

## Wales COVID-19 Evidence Centre (WCEC) Rapid Review

**What is the impact of educational and other restrictions during the COVID-19 pandemic on children aged 3-13 years in terms of: i) exacerbating and mitigating factors that have contributed to physical or mental health harms; ii) exacerbated or newly introduced social and educational inequalities; and iii) facilitators/barriers to interventions aimed at enhancing physical and mental health or reducing inequalities?**

**Report number – RR00013 (October 2021)**

### Rapid Review Details

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## **TOPLINE SUMMARY**

### **What is a Rapid Review?**

Our rapid reviews use a variation of the systematic review approach, abbreviating or omitting some components to generate the evidence to inform stakeholders promptly whilst maintaining attention to bias. They follow the methodological recommendations and minimum standards for conducting and reporting rapid reviews, including a structured protocol, systematic search, screening, data extraction, critical appraisal, and evidence synthesis to answer a specific question and identify key research gaps. They take 1- 2 months, depending on the breadth and complexity of the research topic/ question(s), extent of the evidence base, and type of analysis required for synthesis.

### **Who is this summary for?**

This review was requested by the Welsh Government (WG) Technical Advisory Group (TAG) Children and Young People subgroup

### **Background / Aim of Rapid Review**

The COVID-19 pandemic has disrupted children's lives worldwide, with those from deprived backgrounds being particularly vulnerable. These disruptions, including both **imposed restrictions and disruptions in educational provision**, may have introduced new or exacerbated established inequalities. Identifying **exacerbating and mitigating factors**, or **interventions that may mitigate any harms**, is crucial for the healthy development of young children. This review evaluated the impact of COVID-19 educational restrictions on **children aged 3-13 identified within UK primary research**.

### **Key Findings**

#### *Extent of the evidence base*

- **One rapid review and 13 UK primary studies were included**
- One study (Adegboye et al. 2021) exclusively studied a Welsh population: primary aged children identified as 'at-risk' for mental health problems
- Only one study (Syeda et al. 2021) evaluated an intervention: storybook to support the return to primary school

#### *Recency of the evidence base*

- Most studies evaluated **data collected in 2020**. Only one (non-comparative) study (Skripkauskaite et al. 2021) provided recent data (between April 2020 and June 2021)

### *Evidence of effectiveness*

- There is some evidence for **a range of harms** associated with imposed restrictions and disruptions in educational provision during the pandemic regarding **mental health and wellbeing, nutrition, physical health, increased exposure to risk factors, and learning and attainment**. It is unclear if these will persist as longer lasting harms.
- **Children living in poverty have been most affected**, in particular through food insecurity, conditions triggering stress and anxiety in the home, limited opportunities to access digital resources for learning, or constrained access to outside space for physical activity.
- In terms of **mental health and wellbeing**, children who were: already at risk of poor mental health or experienced high levels of anxiety before the pandemic, and those with carers who experienced psychological distress, have been particularly affected. There was mixed evidence for gender differences.
- In terms of **learning and attainment, younger children**, and those from **disadvantaged communities** have been most affected.
- In terms of **physical health, children with disabilities** were particularly affected by decreased activity.
- There is almost **no UK evidence of effectiveness of mitigations put in place** to offset the impact of the pandemic on these harms.

### *Stakeholder supporting evidence*

- The National Strategy for Educational Research and Enquiry (NSERE) presented recommendations drawn from 5 case studies exploring the impact of the pandemic on the Welsh education system for children of all ages

### **Policy Implications**

- There is some indication of various harms experienced by children from the imposed restrictions and changes in educational provision during the pandemic, but **short and longer term evaluations of the harms are needed**; harms cover well-being, mental and physical health, nutrition and attainment.
- There is **almost no evidence on mitigations** to offset the impact of the pandemic educational restrictions on the harms, representing a **clear need for primary research**. *However, some schools may have introduced their own strategies which have not necessarily been documented and evaluated.*
- Recommendations from the NSERE enquiry suggest the need to strengthen the **home learning environment**, in particular for **bilingual and more vulnerable learners**. This should incorporate emphasising the value of **home-school communication**, supporting **parental engagement in children's learning**, developing **independent learning**, and increasing the **availability of hardware and internet connectivity** to support blended and distance learning. Greater emphasis needs to be placed on **mental health and well-being within the school/community context** and for this to be **monitored within the schools and home environment**. Greater emphasis needs to be placed in both **professional learning and initial teaching on health and wellbeing**, the home learning environment and the **situation of vulnerable and disadvantaged learners**, parental engagement, and blended and distance learning.

### **Strength of Evidence**

The evidence is weak and lacks recent and long-term data.

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**Abbreviations:**

<b>Acronym</b>	<b>Full Description</b>
CEYRIS	COVID-19 Early Years Resilience and Impact Survey
DfE	Department for Education
FAD	Family Assessment Device
FSM	Free school meals
HADS	Hospital Anxiety and Depression Scale
K6-PDS	Kessler (K6) Psychological Distress Scale
MHCYP	Mental Health of Children and Young People Survey
NSERE	National Strategy for Educational Research and Enquiry
RCADS	Revised Children's Anxiety and Depression Scale
RED	Resilience in Education and Development
RES	Rapid Evidence Summary
SCARED	Screen for Child Anxiety Related Emotional Disorders
SDQ	Strengths and Difficulties Questionnaire
UKHLS	UK Household Longitudinal Survey

## 1. BACKGROUND

This Rapid Review is being conducted as part of the Wales COVID-19 Evidence Centre Work Programme. The above question was suggested by the TAG Children and Young People subgroup.

### 1.1 Purpose of this review

It has been widely reported, including by organisations such as UNICEF, the Children's Society and Save the Children, that the COVID-19 pandemic has disrupted children's lives worldwide, with children from deprived backgrounds being particularly vulnerable. The disruptions caused by the pandemic may also have resulted in the introduction of new, as well as exacerbated established inequalities. Identifying the extent and scope of the impact of COVID-19 educational and other restrictions on children's lives, along with any exacerbating or mitigating factors or interventions that may alleviate any harms, is crucial for their future healthy development. The purpose of this review was to evaluate the impact of the imposed restrictions and changes in educational provision during the COVID-19 pandemic for children aged 3-13 years, by assessing the research literature on i) what are the exacerbating and mitigating factors that have contributed to physical or mental health harms; ii) what are exacerbated existing or newly introduced social and educational inequalities among these children; and iii) what are the facilitators/barriers to interventions enhancing physical and mental health and reducing these inequalities?'

### 1.2 Preliminary literature review

Prior to this review, a rapid evidence summary (RES) was conducted (July 2021) to identify relevant systematic reviews to answer the review question: during the Covid-19 pandemic, what are the facilitators and barriers that have contributed to physical, mental, social and/or educational harms in children aged 3-13 years, to exacerbate existing or introduce new inequalities into our society? Although a moderate volume of evidence was identified, closer inspection of that evidence revealed that the actual usefulness and applicability to the question was limited. None of the reviews that were exclusive to the COVID-19 pandemic were deemed to be applicable and therefore a rapid review of UK primary studies was undertaken.

## 2. RESULTS

### 2.1 Overview of the Evidence Base

Of the 204 records that were screened at full text, 14 studies (reported in 15 publications) were included in this review (see Flow Diagram in Section 6). These are comprised of: 1 rapid review (Moss et al. 2021); 2 before and after studies (comparison made within same group of individuals) (Adegboye et al. 2021; Bignardi et al. 2021); 4 non-concurrent cohort studies (comparisons made between different groups of individuals) (Alma Economics 2021; Ibrahim et al. 2021; Odd et al. 2021; Vizard et al. 2020); 1 non-comparative times series (Skripkauskaite et al. 2021); 6 cross-sectional studies (Bathathey 2021; Morgul et al. 2020;

Morris et al. 2021; Parnham et al. 2020; Syeda et al. 2021; Watson et al. 2020a & b - COVID-19 Early Years Resilience and Impact Survey, CEYRIS). Although not comparative, Skripkauskaite et al. (2021), the latest report of the Co-SPACE study, provides longer term data on the mental health of school aged children and young people.

### **2.1.1 Secondary evidence**

In September 2021, whilst this review was being conducted, Moss et al. (2021) published a rapid review (commissioned by the Department for Education, DfE) assessing the evidence of harms caused to primary and lower secondary pupils during the COVID-19 pandemic and mitigation strategies relevant to those harms, drawing on UK evidence for harms and relevant mitigation strategies. The Moss et al. (2021) review was relevant to this review question and its findings are summarized in 2.2.1 and Table 1.

### **2.1.2 Primary evidence**

Of the 13 primary studies, 12 collected data during 2020, with the latest data being collected from June to November 2020 by Syeda et al. (2021). One study (Bathatleg, 2021) did not report data collections times. Only Skripkauskaite et al. (2021) provides recent data, reporting on monthly data collection between 30th March 2020 and 30th June 2021.

The **only study that exclusively studied a Welsh population** was Adegboye et al. (2021), which investigated the mental health needs of primary aged children identified as 'at-risk' for mental health problems. Three studies were in English populations (Bignardi et al. 2021; Odd et al. 2021; Vizard et al. 2020) and another in a Scottish population (Watson et al. 2020a & b). The other studies were either UK-wide or unspecified.

**Only one of the 13 primary studies was concerned with the evaluation of an intervention** (Syeda et al. 2021). The majority of the other 12 primary studies explored the impact of the pandemic on mental health and wellbeing (Adegboye et al. 2021; Alma Economics 2021; Bignardi et al. 2021; Morgul et al. 2020; Skripkauskaite et al. 2021; Vizard et al. 2020; Watson et al. 2020 a); Watson et al. (2020b) also reported on the impact on play, learning and social activities. The other studies investigated the impact on nutrition (Bahatleg 2021; Parnham et al. 2020); trauma injuries (Ibrahim et al. 2021); mortality (Odd et al. 2021) and social communication in children with autism spectrum disorder (Morris et al. 2021). The findings of all primary studies are summarised in 2.2.2 and Table 2.

## **2.2 Summary of Evidence Findings**

### **2.2.1 Summary of Secondary Evidence (Moss et al., 2021)**

Moss et al. (2021) included reported data concerning children aged 4-16 years, therefore not all findings are applicable to this review of children aged 3-13 years. Moss et al. (2021) did not present data extraction tables of the included evidence, therefore it was not easy to identify the applicability of the age of the participants for this review. Furthermore, the details on age were also not provided in the narrative text of the review other than when studies

were restricted to primary or secondary students. On closer inspection of the included studies, many did not report sub-grouped data by age and some did not specify the age.

Quality assessment of Moss et al. (2021) using the checklist developed by Hunter (2020), highlighted a potential concern with the quality assessment of the included studies. Moss et al. (2021) used 4 author-derived questions for all types of evidence rather than a validated tool for specific study designs; it is possible that issues within different study designs have not been fully assessed. However, Moss et al. (2021) provide a detailed description of the flaws in the identified evidence. Also of note are the search dates which were conducted in April and May 2021, as data is constantly emerging and being published it is possible that relevant studies were not identified.

Moss et al. (2021) state the **evidence base was weak and that further research** will be needed to differentiate between short term and longer lasting harms. Also, a limited evidence base was identified for mitigations to address these harms, therefore other evidence for mitigations outside the UK and the COVID-19 pandemic was considered.

**Evidence of harms to the following were identified:** learning and attainment, mental health and wellbeing, physical health and nutrition and increased exposure to risk factors; particularly in children who are vulnerable or disadvantaged.

#### **Learning and Attainment:**

Over the first year of the pandemic, test data indicated that there were **some learning losses which were more pronounced in younger children**. Also, **disadvantaged communities** suffered the greatest impacts with lack of access to IT a particular concern

#### **Mental Health and Wellbeing:**

The evidence of the impact on mental health and wellbeing from school closures was mixed. It was noted that **girls and those experiencing anxiety before lockdown** were more adversely affected.

#### **Physical Health and Nutrition:**

Evidence concerning physical health was mixed, though it was noted that parents of children with **physical or intellectual disabilities**, reported that their children had done less physical activity during lockdown. No evidence on harms to child development was identified. There was robust evidence that families were **more reliant on foodbanks** during the pandemic; and support from schools was relied on by those whose incomes had been impacted by the pandemic.

#### **Increased Exposure to Risk Factors:**

The evidence identified indicated that the number of incidents had increased during lockdowns and school closures, with some **significant harms** being noted, including increased risk of sexual abuse and criminal exploitation.

