The global response to Coronavirus Disease 2019 (COVID-19) has changed daily life in many ways for children, families, and care providers. We have seen a sharp increase in research worldwide on COVID-19 and its impacts on children’s development and wellbeing.

In this research roundup, we describe the nature and scope of the existing early childhood development (ECD) evidence related to components of nurturing care for young children, including health, nutrition, child protection, opportunities for learning, and responsive caregiving (Figure 1).

We summarize who the studies have been conducted with; where the studies have been conducted; how they have been conducted in terms of research design; and priority research topics addressed so far.

We characterize the evidence base but do not formally evaluate the quality of the evidence. The primary audience is researchers, users of researchers, and funders of research in the early childhood development space and related sectors.

The Early Childhood Development Action Network (ECDAN) will launch a COVID-19 and ECD Research Hub in January 2022 to consolidate original research on the pandemic’s impacts on young children and families in low- and middle-income countries. The digital repository will enable quick and easy access, a one-stop-shop, to COVID-19 research. All studies from this research brief will be available in the upcoming repository.
Essential components of nurturing care for early childhood development

**Health and nutrition**
For good health, it is vital that caregivers and families access promotive and preventive health services, including antenatal and safe childbirth services, immunization, and timely and appropriate care-seeking for sick children. For good nutrition, young children benefit from exclusive breastfeeding and the timely introduction of suitable complementary foods. It is equally essential to ensure maternal nutrition.

**Responsive caregiving and opportunities for early learning**
Providing young children with opportunities for early learning and interacting with them in responsive, emotionally supportive, developmentally appropriate, and stimulating ways are critical components of nurturing care. From early infancy, babies begin to learn through daily interactions with their environments. The involvement of fathers, social support, good quality childcare and pre-primary education can also provide early learning and responsive caregiving.

**Safety and security**
To feel secure and safe, young children need protection from physical punishment, mental or emotional abuse, and neglect. They also need food security, safe spaces to play, and access to clean water and sanitation. Social care services, social protection, and supportive family care and foster care (over institutional care) help to ensure children’s safety and security.
KEY FINDINGS

We conducted a robust search of the Scopus database to identify studies related to COVID-19 and ECD in low-and-middle-income countries.¹ This produced an initial list of 2541 articles published between January 2020 and October 2021. Two reviewers screened the articles to exclude opinion pieces, unpublished reports, technical guidelines, protocols, non-evidence-based material, and clinical articles (i.e., those focused on COVID-19 transmission, epidemiological characteristics, or comorbidities). We identified 411 peer-reviewed, publicly available scientific research studies for inclusion. All studies include a detailed methodology and original evidence.

There was a slow rise in publications after the World Health Organization categorized COVID-19 as a global pandemic. However, an average of 30 COVID-19 and ECD-related articles have been published per month since October 2020 (Figure 2).

¹ Search strategy details and inclusion/exclusion criteria can be found here.
More than 400 scientific research studies have been published related to COVID-19 and ECD in low- and middle-income countries, with an average of 30 articles per month.

Figure 2
The number of relevant articles published per month from March 2020 to October 2021
Who has been studied?

The evidence focuses predominantly on pregnant women and children up to age 18 years, inclusive of young children. Few studies focus exclusively on infants and young children (i.e. under age 8). We found less than 10% of studies focus on infants and young children as a specific target population. These studies cover topics from missed childhood vaccines to parental involvement in early childhood and young children’s screen time use (Figure 3). Overall, studies across the sample tend to include mothers rather than fathers. We identified one study that focuses exclusively on fathers and their experiences during COVID-19. Further, we identified more than 35 articles that include service providers as study participants, primarily maternal and child healthcare workers, child welfare workers, early childhood educators and early grade teachers.

Figure 3

COVID-19 and ECD research focusing on infants and young children covers various topics, primarily related to health.

Examples of articles focused specifically on infants and young children

- Physical activity and movement behaviors
- Sleep quality
- Screen time
- Delivery and uptake of existing health, nutrition and immunization services
- Delivery of early childhood education
- Parental involvement in early learning during school closures
- Oral healthcare and dental pain among preschoolers
- Modelling the indirect effects of the pandemic on child mortality
- Child undernutrition and quality diets
- Children and caregivers’ music-related activities
Where have studies been conducted?

