

Literature screening report: Secondary health impact of COVID-19 containment measures in children, adolescents and young adults - 14.04.2021 - Julia Dratva, Frank Wieber, Simona Marti, Anthony Klein.

Literature screening report

Secondary health impact of COVID-19 containment measures in children, adolescents and young adults

<i>Report submission date:</i>	14.04.2021
<i>Responsible author:</i>	Julia Dratva, Frank Wieber
<i>Affiliation:</i>	Institut of Health Sciences ZHAW
<i>Co-authors:</i>	Simona Marti, Anthony Klein Swormink

Abstract

Given the rather small number of studies that we have identified so far in our literature search, we refer to the summaries of the respective questions for an overview of the current findings. In the next report, there will be a larger number of studies and we will complement the summaries of the questions with a concise abstract.

Content

Abstract	1
Content	2
<i>Preamble</i>	2
Background	3
Questions addressed	3
Methodology	4
Results and Findings	5
What impact do the pandemic and the containment measures have on everyday activities of children, adolescents, and young adults?	5
What impact do the pandemic and the containment measures have on physical health of children, adolescents, and young adults?	6
What impact do the pandemic and the containment measures have on mental health of children, adolescents, and young adults?	13
What impact does the pandemic and the containment measure “school closures” have on children, adolescents, and young adults?	18
What impact do the pandemic and the containment measures have on vulnerable children, adolescents, and young adults?	19
References	20

Preamble

A large number of scientific publications become available on a daily basis, reflecting the rapid development of knowledge and progress of science on COVID-19 related issues. Leading authorities should base decisions or policies on this knowledge; hence they need to master the actual state of this knowledge. Due to the large number of publications shared daily, decision makers heavily depend on accurate summaries of these publications, in the different public health domains. Therefore, the authors of this report were mandated by the Swiss School of Public Health plus (SSPH+), on request of the Federal Office of Public Health (FOPH), to inform the FOPH on recent findings from the literature.

Literature screening report: Secondary health impact of COVID-19 containment measures in children, adolescents and young adults - 14.04.2021 - Julia Dratva, Frank Wieber, Simona Marti, Anthony Klein.

Background

The COVID-19 pandemic is an unprecedented global public health crisis touching the whole population in different ways. Since the beginning of the pandemic containment measures and policies have been implemented to curb the epidemics. Driven by the scenario of an exponential epidemic and overburdened health system, the Swiss government ordered different containment policies and hygiene recommendations. Current but still limited evidence indicates that children and adolescents have an equally high attack rate, but luckily are at far less risk to contract severe COVID-19. However, more and more research indicates that containment measures impact health in the young population, leading to secondary health risks and adverse outcomes in children, adolescents and young adults. The literature screening report extracts evidence on these secondary health impacts both from peer-reviewed publications addressing the situation in Europe and Swiss grey literature and presents this evidence in a narrative resumé.

Questions addressed

- What impact do the pandemic and the containment measures have on everyday activities of children, adolescents, and young adults?
 - What impact do the pandemic and the containment measures have on physical health of children, adolescents, and young adults?
 - What impact do the pandemic and the containment measures have on mental health of children, adolescents, and young adults?
 - What impact does the pandemic and the containment measure “school closures” have on children, adolescents, and young adults?
 - What impact do the pandemic and the containment measures have on vulnerable children, adolescents, and young adults?
-

Methodology

The literature search spans the time period 01. January 2020 until the end of the project. Three literature data banks are accessed to identify relevant literature: PubMed (biomedical literature), PsycInfo (psychological literature) and Web of Science (broad scope). A search string was defined and tested based on the study questions and outcomes of interest (see attachment). The search string was adapted to the three literature data banks, which provide different features for selective searching. For the scientific literature prior to the start of the project, we could resort to existing results of a systematic literature search by the EUPHA section Child and Adolescent Public Health directorate (CAPH) with the same outcomes and exposure in the age-group 0 – 18 years for the time from January 1st, 2020 – mid-February 2021. The full search in age 0 – 25-year-olds using the project search string starts mid-February 2021 and publications are searched retrospectively. With the start of the project a PubMed and PsychInfo search is conducted weekly, literature is exported into Rayyan (www.rayyan.qcri.org/), an open systematic literature search software, and screened for inclusion. Screening is performed by one researcher; in case of questions a second opinion is requested. Inclusion criteria are data on children, age 0 – 25 years, exposure related to pandemic policies or containment measures, outcomes according to study questions, and study data from European continent. Publications without any data collected during the pandemic or publications without primary study data and peer-review such as guideline papers, letters or opinion pieces are excluded. Web of Science is searched monthly. Included publications are categorized and rated and relevant results extracted in a programmed Excel sheet by a researcher. Quality rating (yes, no, partly) is based on three questions: 1. “Was the study sample clearly described?” 2. “Were confounding factors identified or discussed?”, and 3. “Were outcomes measured in a valid and reliable way?”. All studies included in the narrative review are considered of sufficient quality. If quality issues should limit the interpretation of the results, such issues will be reported alongside the publication.

Lastly, a search for grey literature, restricted to Switzerland, will be performed via a desktop search at two time points during mandate. National stakeholders: Pro Juventute, SclarMed, UNICEF-CH, Caritas, HEKS, SRK, GS SODK, KOKES, and EKKJ will be approached for grey literature of interest they may have produced or know of. Data will be extracted from the management summaries and included in the overall narrative review.

Results and Findings

What impact do the pandemic and the containment measures have on everyday activities of children, adolescents, and young adults?

Summary

Overall, there is still limited evidence on physical activity and nutritional behavior. The presented studies point to a decrease in physical activity during confinement at home. It also underlines the relevance of cultural or environmental differences, with higher impact on lifestyle in Latin American countries as compared to European countries. For food consumption changes are documented but they vary in direction and health relevance. The increase in sweet foods seems inconsistent.

In the screened literature so far, we did not find relevant publications on the following topics:
none

Number of publications: 3

Time period: Jan 2020 – Sept 2021, single publications from March 2021.