#### **Mitigations**

Moss et al. (2021) found **no evidence of mitigations** put in place to offset the impact of the pandemic on the above harms. Stating that any interventions that have been used have been designed pre-pandemic which would not have considered the widespread disruption of

a pandemic or the need for use with large groups of individuals. It is also stated that **catch-up should not be thought as a short-term fix** and rather what is needed is a **whole school community recovery plan**. Furthermore, schools may have introduced their own strategies which have not necessarily been documented and evaluated.

### **Overlap between studies included in Moss et al., 2021 and current review**

Moss et al. (2021) referenced 66 publications concerning harms, 2 of these were included by this review: Parnham et al. (2020) and Vizard et al. (2020), specific narrative details relevant to this review question have been provided below in [2.2.2](#) and in Table 2. A third study, Raw et al. (2021), was identified but has been superseded by (Skripkauskaite et al. 2021) which was included instead. Moss et al. (2021) were able to undertake some extensive supplementary searching for grey literature, which was not possible for this review. It is interesting to note the wide variety of sources of this type of evidence. There were 10 grey literature publications, listed below, that were relevant to this review in that they either specifically reported data for the age group of this review or provided data sub-grouped by age. Data from these publications has not been extracted for this review but are listed in the appendix ([9.2](#)). The other 53 referenced publications did not meet the inclusion criteria for this review.

## **2.2.2 Summary of Primary Evidence**

### **Evidence of Harms:**

#### **Mental Health and Wellbeing**

Seven studies explored the impact of the pandemic on mental health and wellbeing, 2 before and after studies (Adegboye et al. 2021; Bignardi et al. 2021); 2 non-concurrent cohort studies (Alma Economics 2021; Vizard et al. 2020); 1 non-comparative times series (Skripkauskaite et al. 2021); 2 cross-sectional studies (Morgul et al. 2020; Watson et al. 2020a & b). None of the studies are robust in design and all have weaknesses in the way they were conducted. All the studies collected parent or caregiver reported outcomes, with the strengths and difficulties questionnaire (SDQ) being the most used tool. Although not comparative, Skripkauskaite et al. (2021), the latest report of the Co-SPACE study, provides longer term data on the mental health of school aged children and young people, however there is no pre-pandemic data for comparison. Whereas Adegboye et al. (2021) and Bignardi et al. (2021) do provide pre-pandemic comparisons, within the same group of individuals, and Alma Economics (2021) and Vizard et al. (2020) provide pre-pandemic comparisons between non-concurrent groups.

Adegboye et al. (2021) examined the impact of the pandemic on **142 Welsh children** aged 5 to 10 years during the pandemic who were **“at risk”** for mental health problems. The sample had considerable levels of deprivation and child mental health problems, although children with a clinical diagnosis were excluded. Using parent reports of the SDQ they showed **mental health problems**, driven by internalizing problems, **to have increased** during the pandemic (compared with pre-pandemic). Using another measure (Screen for Child Anxiety Related Emotional Disorders; SCARED), children’s anxiety was also shown to have significantly increased, though subscale data showed increases in some areas of anxiety (pain/somatic symptoms, generalised anxiety, school anxiety) but decreases in others (separation and social anxiety). Financial stress and child mental health were not

associated, however an indirect effect through parent mental health was reported, but it should be noted that these analyses were cross-sectional.

Alma Economics (2021) report on the Understanding Society UK household longitudinal survey and compare data from two timepoints during the pandemic (July and September 2020) with trends from 2019 data. All statistics provided are descriptive with no details of statistical testing. Parents of a sub-group of children aged 5 to 11 years (in 2020) completed the SDQ which showed the proportion of children with mental health problems (abnormal scores) was greater across a number of subscales (emotional, hyperactivity and peer problems) in July, some of which returned to pre-pandemic proportions (emotional and hyperactivity problems). **Girls and those who did not attend school in June/July 2020 were most affected** by the increase in emotional problems. Conduct problems were reported as least affected by the pandemic. The proportion of those with abnormal prosocial scores was greater in September 2020 than in 2019, and this was particularly for children aged 5-7 years. Comparisons were made between Wales and the UK as well as a number of demographic factors on each subscale.

Bignardi et al. 2021 aimed to determine whether, in children of ages 7-11 years living in the East of England, changes in emotional well-being, anxiety and depression occurred during lockdown. The study was reliant upon caregiver-reported outcomes for 114 children assessed in school and 54 children assessed in a laboratory. This sample was taken from within the Resilience in Education and Development (RED) cohort study and surveys were issued to caregivers and children in a pre-lockdown period and to parents during lockdown. Survey response rate was 29% (n=168 caregivers), with responses more likely from affluent families. There was no statistically significant change in emotional problems: difference in mean SDQ score; lockdown value minus pre-lockdown value was -0.25, 95% CI -0.54, 0.05,  $p = 0.103$ . There was also no statistically significant change in anxiety: difference in mean RCADS (Revised Children's Anxiety and Depression Scale) anxiety subscale score; lockdown value minus pre-lockdown value was -0.06, 95% CI -0.34, 0.23,  $p = 0.699$ . There was a statistically significant increase in depression: difference in mean RCADS anxiety subscale score; lockdown value minus pre-lockdown value was 0.74, 95% CI 0.46, 1.01,  $p < 0.001$ . The authors interpreted this as a large effect size. Within the RCADS anxiety subscale there were deteriorating scores for caregiver's reporting of their children: 'not wanting to move', 'tired often', 'sad/emptiness' and 'nothing is fun'. Controlling for demographic factors (age, gender, socio-economic status) did not change the study's findings.

The cross-sectional survey by Morgul et al. (2020) aimed to measure change in UK children's (5-11 years) behaviour, emotional state and daily activities before and during the lockdown and the association of these changes with parental mental health. The study issued two surveys via social media: the Family daily routines and children's emotional and behavioural symptoms questionnaire and the Kessler (K6) Psychological Distress Scale (K6-PDS). There were 927 caregiver respondents reporting outcomes for their children and themselves. Caregivers reported changes in children's emotional and behavioural symptoms during lockdown, with the most frequently reported being boredom (73.8%), loneliness (64.5%) and frustration (61.4%). The mean value on the Family daily routines and children's emotional and behavioural symptoms questionnaire score was 2.83 (SD = 1.10; range 1-5), representing moderately difficult family coexistence. Caregivers reported that the **daily rate**

**of screen use** by children for more than 3 hours **increased** from 1.4% to 33.8% (pre-lockdown to lockdown) and use for less than 30 minutes decreased from 13.4% to 1.6%, respectively. The proportion of children with low physical activity (<30 mins/day) increased from 3.7% (pre-lockdown) to 16.2% (lockdown), and the proportion of children reported to be engaged in **physical activity** for 1.5-2 hours/day and also for >3hours/day were both **nearly halved** from 20.3% to 13.5% and from 10.1% to 5.8%, respectively. On average children **slept for half an hour less** during the lockdown ( $p < 0.001$ ). There were small but significant correlations between caregivers' level of psychological distress and most of child emotional and behavioural symptoms (i.e. 20 of the 23 symptoms).

Skipcauskaite et al. (2021) tracked the mental health of children during the pandemic (starting 30th March 2020) on a monthly basis. This included a sub-group of children aged 4 to 10 years whose parents completed SDQs. The sample varied each month depending on who completed follow up questionnaires and who joined the study (but adjustments made in analyses for missing/partial data). Marked changes in behavioural, emotional and attentional difficulties during the pandemic were reported, but it should be noted that no comparison was made with pre-pandemic levels.

Vizard et al. (2020) also compared pandemic and pre-pandemic cohorts of children. Data were weighted for non-response so that they were representative of children in England. Data were presented for sub-groups of children aged 5 to 10 years to examine changes in mental health between 2017 and during the pandemic, using 95% CIs to determine significant differences. Parent reports of the SDQ showed a **greater proportion of children had a probable mental health disorder** during the pandemic than prior to it, which was driven by an **increase in boys' mental health problems**. Different versions/data collection methods were used for the SDQ at the different time points. Family functioning, pandemic anxiety, wellbeing and access to education during the pandemic were all reported on with comparisons being made to other age groups (not with pre-pandemic data). Children with a probable mental disorder were more likely to have sleep problems than those unlikely to have a mental disorder, and this was more prominent for boys. Children who had a parent experiencing psychological distress were more likely to have seen or heard adults arguing in the home than those with a parent showing little of no experience of distress.

The COVID-19 Early Years Resilience and Impact Survey (CEYRIS) (Watson et al. 2020a and Watson et al. 2020b) present cross-sectional findings about Scottish children during COVID-19 collecting data in June to July 2021. Sub-group data was provided for those aged between 5 and 7 years of age as well as for those aged 4 to 7 years for the measure of mental health and wellbeing (SDQ). Parents or carers reported on their children's behaviour, learning and activities during the pandemic as well as compared with what some of these were like before the pandemic (subject to recall bias). A mixture of validated (SDQ) and non-validated measures (some of which included ambiguous statements) were used. All statistics presented are descriptive and the sample was not representative. Some comparisons are drawn with pre-pandemic data from the Scottish Study of Early Learning and Childcare which is nationally representative (which may account for differences), but are only broadly comparable for data on the SDQ: 64% of children who had had interaction with other adults and children since lockdown scored close to average on the total difficulties score in 2020 whereas 85% of 4 and 5 year olds did in 2019.

## Nutrition

Two cross-sectional studies provided data on aspects of nutrition (Bahatheg 2021; Parnham et al. 2020). However, study quality and standard of reporting was particularly poor in Bahatheg (2021).

Bahatheg et al. (2021) aimed to explore changes in children's nutritional status during the Covid-19 pandemic in Saudi Arabia, Turkey and the UK, with a reliance upon parent-reported outcomes. The majority of results were presented in aggregated form across the three countries. 61% of UK parents reported no weight gain for their children during the lockdown.

Parnham et al. (2020) used data from the UK Household Longitudinal Survey (UKHLS) alongside a COVID-19 questionnaire in April 2020 to investigate access to free school meals (FSM); eligibility to FSM was self-reported. Children in junior schools were more likely to access FSM than in infant schools OR 11.81 (95% CI 5.54, 25.19). Children (including those in secondary schools) who were still attending school were almost six times more likely to receive their FSM entitlement (78.51%) than those who could not (48.77%), OR 5.87 (95% CI 1.70, 20.25). Children (including those in secondary schools) in Wales, compared with England, were 89% **less likely to access FSM** (OR 0.11, 95% CI 0.03, 0.43), however the sample size was small (4.7%), and reasons for reduced access are not provided.

## Trauma Injuries

The service evaluation by Ibrahim et al. (2021) aimed to determine whether the pattern of attendance at a paediatric trauma centre (Broomfield Hospital, Chelmsford) changed during Covid-19 lockdown. Much of the data was not presented by age sub-group relevant to this review, comparing absolute numbers of injuries for 6 to 11 year olds there was a non-significant decrease of trauma presentations in 2020 compared to 2019.

## Mortality

The retrospective analysis of paediatric mortality data by Odd et al. 2021 aimed to identify changes in the rate of overall childhood mortality during the lockdown period, compared with the pre-lockdown period in 2020, and a comparable (pre-pandemic) period in 2019. Sub-group data were presented for 5 to 9 year olds, there were **no significant changes in death rates** during lockdown compared with the 2020 period before lockdown or during lockdown compared with 2019.

## Social communicative impact for children with autism spectrum disorder

The cross-sectional study by Morris et al. (2021) included a longitudinal element by issuing surveys at two close-together time points to caregivers of children (aged 3-12 years) with autism-spectrum disorders. Parents reported that their child's level of physical activity increased during the first half-term of 2020, in comparison to the **course of lockdown (lower)** ( $p < 0.0001$ ). There was a small, positive correlation between change in overall social-communicative behaviour and overall change in physical activity levels during the course of the first half-term ( $r = 0.285$ ;  $p = 0.037$ ).

## Evidence of Mitigations:

### Support for the return to school

Syeda et al. (2020) conducted a scoping exercise, using a cross-sectional survey with a convenience sample between June and November 2020, to develop a **storybook to support** the return of primary school children to educational settings. Of the 21 respondents, 57% reported 'agree' or 'strongly agree' that the storybook 'helped children understand their own feelings' and 62% reported 'agree' or 'strongly agree' that the storybook had **helped reassure children** that they could ask for help if they forgot things or made a mistake'.

