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Child wellbeing in the United Kingdom following the COVID-19 lockdowns

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Abstract
The COVID-19 pandemic led to huge changes to children’s daily lives including school closures, loss of contact with family and friends, and financial difficulties which impacted on the wellbeing of all children. The Social Determinants of Health model gives us a framework to consider the impact of lockdown directly on children, and indirectly through the impact on parents, families, community and government policy as children cannot be considered in isolation to families or society. Children have suffered directly with lack of access to healthcare, and a decline in their mental health. Infant bonding may have been affected due to maternal stress, anxiety or depression, compounded by limited Health Visitor support. Poverty, food insecurity and lack of exercise contributed to increased obesity. Many children will have been exposed to domestic violence, parental mental illness and child abuse without being able to tell teachers or other adults outside of the home, these Adverse Childhood Experiences (ACE) increase the risk for subsequent health and behaviour problems. Children have spent many hours online for school learning and socializing with friends but faced risks of criminal exploitation and grooming. The long-term financial implications of COVID-19 will continue to impact on society for many years to come and further increase social inequalities.

Keywords adverse childhood experiences; COVID-19; mental health; poverty; social inequality; wellbeing

Introduction
In March 2020, the United Kingdom (UK) implemented the first national lockdown measures in response to the COVID-19 pandemic. By May 2021 the UK has the 6th highest total cases of coronavirus globally with just over 127,000 total deaths. Despite the very low risk to children, with 32 child deaths nationally related to COVID during this first year, the impact on children’s lives has been huge. Schools have been closed, social contacts drastically reduced, families faced financial hardship, fear gripped communities with many families bereaved. The pandemic has been the defining event of this generation, no such major societal changes have occurred since World War Two (1939–45).

This article will consider the impact of lockdowns on child wellbeing based on our experience of working in the UK, although the effects will likely be similar in many other countries impacted by the pandemic. We use the term ‘lockdown’ to refer to any period in time where restrictions were placed on daily life such as school and workplace closures or limits on social contact outside of the immediate household. The UK commenced lockdown measures on 16 March 2020 with the final social restrictions anticipated to end in June 2021. Schools reopened fully between September and December 2020, but were then closed until March 2021, with most pupils learning remotely.

Given the huge impact of COVID-19, where do we start? Maybe a child attends a virtual clinic with sleep difficulties, poor concentration and disruptive behaviour, all of which have been worse since lockdown. We need a framework, so will consider the impacts using a Social Determinants of Health model based on Bronfenbrenner’s Ecological Systems Theory, by this we mean that child wellbeing is seen as a complex system of relationships affected by multiple levels of the surrounding environment, from immediate settings of family and school to broad cultural values, laws, and customs. A child and family cannot be considered in isolation from their wider community and government policies, and this gives us a framework to analyse issues and understand health outcomes and inequalities. The child and their fixed characteristics (such as age, sex and ethnicity) is at the centre of the model. Surrounding this are concentric layers of influence that are potentially modifiable, the social determinants, these all interact with each other to impact on the child at the centre. We will review the different layers working outwards from the child. The model is shown in Figure 1, illustrated by the impact on Tyler a boy aged 4 years with cerebral palsy and developmental delay.

The child, parenting and child health behaviours
The innermost layer includes intrinsic child vulnerabilities, health behaviours, lifestyle factors as well as the nature of interactions between carer and child as these directly influence health behaviours in early childhood.

Physical health
Lockdown led to an immediate disruption to health services, as they switched to focus on COVID-19 treatment and other acute illnesses. Initially, there were concerns parents may delay accessing urgent health services for acutely sick children due to fear of COVID-19 or not wanting to burden health services.
Children with chronic conditions such as epilepsy, cerebral palsy or diabetes will have missed routine appointments with doctors or therapists, potentially leading to poorer symptom control with long-term health implications. Many may have missed routine immunisations or health screening appointments.

**Mental health**

Mental health concerns have increased for children during lockdown with a marked rise in mental health referrals. Children have been socially isolated with school closure, unable to see friends and family, suffered bereavements, and witnessed parental anxieties. The lived experiences for most children during lockdown have been completely different to anything experienced before. Child suicides increased slightly (but not statistically significantly) during March–May 2020, compared to previous years. Eating Disorders have become much more common, with an increase of three to four times compared to previous years. The rise in mental health problems relates more to the stresses from changes to families, communities and society rather than intrinsic vulnerability.

**Attachment and bonding**

A cornerstone of child wellbeing is a secure attachment with the primary caregiver; as young babies learn that their needs for food, comfort and security are reliably met by their parent/carer, they learn to trust and bond with parents/carers and from this make secure relationships with others. Parents/carers need to be emotionally attuned to their babies so that they can meet their needs, otherwise babies may develop attachment difficulties. Stress, anxiety, postnatal depression or other mental illness may prevent a parent/carer being emotionally available to their baby. Insecure attachments are often at the root of child and adult mental health, emotional and behavioural difficulties.

