=54,999 (mean age 11.3 yrs.). | Anxiety symptoms: range 1.8–50% Depression symptoms: 2.2–64%, Irritability: 17–73% Anger: 30–51% Special needs and the presence of mental disorders before the lockdown, alongside excessive media exposure, were significant risk factors for anxiety. Parent-child communication was protective for anxiety and depression. | Meta-analysis was not performed due to the heterogeneity of the outcomes and measurement methods. Some studies (62%) did not provide details about the duration of the lockdown. Most studies (74%) were cross-sectional. |
| Samji H 2021 | children & adolescents 116 articles (n=127,923) | A high prevalence of COVID-19-related fear was noted, as well as depressive and anxious symptoms compared with pre-pandemic estimates. Older adolescents, girls, and those living with neurodiversity and/or chronic physical conditions were more likely to experience negative mental health outcomes. Physical exercise, access to entertainment, positive familial relationships, and social support were associated with better mental health outcomes. | Many studies were cross-sectional done during disparate restrictions (e.g., full lockdowns vs. settings of minimal restrictions). Several studies failed to separately report results for children and adolescents. Heterogeneity of populations, mental health outcomes, and the tools to assess impact prevented meta-analysis. |

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| Sun Y 2021 | The general population, 36 studies children 4 studies | Two studies of children or adolescents (Magson 2021, Zhang 2020) did not find statistically significant differences in anxiety. The same two studies reported small statistically significant increases in depression among children and adolescents. | Most studies had limitations related to study sampling frames and recruitment methods, response and follow-up rates, and management of missing follow-up data. Heterogeneity was high in most meta-analyses that we conducted. Third, only a handful of studies reported results from the fall months of 2020. |
| <ul style="list-style-type: none"> • Magson NR, Freeman JY, Rapee RM, Richardson CE, Oar EL, Fardouly J. Risk and protective factors for prospective changes in adolescent mental health during the COVID-19 pandemic. <i>J Youth Adolesc</i> 2021;50:44–57. (Article Link) • Zhang L, Zhang D, Fang J, Wan Y, Tao F, Sun Y. Assessment of mental health of Chinese primary school students before and after school closing and opening during the COVID-19 pandemic. <i>JAMA Netw Open</i> 2020;3:e2021482. (Article Link) | | | |
| Viner R 2021 | Aged 0-20 years. 72 studies from 20 countries 27 studies concerning mental health | 27 studies concerning mental health identified impacts across emotional, behavioural and restlessness/inattention problems; Two studies reported non-significant rises in suicide rates. Self-harm and psychiatric attendances were markedly reduced, indicating a rise in unmet mental health needs. Child protection referrals fell 27-39%, with a halving of the expected number of referrals originating in schools. A high-quality national English cohort study found psychiatric inpatient admissions decreased by 40%, with large decreases in ED presentations for mental health reasons including self-harm. A high-quality US regional cohort study reported decreases in ED mental health presentations of just over 50%, with self-harm presentations reduced by 65% One pre-post study of English young people found improvements in mean anxiety scores during the lockdown, particularly in those with pre-existing high scores and in those with poorer relationships with the school. | 63% were high-quality, 25% medium-quality and 13% low-quality. Studies were largely unable to reach or recruit new participants during the lockdown, hence the reliance on online self-report data collection from convenience studies. Many publications included only simple analyses which did not take account of potential confounders. Many studies used historical control periods, which in some failed to take account of seasonal variation. Studies using parent reports may have been biased No data on the impact of the degree of school closures. |
| Octavius GS 2020 | Adolescents 4 studies | Three studies showed that COVID-19 was a risk factor for mental health problems in adolescents Jiang 2020 reported the prevalence of mild-to-severe depressive and anxiety symptoms in Chinese adolescents during COVID-19 | The studies did not measure any baseline characteristics except for Qu et al, Heterogeneity prevented meta-analysis. Recommends homogenous questionnaire |