### 2.2.3 Bottom line results

- In children aged 4-11 years, there is weak evidence of mental health and wellbeing harms. This is in line with the rapid review findings by Moss et al. (2021) which found a weak evidence base of harms in children aged 4- 16 years old. Evidence of harms to the following were identified by Moss et al. (2021): learning and attainment, mental health and wellbeing, physical health and nutrition and increased exposure to risk factors, however it is **unclear if these will persist as longer lasting harms**.
- **No evidence** from either this review or Moss et al. (2020) was found **of mitigations** put in place to offset the impact of the pandemic on the above harms.

**Table 1: Summary of Secondary Evidence (Moss et al., 2021)**

Citation (Country)	Review details	Included studies	Quality	Findings and observations/notes
<u>Moss et al., 2021</u>  UK	<p><b>Review period:</b> Nov 2019 – May 2021</p> <p><b>Review purpose:</b> rapid review to identify and assess evidence of harms caused to primary and lower secondary pupils during this time and identify mitigation strategies relevant to those harms.</p> <p><b>Included study designs:</b> any research design</p> <p><b>Included outcome measures:</b> data on harms to children aged 4-16 in a community or hospital setting resulting from the impact of primary and/or secondary school closure and evidence of mitigations to identified harms.</p>	<p><b>Number of included studies:</b> 65 studies of harms, 0 studies for mitigations to those harms.</p>	Moderate	<p>Quality of evidence on harms is inconsistent but the evidence indicates that children’s learning and attainment, mental health and wellbeing, physical health and nutrition have been impacted and they have had an increased exposure to risk. Evidence of longer terms harms need further research.</p> <p>No evidence for mitigations strategies relevant to the harms identified.</p>

**Table 2: Summary of Primary Evidence**

Citation	Study Details	Participants & setting	Key findings	Notes
<u>Adegboye et al. 2021</u>  UK (Wales)	<p><b>Study Design:</b> Before-after study.</p> <p><b>Aim:</b> 1. Understand mental health needs of children with emerging problems and their families’ economic circumstances, including potential impact of the COVID-19 pandemic.</p>	<p><b>Sample size:</b> 142 children (parent report).</p> <p><b>Participants:</b> Parents completed questionnaires about their primary school children aged 4 – 8 years (at baseline; 5 – 10 years during lockdown) classified as ‘at risk’ for mental health problems. Children with a clinical diagnosis were excluded. (The study</p>	<p>The sample had substantial levels of deprivation and child mental health problems.</p> <p><b>Primary Findings:</b> Financial stress at T2 was reported by a greater proportion (41%) of low income families than those with higher income (33%).</p> <p>Child mental health problems (SDQ, parent reported) increased significantly at T2 (from</p>	<p>Representativeness of the sample not reported.</p> <p>Possible for selection bias.</p> <p>Children with clinical diagnoses were excluded, which needs</p>

	<p>2. Identify modifiable contributory child and family-related factors to risk and resilience.</p> <p><b>Data collection dates:</b> T1 (pre-COVID-19): Sep 2017 to Mar 2020. T2: Jul 2020 to Sep 2020. Mean follow up 17 months (range 4 to 35 months)</p>	<p>capitalised on participants included in ongoing study of this population)</p> <p><b>Setting:</b> 67 mainstream primary schools in Wales.</p>	<p>mean T1=19.14 to T2=20.76, <math>p&lt;.05</math>), which was driven by internalising problems (mean T1=6.86, T2=8.18, <math>p&lt;.05</math>). There was no change in externalising problems (mean T1=12.25, T2=12.54, ns).</p> <p>69% had high/very high total SDQ scores at T2 (61% at T1). 45% had high/very high internalising scores (SDQ) at T2 (34% at T1).</p> <p>Child anxiety (SCARED) increased significantly (mean T1=18.56, T2=24.87, <math>p&lt;.001</math>). This was driven by changes in panic/somatic symptoms (mean T1=2.86, T2=2.13, <math>p&lt;.001</math>), generalised anxiety disorder (mean T1=4.83, T2=6.10, <math>p&lt;.05</math>) and school anxiety (mean T1=1.21, T2=2.59, <math>p&lt;.001</math>), but there were significant decreases in separation anxiety (mean T1=5.11, T2=4.33, <math>p&lt;.01</math>) and social anxiety (mean T1=4.83, T2=3.80, <math>p&lt;.01</math>).</p> <p>After controlling for parent mental health, there was a significant increase in child mental health (SDQ total, <math>F(1,122)=15.36</math>, <math>p&lt;.001</math>).</p> <p>Child mental health problems (SDQ) at T1 and T2 were significantly and strongly correlated (<math>r=0.62</math>). They were also associated with parental mental health, but only at T2 (0.34), <math>p&lt;0.001</math>. Parent mental health (HADS; T2) and financial stress (T2) were also significantly correlated (<math>r=0.25</math>). There was no association between financial stress and child mental health at either time point.</p> <p>An indirect effect of financial stress on child mental health problems through parent mental health (<math>B=0.88</math>, CI 0.17, 1.88) was</p>	<p>to be considered in generalisation of the results.</p> <p>Validated measures used.</p> <p>Mediational analysis used single-informant measures and causality cannot be established due to the cross-sectional nature of the analysis.</p> <p>T2 would have been during school holidays for many.</p> <p>Follow up length varied, but this was controlled for in the mediational analysis.</p>
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			<p>shown using mediational analysis (all T2; no direct effect shown). T1 SDQ scores and length of follow up were controlled for.</p> <p><b>Additional Findings:</b> Parent anxiety and depression (HADS) increased significantly (mean total HADS score T1=11.91, T2=14.79, p&lt;.05), but note 56% did not provide HADS data at T1.</p>	
<p><b>Alma Economics 2021</b></p> <p>UK</p>	<p><b>Study Design:</b> non-concurrent cohort study.</p> <p><b>Aim:</b> To explore children's (and young people's*) mental wellbeing outcomes for children during the COVID-19 pandemic. Firstly, by examining average wellbeing changed, secondly by focusing on those with poor mental health and examining changes.</p> <p><b>Data collection dates:</b> T1: 2019. T2: Jul 2020. T3: Sep 2020.</p>	<p><b>Sample size:</b> approximately 2000 or 3000 (contradictory data) children 5-11 with T2 and T3 data.</p> <p><b>Participants:</b> Parents reported on children aged 5-11 years (in 2020). Approximately 5% of the sample live in Wales. (The study capitalised on participants included in the Understanding Society, the UK household longitudinal study.)</p> <p><b>Setting:</b> Children (and young people) living in UK.</p>	<p><b>Primary Findings:</b> Wellbeing worsened in July 2020. Those not attending school were most affected. Some, but not all, outcomes returned to pre-pandemic levels in September.</p> <p>Emotional symptoms: Proportion with abnormal emotional problems increased from T1 (15.7%) to T2 (16.2%), then decreased at T3 (15.3%). The increase in emotional problems was greatest for girls (T1=15%, T2=18.2%) and children who didn't attend school in June/July (T2=14.5%, T3=17.6%). Average emotional problems scores stayed within the normal range throughout (for Wales and UK children).</p> <p>Hyperactivity/Inattention: Proportion with abnormal hyperactivity scores increased from T1 (17%) to T2 (19.4%), then decreased at T3 (17%). The increase was greatest for those aged 8-11 years and those who did not attend school in June/July (T1=17%, T3=19%). Average hyperactivity scores stayed within the normal range throughout (for Wales and UK children).</p> <p>Peer relationship: Proportion with abnormal peer problems increased from T1 (10%) to T2 (15%) and T3 (14%). The increase in peer problems was greatest children who didn't attend school in June/July (T2=9.5%,</p>	<p>Representativeness of the sample not reported.</p> <p>Possible for selection bias. Sample size varied at different timepoints and reporting is also inconsistently reported for the 5-11 year olds.</p> <p>Validated measure used. Analysis all descriptive (no statistical testing). Confounders not explored. *Sample also included 1-15 year olds and 16-24 years olds – data not extracted. Part 1 is a literature review.</p>

			<p>T3=15%). Average peer problem scores were similar for Wales and UK, with it increasing at T2 to around 2, (threshold between normal and borderline) but returning to within a normal range at T3.</p> <p>Conduct: Least affected subscale by the pandemic (an increase in 2% points T1 to T2, then dropping to below T1 at T3). The proportion with abnormal conduct problem scores at T3 was lower for most groups than at T1. Average conduct problem scores stayed within the normal range throughout (for Wales and UK children).</p> <p>Prosocial: Proportion with abnormal prosocial score increased slightly from T1 to T3. Increase in those with abnormal prosocial scores was greatest for those aged 5-7 years (T1=1%, T2=4%).</p> <p>Average prosocial scores increased (fewer difficulties) in Wales from T1, whereas it remained constant for the rest of the UK.</p> <p><b>Additional Findings:</b> More detailed findings are presented within the report, including age (5-7, 8-11), gender, ethnicity and school attendance and by particular questions within the SDQ subscales – data not extracted.</p>	
<p><b>Bahatheg 2021</b></p> <p>Saudi Arabia, Turkey, UK</p>	<p><b>Study Design:</b> Cross sectional survey of parents</p> <p><b>Aim:</b> To explore changes in children's nutritional status during the Covid-19 pandemic in three countries.</p> <p><b>Data collection dates:</b></p>	<p><b>Sample size:</b> n=62 (UK)</p> <p><b>Participants:</b> Parents of 330 children of age 4-7 years in Saudi Arabia (n=198; 60%), Turkey (n=70; 21%) and UK (n=62; 19%)</p> <p><b>Setting:</b> Saudi Arabia, Turkey, UK</p>	<p><b>Primary Findings:</b> 61.3% of UK parents answered 'no' to the statement: 'The child's weight increased during the lockdown'</p> <p><b>Additional Findings:</b> None relevant.</p>	<p>The majority of the data are aggregated across the three countries.</p> <p>Study quality and standard of reporting is low.</p>

	Not reported. Stated as 'during Covid-19 lockdown'.			Study relies upon parents reporting outcomes accurately.
<b><u>Bignardi 2021</u></b>  UK (East of England)	<p><b>Study Design:</b> Longitudinal study with surveys issued pre-and post-Covid-19 pandemic: analysis within the Resilience in Education and Development (RED) cohort study.</p> <p><b>Aim:</b> To test whether changes in emotional well-being, anxiety and depression occurred during lockdown.</p> <p><b>Data collection dates:</b> Baseline: June 2018-March 2019 (school group); December 2018-September 2019 (laboratory group)</p> <p>Lockdown: 29 April 2020-19 June 2020 Study has two samples: a school group assessed in the classroom and a laboratory group who were assessed in a laboratory. Before lockdown, teachers and caregivers completed the Strengths and Difficulties questionnaire emotional problems subscale (SDQ) for the school and laboratory groups. Children in both groups completed the Revised Child Anxiety and Depression Scale (RCADS). Caregivers completed the RCADS in the lab group.</p>	<p><b>Sample size:</b> 168 caregivers (for whom prior mental health data were available) provided responses (representing 29% of the contacted, eligible sample). School group: n=114 children Laboratory group: n=54 children</p> <p><b>Participants:</b> School children of age 7-11 years in the East of England and their caregivers.</p> <p><b>Setting:</b> Covid-19 related restrictions</p>	<p><b>Primary Findings:</b> Survey response rate was 29%.</p> <p>All scales were analysed such that higher score indicates worse mental health. Analysis was by mixed linear model. Mean group differences are as follows:</p> <p>Emotional problems: change in SDQ score (lockdown minus pre lockdown): -0.25, 95% CI -0.54, 0.05, p = 0.103 i.e. a non-statistically-significant improvement.</p> <p>Anxiety: change in RCADS anxiety subscale score (lockdown minus pre-lockdown): -0.06, 95% CI -0.34, 0.23, p = 0.699 i.e. a non-statistically-significant improvement.</p> <p>Depression: change in RCADS depression subscale score (lockdown minus pre-lockdown): 0.74, 95% CI 0.46, 1.01, p &lt; 0.001 i.e. a statistically significant deterioration. The authors interpret this as a medium-to-large effect size.</p> <p><b>Additional Findings:</b> Controlling for demographic factors (age, gender, socio-economic status) did not change the findings of the mixed linear model.</p> <p>For each of 5 elements within the SDQ emotional problem scale there were no statistically significant differences (lockdown minus pre-lockdown).</p> <p>For each of 5 elements within the RCADS Anxiety subscale there were no statistically</p>	<p>Both samples are convenience samples.</p> <p>Parental consent was reportedly gained on an 'opt out' basis.</p> <p>The study uses no child-reported measures during the lockdown period.</p>