Results

Nutrition and physical activity

A high prevalence of **physical inactivity** among adolescents (10 – 19 years), before and during lockdown, was reported by Ruiz-Roso et al. (2020): 79.5% during the confinement period vs. 73% before. The study compares physical activity and processed food consumption before and during the lockdown in different countries, among them Italy and Spain. Risk of low physical activity was higher in Latin America as compared to Europe (OR 2.98; CI 95% 1.80 – 4.94) and in adolescents with mothers with higher education (OR 2.32; CI 95% 0.99 – 5.44). Boys were more active before/during the lockdown compared to girls (OR 2.22; CI 95% 1.28 – 3.86). The study used the IPAQ, an international validated instrument to measure physical activity, however both the information on the before and during lockdown behaviors was retrospectively reported. Comparing the age groups 5 – 12 and 13 – 18 years, a study by Passanisi et al. (2020) found that older individuals reported that they were more physically active than younger subjects ($p < .001$)

Literature screening report: Secondary health impact of COVID-19 containment measures in children, adolescents and young adults - 14.04.2021 - Julia Dratva, Frank Wieber, Simona Marti, Anthony Klein.

The same study investigated **nutritional behaviors**. Results can be summarized accordingly: Changes in food consumption differ by food type. General increase in legumes and fruit, and sweet foods and beverages, while no change in processed meat and decrease in fast food. Associated factors like gender, maternal education and family size vary regarding the impact on food consumption. An Italian study (Pietrobelli et al, 2020) in obese children confirms changes, however, not fully consistent with Ruiz-Roso et al., as they did not find change in legumes and fruit but change in meat consumption. In a study on diabetics, more than half of patients (56.9%) did not change their eating habits during the lock-down period, while 26.5% increased carbohydrate consumption, 7.8% and 8.8% ate a large amount of fat and protein, respectively.

Sleep and screen time

A health relevant daily behavior is sleep. Studies indicate an increase in sleep time in this age group. Pietrobelli et al. (2020) report increased sleep time ($M = 0.65$ hours/day, $SD = 1.29$, hours/day, $p = .003$). Moreover, they also found that children's screen time increased ($M = 4.85$ hours/day; $SD = 2.40$ hours/day; $p < .001$).

What impact do the pandemic and the containment measures have on physical health of children, adolescents, and young adults?

Summary

A number of studies focus on children and adolescents with specific diseases and/or health needs during the pandemic. Depending on the health endpoint, containment measures have different impact. While limited evidence exists so far on the impact on body weight, a simulation model and some first data indicate that school closure and reduced mobility is associated with an BMI increase in both normal weight and obese children. Hygiene measures, for example, are shown to increase the prevalence of hand eczema in children, irrespective of previous atopic dermatitis. Research on diabetic type 1 in children and adolescents indicates no adverse impact on diabetes management. Lock-down is even associated with a better metabolic performance in patient populations with different treatment regimens and technologies. However, the patient samples are small. Improvement was also seen in two studies regarding infection related throat, nose and throat medicine: otitis media episodes and adenoid or tonsillar hypertrophy symptoms. Lastly, a study on

intestinal bowel disease reports the lockdown to impact on state-of-the-art diagnostic procedures and consequently treatment.

A change in health care utilization is reported in many studies early in the pandemic, mostly investigating the lockdown in spring (mainly March 2020). They consistently show a large decrease in emergency department visits, with patients presenting themselves with higher severity scores. Regarding different diagnoses, studies agree in a reduction of trauma and injuries, as well as a change in demographic characteristics of trauma/injured patients and associated causes.

In the screened literature so far, we did not find relevant publications on the following topic:
Physical, sexual abuse

Number of publications: 24

Time period: Jan 2020 – Sept 2021, single publications from March 2021.

Results

Impact on body weight

Early in 2020, a simulation study using child cohort data (USA, pre- and primary school age cohort) investigated the impact of 4 scenarios regarding different length of school closures and 10% reduced physical activity during summer months. The scenarios show an increasing a significant rise in BMI prevalence and BMI-z-score over time compared to the control group. Depending on the scenario the BMI z-score increase by 0.056, 0.084, 0.141, and 0.198 and BMI prevalence by 0.640, 0.972, 1.676, and 2.373 percentage points (An, 2020). We included this study, albeit originating from the United States, because it exemplifies the use of existing data to estimate impact of measures prior to their implementation. In the meantime, first BMI data from Europe collected during the pandemic has been published. Pietrobelli et al. (2020) confirm that obese children changed their life style unfavorably 3 weeks into their confinement during the national lockdown compared to pre-pandemic data: significant increase in sweet foods, red meat and fast foods, decrease in physical activity ($M = -2.30$ hours/week; $SD = 4.60$ hours/week; $p = .003$) and increase in screen time ($M = 4.85$ hours/day; $SD = 2.40$ hours/day; $p < .001$).

Impact on chronic diseases/Impact on acute diseases

A number of studies focus on children and adolescents' health care utilization, children with specific chronic diseases and/or health needs. They address both preventive care, disease management and symptoms. Another frequent topic is emergency utilization.

Vaccination:

Mc Donald et al. (2020) studied the impact of coronavirus disease (COVID-19) on routine childhood vaccination in England. Measles-mumps-rubella vaccination (12 – 18 months-olds) counts dropped prior to physical distancing measure, but showed highest drop 3 weeks after physical distancing by 19.8% (95% CI; -20.7 – -18.9) and hexavalent vaccination (<6 months olds) was 6.7% (95%CI; -7.1 – -6.2) compared to same period in 2019. Albeit containment measure continued, in week 16 and 17 counts were higher than 2019, indicating a rebound and improvement in mid-April.

Specific diseases

Significant ($p < .001$) reduction of **acute otitis media** episodes/month compared to pre-pandemic time period ($M = 0.07$, $SD = 0.35$ vs. $M = 0.37$, $SD = 0.64$, respectively), otorrhea episodes/month ($M = 0.01$, $SD = 0.09$ vs. $M = 0.48$, $SD = 0.80$, respectively) and the use of antibiotics ($M = 0.09$, $SD = 0.38$ vs. $M = 0.85$, $SD = 0.88$, respectively) was observed in a study in Italy by Toretta et al. (2020). Parents in this Italian study also reported improvement in 82.3% of the cases. Another study from Italy (Gelardi et al., 2020) yields reduced exposure to children due to closed day care and schools led to a clinical improvement in otalgia, otorrhea and hearing loss in children with **adenoid or tonsillar hypertrophy**, as rated by the parents ($N = 120$), leading to changes in therapy. Moreover, parents attributed a lower average symptom score of 4.1 as compared to a score of 6.7 on a 0-10-point Likert scale ($p < .0001$).