More than 60% of the identified studies are based on data from upper-middle-income countries. A minority of studies are based on data from lower-middle-income countries and few from low-income countries (Figure 4). Among the studies from low-income countries, three articles include young children under the age of 8; and two of these are published by the same research group in Sierra Leone. All three studies explore how the COVID-19 pandemic has interfered with delivering essential child health services (i.e., malaria and immunization) and nutrition programs. In terms of geographical region, most studies are from Asia and more than 100 studies are based on data from China. Most studies focus on one region, while multi-regional studies account for the remaining 5%.

The top five countries where COVID-19 and ECD studies have been conducted. Studies in these countries account for more than 50% of the available evidence base.

1. China
2. India
3. Brazil
4. Turkey
5. Iran

Figure 4

Two thirds of published COVID-19 and ECD studies are based on data from upper-middle-income countries. Studies are primarily from Asia.
What key themes have been studied?

Nearly 85% of the included COVID-19 studies address themes of maternal and child health or nutrition (Figure 5). In contrast, 9% of the studies focus on themes of early learning or responsive caregiving. Lastly, 7% of the COVID-19 studies focus primarily on children’s safety and security. We describe the nature of this evidence in the following sections.

Figure 5

Most published COVID-19 and ECD studies focus on maternal and child health and nutrition.
In terms of health and nutrition, the COVID-19 evidence base is dominated by two topics: documenting trends in mental health during the pandemic and determining trends in access to and utilization of essential health services. More than 100 articles (or 25% of the total) studied mental health among children and caregivers during the pandemic, particularly among pregnant women and mothers, with relatively consistent findings across different countries of increased risk of depression, anxiety and stress, primarily among parents/caregivers.

- For example, a cross-sectional online survey of pregnant and postpartum women across 64 countries found a relatively high frequency of clinically relevant anxiety and depression (31%) during the first three months of the pandemic. Common worries included social isolation, the baby contracting COVID-19, and having no social support during labour and delivery. A qualitative study in Pakistan found that financial concerns, a lack of social support, and distrust of health services increased reported anxiety among pregnant women.

- In terms of risk factors, a study from South Africa found the risk of maternal mental health problems increased in women who were severely food insecure or who experienced domestic abuse. A study from China found having a history of mental health issues before the pandemic was also a risk factor. Another survey of pregnant women in China found that quarantine and isolation increased the risk of depression and anxiety.

- On the other hand, studies from Mexico and China found that family support was a protective factor in mental health problems among mothers during the pandemic. A study found China reported that mothers attending an online mother and baby group reported better coping during the pandemic.

- Two qualitative studies from Brazil and Turkey look specifically at the experiences of nurses who have children and the mental health repercussions of taking on dual caregiving roles during the pandemic. This research highlights the need for better social and institutional support mechanisms for frontline workers who are primary caregivers at home, particularly during health emergencies.

- While most studies explore mental health concerns among adults, a few studies, for example, from Bangladesh and Iran, focus on the mental health of children, including young children, during the pandemic. In a qualitative
study from Uganda, children with disabilities and their parents reported that COVID-19 restrictions harmed their mental and physical health, social life, finances, education, access to medical services, and food security. More than 100 studies or 25% of the identified articles studied access to and utilization of health services during the pandemic, with largely consistent findings across contexts that COVID-19 and related restrictions disrupted access to reproductive, maternal, newborn and child health services.

- For example, an interrupted time-series study from eight sub-Saharan African countries estimated a cumulative shortfall of more than 5 million maternal and child health consultations and 300,000 vaccinations during the first 5 months of the pandemic alone, with significant declines in institutional deliveries, antenatal care visits and postnatal care visits in some countries.

- In Bangladesh, a longitudinal study with pregnant women and mothers of children under age 2 found declines in health facility visits and child immunizations (by 38%) during the pandemic, partly due to the pressure to isolate and fears of contracting the virus in health facilities. In Jordan, the proportion of women not receiving antenatal care increased from 4% to 60% with COVID-19 restrictions. In Uganda, antenatal and vaccination services and treatment for childhood illnesses also showed statistically significant decreases.

- Other studies noted delayed hospital admission for the treatment of diabetes in children (Egypt), a decline in HIV detection and care (Ethiopia), and limited uptake of family planning services (Bangladesh).