	Caregivers completed assessments for their children during lockdown.		<p>significant differences (lockdown minus pre-lockdown).</p> <p>4 out of 5 elements within the RCADS Depression subscale had statistically significant mean standardised changes (lockdown minus pre-lockdown) as follows:</p> <p>Problems with appetite: 0.04, 95% CI -0.24, 0.33  Not wanting to move: 0.73, 95% CI 0.44, 1.01  Tired often: 0.48, 95% CI 0.19, 0.76  Sad/emptiness: 0.48 95% CI 0.19, 0.76  Nothing is fun: 0.63 95% CI 0.35, 0.92</p> <p>More affluent families were more likely to provide survey responses than less affluent families (Index of Multiple Deprivation <math>r = -0.17</math>; Free school meal eligibility <math>r = -0.18</math>).</p>	
<p><b><u>Ibrahim et al. 2021</u></b></p> <p>UK</p>	<p><b>Study Design:</b> Service Evaluation comparing prospectively collected hospital record data during Covid-19-related lockdown with retrospectively viewed hospital record data from the pre-Covid-19 period.</p> <p><b>Aim:</b> To examine whether the pattern of attendance at a paediatric trauma centre changed during Covid-19 lockdown.</p> <p><b>Data collection dates:</b> Pre-lockdown: 23 March 2019 – 14 June 2019  Lockdown: 23 March 2020 – 14 June 2020</p>	<p><b>Sample size:</b> n = 306 patients in 2020 n = 441 patients in 2019</p> <p><b>Participants:</b> Children of age <math>\leq 16</math> years attending a paediatric trauma centre, excluding patients with hand trauma, polytrauma and for planned removal of metalwork.</p> <p><b>Setting:</b> Paediatric trauma centre, Broomfield Hospital, Chelmsford</p>	<p><b>Primary Findings (age range 6-11 years):</b> In the age group 6-11 years the number of injuries (2020 versus 2019) as a proportion of all injuries was 41.9% versus 34.8; <math>p=0.021</math> (not statistically significant after Bonferroni correction applied).</p> <p>In the age group 6-11 years there was no difference in the number of surgical cases (2020 versus 2019) as a proportion of all injuries: 40.4% versus 49.0%; <math>p = 0.395</math>.</p>	<p>Authors report that the region studied is fairly affluent.</p>

<p><b>Morquì et al. 2020</b></p> <p>UK</p>	<p><b>Study Design:</b> Cross-sectional survey</p> <p><b>Aim:</b> To measure change in UK childhood (5-11 years) behaviour, emotional state and daily activities before and during the lockdown and the association of these changes with parental mental health.</p> <p><b>Data collection dates:</b> 14th July 2020 and 14th August 2020.</p> <p>An online survey was administered electronically via social networks (e.g. Facebook, Instagram), e-mail, messaging groups (e.g. WhatsApp).</p> <p><b>Instruments used:</b> Family routine and child mental health: measured using Family daily routines and children's emotional and behavioural symptoms questionnaire. This scores items on a 5-point scale (range 1-5); higher score represents worsening outcome.</p> <p>Caregiver psychological wellbeing: measured using Kessler (K6) Psychological Distress Scale (PDS)</p>	<p><b>Sample size:</b> n = 927</p> <p><b>Participants:</b> n = 927 caregivers: mothers n = 898, 96.9%; fathers n = 17, 1.8%; other caregivers n = 7, 8%</p> <p>Age range: 21-61 years (mean 39.3 years, SD = 5.5)</p> <p>White ethnic background: 92.1% White British background: 69.6%</p> <p>Married: 74.3% In employment: 73.6%</p> <p>Degree and/or postgraduate: 75.0%</p> <p>Mothers were more likely than fathers to work part time (29.8%) and have higher education (74.4%).</p> <p>Most participants were living in a family of four people including their children (47.3%) and in houses with three rooms excluding kitchen, toilet, and bathroom (94.8%). Most (91.8%) of the participants had access to outside space for their children to play.</p> <p>56.0% of caregivers reported having friends or family members who are at high risk for Covid-19, but not living in the family home. 10.5% of the caregivers were at high risk for Covid-19.</p> <p>505 children were male (54.5%)</p>	<p><b>Primary Findings:</b> Caregivers' reported changes in their children's behavioural and emotional symptoms during the lockdown compared to the pre-COVID-19 period:</p> <ul style="list-style-type: none"> <li>• more bored (73.8%)</li> <li>• more lonely (64.5%)</li> <li>• more sad (43.4%)</li> <li>• more frustrated (61.4%),</li> <li>• more irritable (57.1%)</li> <li>• more restless (52.9%)</li> <li>• more worried (52.4%)</li> <li>• more angry (48.6%)</li> <li>• more anxious (45.2%)</li> <li>• more argumentative (29.7%)</li> </ul> <p><b>Family coexistence:</b> Family daily routines and children's emotional and behavioural symptoms questionnaire score: Mean = 2.83, SD = 1.10; range 1-5) representing moderately difficult family coexistence.</p> <p><b>Caregivers' psychological distress score on the K6 scale:</b> Mean score 6.78, SD = 5.26; i.e. moderate distress. 42.4% of the caregivers experienced moderate psychological distress (4 &lt; K6 score &lt; 13) and 15.4% experienced severe psychological distress (K6 score ≥ 13).</p> <p>Caregivers report that children spent significantly more time using screens during the lockdown period; p &lt; .001.</p> <p>The daily rate of screen use for more than 3 hours increased from 1.4% to 33.8% and use</p>	<p>The study has a high level of detailed demographic and outcome data. Sampling frame not defined by region: 'snowball' method via social media with potential for response bias.</p> <p>Participants were predominantly highly educated, white British mothers.</p> <p>Survey was issued in a time period following first wave when restrictions were easing.</p> <p>All pre-lockdown data rely upon accuracy of caregiver recall and may be subject to recall bias.</p> <p>There is no child reported data The K6 score has reported high internal consistency in literature. No similar statement is made of the Family daily routines and children's emotional and behavioural symptoms questionnaire.</p>
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		<p>Mean age: 7.45 years (SD = 2.04; range: 5 – 11 years).</p> <p>Most children attended state schools 90.3%.</p> <p><b>Setting:</b> UK school age children of age 5-11 years during lockdown.</p>	<p>for less than 30 minutes decreased from 13.4% to 1.6%.</p> <p>Children spent significantly less time in daily physical activity; <math>p &lt; .001</math>.</p> <p>The proportion of children with low physical activity (30 mins &lt;) increased from 3.7% to 16.2%, and the proportion of children reported to be engaged in physical activity between 1.5 – 2 hours as well as of those highly engaged (&gt; 3 hours) was nearly halved down from 20.3% to 13.5% and from 10.1% to 5.8%, respectively. The difference in sleep time before and during the lockdown was statistically significant with children sleeping for half an hour more before than during the lockdown (<math>p &lt; 0.001</math>).</p> <p><b>Association between caregiver outcomes and child outcomes:</b> Higher caregiver psychological distress was associated with children being more worried, restless, anxious, sad, lonely, uneasy, nervous, angry, frustrated, bored, and irritable during than before the lockdown.</p> <p>Higher caregiver psychological distress was associated with children being more afraid of COVID-19 infection, more likely to argue with the rest of the family, crying more easily, eating a lot, having more difficulty concentrating and more behavioural problems, being more dependent on them, and being more worried when one of the parents left the house.</p> <p>Correlations for the above outcomes were weak: <math>r</math> range = 0.07 - 0.25.</p>	
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			<p><b>Association between family coexistence and child outcomes:</b>  Caregivers reporting difficulty with coexistence was associated with children being reported as significantly more worried, restless, anxious, sad, reluctant, lonely, uneasy, nervous, quiet, angry, frustrated, bored, and irritable than before the quarantine. Also, children were significantly more likely to be reported to be afraid of COVID-19 infection, to argue with the rest of the family, to cry more easily, to eat a lot, to have more difficulty concentrating, more behavioural problems and nightmares, to be more dependent on them and more worried when one of the parents left the house.</p> <p>Correlations for the above outcomes were small to strong: <math>r</math> range = 0.07 - 0.43.</p>	
<p><u>Morris et al. 2021</u></p> <p>UK</p>	<p><b>Study Design:</b>  Cross sectional study with longitudinal element</p> <p><b>Aim:</b>  To test four hypotheses:  H1: Social development and communication skills will have worsened during the lockdown period</p> <p>H2: social-communicative behaviours will have significantly improved since returning to school in comparison to the end of lockdown.</p> <p>H3: Physical activity levels will have increased since returning to school, in comparison to the end of lockdown.</p>	<p><b>Sample size:</b>  T1: <math>n = 176</math>, decreasing with attrition to T2: <math>n = 54</math></p> <p><b>Participants:</b>  Parents with children (of age 3-12 years old) with autism. Most parents had known of their child's diagnosis for 2 - 3 years. The majority of children were verbal and did not attend any kind of private therapy.</p> <p><b>Setting:</b>  Survey of parents of children with autism in England and Wales; issued via charities and support groups.</p> <p><b>Assessment of outcomes:</b>  The surveys had four sections:  1. Demographics  2. Impact at T1 and T2 on school attendance (yes/no), support from</p>	<p><b>Primary Findings:</b>  <b>Lockdown and return to school:</b>  At T1 10.2% of children regularly attended school during lockdown. 55.7% of parents felt they did not receive sufficient support from school during lockdown.</p> <p>At T2 81.5% of children regularly attended school. 64.8% of parents felt they had adequate support from school. 66.7% of parents said their child had contact with others beside family and school.</p> <p><b>Changes in physical activity</b>  At T1:  46.6% of children had an increase in physical activity  35.5% had no change in physical activity  19.9% had an increase in physical activity</p> <p>At T2:</p>	<p>Study sample is drawn from most regions of England and also Wales and Scotland.</p> <p>Study is entirely reliant on caregivers' reporting of outcomes.</p> <p>Heavy reliance on recall in 2 out of 4 surveys; potential for recall bias.</p> <p>There were no major differences in group demographics for participants at either T1 or T2 for age, being verbal/non-verbal, length of</p>