In two Danish studies, hygiene measures are reported to cause **hand eczema** (dry, red and itchy skin) in children without any prior symptoms (Borch et al., 2020; 42.4%) and to increase eczema in children with previous atopic dermatitis (Simonsen et al., 2021; increase by 31.5 percentage points ($p < .001$)). Borch et al. report schoolchildren had a 1.5 times greater relative risk of developing irritant contact dermatitis (ICD) than preschool children. The study by Simonsen et al. was in daycare children. Frequency of hand washing was a strong risk factor, whereas this was not the

case for alcohol-based hand sanitizer. Hand washing 7-10 times/day and >10 times/day increased the relative risk by 1.83 and 2.23 times, respectively (Borch et al., 2020). Simonsen et al. additionally found atopic dermatitis, female gender, and higher age, to be associated with eczema.

A number of studies exist on **diabetes** and diabetes management. In a study from Italy, Passanisi et al. (2020) found some benefits of lock-down measures regarding diabetes type 1 (T1D) management in 204 patients recently diagnosed with T1D: roughly a third of the patients reported more intensive daily glucose monitoring (33.8%) while 18.6% paid less attention to their glycemic levels, and 47.5% of patients did not report differences from the pre-quarantine period. Almost half of the patients (49%) did not need to contact the Diabetes team for advice on managing their disease. Children <12 years were significantly more influenced by the quarantine period in their approach to the disease than older patients ($p = .017$). Christoforidis et al. (2020) from Greece confirmed that glycemic control can be adequately achieved comparable to the pre-lockdown period in children with type 1 diabetes mellitus wearing an insulin pump equipped with a sensor ($N = 34$). They showed similar mean time in range (TIR) values. In another study from Italy (Schiaffini et al., 2020), data from 22 school children that were equipped with a Tandem Basal IQ Technology providing real-time glycemic control data, indicated significantly ($p < .001$) higher median value of TIR (66.41% vs. pre-pandemic 61.45%) and a showed a lower time above range value (TAR) during in-pandemic period than pre-pandemic ($29.86 \pm 10.6\%$ vs $34.73 \pm 12.8\%$, $p < .002$). Tornese et al. (2020), in a study in Italy, support the findings on improved metabolic control of T1D in 13 adolescents using a hybrid closed loop HCL system.

Most studies observed no differences between in-pandemic and pre-pandemic periods regarding the total insulin dose and the basal insulin delivery (Tornese et al., 2020; Schiaffini et al., 2020; Christoforidis et al., 2020) while some found statistically significant difference ($p < .05$) in mean bolus doses and daily number of correction boluses (Schiaffini et al., 2020) and changes in meal schedules (Christoforidis et al., 2020).

With respect to newly diagnosed diabetes in children and adolescents, Rabbone et al. (2020) invited all Italian pediatric diabetic centers to participate in a survey study (79.9% participation). They observed 23% fewer new diabetes cases compared with the same period in 2019, and

children presenting with diabetic ketoacidosis (DKA) had more severe DKA ($\text{pH} < 7.1$) in 2020 than in 2019 (44.3% vs. 36%, respectively; $p = .03$); while DKA episodes and severe hypoglycemia were similar between the two periods. These data suggest a lower exposure to triggering factors, such as infections, but at the same time delayed diagnosis.

Utilization of health services (hospitalizations or primary care & preventive care)

Many countries experienced a change in utilization of health services, partly due to recommendations to postpone health care appointments, reorganizations of wards and departments to cope with COVID-19 patients with impact on pediatric care (Agostini et al., 2020) or closing of specific services altogether. Some studies suggest that patients avoided health services out of fear of infection and stay-at-home rules.

Impact on diagnostics/treatment

During the lockdown, patients with symptoms of Intestinal Bowel Disease (IBD) did not receive normal standard of diagnostics. In participating gastroenterological centers in the UK (90% participation), in 53.3% of the cases, the diagnosis was only presumed on the basis of the clinical symptoms, without endoscopy/histological examination, with therapeutic consequences (Ashton et al., 2020).

Impact on emergency department hospital visits

Emergency department visit decreases were observed in many hospitals. According to a study in Italy (Comelli et al., 2020), emergency department visits in the youngest age groups declined (0 – 12, 13 – 18) while visits by adults and older age groups increased. Agostini et al. (2020) (Italy) describe a significant decrease in admissions in the pediatric emergency unit after the beginning of the lockdown phase. The percentage of decrease in emergency department varied greatly. The mean number of cases presenting daily at the pediatric emergency unit during lockdown was ~28% of those presenting during the same period of the previous year (on average 20 vs. 69 patients per day), while Cozzi et al. (Italy) report a decrease in visits by 77.5% (Cozzi et al., 2020) and Molina-Gutiérrez et al. (Spain) by 65.4% (Molina Gutiérrez et al., 2020) compares to the same period of 2019, which confirms the effect of lockdown. An increased severity of cases presenting themselves

is reported by more than one publication (Cozzi et al., 2020; Molina Gutiérrez et al., 2020), only few report delayed care with adverse outcomes.

With respect to the type of diagnoses reports are inconsistent. Some publications report a decrease in respiratory infections, functional symptoms (Cozzi et al., 2020) and injuries (Cozzi et al., 2020; Hernigou et al., 2020; Murphy et al., 2020; Park et al., 2020; Sugand et al., 2020). Others (Shepherd et al., 2021) (UK) specify that the most frequent reasons for consultation at the pediatric ED were fever (increased from 21.3% in 2019 to 26.5% in 2020, $p = <.001$), respiratory symptoms (no sig. change from 16.1% in 2019 to 17% in 2020, $p = .450$), and trauma (increased from 12.3% in 2019 to 15.2% in 2020, $p = <.005$). The modeled mean number of violence-related emergency department attendances per week decreased from 28.4 (95% CI; 26.7 – 30.1) before lockdown to 16.5 (95% CI, 11.4 – 21.6) after lockdown. Mean weekly counts of injury at home were not significantly different before and after lockdown (before: 4.75; 95% CI; 4.10 – 5.40; after: 6.00; 95% CI; 2.77 – 9.23) and a difference of 1.19 attendances (95% CI; -1.80 – 4.17), but injury outside the home declined significantly (before: 22.62; 95% CI; 21.22 – 24.02; after: 8.25; 95% CI; 5.68 – 10.82); with a far larger difference of -14.29 attendances (95% CI; -17.27 – -11.31).