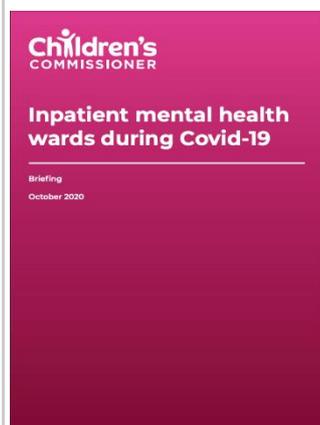
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| | | <p>outbreak was 44% and 37% respectively.</p> <p>Qu 2020 before the pandemic, 52 % of adolescents reported depressive symptoms and 39% anxiety symptoms. After home confinement, the number dropped to 38% and 24% respectively (all $p < 0.0001$). After Propensity Score Matching (PSM) matching, adolescents with exposure risk* still had more depression (61%) and anxiety symptoms (41%) than those without any exposure risks (46% and 29% respectively)</p> <p>Oosterhoff 2020 reported that adolescents who preferred to stay at home reported less anxiety and depressive symptoms. Seçer 2020 reported that fear of COVID-19 positively predicts emotional reactivity which positively predicts experiential avoidance and depression-anxiety.</p> | |
| <ul style="list-style-type: none"> • Oosterhoff B, Palmer CA, et al. (2020) Adolescents' motivations to engage in social distancing during the COVID-19 pandemic: associations with mental and social health. <i>J Adolesc Health</i>; 67(2): 179-85. • Seçer İ, Ulaş S (2020) An investigation of the effect of COVID-19 on OCD in youth in the context of emotional reactivity, experiential avoidance, depression and anxiety. <i>Int J Ment Heal Addiction</i>:1–14. Article Link • Qu M, Yang K, et al (2020) Mental health status of adolescents after family confinement during the COVID-19 outbreak. <i>Lancet</i>.:1–17 • Jiang S, Li Z, Zhang et al (2020) Prevalence and socio-demographic correlates of psychological health problems in Chinese adolescents during the outbreak of COVID-19. <i>Eur Child Adolesc Psychiatry</i> 29:749–758 Article Link | | | |
| <p>*Exposure risk was defined as anyone in the surrounding living environment of the participant who was infected with COVID-19.</p> | | | |
| <p>Samji H 2022</p> | <p>General 65 articles (number in children and adolescents not clear)</p> | <p>The initial outbreak of the pandemic was associated with a significant but statistically small increase in mental health symptoms. found no evidence that change in mental health symptoms differed based on age, gender, or study continent.</p> | <p>The majority of studies sampled populations in developed countries during the early stages of the pandemic. Heterogeneity tended to be high. Little evidence that study outcomes were strongly related to individual risk of bias indicators and in an analysis limited to relatively high-quality studies results were similar to the main analyses. The level of attrition was high</p> |

Summary of Reports

UK Children's Commissioner 2020

Inpatient mental health wards during Covid-19. Briefing October 2020 ([Link](#))

A survey was sent to all inpatient mental health wards in England for children between the 23rd March and 31st May 2020. Overall, Responses from 104 wards, two wards which responded were closed during the period analysis from the remaining 102 open wards. Of the wards which responded, 61 were NHS and 43 independent providers



'For some of the children, we spoke to, not having visits from their families was the most difficult part of lockdown.'

'Even when policies on visits became more flexible, children still faced restrictions – for example only one family member being allowed to visit at a time, and visits having to be socially distanced.'

'As one child said, it was hard knowing that: There was no association between whether there was at least one confirmed case of Covid-19 on the ward among children or staff (between 23rd March and 31st May) and whether the ward stopped visits from family.'

'The proportion of wards with a confirmed case – 47% - was the same in both wards which stopped visits and those that did not stop visits.'

Our survey found that more than two-thirds of children's mental health wards - 71% - suspended family visits

at some point between 23rd March and 31st May, while the rest continued to allow visits to children.

UNICEF 2020

Responding to the mental health and psychosocial impact of COVID-19 on children and families ([Link](#))

The research was implemented in 46 countries and results in a survey of children and families during the COVID-19 crisis to date, with 31,683 parents and caregivers and 13,477 children aged between 11-17 years old participating in the research.



'While the full impact and long-term fallout of COVID-19 remain to be seen, it is clear that restricted movement, closed schools, physical distancing, and fear of the disease are impacting the mental health and wellbeing of children, adolescents and caregivers.'

Save the Children 2020

The hidden impacts of covid-19 on children's mental health ([Link](#))

The research implemented in 46 countries results in the largest and most comprehensive survey of children and families during the COVID-19 crisis to date, with 31,683 parents and caregivers and 13,477 children aged between 11-17 years old participating.



83% of children reported an increase in negative feelings, Negative feelings due to COVID-19 increased with the duration of school closures: 96% of children expressed increased negative feelings when schools closed for 17-19 weeks, compared to 62% closed for 1-4 weeks.

Children not in touch with friends reported feeling less happy (57%), more worried (54%) and less safe (58%). The few children able to interact with friends in person and virtually reported that they were less happy (5%), more worried (5%) and less safe (6%).

Those aged 15 to 17 years showed higher levels of change in negative feelings: 60% stated they were feeling less safe, compared to 48% aged 11–14 years and 54% felt less hopeful compared to 42% of younger children.

OECD 2021

Supporting young people's mental health through the COVID-19 crisis ([Link](#))

Policy brief including review of the evidence



Young people's (15-24 year-olds) mental health has worsened significantly in 2020-21.

In most countries, mental health issues among this age group have doubled or more.

The uncertainties and broad impacts of COVID-19 have not affected all people to the same degree: young people were 30% to 80% more likely to report symptoms of depression or anxiety than adults in Belgium, France and the United States in March 2021. Higher levels of loneliness are also being reported by young people;

Mental health support for young people – notably in schools, universities and workplaces – has been heavily disrupted.