	<p>H4: Decreased levels of physical activity, not attending school regularly, not feeling supported by the school, and not seeing people outside of school/outside the household will be associated with detrimental changes in social-communicative scores during the lockdown and also during the return school period.</p> <p><b>Data collection dates:</b>  T1: 3-week period in August/September 2020 as follows:  T1a: parents recall outcomes during first lockdown  T1b: parents complete a current survey at the start of the school year.</p> <p>T2: 2-week period at end of October 2020 as follows:  T2a: parents recall outcomes for the first half term  T2b: parents complete a current survey at the end of the first half term</p>	<p>school (yes/no), access to family and friends (yes/no), additional support (private therapy) (yes/no), change to levels of physical activity  3. &amp; 4. Impact on communication skills, self-regulation and cooperation, utilising elements drawn from validated scales including:</p> <ul style="list-style-type: none"> <li>• Conversation Skills Rating Scale</li> <li>• Strengths and Difficulties Questionnaire (self-regulation skills)</li> <li>• Preschool and Kindergarten Behaviour Scale</li> </ul> <p>These were recorded on 5-point Likert scales with higher score representing better outcome.</p>	<p>7.4% of children had an increase in physical activity  29.6% had no change in physical activity  63.0% had an increase in physical activity  Change T1 versus T2; <math>p &lt; 0.0001</math></p> <p><b>Changes in communication skills</b>  During lockdown T1a:</p> <ul style="list-style-type: none"> <li>• No change: 51.7%</li> <li>• A lot worse: 4.5%</li> <li>• A bit worse: 26.7%</li> <li>• A little bit better: 13.6%</li> <li>• A lot better: 3.4%</li> </ul> <p>First half of half term T2a:</p> <ul style="list-style-type: none"> <li>• No change: 57.4%</li> <li>• A lot worse: 3.7%</li> <li>• A little bit worse: 20.4%</li> <li>• A little bit better: 16.7%</li> <li>• A lot better: 1.9%</li> </ul> <p>There was no significant relationship between parents' perception of change in communication skills and time point; <math>p = 0.599</math>.</p> <p>At T1b:</p> <ul style="list-style-type: none"> <li>• Poor: 8.3%</li> <li>• Below average: 31.2%</li> <li>• Average: 42.2%</li> <li>• Good: 16.5%</li> <li>• Excellent: 1.8%</li> </ul> <p>At T2b:</p> <ul style="list-style-type: none"> <li>• Average: 51.9%</li> <li>• Poor: 3.7%</li> <li>• Below average: 35.2%</li> <li>• Good: 7.4%</li> <li>• Excellent: 1.9%</li> </ul> <p>Mixed-model ANOVA suggested there was no statistically significant difference between</p>	<p>diagnosis, or attending private therapy.</p>
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			<p>T1b and T2b for communication skills (<math>p = 0.989</math>).</p> <p><b>Changes in self-regulation skills</b> A greater number of parents saw an overall worsening of self-regulation skills in comparison to parents who saw an improvement or reported no change.</p> <p><b>Changes in co-operation</b> A significant association was found between co-operation skills and time point (<math>p = 0.045</math>) where more parents noted a worsening of co-operation skills during the lockdown than during the first half-term.</p> <p>There was no statistically significant difference in parents' scoring of their child's cooperation skills between the end of lockdown and the end of half term; <math>p = 0.968</math>.</p> <p><b>Association between communication skills and lockdown</b> Children whose parents felt supported by their schools were reported to, on average, show an improvement in their social communication skills (i.e. social-communicative skills got a little bit better, or got a lot better) over the course of the lockdown (<math>p = .007</math>).</p> <p><b>Associations between overall change in social-communicative skills and first half-term variables</b> There was a small, positive correlation between change in overall social-communicative behaviour and overall change in physical activity levels during the course of the first half-term (<math>r = 0.285</math>; <math>p = 0.037</math>).</p>	
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			Regularly attending school throughout the first half term ( $p = 0.004$ ; Table 4) and parents feeling sufficiently supported by the school over the course of the first half term ( $p = 0.003$ ; Table 4) were positively associated with a change in overall communication scores. Parents of children who regularly attended school throughout the first half-term were more likely to report an increase in their child's overall social-communication score in comparison to children that did not attend school regularly during the first half-term.	
<b><u>Odd et al. 2021</u></b>  UK (England)	<p><b>Study Design:</b> Retrospective analysis of routinely and prospectively collected data.</p> <p><b>Aim:</b> 1. Identify the number and characteristics of children dying of COVID-19 in England during the first wave of the pandemic. 2. Identify changes in rate of overall childhood mortality during the lockdown period, compared with the pre-lockdown period in 2020, and a comparable (pre-pandemic) period in 2019.</p> <p><b>Data collection dates:</b> 6<sup>th</sup> January 2020 to 28<sup>th</sup> June 2020, analysed in two periods: 6<sup>th</sup> January–22<sup>nd</sup> March 2020 (pre-lockdown) 23<sup>rd</sup> March–28<sup>th</sup> June 2020 (lockdown)</p>	<p><b>Sample size:</b> <math>n = 1550</math> child deaths</p> <p><b>Participants:</b> Children in England, 0-17 years (sub-group 5-9 years)</p> <p><b>Setting:</b> Child mortality in England</p> <p><b>Methods:</b> Deaths were coded by four coders as due to malignancy, preterm birth, intrapartum events, infection, trauma, substance misuse, suicide, an underlying medical condition, or if the event should be considered a sudden, unexpected death in infancy or childhood (SUDIC). Age, gender, ethnicity and deprivation score were recorded. The analysis was conducted comparing deaths during lockdown with those in 2019 and split by the age of the child at their death (birth–27 days, 28 days–1 year, 1–4 years, 5–9 years, 10–14 years, 15–17 years).</p>	<p><b>Primary Findings:</b> There were no significant differences in death rates pre-lockdown versus during lockdown nor for 2019 versus during lockdown for children aged 5-9 years.</p>	<p>First study aim is out of scope.</p> <p>NHS England-funded study</p>

<p><b><u>Parnham et al. 2020</u></b></p> <p>UK</p>	<p><b>Study Design:</b> cross-sectional survey</p> <p><b>Aim:</b> Investigated access to FSMs among eligible school children in the UK using the COVID-19 wave of the UK Household Longitudinal Survey (UKHLS). Describes factors associated with uptake and whether receiving FSMs was associated with measures of food insecurity.</p> <p><b>Data collection dates:</b> Between 17<sup>th</sup> - 30<sup>th</sup> April 2020</p>	<p><b>Sample size:</b> 635 (analytical sample)</p> <p><b>Participants:</b> self-reported FSM eligible children with complete data set. Aged 4-18 years old</p> <p><b>Setting:</b> UKHLS participants invited to answer a COVID19 questionnaire. Child-level data set produced from proxy responses of a guardian in the household.</p>	<p><b>Baseline Characteristics:</b> infants [aged 4-7 years (56.5%)] juniors [aged 8-11 years (19%)] secondary [aged 12-18 years (24%)] 89.3% guardians identified as white 49.6% came from a low income household (according to wave 9 of the UKHLS (2017-19) 95.1% from England</p> <p><b>Primary Findings:</b> 77.3% of infant and 23.7% of junior children did NOT receive their FSM in April 2020. Junior school children more likely to access FSMs than those in infant schools, OR 11.81 (95% CI 5.54, 25.19).</p> <p><b>Additional Findings:</b> for the whole age group Lowest income group almost five times more likely to receive their FSM entitlement (68.98%) than high income group (18.06%) (odds ratio [OR]: 4.81; 95% confidence interval [CI]: 2.10, 11.03)</p> <p>Children who were still attending school almost six times more likely to receive their FSM entitlement (78.51%) than those who could not (48.77%) (OR:5.87; 95% CI: 1.70, 20.25)</p> <p>Children in Wales, compared with England, were 89% less likely to access a FSM (OR: 0.11; 95% CI: 0.03, 0.43), however low sample size (4.7%) Access to FSMs was not associated with someone in the household feeling hungry but being unable to eat in the past week (OR: 0.99; 95% CI: 0.35, 2.82).</p>	<p>Cross-sectional survey using data from UKHLS. FSM eligibility was self-reported.</p> <p><b>Author reported limitations:</b> FSM eligibility did not distinguish between means-tested and universal schemes.</p> <p>Didn't capture the reasons behind lack of access.</p>
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			Those who accessed FSMs were 14 times more likely to have recently used a food bank (OR: 13.89; 95% CI: 2.27, 85.10)	
<p><b>Skripkauskaite et al. 2021</b></p> <p>UK</p>	<p><b>Study Design:</b> longitudinal survey – non-comparative study.</p> <p><b>Aim:</b> To track the mental health of school-aged children throughout the COVID-19 pandemic.</p> <p><b>Data collection dates:</b> monthly collection between 30 Mar 2020 and 30 Jun 2021.</p>	<p><b>Sample size:</b> Aged 4 – 10 years N=5773 But note fluctuations per month – range 679 to 2808.</p> <p><b>Participants:</b> parents of children aged 4 to 10 years (sub-group data extracted).</p> <p><b>Setting:</b> COVID-19: Supporting Parents, Adolescents and Children during Epidemics (Co-SPACE) study.</p>	<p><b>Primary Findings:</b> Children had marked changes in behavioural, emotional and attentional difficulties (parent report on SDQ) throughout the pandemic.</p> <p>In Jun 2021 12.9% were possible/probable cases for behavioural problems, 27.3% with possible/probable attentional problems and 21.2% possible probable emotional problems.</p> <p><b>Additional Findings:</b> Comparisons with children in an older age group (11-18 years) made – data not extracted.</p> <p>Detailed tables provided of monthly means for SDQ subscales and % possible/probably cases for children aged 4-10 (and 11-18) years.</p>	<p>Sample was opportunistic, so possible selection bias, and not nationally representative.</p> <p>No pre-pandemic data, so not possible to examine initial impact.</p> <p>Sample size varied each month and participants could join at any point and did not have to complete all timepoints.</p> <p>Validated measure used. More details on statistical analyses needed, though this is more relevant for the whole sample and comparisons (not extracted).</p> <p>Adjustments made in analyses for partial and missing data as well as impact of within family dependency over time.</p> <p>Whole sample included children aged 4 – 18 years - data</p>

				only extracted on relevant sub-group.
<p><b>Syeda et al. 2021</b></p> <p>UK</p>	<p><b>Study Design:</b> cross sectional survey</p> <p><b>Aim:</b> Rapidly collate feedback on topics for a children’s storybook to support the return of primary school children to educational settings.</p> <p><b>Data collection dates:</b> June – November 2020</p>	<p><b>Sample size:</b> 31 out of 71 approached</p> <p><b>Participants:</b> Public Health England and local authorities: 27 Dept. For Education: 3</p> <p><b>Setting:</b> Online survey; publicised via social media and dissemination by participating professionals involved in the production of the ‘My back-to-school bubble’.</p>	<p><b>Baseline Characteristics:</b> <b>PHE/Local authorities:</b> Children Young People and Families Network (multi-organisational): 15 (48%) Children and Families Centre Leads Network: 5 (16%) Schools and COVID-19 South West Coordinating Group: 4 (13%) Primary Care and Interventions Unit: 2 (6%) Educational Psychologist: 1 (3%)</p> <p><b>Department for Education:</b> Early Years Quality and Outcomes Division: 2 (6%) Pupil Mental Wellbeing: 1 (3%)</p> <p><b>Other:</b> National Children’s Bureau: 1 (3%)</p> <p><b>Primary Findings:</b> 57% of respondents were parents/carers who had read the book with their child. 33% were educators who used the book with their class. 86% indicated that it would be appropriate for either key stage 1 or key stage 2 (ages 5–11). 67% rated the storybook as either ‘pretty good’ or ‘excellent’ and 2/21 reported the book to be ‘poor’ or ‘very poor’. Relevance: 71% rated the storybook as either ‘pretty good’ or ‘excellent’, 19% reported the book to be ‘poor’ or ‘very poor’. 62% of respondents reported ‘agree’ or ‘strongly agree’ that the storybook had helped ‘reassure children that they could ask for help if they forgot things or made a mistake’.</p>	<p>Cross-sectional survey using a convenience sample which may not be representative.</p> <p><b>Author reported limitations:</b> Convenience sample so a relatively small number of responses.</p> <p>Lack of longitudinal data.</p>

			<p>57% reported 'agree' or 'strongly agree' that the storybook 'helped children understand their own feelings'.</p> <p><b>6 main themes identified:</b></p> <ul style="list-style-type: none"> <li>• Changes in school environment</li> <li>• Acknowledging feelings</li> <li>• Relationships with family</li> <li>• Relationships with friends</li> <li>• Language and content</li> <li>• Taking ownership of health and hygiene behaviors</li> </ul>	
<p><b><u>Vizard et al. 2020</u></b></p> <p>UK (England)</p>	<p><b>Study Design:</b> non-concurrent cohort study.</p> <p><b>Aim:</b> 1. Compare mental health (likelihood of probable mental disorder) between 2017 and 2020. 2. Describe circumstances of children and their families during the COVID-19 pandemic.</p> <p><b>Data collection dates:</b> T1: 2017. T2: Jul 2020</p>	<p><b>Sample size:</b> Aged 5 – 10 years T1 N=1428, T2 N=1396.</p> <p><b>Participants:</b> Parents and teachers (latter T1 only) report of children aged 5 to 10 years old (sub-group data extracted).</p> <p><b>Setting:</b> Children and young people in England. Mental Health of Children and Young People (MHCYP) survey.</p>	<p><b>Primary Findings:</b></p> <p>Change in mental health (SDQ): Proportion of children with a probable mental disorder increased from 9.4% at T1 to 14.4% at T2. For boys, this increased from 11.5% (T1) to 17.9% (T2). For girls the increase was not statistically significant.</p> <p>Family functioning (general functioning scale of FAD): 13.9% of parents reported problems with family functioning. 20.8% of boys had a parent experiencing psychological problems who reported family functioning problems. 37.1% of children were reported (by parents) to have seen or heard adults in the household arguing. Children were more likely to witness adults arguing in the home if they had a parent experiencing psychological distress (44.4%) than those with a parent showing little to no psychological distress (33.5%).</p> <p>Pandemic anxiety and wellbeing: 12.5% of children with probable mental disorder were reported by their parents as to some degree worried about transmitting COVID-19 infection to someone else. 18.6% of children (20.5% boys and 16.6% girls) were reported</p>	<p>Data were weighted to take account for non-response so that they were representative of children in England, but no comparison of the age groups at the two timepoints were made.</p> <p>Confounders not explored.</p> <p>95% CIs used to determine significant differences.</p> <p>Possible measurement error due to different measurement versions/ methods of collection at T1 and T2. Some validated measures used.</p> <p>Whole sample included 5 to 22 year olds - data only</p>