Regarding acute pediatric trauma referrals in 2020, the large drop and origin of injuries are worthwhile to point out. Sugand et al. (2020) (UK) observed a significant reduction of 68% in pediatric injuries and a decreased risk and odds ratios of sporting-related mechanism of injuries (RR 0.55; OR 0.43). They also observed a change in general demographic of those presenting with injuries with a significantly younger median age ($p = .02$) in 2020 and more girls. Molina Gutiérrez et al. (2020) (Spain) report a high ranking of traumatic injuries among the overall cases in their pediatric emergency department irrespective of the confinement at this time, underlining that "the home is a frequent setting of accidents in children".

An analysis of characteristics of violent events before and after lockdown stratified by injury location revealed no significant changes among subgroups for injury at home in a study from the UK (Shepherd et al. 2021). However, for injury outside the home significant decreases were found in emergency department visits by female individuals younger than 18 years and by male individuals

in all age groups, those injured with weapons, and those, in which the perpetrator was a stranger, acquaintance, or security officer.

An international study (Papadopoulos et al., 2020) evaluated that 47% of the participants reported that their clinics did not accept/receive new patients during the epidemic (exception participants from Asia). Between 39% and 60% of the participating practices have even ceased physical appointments. In addition, there is also a reduction in the frequency and/or the total number of patients monitored (median 35 cases (IQR, 20 – 60)). Ninety percent of the participating centers have launched virtual online or telephone consultations to substitute or complement clinical visits, while 73% have used a helpline to address the needs of their patients. Within each practice, a median of 70% (IQR, 60% – 80%) of evaluated patients were well controlled.

Impact on self-injury

Regarding self-harm, a study on hospital presentations in England by Hawton et al. (2021) showed that during the first 12 weeks following the introduction of lockdown (23.03.2020 – 14.06.2020), the average weekly number of self-harm presentations was 30.6% lower than in the pre-lockdown period (06.01.2020 – 22.03.2020) and 37% lower during the equivalent period in 2019 (23.03.2019 – 14.06.2019). Compared pre-post-lockdown 2020, the reduction appeared to be more marked for presentations involving self-poisoning compared with self-injury. Furthermore, the reduction was greater in females than males, and with it was greater in 18-34-year-olds (presentations were reduced by 43.8% in that age group) than in older adults

Physical, sexual abuse

In the screened literature so far, we did not find relevant publications on this topic.

What impact do the pandemic and the containment measures have on mental health of children, adolescents, and young adults?

Summary

The majority of children, adolescents, and young adults are worried and distressed. They miss their social contacts, particularly their peers and report increased feelings of loneliness. Many adolescents with eating disorders experience reactivation of symptoms and regular consumption of alcohol does seem to increase, whereas binge drinking and smoking did not. The effects for children and adolescents with Attention Deficit Hyperactivity Disorder (ADHD) and ASD (Autism Spectrum Disorder) as well as cystic fibrosis showed effects on well-being and social relations, however, there is a greater variance with respect to the direction of the effects. While some benefitted from the reduction of external demands that cause stress (e.g., tightly organized school schedules for children with ADHD or social situations for children with ASD), others experience decreases as external support is reduced (e.g., local health services, school or private therapist). Finally, also Special Educational Needs and Disability families felt a lack of support and young LGBTQ+ adults were emotionally affected and felt isolated.

In the literature screened so far, we did not find relevant publications on the following topics: Impact on the utilization of mental health services (hospitalizations or mental health emergencies)

Number of publications: 14

Time period: Jan 2020 – Sept 2021, single publications from March 2021.

Results

Worries and social contacts

A study from Italy by Buzzi et al. (2020) observed that the majority of adolescents were moderately worried in general, but less worried than their parents. Adolescents in south-central regions in Italy, which were less affected, reported greater worries than in northern regions. Containment measures were considered to be appropriate (> 90%), with 41 – 57% reporting that they adhered sometimes or always to the measurements. About 32 – 37% of the adolescents think there will be negative consequences in school education, whereby females worried more than men and 27% report that

they don't know. The majority experienced changes in their social relationships with 70% indicating that they have more social network contacts but less physical meetings and 22% state that they have less of both, and 8% report no change. Worries and fears varied according to gender, age, and region. Similarly, a study from Spain (Idoaga Mondragon et al., 2020) observed that children have mixed emotions in lockdown; whilst they are happy and relaxed with their families, they also feel fear, nervousness, worry, loneliness, sadness, boredom, and anger. Socially, they state that they missed peers and caregivers

Psychological distress and loneliness

A study from the UK (Niedzwiedz et al. 2021) found that psychological distress increased 1 month into lockdown with the prevalence rising from 19.4% (95% CI; 18.7% – 20.1%) in 2017–2019 to 30.6% (95% CI; 29.1% – 32.3%) in April 2020 (RR=1.3, 95% CI; 1.2 – 1.4). Groups most adversely affected included women, young adults, people from an Asian background and those who were degree educated. They also observed that loneliness remained stable overall (RR=0.9, 95% CI; 0.6 – 1.5) but repeated cross-sectional analyses revealed that there were differences by age group, with younger people experiencing higher overall levels of loneliness, as well as a large increase in loneliness, from 13.3% (95% CI; 11.6 – to 15.3) to 20.2% (95% CI; 16.0 – 25.2) during lockdown.

Eating disorders and/or substance abuse (alcohol, cannabis, prescription drugs, drugs)

A study from Spain (Graell et al., 2020) reported that during the study period from March 16 to May 10, 2020, 41.9% of patients reported reactivation of eating symptoms. Thereby, adolescents presented a more pronounced reactivation of eating disorder and non-eating disorder symptoms than children. They outlined that the swift establishment of a combined teletherapy program has allowed continuity of the outpatient treatment and partial continuation of the day hospital, managing the reactivation of eating symptoms and general psychopathology produced during this exceptional time.