Early in lockdown face-to-face Health Visitor services were significantly reduced, assessing parent/carer - infant interaction, or emotional problems virtually is difficult, making identification of struggling parents challenging. Given the lack of professional support, social isolation and stresses related to COVID-19 there could be a cohort of lockdown babies whose parents/carers have struggled to bond who present later with emotional and behavioural difficulties. However, this may be mitigated in part by a second parent/carer being more available to support their partner as many people began working from home.

**Parents, carers and household resources**

Parents mental and physical health, and family resources and income have a direct bearing on child wellbeing.

**Poverty and obesity**

Many families have faced economic hardship due to job losses although the government attempted to address this with generous furlough payments for those unable to work. Ongoing job uncertainties continue, as not all businesses will reopen following the pandemic and some sectors (arts, hospitality, tourism) may take years to recover.

In 2019, 1.3 million UK children were eligible for free school meals, with a further 1 million ineligible but still considered to

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Figure 1 Social determinants of child health model.
be living in food insecurity; the pandemic has highlighted the degree of food insecurity in the UK despite its high average income. School closure removed an important source of nutrition, families were given food parcels and later vouchers. Food poverty in the UK is associated with obesity, as energy rich highly processed foods are cheap, compared to fresh fruits and vegetables, nearly 10% of UK children aged 4–5 years were obese prior to the pandemic. Low-income children may become more obese as a result of lockdown, initially people were only allowed outdoors for one hour daily to exercise, with few children having access to private gardens to enjoy more time outside. The lack of school has led to many children becoming much more sedentary.

Parental health, bereavement and long-COVID
Some children will have had parents or close relatives die from COVID-19; and may be dealing with bereavement, financial hardship and potentially caring for younger siblings without support from school, extended family or friends. Deaths from COVID-19 have occurred disproportionately in those from Black, Asian and Minority Ethnic backgrounds and with low socio-economic status; bereaved children are likely to be amongst the most disadvantaged children in our society. Many adults have been left with debilitating symptoms from ‘Long COVID’, and may now rely on their children to care for them. Young carers already face significant inequalities including higher rates of school absenteeism and lower educational attainment. They are often from lower income households, have worse levels of mental and physical health themselves.

Parental mental health has declined during lockdown partly due to the social impact of pandemic restrictions, fear, bereavement, economic uncertainty, job loss and unemployment; these issues are likely to continue for some time after all COVID lockdown restrictions are lifted. Poor parental mental health impacts on whole families, with children showing emotional distress and potentially behaviour problems and parents being unable to work so reducing incomes.

Domestic abuse and child abuse
Many families will have benefited from some enforced ‘family time’ during lockdown, where they reconnected with each other and took part in family activities together, rather than working, schooling and socializing separately. However, for children living in families with domestic abuse, alcohol or substance misuse, or mental health problems the lockdown experience is likely to have been very challenging. The pressures of families being confined to home for prolonged periods, without usual social supports but with added financial and health worries may well exacerbate abusive relationships, there was a 10% increase in domestic abuse incidents reported to the police during March –June 2020.

The ‘toxic trio’ of co-occurring domestic abuse, mental health problems and alcohol or substance misuse is well recognized in child protection. These risks combined with social isolation, cramped housing conditions and financial worries induced by lockdown will have contributed to many children suffering abuse at home. There was an increase of 25% of children reported to the National Child Safeguarding Practice Review Panel as suffering serious harm or dying due to abuse or neglect during April to September 2020, although there is considerably year-on-year variation in reporting numbers.

Children with complex needs and disabilities
Children with additional needs were particularly vulnerable during lockdown. Many families relied on complex packages of care provided by extended family and paid carers, with special schools at the centre of support networks; much of this support stopped abruptly leaving families to manage alone. Special schools re-opened promptly to smaller numbers of children considered the most vulnerable, and most remained open during January to March 2021. However, the impact of lockdown on children with additional needs and their families is much greater, due to the increased stresses of providing care with less support and reduced finances as it is more difficult for parents to work.

Adverse childhood experiences
The impacts of the COVID-19 pandemic and lockdown on children, as described above, can be considered as Adverse Childhood Experiences (ACE); these include abuse, neglect and household dysfunction (domestic abuse, parental mental illness or substance abuse, parental separation or incarceration). Many children will have experienced more ACE due to the pandemic, this may have long-term societal impacts as adults who have experience four of more ACE have increased risk of behavioural, physical and mental health problems in later life.

Community, living and working conditions
The African proverb ‘It takes a village to raise a child’ explains how an entire community needs to interact with a child to ensure they grow in a healthy and safe environment. Lockdown removed or severely limited access to this vital community.