			<p>to have sleep problems in the last 7 days. Children with a probable mental disorder were more likely to have sleep problems (52.5%) than those unlikely to have a mental disorder (11.1%). This was more the case for boys (probable disorder 55.0%, unlikely disorder 11.0%) than girls (probable disorder 48.3%, unlikely disorder 11.3%).</p> <p>Access to education: 11.1% attended school throughout late Mar to Jul 2020 due to parent/carer being a keyworker, considered vulnerable or other reasons. 34.0% of children returned to school (part- or full-time) Jun/Jul 2020. 36.8% did not attend school Mar to Jul 2020 because their school was closed. 18.1% did not attend school Mar-Jul 2020 even though their school was open. 72.4% of children had regular support from school.</p> <p><b>Additional Findings:</b>  <u>Datafile</u> provided which breakdown of results for measures, by group (including age), at both timepoints. Data not extracted.</p>	<p>extracted on relevant sub-group.</p> <p>Comparisons drawn between different age groups – data not extracted.</p>
<p><b><u>Watson et al. 2020a</u></b></p> <p>UK (Scotland)</p>	<p><b>Study Design:</b> cross-sectional survey.</p> <p><b>Aim:</b> Describe children's behaviour during the COVID-19 pandemic and changes that have occurred.</p> <p><b>Data collection dates:</b> 22 Jun to 6 Jul 2020.</p>	<p><b>Sample size:</b> Aged 4 - 7 years N= 7331. Aged 5 – 7 years N= 5182. (variation in sample size depending on measure)</p> <p><b>Participants:</b> Parents or carers of children aged 4 to 7 years (sub-group data extracted).</p> <p><b>Setting:</b> COVID-19 Early Years Resilience and Impact Survey (CEYRIS)</p>	<p><b>Primary Findings:</b>  Sleep for age 5 to 7 year olds: 50% were sleeping right through the night every night in the last 2 weeks. 60% were reported to be sleeping about the same as before lockdown, 7% sleeping better and 33% sleeping worse.</p> <p>Changes in life (behaviour, mood, activity) for age 5 to 7 year olds: Behaviour was about the same for 47% of children, better for 8%, but worse for 46%. Mood was worse for 52%, amount of physical activity was worse for 50% and ability to concentrate was worse for 51%. Eating behaviour was about the same for 58%, but worse for 28%.</p>	<p>Potential for selection bias due to recruitment methods and sample is not representative of the population (comparisons of some of the sample made with Scottish Study of Early Learning and Childcare, 2019 and differences discussed).</p> <p>A mixture of validated and non-validated measures used.</p>

			<p>Mental health and wellbeing (SDQ) for age 4 to 7 year olds: 64% of children who had had interaction with other adults and children since lockdown scored close to average on the total difficulties score. This compared with 85% of 4 and 5 year olds in the Scottish Study of Early Learning and Childcare in 2019. The percentage scoring close to average on subscales were: 78% for peer problems, 63% for emotional problems, 59% for hyperactivity, 56% for prosocial behaviour and 57% for conduct problems.</p> <p><b>Additional Findings:</b> More detailed data presented (e.g. % of each response on items) but data not extracted.</p>	<p>All data descriptive (no statistical analyses presented).</p> <p>Change in children's sleep and life required parents to compare behaviour retrospectively which might be subject to recall bias.</p> <p>Whole sample included children aged 2 – 7 years - data only extracted on relevant sub-group.</p> <p>Comparisons made with data from the Scottish Study of Early Learning and Childcare in 2019 (3 and 4-5 year olds) – data not extracted except for SDQ.</p>
<p><b><u>Watson et al. 2020b</u></b></p> <p>UK (Scotland)</p>	<p><b>Study Design:</b> cross-sectional survey.</p> <p><b>Aim:</b> Describe children's play, learning and social activities during the COVID-19 pandemic.</p> <p><b>Data collection dates:</b> 22 Jun to 6 Jul 2020.</p>	<p><b>Sample size:</b> Aged 5 – 7 years N= 5182</p> <p><b>Participants:</b> Parents or carers of children aged 5 to 7 years (sub-group data extracted).</p> <p><b>Setting:</b> COVID-19 Early Years Resilience and Impact Survey (CEYRIS)</p>	<p><b>Primary Findings:</b> Changes in play and learning activities: ability to concentrate was worse for 51% of children. Imaginative play was about the same for 45% of children and better for 38%. In the last week children had done following activities on at least 4 days: 75% had looked at books or read stories on, 52% had done painting or drawing activities, 45% had recited nursery rhymes or sung songs, 65% had recognised letter, words, numbers of shapes, 38% had played actively inside, and 73% had played a screen-based game. 6% had not played a screen-based game at all in the last week.</p>	<p>Potential for selection bias due to recruitment methods and sample not necessarily representative of the population.</p> <p>Non-validated measures used and some statements ambiguous.</p> <p>All data descriptive (no statistical analyses presented).</p>

			<p>Changes in use of outdoor space: 24% of children spent about the same amount of time outside, whereas it was better for 35%. In the last week children had done following activities on at least 4 days: 78% had played outside, 60% had been for a walk/cycle/scoot in the local area, 31% had been to a park or greenspace in the local area. 27% of children had not been to a park/greenspace at all in the last week.</p> <p>Social interactions: 14% of children had not met up with people from another household in the last 2 weeks. 93% had not attended any childcare or educational setting since the start of lockdown. 36% had not spoken to friends in the last week and only 18% had spoken to friends on at least 4 days in the last week. In the last week 9% had not spoken to extended family, whereas 41% had spoken to extended family on at least 4 days.</p> <p>Experience of physical distancing: 50% of parents decided not to keep their child 2 metres from those in other households. 71% had found it difficult or stressful to keep their child 2 metres from people in other households. 45% had not been able to keep their child 2 metres from people in other households despite trying. 54% reported that their child had tried to stay 2 metres from people in other households but has found it difficult or upsetting (29% disagreed with the statement but note ambiguity). 64% of children tried to stay 2 metres from people in other households but easily forget. 17% reported that their child does not understand the need to stay 2 metres from people in other households (68% did understand).</p>	<p>Change in learning and play activities required parents to compare behaviour retrospectively which might be subject to recall bias.</p> <p>No pre-pandemic data, so not possible to examine impact.</p> <p>Whole sample included children aged 2 – 7 years - data only extracted on relevant sub-group.</p>
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			<b>Additional Findings:</b> More detailed data presented (e.g. % of each response on items) but data not extracted.	
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## 3. DISCUSSION

### 3.1 Summary of the findings

Fourteen studies (reported in 15 publications) were included in this review. Most of the primary studies explored the impact pandemic on mental health and wellbeing (Adegboye et al. 2021; Alma Economics 2021; Bignardi et al. 2021; Morgul et al. 2020; Skripkauskaite et al. 2021; Vizard et al. 2020; Watson et al. 2020 a); Watson et al. (2020b) also reported on the impact on play, learning and social activities. The other studies investigated the impact on nutrition (Bahatheg 2021; Parnham et al. 2020); trauma injuries (Ibrahim et al. 2021); mortality (Odd et al. 2021) and social communication in children with autism spectrum disorder (Morris et al. 2021)

In September 2021, whilst this review was being conducted, Moss et al. (2021) published (for DfE) a rapid review assessing the evidence of harms caused to primary and lower secondary pupils during the COVID-19 pandemic and mitigation strategies relevant to those harms, drawing on UK evidence for harms and relevant mitigation strategies.

The current rapid review, focussing on children aged 3 to 13 years, found weak evidence of mental health and wellbeing harms in children aged 4-11 years. The evidence is drawn from five studies that used the SDQ tool (Adegboye et al., 2021; Alma Economics 2021; Skripkauskaite et al., 2021; Vizard et al., 2020; Watson et al., 2020a). Only one of these studies made pre-pandemic comparisons (Adegboye et al., 2021), however the population included children who were “at risk” for mental health problems. Another study of children in the East of England that made pre-pandemic comparisons, found no statistically significant change in mean SDQ score (Bignardi et al., 2021).

The findings of this review are in line with the rapid review findings by Moss et al. (2021), which found a weak evidence base of harms in children aged 4-16 years old. Evidence of harms to the following were identified by Moss et al. (2021): learning and attainment, mental health and wellbeing, physical health and nutrition and increased exposure to risk factors, however it is unclear if these will persist as longer lasting harms. Some of these findings are also corroborated by those of the NSERE enquiry (Section 3.3), which evaluated the impact of the COVID-19 pandemic on the education system in Wales for school children in general (any age).

Almost no UK-based evidence, from either this review or Moss et al. (2021), was found of mitigations put in place to offset the impact of the pandemic on the above harms.

### 3.2 Limitations of the available evidence included in the rapid review

There is weak evidence on a range of harms that the pandemic has caused. Much of the literature is from cross-sectional surveys, there is a **lack of longitudinal data comparing pre-pandemic outcomes with those over the trajectory of the pandemic**. It should be noted that the pandemic is likely to have impacted research and data collection, particularly

with school closures. Also noted by Moss et al. (2021) the reporting of evaluations may have been impacted by the lengthy peer-review publication process.

Although Moss et al. (2021) focussed on the **impact of school closures**, these cannot be considered in isolation to the **wider societal restrictions** that were implemented at the same time. The current rapid review had a broader remit, considering wider pandemic restrictions and changes.

The evidence lacks recency: 12 of the 13 primary studies collected data during 2020 with the latest collection data period being Syeda et al. (2021), collecting between June and November 2020. One study (Bathatweg 2021) did not report data collections times. Only Skripkauskaite et al. (2021) provides recent data, reporting on monthly data collection between 30th March 2020 and 30th June 2021, however they did not collect pre-pandemic data.

The age range specified in the question, 3 to 13 years, presented a problem; many studies included children 0 to 16 and even 18 years without providing outcome data sub-grouped by age. Some studies were exclusive to primary school aged populations but even Moss et al. (2021) included children 4 to 16 years. Approximately 42 publications were excluded from this review as the age of participants encompassed 3 to 13 years but there was no sub-group analysis of any part of that age range.

Only one study was identified for this review that included an exclusive Welsh population and this was a sample of vulnerable children rather than population based. Although the other evidence was conducted within the UK, consideration to devolved responsibilities should be given to understand how generalisable the evidence is to a Welsh population.

### **3.3 Supporting evidence provided by stakeholders**

The National Strategy for Educational Research and Enquiry (NSERE) was highlighted by the stakeholders as being potentially relevant to this review. The research studies conducted as part of this enquiry did not meet the eligibility criteria for the rapid review (age range wider than specified for this review), but they were conducted in Wales.

As part of the NSERE enquiry, Welsh Universities were commissioned to undertake a series of collaborative research studies on the **impact of the COVID-19 pandemic on the education system in Wales** (NSERE, 2021). This included five case studies, the methods of which were based on a review of the existing evidence for the topic and primary data collected via interviews, focus groups or surveys with teachers, support staff, school leaders and parents/carers. The data were collected during 2020 and early 2021. However, this work does not focus on children aged 3-13, rather it evaluates the impact of the COVID-19 pandemic on (Welsh) school children in general.