With respect to alcohol abuse, a study from the UK (Niedzwiedz et al. 2021) observed that in 18-24-year-olds binge drinking remained unchanged but that the proportion of those who are drinking four or more times per week increased. With respect to smoking, they observed that current smoking declined.

Further reviews on the impact of the COVID-19 pandemic on psychiatric disorders remained speculative but suggested increases in post-traumatic stress, depression, and anxiety due to the COVID-19 pandemic (Guessoum et al., 2020; Imran et al., 2020).

Impact on the utilization of mental health services (hospitalizations or mental health emergencies)

No study found so far.

Psychological abuse

The study by Shepherd et al. (2021) (UK) that is described in the section on “physical health” investigates abuse without specifically differentiating between physical and psychological abuse, (see also Đapić et al., 2020).

Impact on well-being and social contact in children with ADHD

In total, answers of 533 parents of children with ADHD were included in the analysis of this study from France. The vast majority of responders were women 95% (95% CI 93.50; 97.18), children mean age was 10.5 (95% CI; 7.58 – 13.44). Since the lockdown, 34.71% of children experienced a worsening in well-being, 34.33% showed no significant changes and 30.96% (95% CI; 27.09 – 35.10) were doing better according to their parents. The thematic analysis showed that an improvement of their children’s anxiety was one of the main topics addressed by parents. This improvement related to less school-related strain and flexible schedules that respected their children’s rhythm. Improved self-esteem was another topic that parents linked with a lesser exposure of their children to negative feedback (e.g. in school environment). On the other hand, parents reported a worsening of general well-being in their children, and this manifested as oppositional/defiant attitudes and emotional outbursts (both can be typical for behavior in the context of “ADHD”). In addition, doing school-task at home and learning for school was difficult for some children, according to their parents. The lockdown situation raised parents’ awareness of the role of inattention in relation to ADHD symptoms in the context of their children’s learning difficulties. Furthermore, a “shift to the digital” world has been described, children suffered from not being able to meet their classmates in person, hence their spending more time on social media and playing video games (Bobo et al., 2020).

Autism Spectrum Disorder: Well-being and social contact

ASD individuals are vulnerable to routine disruption. In line with the assumption that COVID-19 outbreak disrupted their routines, a study in Italy (Colizzi et al., 2020) found that behavior problems were reported to be more intense (35.5%) and more frequent (41.5%) in a substantial proportion of ASD individuals, compared to before the COVID-19 outbreak. Thereby, ASD individuals with behavior problems predating the COVID-19 outbreak were twice as likely to experience more intense and more frequent behavior problems. Also, a study from Spain (Mumbardó-Adam et al., 2021) observed that some children with ASD were more irritable because of the unpredictability of the situation. However, in their study, the majority of the responding families with a child with ASD highlighted that their children were happier than before quarantine. "Families observed that their children were more communicative, participated more often in family routines, and in choice-making decisions regarding family activities. The majority seemed to be comfortable with the situation and did not often asked to go back to school or to previous routines. Families also benefited from this extra time with their sons and daughters to teach new skills related to their autonomy, to house care routines, and perhaps more importantly, to social skills and communicative interaction.

The external support seems to play an important role for the experiences of children with ASD and their families. In the study by Mombardó-Adam et al., families appreciated to have school and online psychological support, and truly valued their cohesion and online contact with relatives during quarantine. However, they also claimed for social comprehension regarding their children special needs during quarantine (such as going out for a walk), more flexibility at their workplaces to better conciliate with their family life, and they would also have appreciated a more continued educational support, and a more tailored monitorization of school activities (Mumbardó-Adam et al. 2021). Similarly, Colizzi et al. report that parents claimed frequent support from local health services, school and private therapist, whereby support by local healthcare service was rated as less useful than school and therapist. In addition, not receiving school support was associated with more intense behavior problems. Parents reported difficulties in managing their child's meals (23%), autonomies (31%), free time (78.1%), and structured activities (75.7%) and one out of four parents stopped working due to the outbreak. These findings also complement the findings on pediatricians' changed clinical practice with a focus on the necessary maneuvers (Monzani et al., 2020).

Cystic fibrosis: Stress and treatment

A study from Belgium (Havermans et al., 2020) investigated how parents of children with cystic fibrosis (CF) were affected by the COVID-19 outbreak and observed several changes. Parents reported increasing levels of stress (63.05%) and difficulty sleeping (31.5%). With 54.8% more than half cancelled child's hospital appointment. Other than that, changes in health relevant behaviors varied. With respect to home CF treatment, little change in oral medication of child with CF was reported: 49.3% skipped meals and 72.6% ate more, 28.8% adhered better to pills than before. Most children continued their treatment with home physiotherapist and nebulizing as before >67%, 32.9% did better physiotherapy than before, 30.6% did it at a different time. Regarding health protecting behavior and CF related worries, 35% reported to give the children more vitamins, 100% of children stayed always home. CF related worries did not increase a lot: only 22% were more worried when child cough, 21% worried more about CF. Finally, concerning the lung function, BMI, and change in treatment, parents' responses showed a significant change in nebulizing therapy: in comparison to the group of parents of children with higher lower lung function as indicated by FEV 1% pred (Forced expiratory volume in 1s) ($M = 100.8\%$; $SD = 15.9\%$), the parents of 11 children with lower FEV 1% pred ($M = 85.5\%$; $SD = 11.8\%$) reported that 'nebulising has been forgotten', but also improved nebulizing and nebulizing at a different time ($p < .01$).

Special Educational Needs and Disability families

Most of the Special Educational Needs and Disability families feel that the COVID-19 pandemic influences their own and their children's mental health such that it increases their experienced anxiety (44% vs 25%) and stress (12% vs 5%). "The level of worry many Special Educational Needs and Disability (SEND) families report appears to be substantial and serious." Similarly, "loss was also described by many participants as a result of COVID-19", SEND Families also experience a higher effect of these losses, because of the challenging needs of their children. Especially single parents experienced increased isolation from any support for their challenging child. Furthermore, for "children with SENDs it is not possible to explain why these losses have occurred, creating further difficulties." (Asbury et al., 2020)(UK).

LGBTQ+

Literature screening report: Secondary health impact of COVID-19 containment measures in children, adolescents and young adults - 14.04.2021 - Julia Dratva, Frank Wieber, Simona Marti, Anthony Klein.