School closures
UK school closures during the COVID-19 pandemic led to the largest disruption to schooling since the Second World War. School closure impacts not just on education but also on safety and welfare of children, as school provides children with a place of physical and emotional safety with access to trusted adults in whom they can confide. This impact was shown by the significant decline in community child protection referrals during March to June 2020, compared with previous years.

Most school teaching continued online, particularly during the second period of school closures from January to March 2021. However, the Early Years curriculum (age 3–5 years) is play based, allowing children to explore and learn in a safe, secure yet challenging environment this is not easily replicated online. Successful home learning relies on good access to suitable electronic devices, quiet study space and parental support with home studies, it therefore follows those children in low-income families are clearly disadvantaged; they already start school with an attainment gap compared to children from higher income families, and lockdowns will have exacerbated this gap.

For many children, the lack of daily contact with friends was their biggest loss during lockdown, and this alone was the cause for significant emotional distress and anxiety. However, a minority of children found home schooling a very positive experience. Some children with social anxiety disorders or Autistic Spectrum Disorder find school challenging, and struggle to cope
social interactions in a noisy, busy environment. This group of children thrived on home education, where they felt safe and secure, able to focus fully on their learning and their mental health improved. Many have chosen to continue with home education.

Social media
With the lack of social and cultural events, the pandemic necessitated children to rely more on social media and technology to virtually interact and communicate via screens in order to maintain social connections. Social network platforms such as TikTok saw an exponential rise in its use by children. While social media was an important social support for many, there are risks of children being exploited and bullied online with negative consequences for emotional health. Excessive screen time is associated with lack of exercise, poor diet and sleep difficulties. There has been a dramatic increase in teenagers presenting with dramatic vocal and motor tics, this may in part have been fueled by tic videos posted on social media.

Criminal exploitation
County lines gangs have adapted following lockdowns. More children are recruited locally, working for gangs close to home so not drawing attention to themselves by travelling long distances. Recruitment often occurs online, children from more affluent families and girls are frequently recruited as they more likely to be able to work unrecognized. Some children did not return to school following the initial closures, children who are missing from education are much more prone to exploitation.

Socio-economic, cultural, commercial, political and physical climate
UK government finances
At the start of 2020, unemployment in the UK was at a historic low. As a result of the COVID-19 pandemic restrictions, unemployment rates rose and the UK government borrowed £355 billion in total to fund the National Health Service (NHS), furlough payments and make up for lost tax revenue. The debt to Gross Domestic Product (GDP) ratio is now at its highest since 1960, and it will take many years to pay back, with our children paying much of this as future tax payers. The NHS was under enormous pressure during the pandemic, and routine appointments and treatments were cancelled resulting in long waiting lists; it will be months before these backlogs are cleared. Many staff may quit the NHS. While most of these issues do not directly affect paediatric services, the overall financial and staffing pressures will likely impact children with potential diversion of funds.

Conclusion
The impact of the COVID-19 pandemic has been huge for children, even though few became significantly unwell. Much of this impact was the indirect effect of lockdown, not just school closures but increased parental stresses, financial hardship and loss of social contacts, leading to poorer mental and physical health, and risk of child abuse. Some children will have been more affected than others, as both COVID-19 and the lockdown disproportionately impacted on social deprived children, due to poverty, bereavement, lack of outdoor space, and greater difficulties accessing online education, entrenching our social inequalities. The greater exposure to Adverse Childhood Experiences may increase future risk of physical, behavioral and mental health problems as children reach adulthood. The long-term impact on UK finances and health service policies will remain with us for many years to come, with our children paying for this in their taxes.

We owe it to our children, to ensure we provide services and support to meet their needs to help them recover from the greatest societal change in our generation.

FURTHER READING
Chuang R, Kaye T, Moss Cofian C, Hailer B. Back-to-School campaigns following disruptions to education, 2020 (EdTech Hub Helpdesk Response No 12).
Hefferon C, Taylor C, Bennett D, et al. Priorities for the child public health response to the COVID-19 pandemic recovery in England. Arch Dis Childhood, Published Online First: 09 December 2020. https://doi.org/10.1136/archdischild-2020-320214.
Lakhanpaul M, Rosenthal DM, Lakhanpaul M, et al. Reverse innovation: could learning from LMIC child health programmes support HIC to equitably and efficiently address child health needs post COVID-19? Ann Public Health Rep 2020; 4: 53–4.
Theis N, Campbell N, De Leeuw J, Owen M, Schenke KC. The effects of COVID-19 restrictions on physical activity and mental health of children and young adults with physical and/or intellectual disabilities. Disabil Health J, 2021 Jan 22; 101064. https://doi.org/10.1016/j.dhjo.2021.101064. Epub ahead of print. PMID: 33549499; PMCID: PMC7825978.