- Evidence from 24 hospitals in Brazil suggests that most have not followed recommendations to protect, promote, and support breastfeeding. For example, delivery services prohibited immediate and uninterrupted skin-to-skin contact. A modeling study estimates that the risk of separating mothers and newborns after delivery far outweighs the risk of death due to COVID-19 and argues for stronger protection of kangaroo mother care and protocols to keep mothers and newborns together, even if the mother is SARS-CoV-2-positive.

- A global, cross-sectional survey found that healthcare providers are worried about the impact of changes in service availability during COVID-19, and many reported higher stress levels due to increased working hours and staff shortages.
Responsive caregiving and early learning

Throughout the COVID-19 pandemic, caregivers’ daily routines have changed drastically, raising questions about the quality and frequency of responsive caregiving and early learning opportunities at home. Interactions with early childhood educators also decreased with the closing of schools, daycares and centers. In addition, social distancing protocols and playground closures have made play-based learning activities difficult during the pandemic. With respect to early learning, most studies documented the experiences, attitudes or perceptions of parents, students, and/or teachers regarding the shift from in-person to online learning and homeschooling during the pandemic.

- In an Ethiopian study, researchers collected data via phone surveys to understand the extent to which parents and caregivers engaged in pre-primary children’s learning during school closures. Authors report that children from poorer households or those whose caregivers have lower literacy levels had fewer child-oriented learning resources in the home and limited educational interactions with caregivers. This illustrates how existing (pre-pandemic) inequities among children may be exacerbated by the COVID-19 pandemic. In the Philippines, parents reported challenges with transitioning to virtual learning, the delivery of instruction, unsatisfactory learning outcomes, accessing and using technology, and personal problems with respect to finances, health, stress, and learning styles.

- In a study from China, parents of children enrolled in early childhood education generally had negative perceptions regarding online learning due to its perceived shortcomings relative to in-person learning, children’s inadequate self-regulation, and parents’ limited time and knowledge required to support their children’s online learning. Similarly, in South Africa, parents reported difficulties balancing time between roles as a parent and teacher, and cited a lack of government support as a major bottleneck to online learning. In another study, teachers, including those in the early grades, were concerned that students’ interest, focus and academic performance suffer with remote learning, and parents reported concerns regarding emotional or behavioral problems, increased screen time, decreased eyesight, and a lack of daily outdoor activity as a result of
school closures. In Jordan, parents perceived increased boredom, irritability, argumentative behaviour, nervousness, reluctance, and loneliness among their children during the pandemic.

- Several studies looked specifically at the experiences of families of children with intellectual or developmental disabilities. In Pakistan, parents of children with disabilities reported financial constraints, social isolation, deteriorated health conditions, reduced access to health services, negative behavioral impacts, and delayed cognitive development. On the other hand, a case study of Indian children with special needs points to the upsides of school closures, suggesting that children continued to learn and build skills in a nurturing familial environment while benefiting from strengthened relationships with parents, communities, and teachers; and new opportunities for homeschooling and digital learning, and technological adaptation.

- Several studies explore the impact of school closures and social distancing on ECD and learning outcomes. For example, an analysis of household survey data from 13 low- and lower-middle-income countries reports two key findings: missing or dropping out of school is associated with lower reading and numeracy outcomes; and most countries’ remote learning responses are insufficient to keep all children learning, avoid dropout, and attenuate learning losses, especially for marginalized and pre-primary level children.

- Despite the downsides, parents in multiple settings reported positive aspects of school closures, such as having more time with their children at home and having new opportunities to engage with their children’s learning. A qualitative study in China reported positive impacts on intergenerational learning and relationship building as children spent more time with grandparents during the pandemic. A study from Malaysia highlighted the use of Brain Breaks Physical Activity Solutions to support students’ physical activity during school closures. While positive perceptions of online learning were reported by parents in multiple countries, most studies argue that technology is not an adequate replacement for in-person learning interactions.