LGBTQ+ young adults from the European countries Portugal, UK, Italy and Sweden reported less negative psychosocial effects of the pandemic than their counterparts from Brazil and Chile.

“Depression and anxiety were higher among participants who were younger, not working, living in Europe and who reported feeling more emotionally affected by the pandemic, uncomfortable at home, or isolated from non-LGBTQ friends. Not attending higher education predicted depression while not being totally confined at home, residing habitually with parents, and fearing more future infection predicted anxiety” (Gato et al., 2021).

What impact does the pandemic and the containment measure “school closures” have on children, adolescents, and young adults?

Summary

In the literature screened so far, school closures seem to increase physical inactivity, screen time, as well as irregular sleep pattern, and less appropriate diets. However, given that it is only one study, the results should be interpreted with caution.

In the literature screened so far, we did not find relevant publications on the following topics:

none

Number of publications: 1

Time period: Jan 2020 – Sept 2021, single publications from March 2021.

Results

In a study in China, Wang et al (2020) observed that no school can increase physical inactivity, screen time, as well as irregular sleep pattern, and less appropriate diets.

Literature screening report: Secondary health impact of COVID-19 containment measures in children, adolescents and young adults - 14.04.2021 - Julia Dratva, Frank Wieber, Simona Marti, Anthony Klein.

What impact do the pandemic and the containment measures have on vulnerable children, adolescents, and young adults?

Summary

Publications on children with specific vulnerabilities or living in vulnerable conditions are mostly discussed in the above sections based on the main outcomes investigated. In the next report, we will address aspects of increased vulnerabilities related to the containment measures in these groups.

Number of publications: >10

Time period: Jan 2020 – Sept 2021, single publications from March 2021.

Results

Among the vulnerable groups that were covered in the section above were children with chronic diseases such as ADHD (Bobo et al., 2020), eating disorders (Graell 2020), diabetes (Christofordis et al. 2020; Rabbone et al., 2020), cystic fibrosis (Havermans et al., 2020), as well as Autism Spectrum Disorder (Colizzi et al., 2020; Mumbardó-Adam et al., 2021). In addition, there are also other vulnerability factors such as Special Educational Needs and Disability (SEND; Asbury et al., 2020) or LGBTQ+ (Gato et al., 2021).

References

- Agostoni, C., Bertolozzi, G., Cantoni, B., Colombo, C., Montini, G., & Marchisio, P. (2020). Three months of COVID-19 in a pediatric setting in the center of Milan. *Pediatr Res*.
- An, R. (2020). Projecting the impact of the coronavirus disease-2019 pandemic on childhood obesity in the United States: A microsimulation model. *J Sport Health Sci*, 9(4), 302–312.
- Asbury, K., Fox, L., Deniz, E., Code, A., & Toseeb, U. (2020). How is COVID-19 Affecting the Mental Health of Children with Special Educational Needs and Disabilities and Their Families? *J Autism Dev Disord*, 1–9.
- Ashton, J. J., Kammermeier, J., Spray, C., Russell, R. K., Hansen, R., Howarth, L. J., Torrente, F., Deb, P., Renji, E., Muhammed, R., Paul, T., Kiparissi, F., Epstein, J., Lawson, M., Hope, B., Zamvar, V., Narula, P., Kadir, A., Devadason, D., ... Beattie, R. M. (2020). Impact of COVID-19 on diagnosis and management of paediatric inflammatory bowel disease during lockdown: A UK nationwide study. *Arch Dis Child*.
- Bobo, E., Lin, L., Acquaviva, E., Caci, H., Franc, N., Gamon, L., Picot, M. C., Pupier, F., Speranza, M., Falissard, B., & Purper-Ouakil, D. (2020). [How do children and adolescents with Attention Deficit Hyperactivity Disorder (ADHD) experience lockdown during the COVID-19 outbreak?]. *Encephale*, 46(3), S85-s92.
- Borch, L., Thorsteinsson, K., Warner, T. C., Mikkelsen, C. S., Bjerring, P., Lundbye-Christensen, S., Arvesen, K., & Hagstroem, S. (2020). COVID-19 reopening causes high risk of irritant contact dermatitis in children. *Danish Medical Journal*, 67(9), 1–11.
- Buzzi, C., Tucci, M., Ciprandi, R., Brambilla, I., Caimmi, S., Ciprandi, G., & Marseglia, G. L. (2020). The psycho-social effects of COVID-19 on Italian adolescents' attitudes and behaviors. *Italian Journal of Pediatrics*, 46(1), 69. <https://doi.org/10.1186/s13052-020-00833-4>
- Christoforidis, A., Kavoura, E., Nemtsa, A., Pappa, K., & Dimitriadou, M. (2020). Coronavirus lockdown effect on type 1 diabetes management on children wearing insulin pump equipped with continuous glucose monitoring system. *Diabetes Res Clin Pract*, 166, 108307.
- Colizzi, M., Sironi, E., Antonini, F., Ciceri, M. L., Bovo, C., & Zocante, L. (2020). Psychosocial and Behavioral Impact of COVID-19 in Autism Spectrum Disorder: An Online Parent Survey. *Brain Sci*, 10(6).
- Comelli, I., Scioscioli, F., & Cervellin, G. (2020). Impact of the covid-19 epidemic on census, organization and activity of a large urban emergency department. *Acta Biomedica*, 91(2), 45–49.
- Cozzi, G., Zanchi, C., Giangreco, M., Rabach, I., Calligaris, L., Giorgi, R., Conte, M., Moressa, V., Delise, A., & Poropat, F. (2020). The impact of the COVID-19 lockdown in Italy on a paediatric emergency setting. *Acta Paediatrica (Oslo, Norway : 1992)*, 109(10), 2157–2159. PubMed. <https://doi.org/10.1111/apa.15454>
- Đapić, M. R., Flander, G. B., & Prijatelj, K. (2020). Children behind closed doors due to covid-19 isolation: Abuse, neglect and domestic violence. *Archives of Psychiatry Research*, 56(2), 181–192.

Literature screening report: Secondary health impact of COVID-19 containment measures in children, adolescents and young adults - 14.04.2021 - Julia Dratva, Frank Wieber, Simona Marti, Anthony Klein.