The five case studies conducted as part of the NSERE enquiry investigated the following:  
Research study 1: experiences of blended and distance learning during the COVID-19 pandemic in Wales – schools and stakeholders' evidence

- Research study 2: exploring the **impact of the COVID-19 pandemic on learners** in Wales
- Research study 3: accessing Welsh during the COVID-19 pandemic – challenges and support for non-Welsh speaking households
- Research study 5: from relationships to partnerships – the **impact of the COVID-19 pandemic on parental engagement in children’s learning** in Wales and the implications for initial teacher education
- Research study 6: the **impact of the COVID-19 pandemic in Wales on the health and wellbeing of learners** and practitioners, including the implications for initial teacher education

(N.B. at the time of writing, the full reports of for the case studies were not yet available, and Research study 4 was not listed on the website)

The findings of the case studies reinforce those provided by Moss et al. (2021) and other evidence. In terms of learning and progression, the use of emergency remote teaching led to both opportunities and challenges. There were difficulties in accessing appropriate hardware and internet connectivity. Children who were most vulnerable or disadvantaged were more likely to struggle. Where learners thrived, it was often because of they were confident as independent learners, and the support they received from their parents/carers/families. Where learners struggled, it was because they missed the support of their teachers and were not able to receive a high level of parental/family support. Where appropriate support was provided many learners were able to regain their learning competencies when they returned to school, illustrating their resilience. The lack of progress experienced by many vulnerable and disadvantaged learners was not a new phenomenon, but rather exacerbated and made more evident during the pandemic. The impact of increased school-home collaboration developed during this period was at its greatest where parental engagement with schools was already well established. The mental health and wellbeing of all learners was to some extent adversely affected by the impact of the pandemic, but this was particularly so for the most vulnerable learners. Teachers, schools and local authorities provided exceptional support to learners and their families to mitigate these impacts, but there was variability in the extent and quality of this provision.

Of potential interest here, for interpreting the findings of the case studies, is an **integrative model** proposed by Goudeau et al. (2021), which tries to **discern the social inequality impact of school closures** during the pandemic. The model was based on a narrative review of international literature, which was submitted for consideration by stakeholders. The review focused on research conducted both before and during the COVID-19 pandemic and did not differentiate between different age categories. It was not based on a systematic search of the literature and did not meet the eligibility criteria for the rapid review. However, the authors provide recommendations to help parents, teachers, and policymakers to limit the impact of the lockdown on social-class-based academic inequality based on the interconnected model, which are aligned with those made by NSERE and Moss et al. (2021). The model illustrates how **economic and structural, digital, and cultural divides** influence the psychological functioning of parents and students in a way that **amplify inequalities**. Social digital divide incorporates not only access to digital tools and resources, but also having the digital skills to support distance learning, and the propensity to use these resources for education rather than just recreational use. Social cultural divide includes disparities in familiarity with academic knowledge and skills, and dispositions for autonomy,

which may affect the parents' communication with teachers. Structural divide incorporates both the space to study, and support from schools. Goudeau et al. (2021) argue that by making children work predominantly via digital resources rather than direct interactions with teachers, and the learning process being more reliant on families rather than teachers, school closures exacerbate social class academic disparities.

The NSERE enquiry makes practical recommendations for practice and about potential mitigations, but these will require evaluation of their benefits, potential unintended consequences, and costs. The recommendations are reinforced by those provided by Goudeau et al. (2021), which evaluated why lockdown and distant learning are likely to increase social gap achievement.

### 3.4 Implications for policy and practice

Although there is some indication of the harms that children have experienced as a result of imposed restrictions and changes in educational provision during the pandemic, as noted by Moss et al. (2021) it could be **too soon to accurately assess longer term harms**. Many of the data available were collected during 2020 and there is a lack of evidence of how those outcomes have been affected over the long term, particularly with the lockdown in early 2021 and living with COVID-19 for 18 months.

No evidence from either this review or Moss et al. (2021) was found of mitigations put in place to offset the impact of the pandemic on the harms that both reviews identified. Interestingly, for stakeholders in education, Moss et al. (2021) state that catch-up should not be thought as a short-term fix and rather what is needed is a **whole school community recovery plan**. Furthermore, schools may have introduced their own strategies which have not necessarily been documented and evaluated.

The findings and recommendations relating to the impact of the pandemic on children from the NSERE enquiry highlighted the following, for both the immediate and future response:

- The **importance of the home learning environment**, which needs to be **particularly strengthened for bilingual and more vulnerable learners**
- The requirement for **training and resources (including increased availability of hardware and internet connectivity)** for both **learners and parents/carers to support the use of blended and distant learning**
- The need for **greater emphasis in professional learning for teachers on blended and distance learning and parental engagement**.
- The **importance of the parents/carers' engagement in children's learning**, which requires **good communication between schools and parents/carers** and recognition of the shared responsibility that exists for children's learning
- The need to incorporate **the development of independent and resilient learners as a key objective** within the new curriculum
- The importance and need **for increased emphasis on mental health and well-being within schools and school/community context**, and the requirement for **monitoring this within the schools and home environment**
- The importance of **specialist support services**

- The need for **schools to become support hubs** for the most disadvantaged and vulnerable learners
- The provision of **greater support for outdoor learning**
- The requirement for responses to the recommendations to **consider the specific needs of the bilingual aspects of the Welsh education system**

### **3.5 Strengths and limitations of this Rapid Review**

This review was conducted rapidly to inform policy and decision makers. Initially a rapid review of published systematic reviews was intended but none of the reviews that were exclusive to the COVID-19 pandemic were deemed to be applicable to this review question. Therefore, the approach was changed to conduct a rapid review of primary studies conducted with UK populations. Although this review was conducted rapidly, comprehensive search strategies were designed to identify relevant evidence in the bibliographic databases. One subsequently published rapid review with UK focus was also included: Moss et al. (2021).

However, it should be noted that there was a lack of time to conduct extensive supplementary searches for grey literature, this is a particular limitation as it would appear that a large proportion of the studies included in Moss et al. (2021) were of this type. In conducting this review rapidly, data extraction and critical appraisal of each study were undertaken by different reviewers and not independently checked for accuracy and consistency.

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## 5. RAPID REVIEW METHODS

### 5.1 Eligibility criteria

Studies will be selected based on the following criteria: participants, intervention/exposure, comparison, outcomes, and study design.

**Participants:** children aged 3-13 years

**Intervention / exposure:** imposed restrictions and changes in educational provision during the COVID-19 pandemic

**Comparison:** not specified

**Outcomes:** child outcomes, including parent reported for young children, prevalence of mental and physical health harms, prevalence of social and educational inequalities, exacerbating and mitigating factors that have contributed to physical or mental health harms, or introduced new social and educational inequalities, barriers and facilitators to interventions to mitigate against health harms or inequalities

**Study design:** Any study design except systematic reviews.

Context: studies of UK populations,

Exclusion criteria:

- studies concerning the clinical implications as direct result of COVID-19, i.e. infection, transmission, treatment.
- Studies concerning the impact on other communicable diseases due to social distancing
- studies that included children outside of the 3 to 13 years age range where data was not presented separately for the eligible age group.
- qualitative studies of parents and carers

### 5.2 Literature search

A systematic search was conducted on the 24<sup>th</sup> August 2021 across three databases, as noted in Table 3, to identify primary research studies. The search strategy was developed in Ovid Medline using a combination of text words and Medical Subject Headings and adapted for each subsequent database. The Medline search strategy used can be found in the Appendix ([9.1](#)). This search retrieved 494 results after deduplication. Additional studies (n=38) detected by WC-19EC Methods group members were screened for relevance.

In addition, prior to preparing this review, a Rapid Evidence Summary (RES) was undertaken (July 2021), as part of the initial phase of the rapid evidence review process. As part of the RES a search was carried out in COVID 19 specific repositories of VA-ESP and L·OVE – COVID-19 (L\*VE by Epistemonikos) platforms for systematic reviews and rapid reviews, using the search concepts focusing on Prevention and treatment AND Children & adolescents. Additionally, an advanced search using the search terms 'physical or mental or social or education\* and child\* and harm\* or negative or risk\*' were conducted to identify

secondary research. In total, 28 systematic reviews were identified as relevant based on screening the title and abstract, and due to the lack of detail presented in many of the abstracts the full text was consulted to establish the following:

- age (3-13 years)
- if the SR included published studies or protocols
- if included studies were conducted during COVID-19 pandemic (included if some but not all during COVID-19)
- relevant outcomes

Ten publications appeared useful for the initial Rapid Evidence Summary RES presented to the stakeholders, however closer inspection revealed that the actual usefulness and applicability to the RES question was limited. None of the reviews that were exclusive to the COVID-19 pandemic were deemed to be applicable and only one of the non-COVID-19 exclusive reviews (Viner et al., 2021) provided any useful findings. Viner et al. (2020) was retained as a supplementary source of primary evidence of UK populations.

**Table 3: Resources List**

<b>Date</b>	<b>Resources</b>
24/08/21	Medline (ALL): OVID 1990-2021
24/08/21	PsycINFO: OVID 1990-2021
24/08/21	Scopus: Elsevier 1990-2021

### **5.3 Study selection process**

Results from the literature searches were imported into EndNote X9, where duplicates were removed, and title and abstracts were screened followed by full text articles. Both screening stages were undertaken by a single reviewer against predefined inclusion criteria. In cases of uncertainty for full text screening a second reviewer was consulted.

### **5.4 Data extraction**

A standardised data extraction form was created in Microsoft Word and data extraction was performed by a single reviewer.

The following information was extracted for all studies when reported:

- Study citation (e.g. author, year of publication)
- Study details (study Design, region, data collection dates)
- Study participants (Sample size, Participants: i.e. parent, legal guardian, child, teacher etc.)
- Study outcomes
- Study results (Baseline characteristics etc.)

### **5.5 Quality appraisal**

Quality appraisal was carried out by a single reviewer, using the Joanna Briggs Institute (JBI) Critical Appraisal Tool (Moola et al. 2020), Checklists for Analytical Cross-Sectional

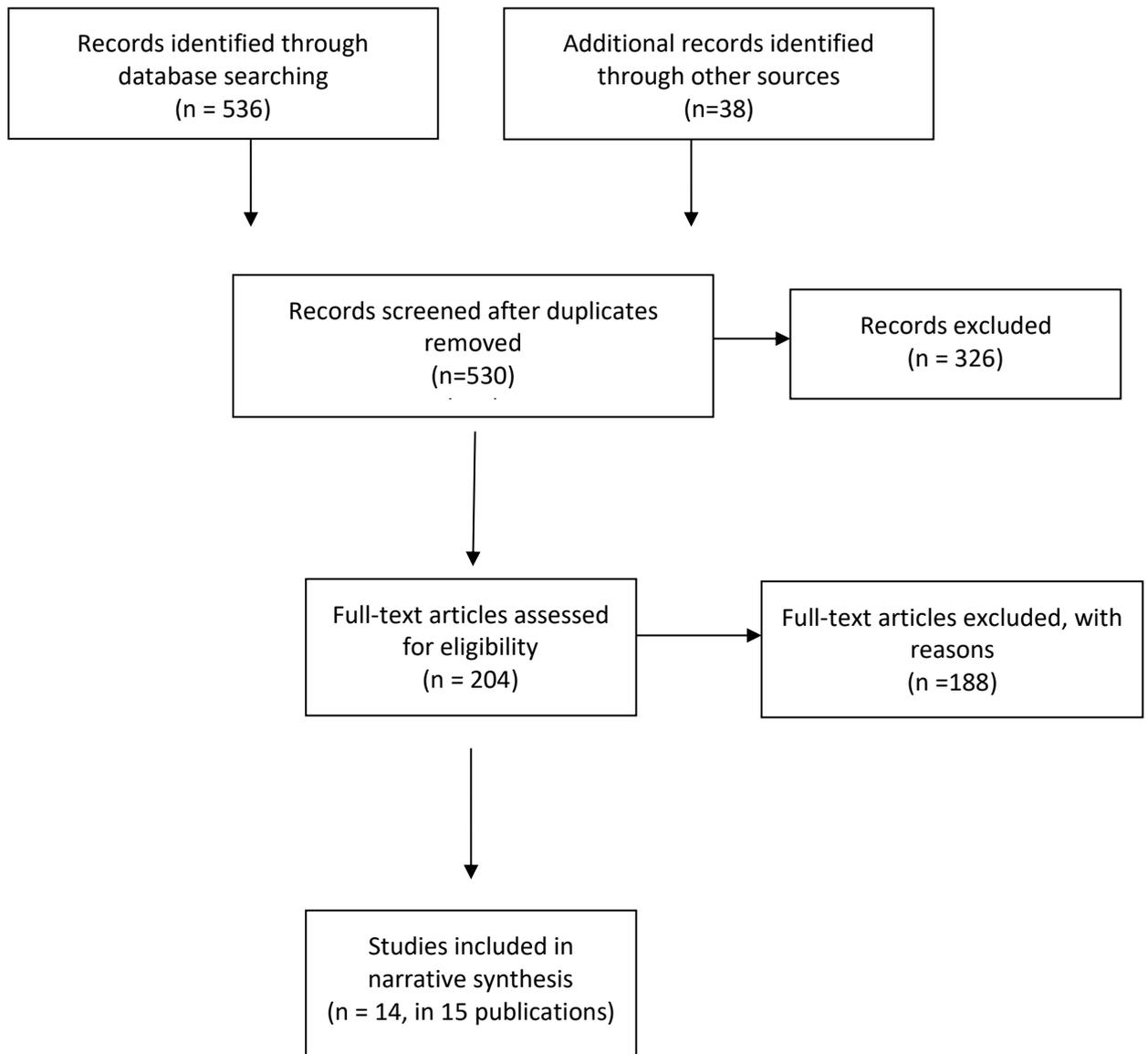
and Cohort Studies (Moola et al. 2020), a quality assessment tool for before-after studies (National Heart, Lung and Blood Institute 2013) and the rapid review checklist developed by Hunter (2020).