- One study from rural Bangladesh investigated the effects of the pandemic on the child caregiving environment and examined child stimulation in the home (using Family Care Indicators) but found inconsistent results.
A handful of studies explore how **gendered experiences of domestic responsibilities**, including caregiving, have shifted during the COVID-19 pandemic. For example, a study in **India** reports that stay-at-home orders essentially “turned back the clock of domestic sexual politics”. Even among couples who claimed to support gender equality, there were major inequities in the division of household work, child-rearing and the ability to work remotely. Similarly, an online survey of couples in **Argentina** found that women took on most household tasks and childcare during the pandemic, despite both parents working from home. In **Turkey**, mothers reported higher stress levels and conflict with their children relative to fathers. A modelling study in **Peru** suggests that women who live in rural areas, have children, and do not have a partner have been hit the hardest by the pandemic in terms of labour market participation; consequently, families who were most disadvantaged before the pandemic’s onset will have the most difficulty recovering.
Safety and security

The COVID-19 evidence related to children’s safety and security focuses mostly on whether violence against children and mothers has increased, and child protection responses. In total, we identified ten studies that examined violence against children and their caregivers, primarily mothers. The emerging evidence suggests that risk factors for household violence (i.e. loss of income, parental stress) may have increased during COVID-19.

- For example, a study based on Multiple Indicator Cluster Surveys (MICS) data from Nigeria, Mongolia and Suriname estimated that violent discipline towards children likely increased by 35%-46% during COVID-19 school closures and movement restrictions. Among mothers of very young children, a study in Bangladesh found self-reported increases in intimate partner violence during a COVID-19 stay-at-home order. In both studies, authors call for the prioritization of mental health support for caregivers and social protection strategies to address families’ immediate financial needs.

- Several studies highlight challenges in measuring the incidence/prevalence of violence during the pandemic due to a lack of reliable population-level data on violence against women and children in low- and middle-income countries. This makes it challenging to compare the prevalence of violence during COVID-19 with pre-pandemic periods. Furthermore, high levels of societal stigma and repercussions attached to the disclosure of violence create significant measurement and ethical challenges, with some researchers advising against collecting primary data on experiences of violence during pandemic conditions.

- Studies with pregnant women and mothers in India, the Democratic Republic of Congo and Pakistan found lower family income was associated with greater intimate partner violence during the COVID-19 pandemic. Similarly, a study from Egypt found lower family income was a significant risk factor for violence against children during the pandemic, and that children under age 5 were at heightened risk of experiencing violent discipline.
We identified five studies that examined child protection responses during the pandemic. Underreporting of suspected child maltreatment may have increased due to temporary deficits in child protection responses.

- For example, studies in Mexico and Brazil used synthetic control paired with difference-in-difference methodologies and reported decreases in child maltreatment reporting during COVID-19 school closures and restrictions. A possible explanation is that children had limited access to teachers and other protective adults, including practitioners in health and early childhood education centres, who might typically detect and report suspected maltreatment.

- Studies from China and South Africa investigated child protection COVID-19 policy responses, which highlighted a need for multisectoral coordination and legislation to ensure that in addition to children’s physical health, their safety and well-being is also looked after during health emergencies. A study from Brazil explored issues related to child protection workforce capacity during the COVID-19 pandemic.

In terms of other child safety and security-related topics:

- Studies in China, Iran and India found an overall decrease in hospital admissions for child injury (e.g. fractures) during COVID-19 movement restrictions. Proposed reasons for this change include a shift from organized sports or playground activities to increased time indoors. Also, families may have avoided medical care during the pandemic due to concerns about COVID-19 transmission.

- With respect to foster care, one modelling study used global mortality and fertility data to estimate that more than 1.5 million children experienced COVID-19-associated deaths of primary caregivers and co-residing grandparents during the first 14 months of the pandemic, with the highest rates in low- and middle-income countries, and thus were at increased risk of family separation and institutionalisation.

- In terms of hygiene, studies in Ghana and China explored preventive practices among pregnant women and children and found rates of hand-washing and mask-wearing could be improved.
How have studies been conducted?

A majority of the studies identified utilized quantitative study designs (Figure 6). Most used one-time (i.e., cross-sectional) surveys to collect data, primarily from parents and other caregivers. None of the studies used randomized controlled trials; however, one study in Bangladesh used an interrupted time series design to assess the immediate impact of COVID-19 restrictions on rural Bangladeshi women and their families. In this study, mothers/female guardians of children previously enrolled in a larger trial were randomly selected to participate. In a modelling study, researchers used the Lives Saved Tool to estimate the additional maternal and under-5 child deaths under different hypothetical scenarios where the coverage of essential services was reduced due to the COVID-19 pandemic. Relatively few studies used qualitative methods or a mix of quantitative and qualitative approaches. Among review papers that synthesize existing evidence, the vast majority focus on health topics.