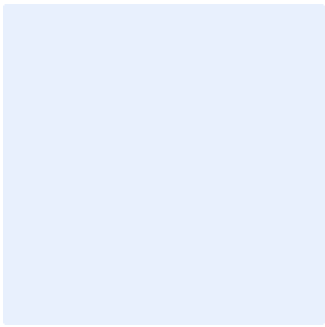
- Gato, J., Barrientos, J., Tasker, F., Miscioscia, M., Cerqueira-Santos, E., Malmquist, A., Seabra, D., Leal, D., Houghton, M., Poli, M., Gubello, A., Ramos, M. de M., Guzmán, M., Urzúa, A., Ulloa, F., & Wurm, M. (2021). Psychosocial Effects of the COVID-19 Pandemic and Mental Health among LGBTQ+ Young Adults: A Cross-Cultural Comparison across Six Nations. *Journal of Homosexuality*, 68(4), 612–630. <https://doi.org/10.1080/00918369.2020.1868186>
- Gelardi, M., Giancaspro, R., Fiore, V., Fortunato, F., & Cassano, M. (2020). COVID-19: Effects of lockdown on adenotonsillar hypertrophy and related diseases in children. *International Journal of Pediatric Otorhinolaryngology*, 138. <https://www.embase.com/search/results?subaction=viewrecord&id=L2007594744&from=export> <http://dx.doi.org/10.1016/j.ijporl.2020.110284>
- Graell, M., Morón-Nozaleda, M. G., Camarero, R., Villaseñor, Á., Yáñez, S., Muñoz, R., Martínez-Núñez, B., Miguélez-Fernández, C., Muñoz, M., & Faya, M. (2020). Children and adolescents with eating disorders during covid-19 confinement: Difficulties and future challenges. *European Eating Disorders Review*. <http://search.ebscohost.com.proxy-ub.rug.nl/login.aspx?direct=true&db=psyh&AN=2020-56545-001&site=ehost-live&scope=site> ORCID: 0000-0001-7870-054X mgoretti.moron@salud.madrid.org
- Guessoum, S. B., Lachal, J., Radjack, R., Carretier, E., Minassian, S., Benoit, L., & Moro, M. R. (2020). Adolescent psychiatric disorders during the COVID-19 pandemic and lockdown. *Psychiatry Research*, 291. <https://www.embase.com/search/results?subaction=viewrecord&id=L2006903531&from=export> <http://dx.doi.org/10.1016/j.psychres.2020.113264>
- Havermans, T., Houben, J., Vermeulen, F., Boon, M., Proesmans, M., Lorent, N., de Soir, E., Vos, R., & Dupont, L. (2020). The impact of the COVID-19 pandemic on the emotional well-being and home treatment of Belgian patients with cystic fibrosis, including transplanted patients and paediatric patients. *Journal of Cystic Fibrosis*. <https://www.embase.com/search/results?subaction=viewrecord&id=L2007366853&from=export> <http://dx.doi.org/10.1016/j.jcf.2020.07.022>
- Hawton, K., Casey, D., Bale, E., Brand, F., Ness, J., Waters, K., Kelly, S., & Geulayov, G. (2021). Self-harm during the early period of the COVID-19 pandemic in England: Comparative trend analysis of hospital presentations. *Journal of Affective Disorders*, 282, 991–995. <https://doi.org/10.1016/j.jad.2021.01.015>
- Hernigou, J., Morel, X., Callewier, A., Bath, O., & Hernigou, P. (2020). Staying home during „COVID-19“ decreased fractures, but trauma did not quarantine in one hundred and twelve adults and twenty eight children and the „tsunami of recommendations“ could not lockdown twelve elective operations. *Int Orthop*, 44(8), 1473–1480.
- Idoiaga Mondragon, N., Berasategi Sancho, N., Dosil Santamaria, M., & Eiguren Munitis, A. (2020). Struggling to breathe: A qualitative study of children’s wellbeing during lockdown in Spain. *Psychol Health*, 1–16.

Literature screening report: Secondary health impact of COVID-19 containment measures in children, adolescents and young adults - 14.04.2021 - Julia Dratva, Frank Wieber, Simona Marti, Anthony Klein.

- Imran, N., Aamer, I., Sharif, M. I., Bodla, Z. H., & Naveed, S. (2020). Psychological burden of quarantine in children and adolescents: A rapid systematic review and proposed solutions. *Pakistan Journal of Medical Sciences*, 36(5), 1106–1116.
- McDonald, H. I., Tessier, E., White, J. M., Woodruff, M., Knowles, C., Bates, C., Parry, J., Walker, J. L., Scott, J. A., Smeeth, L., Yarwood, J., Ramsay, M., & Edelstein, M. (2020). Early impact of the coronavirus disease (COVID-19) pandemic and physical distancing measures on routine childhood vaccinations in England, January to April 2020. *Eurosurveillance*, 25(19). <https://www.embase.com/search/results?subaction=viewrecord&id=L2006036918&from=export> <http://dx.doi.org/10.2807/1560-7917.ES.2020.25.19.2000848>
- Molina Gutiérrez, M., Ruiz Domínguez, J. A., Bueno Barriocanal, M., de Miguel Lavisier, B., López López, R., Martín Sánchez, J., & de Ceano-Vivas la Calle, M. (2020). [Impact of the COVID-19 pandemic on emergency department: Early findings from a hospital in Madrid]. *An Pediatr (Barc)*.
- Monzani, A., Ragazzoni, L., Corte, F. D., Rabbone, I., & Franc, J. M. (2020). COVID-19 Pandemic: Perspective From Italian Pediatric Emergency Physicians. *Disaster Medicine and Public Health Preparedness*, 14(5), 648–651. <https://doi.org/10.1017/dmp.2020.198>
- Mumbardó-Adam, C., Barnet-López, S., & Balboni, G. (2021). How have youth with Autism Spectrum Disorder managed quarantine derived from COVID-19 pandemic? An approach to families perspectives. *Research in Developmental Disabilities*, 110, 103860. <https://doi.org/10.1016/j.ridd.2021.103860>
- Murphy, T., Akehurst, H., & Mutimer, J. (2020). Impact of the 2020 COVID-19 pandemic on the workload of the orthopaedic service in a busy UK district general hospital. *Injury*. <https://www.embase.com/search/results?subaction=viewrecord&id=L2007016191&from=export> <http://dx.doi.org/10.1016/j.injury.2020.07.001>
- Papadopoulos, N. G., Custovic, A., Deschildre, A., Mathioudakis, A. G., Phipatanakul, W., Wong, G., Xepapadaki, P., Agache, I., Bacharier, L., Bonini, M., Castro-Rodriguez, J. A., Chen, Z., Craig, T., Ducharme, F. M., El-Sayed, Z. A., Feleszko, W., Fiocchi, A., Garcia-Marcos, L., Gern, J. E., ... Zawadzka-Krajewska, A. (2020). Impact of COVID-19 on Pediatric Asthma: Practice Adjustments and Disease Burden. *Journal of Allergy and Clinical Immunology: In Practice*. <https://www.embase.com/search/results?subaction=viewrecord&id=L2006880557&from=export> <http://dx.doi.org/10.1016/j.jaip.2020.06.001>
- Park, C., Sugand, K., Nathwani, D., Bhattacharya, R., & Sarraf, K. M. (2020). Impact of the COVID-19 pandemic on orthopedic trauma workload in a London level 1 trauma center: The “golden month”: The COVid Emergency Related Trauma and orthopaedics (COVERT) Collaborative. *Acta Orthopaedica*. <https://www.embase.com/search/results?subaction=viewrecord&id=L2005447029&from=export> <http://dx.doi.org/10.1080/17453674.2020.1783621>
- Passanisi, S., Pecoraro, M., Pira, F., Alibrandi, A., Donia, V., Lonia, P., Pajno, G. B., Salzano, G., & Lombardo, F. (2020). Quarantine Due to the COVID-19 Pandemic From the Perspective of Pediatric Patients With Type 1 Diabetes: A Web-Based Survey. *Front Pediatr*, 8, 491.