## **5.6 Synthesis**

The findings of this review are presented narratively. Data from the included studies are summarized and presented in tables.

## 6. EVIDENCE

### 6.1 Study selection flow chart



Database and supplementary searches identified 530 records, of which 204 were screened at full text. This was an unusually large number of publications to screen. This was in part due to the specific age range of this review, the limited detail provided in most abstracts and the need to check if outcome data was sub-grouped by relevant age. Approximately 42 publications were excluded as the age of participants encompassed 3-13 years but there

was no sub-group analysis of any part of the age group of interest for this review. Of those 42, 50% were deemed as 'service usage' i.e., change in reporting injuries, increased visits to emergency departments etc.

## **7. ADDITIONAL INFORMATION**

### **7.1 Conflicts of interest**

The authors declare they have no conflicts of interest to report.

### **7.2 Acknowledgements**

The authors would like to thank the stakeholders, Nick Srdic, Frances Rice, Yulia Schenderovich and Zakhyia Begum, and members of the Wales COVID-19 Evidence Centre for their contributions to guide the focus of the review.

## 8. ABOUT THE WALES COVID-19 EVIDENCE CENTRE (WCEC)

The WCEC integrates with worldwide efforts to synthesise and mobilise knowledge from research.

We operate with a core team as part of [Health and Care Research Wales](#), are hosted in the [Wales Centre for Primary and Emergency Care Research \(PRIME\)](#), and are led by [Professor Adrian Edwards of Cardiff University](#).

The core team of the centre works closely with collaborating partners in [Health Technology Wales](#), [Wales Centre for Evidence-Based Care](#), [Specialist Unit for Review Evidence centre](#), [SAIL Databank](#), [Bangor Institute for Health & Medical Research/ Health and Care Economics Cymru](#), and the [Public Health Wales Observatory](#).

Together we aim to provide around 50 reviews per year, answering the priority questions for policy and practice in Wales as we meet the demands of the pandemic and its impacts.

**Director:**

Professor Adrian Edwards

**Contact Email:**

[WC19EC@cardiff.ac.uk](mailto:WC19EC@cardiff.ac.uk)

**Website:**

<https://healthandcareresearchwales.org/about-research-community/wales-covid-19-evidence-centre>

## 9. APPENDIX

### 9.1 Medline Search Strategy

Database: Ovid MEDLINE(R) ALL <1946 to August 24, 2021> LS

Search Strategy:

- 
- 1 exp Coronavirus/ (90431)
  - 2 exp Coronavirus Infections/ (110628)
  - 3 (coronavirus\* or corona virus\* or OC43 or NL63 or 229E or HKU1 or HCoV\* or ncov\* or covid\* or sars-cov\* or sarscov\* or Sars-coronavirus\* or Severe Acute Respiratory Syndrome Coronavirus\*).mp. (185205)
  - 4 1 or 2 or 3 (190327)
  - 5 4 not (SARS or SARS-CoV or MERS or MERS-CoV or Middle East respiratory syndrome or camel\* or dromedar\* or equine or coronary or coronal or covidence\* or covidien or influenza virus or HIV or bovine or calves or TGEV or feline or porcine or BCoV or PED or PEDV or PDCoV or FIPV or FCoV or SADS-CoV or canine or CCov or zoonotic or avian influenza or H1N1 or H5N1 or H5N6 or IBV or murine corona\*).mp. (67791)
  - 6 ((pneumonia or covid\* or coronavirus\* or corona virus\* or ncov\* or 2019-ncov or sars\*).mp. or exp pneumonia/) and Wuhan.mp. (5716)
  - 7 (2019-ncov or ncov19 or ncov-19 or 2019-novel CoV or sars-cov2 or sars-cov-2 or sarscov2 or sarscov-2 or Sars-coronavirus2 or Sars-coronavirus-2 or SARS-like coronavirus\* or coronavirus-19 or covid19 or covid-19 or covid 2019 or ((novel or new or nouveau) adj2 (CoV on nCoV or covid or coronavirus\* or corona virus or Pandemi\*2)) or ((covid or covid19 or covid-19) and pandemic\*2) or (coronavirus\* and pneumonia)).mp. (169805)
  - 8 COVID-19.rx,px,ox. or severe acute respiratory syndrome coronavirus 2.os. (4917)
  - 9 or/6-8 (169845)
  - 10 5 or 9 (177590)
  - 11 (preteen\* or pre-teen\* or preadolesc\* or pre-adolesc\* or juvenil\* or schoolchild\*).tw. (105581)
  - 12 (school adj3 (pupil\* or student\*)).tw. (27051)
  - 13 exp infant/ (1183228)
  - 14 exp Child/ (1999933)
  - 15 (boy\* or girl\* or child or children or infant or infants or kid or kids or toddler\* or pre-school\* or preschool).tw. (1714440)
  - 16 (pediatri\* or paediatri\*).tw. (384911)
  - 17 or/11-16 (3194556)
  - 18 exp United Kingdom/ (378002)
  - 19 (national health service\* or nhs\*).ti,ab,in. (226009)
  - 20 (english not ((published or publication\* or translat\* or written or language\* or speak\* or literature or citation\*) adj5 english)).ti,ab. (41469)
  - 21 (gb or "g.b." or britain\* or (british\* not "british columbia") or uk or "u.k." or united kingdom\* or (england\* not "new england") or northern ireland\* or northern irish\* or scotland\* or scottish\* or ((wales or "south wales") not "new south wales") or welsh\*).ti,ab,jw,in. (2213914)
  - 22 (bath or "bath's" or ((birmingham not alabama\*) or ("birmingham's" not alabama\*) or bradford or "bradford's" or brighton or "brighton's" or bristol or "bristol's" or carlisle\* or

"carlisle's" or (cambridge not (massachusetts\* or boston\* or harvard\*)) or ("cambridge's" not (massachusetts\* or boston\* or harvard\*)) or (canterbury not zealand\*) or ("canterbury's" not zealand\*) or chelmsford or "chelmsford's" or chester or "chester's" or chichester or "chichester's" or coventry or "coventry's" or derby or "derby's" or (durham not (carolina\* or nc)) or ("durham's" not (carolina\* or nc)) or ely or "ely's" or exeter or "exeter's" or gloucester or "gloucester's" or hereford or "hereford's" or hull or "hull's" or lancaster or "lancaster's" or leeds\* or leicester or "leicester's" or (lincoln not nebraska\*) or ("lincoln's" not nebraska\*) or (liverpool not (new south wales\* or nsw)) or ("liverpool's" not (new south wales\* or nsw)) or ((london not (ontario\* or ont or toronto\*)) or ("london's" not (ontario\* or ont or toronto\*))) or manchester or "manchester's" or (newcastle not (new south wales\* or nsw)) or ("newcastle's" not (new south wales\* or nsw)) or norwich or "norwich's" or nottingham or "nottingham's" or oxford or "oxford's" or peterborough or "peterborough's" or plymouth or "plymouth's" or portsmouth or "portsmouth's" or preston or "preston's" or ripon or "ripon's" or salford or "salford's" or salisbury or "salisbury's" or sheffield or "sheffield's" or southampton or "southampton's" or st albans or stoke or "stoke's" or sunderland or "sunderland's" or truro or "truro's" or wakefield or "wakefield's" or wells or westminster or "westminster's" or winchester or "winchester's" or wolverhampton or "wolverhampton's" or (worchester not (massachusetts\* or boston\* or harvard\*)) or ("worchester's" not (massachusetts\* or boston\* or harvard\*)) or (york not ("new york\*" or ny or ontario\* or ont or toronto\*)) or ("york's" not ("new york\*" or ny or ontario\* or ont or toronto\*))))).ti,ab,in. (1537364)

23 (bangor or "bangor's" or cardiff or "cardiff's" or newport or "newport's" or st asaph or "st asaph's" or st davids or swansea or "swansea's").ti,ab,in. (61160)

24 (aberdeen or "aberdeen's" or dundee or "dundee's" or edinburgh or "edinburgh's" or glasgow or "glasgow's" or inverness or (perth not australia\*) or ("perth's" not australia\*) or stirling or "stirling's").ti,ab,in. (227189)

25 (armagh or "armagh's" or belfast or "belfast's" or lisburn or "lisburn's" or londonderry or "londonderry's" or derry or "derry's" or newry or "newry's").ti,ab,in. (29031)

26 or/18-25 (2781516)

27 (exp africa/ or exp americas/ or exp antarctic regions/ or exp arctic regions/ or exp asia/ or exp australia/ or exp oceania/) not (exp United Kingdom/ or europe/) (3067534)

28 26 not 27 (2642616)

29 10 and 17 and 28 (1700)

30 Quarantine/ (5085)

31 (quarantine or isolat\*).tw. (1407739)

32 (lockdown\* or restriction\*).tw. (213865)

33 stay-at-home.tw. (1427)

34 stay-local.tw. (20)

35 social distanc\*.tw. (6544)

36 (school\* adj3 closure\*).tw. (941)

37 (remote adj3 (teaching or learning or lesson\* or education\*)).tw. (785)

38 (online adj3 (teaching or learning or lesson\* or education\*)).tw. (5680)

39 virtual classroom\*.tw. (164)

40 (education adj3 (disrupt\* or chang\* or interrupt\* or delay\* or stop\* or hamper\* or access\* or suspen\*)).tw. (7855)

41 ("return\* to school" or "back to school").tw. (1359)

42 furlough\*.tw. (150)

43 "access to support\*".tw. (1057)

44 (access\* adj3 mental health).tw. (2762)

45 or/30-44 (1618983)  
46 29 and 45 (450)  
47 (comment or editorial or letter).pt. (1988695)  
48 46 not 47 (414)  
49 (meta analysis or "review" or "systematic review").pt. (2962314)  
50 48 not 49 (355)

## 9.2 Moss et al. (2021) – relevant grey literature publications

Andrew A, Cattan S, Costa Dias M, Farquharson C, Kraftman L, Krutikova S, Phimister A and Sevilla A (2020). [Inequalities in Children's Experiences of Home Learning during the COVID-19 Lockdown in England](#). Fiscal Studies, 41(3), pp.653-683.

Blainey K and Hannay T. (2021). [The impact of school closures on autumn 2020 attainment Mainstream state schools show measurable declines in attainment between 2019 and 2020 across all years in reading, maths and GPS](#).

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Children's Commission for Wales. (2020). [Coronavirus and Me](#). Children's Parliament. (2020). [How are you doing? A report on the findings from the How are you doing? survey](#).

Education Policy Institute and Renaissance Learning. (EPI) (2021). [Understanding progress in the 2020/21 academic year Interim findings](#). Department for Education.

Juniper Education. (2021). [The impact of the Covid-19 pandemic on primary school children's learning](#). National Dataset Report.

Leaton Gray S., Saville, K., Hargreaves, E, Jones E and Perryman J. (2021). [Moving Up Secondary school transition processes during the COVID-19 pandemic](#). Institute of Education.

Mansfield K L, Jindra C., Geulay G. and Fazel M. (2020). [Self-reported wellbeing and sample characteristics in a survey of 19000 school pupils during the first UK COVID-19 school closures](#). Preprint from authors.

Rose S, Twist L, Lord P, Rutt S, Badr K, Hope C and Styles B. (2021). [Impact of school closures and subsequent support strategies on attainment and socio-emotional wellbeing in Key Stage 1: Interim Paper 1](#). Education Endowment Foundation.