Figure 6
Most studies on COVID-19 and ECD are quantitative in nature and utilize cross-sectional designs.

Among intervention studies, most articles emphasize the feasibility, acceptability, and/or lessons learned during implementation in the context of COVID-19, often related to the use of digital technology. Few studies measured intervention effectiveness or impact on ECD-related outcomes. While there was an absence of randomized controlled trials related to ECD interventions during COVID-19,
two quasi-experimental studies examined the effectiveness of a tele-education program offered to pregnant women (Turkey) and a WeChat-based parenting program for mothers of preschool-age children with autism (China), both with positive impacts on maternal mental health (Figure 7).

**Figure 7**

**Examples of evaluations of ECD-related interventions during COVID-19**

<table>
<thead>
<tr>
<th>Study participants</th>
<th>Interventions</th>
<th>Key findings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WeChat parenting program for pregnant women in China</strong> (<a href="#">Liu et al.</a>)</td>
<td><strong>Control group:</strong> Routine care, which included an electronic manual entitled “108 Strategies to Overcome the Pandemic at Home” and a home training plan for children</td>
<td>Parenting information delivered via WeChat lowered measures of anxiety, depression, parenting stress, and increased measures of hope.</td>
</tr>
<tr>
<td>Mothers who were the primary caregivers of preschool children aged 3-7 years old who were diagnosed with Autism spectrum disorder</td>
<td><strong>Experimental group:</strong> Routine care plus WeChat-based parenting training program, which includes the following:</td>
<td>The tele-education intervention decreased prenatal distress and pregnancy-related anxiety.</td>
</tr>
<tr>
<td>• Joint Attention, Symbolic Play, Engagement, and Regulation (JASPER) online course</td>
<td>• Weekly online Q&amp;A sessions</td>
<td></td>
</tr>
<tr>
<td>• Online parental psychological intervention course based on pandemic situations</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tele-education for pregnant women in Turkey</strong> (<a href="#">Deryxa et al.</a>)</td>
<td><strong>Control group:</strong> No intervention</td>
<td></td>
</tr>
<tr>
<td>Pregnant women who applied for antenatal group education classes at a public hospital</td>
<td><strong>Experimental group:</strong> Tele-education offered to pregnant women about pregnancy and birth planning during COVID-19 on prenatal distress and pregnancy-related anxiety</td>
<td></td>
</tr>
</tbody>
</table>
The number of COVID-19 articles examining issues related to early childhood development in low- and middle-income countries continues to grow. The existing evidence base is heavily concentrated on a small number of topics, often related to maternal and child health. About half of the identified papers examine mental health (primarily among pregnant women and mothers) and disrupted access to essential maternal and child health services. In contrast, evidence on many other topics pertinent to child development and nurturing care is either limited or non-existent.

Furthermore, most of the research to date has focused on children, families and services in upper-middle income countries. As such, the findings may not be representative or comparable to other country contexts. In terms of data collection methods, we see an over-reliance on quantitative methods, particularly cross-sectional surveys, which are relatively quick and easy to administer. Such studies can provide a snapshot in time to measure prevalence, but they are generally not well suited for examining behaviour over time or determining cause and effect relationships. One of the most cited limitations in the evidence is the lack of comparable pre-COVID data, for example, related to maternal mental health and violence in the home, which therefore makes it difficult to measure pre- and post-pandemic changes.

The existing evidence mostly examines prevalence, risk and protective factors related to nurturing care conditions and child development. This provides a critical starting point that can help global stakeholders identify and understand pertinent areas of interest and need. However, future research efforts and funding should focus on topics pertinent to child development that have been understudied in the context of COVID-19, as well as utilizing more complex data collection and analysis, and reaching unrepresented regions and populations.
Acknowledgements: The authors would like to thank Mark Tomlinson, James Radner, Michelle Cruickshank, and Aisha Yousafzai for their input and feedback on the research brief.


Design by Mark Cea