Literature screening report: Secondary health impact of COVID-19 containment measures in children, adolescents and young adults - 14.04.2021 - Julia Dratva, Frank Wieber, Simona Marti, Anthony Klein.

- Pietrobelli, A., Pecoraro, L., Ferruzzi, A., Heo, M., Faith, M., Zoller, T., Antoniazzi, F., Piacentini, G., Fearnbach, S. N., & Heymsfield, S. B. (2020). Effects of COVID-19 Lockdown on Lifestyle Behaviors in Children with Obesity Living in Verona, Italy: A Longitudinal Study. *Obesity*, 28(8), 1382–1385.
- Rabbone, I., Schiaffini, R., Cherubini, V., Maffei, C., & Scaramuzza, A. (2020). Has COVID-19 Delayed the Diagnosis and Worsened the Presentation of Type 1 Diabetes in Children? *Diabetes Care*.
- Ruíz-Roso, M. B., de Carvalho Padilha, P., Matilla-Escalante, D. C., Brun, P., Ulloa, N., Acevedo-Correa, D., Peres, W. A. F., Martorell, M., Carrilho, T. R. B., Cardoso, L. O., Carrasco-Marín, F., Paternina-Sierra, K., de las Hazas, M. C. L., Rodríguez-Meza, J. E., Villalba-Montero, L. F., Bernabè, G., Pauletto, A., Taci, X., Cárcamo-Regla, R., ... Dávalos, A. (2020b). Changes of physical activity and ultra-processed food consumption in adolescents from different countries during covid-19 pandemic: An observational study. *Nutrients*, 12(8), 1–13.
<https://www.embase.com/search/results?subaction=viewrecord&id=L2004824461&from=export>
<http://dx.doi.org/10.3390/nu12082289>
- Schiaffini, R., Barbetti, F., Rapini, N., Inzaghi, E., Deodati, A., Patera, I. P., Matteoli, M. C., Ciampalini, P., Carducci, C., Lorubbio, A., Schiaffini, G., & Cianfarani, S. (2020). School and pre-school children with type 1 diabetes during Covid-19 quarantine: The synergic effect of parental care and technology. *Diabetes Res Clin Pract*, 166, 108302.
- Shepherd, J. P., Moore, S. C., Long, A., Mercer Kollar, L. M., & Sumner, S. A. (2021). Association Between COVID-19 Lockdown Measures and Emergency Department Visits for Violence-Related Injuries in Cardiff, Wales. *JAMA*, 325(9), 885–887.
<https://doi.org/10.1001/jama.2020.25511>
- Simonsen, A. B., Ruge, I. F., Quaade, A. S., Johansen, J. D., Thyssen, J. P., & Zachariae, C. (2021). Increased occurrence of hand eczema in young children following the Danish hand hygiene recommendations during the COVID-19 pandemic. *Contact Dermatitis*, 84(3), 144–152.
<https://doi.org/10.1111/cod.13727>
- Sugand, K., Park, C., Morgan, C., Dyke, R., Aframian, A., Hulme, A., Evans, S., & Sarraf, K. M. (2020). Impact of the COVID-19 pandemic on paediatric orthopaedic trauma workload in central London: A multi-centre longitudinal observational study over the “golden weeks”: The COVID Emergency Related Trauma and orthopaedics (COVERT) Collaborative. *Acta Orthopaedica*.
<https://www.embase.com/search/results?subaction=viewrecord&id=L2005955928&from=export>
<http://dx.doi.org/10.1080/17453674.2020.1807092>
- Tornese, G., Ceconi, V., Monasta, L., Carletti, C., Faleschini, E., & Barbi, E. (2020). Glycemic Control in Type 1 Diabetes Mellitus During COVID-19 Quarantine and the Role of In-Home Physical Activity. *Diabetes Technol Ther*, 22(6), 462–467.
- Torretta, S., Capaccio, P., Coro, I., Bosis, S., Pace, M. E., Bosi, P., Pignataro, L., & Marchisio, P. (2020). Incidental lowering of otitis-media complaints in otitis-prone children during COVID-19 pandemic: Not all evil comes to hurt. *Eur J Pediatr*, 1–4.



Literature screening report: Secondary health impact of COVID-19 containment measures in children, adolescents and young adults - 14.04.2021 - Julia Dratva, Frank Wieber, Simona Marti, Anthony Klein.

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., McIntyre, R. S., Choo, F. N., Tran, B., Ho, R., Sharma, V. K., & Ho, C. (2020). A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. *Brain, Behavior, and Immunity*, 87, 40–48.

All references: .ris file