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Effects of nationwide lockdown and school closures during the COVID-19 pandemic on children's physical health and beyond

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INTRODUCTION

As of 21 September 2020, the World Health Organization (WHO) has reported 30,675,675 cases of the coronavirus disease 2019 (COVID-19) infection worldwide, with 954,417 deaths.⁽¹⁾ Singapore has reported 57,181 positive cases with 27 deaths.⁽²⁾ These numbers are staggering, and the impact on physical health is undeniable. Preliminary epidemiological studies suggest that children are less frequently affected than adults, and those affected have milder disease course with fewer fatalities.^(3,4) However, there have been reports of a rare paediatric multisystem inflammatory syndrome with temporal association with COVID-19, where patients present with overlapping features of Kawasaki disease and toxic shock syndrome.⁽⁵⁾ Singapore has no such cases till date.⁽⁶⁾ Furthermore, we have not had any child mortalities resulting from COVID-19.

Despite this, there are significant concerns that children may still bear the brunt of the pandemic because of the myriad strategies that have been employed to curb the spread of COVID-19 both internationally and locally, such as lockdowns, quarantine and social distancing measures. The intensity of these measures varies among countries, with some countries imposing a full lockdown approach and others allowing a more flexible option. Singapore instituted a partial lockdown on 8 April 2020. Joining another 193 countries,⁽⁷⁾ schools in Singapore were ordered to close, including preschools and student care centres. Only a few listed essential services could operate, while workers in non-essential services were mandated to work from home. This lasted two months, and the measures were gradually lifted on 1 June 2020.

EFFECTS ON CHILD SAFETY

The potential impact that these measures have on children must not be overlooked. Lockdowns requiring children and caregivers to remain homebound for prolonged and continuous periods

of time place children at increased risk of domestic abuse,⁽⁸⁾ exacerbated by pandemic- and isolation-related anxiety and stress on caregivers. We are recognising increased rates of domestic violence, including spousal and child abuse, which have been reported in Europe and the United Kingdom (UK).^(9,10) Locally, social service agencies saw an increase of 14% in referrals and enquiries pertaining to domestic conflicts and violence within the first two weeks of lockdown,⁽¹¹⁾ and there was a 22% increase in police reports made for cases associated with domestic violence within the first month of lockdown.⁽¹²⁾ Children, a prime vulnerable group, are particularly at risk if they are isolated at home due to longer hours spent with their abuser. Adding to this, less exposure to support outside of the home, such as other family members, teachers, social workers or healthcare professionals, serves to exacerbate this risk and allows abuse to possibly go undetected and under-reported for longer periods.

Removal of safety nets like student care centres and schools also encompasses removal of vital support systems that many children and at-risk families rely on for regular meals and care services. Additionally, parents and caregivers suffering from increasing stress due to significant economic repercussions from the pandemic may have increasing consumption of alcohol or drugs of abuse, further exacerbating the problem.⁽¹³⁾

EFFECTS ON CHILDHOOD DISEASE AND PHYSICAL HEALTH

With limitation of close contact following the implementation of lockdowns, many childhood infections such as influenza have seen a welcome decline.⁽¹⁴⁾ However, amidst the current pandemic, Singapore is experiencing one of the worst dengue outbreaks in years, with a record of 9,261 infections this year reported as of 2 June 2020, far more than double the number of recorded cases over the same period last year.⁽¹⁵⁾ There has been a steep increase in the number of dengue cases since the start of May 2020, coinciding with the lockdown period. One of the postulations for this is the shift in concentration of people from schools and workplaces to

homes, providing more ‘blood meals’ for *Aedes aegypti* mosquitoes, which bite during the day and tend to populate residential areas.

A resurgence of vaccine-preventable illness such as measles, pertussis and pneumococcal disease in babies and young children is another possible and very real risk, due to a drastic decrease in vaccination rates among children during the period of lockdown. While routine immunisations for children under 18 months were allowed to continue and encouraged by medical professionals during the lockdown period, parental concerns and a fear of exposure to COVID-19 at healthcare facilities have resulted in parents choosing to defer vaccinations for their children.⁽¹⁶⁾ In England, the uptake of measles vaccine was reduced within the first three weeks of lockdown⁽¹⁷⁾ with similar findings in the United States.⁽¹⁸⁾ Locally, clinics have seen a reduction in the number of vaccine appointments despite medical advice not to delay vaccinations.⁽¹⁹⁾ While battling one infectious disease, we must not let our guard down against the rest, particularly the preventable ones.

Notably, there was a reduction in emergency department attendances and hospitalisations during this period documented in the UK.⁽²⁰⁾ Though this may be attributed to a reduction in infectious diseases from the lockdown, we should also consider that it may be in part due to an intentional avoidance of healthcare facilities stemming from phobia, resulting in delays in seeking necessary and vital medical treatment for children. By attempting to reduce non-urgent hospital visits, assessment and therapy for developmentally delayed children may also be delayed.

Lifestyle-related comorbidities have possibly increased during this pandemic as children are confined to their homes. They may paradoxically lean toward unhealthy dietary preferences and ‘comfort food’, favouring a diet more prominent in sugary drinks and potato chips.⁽²¹⁾ More children report eating and snacking more, especially those who are already overweight, further exacerbating excessive weight gain.⁽²²⁾ This is aggravated by an increase

in sedentary habits and screen time,⁽²¹⁾ both brought on by the need to fill empty pockets of free time, online learning and limitations on outdoor activity. Screen time increase of up to six hours from online learning has been reported.⁽²¹⁾ While this may not have an immediate effect on the incidence of myopia, lifestyle preferences developed during this time may have extended results, which remain to be studied.

EFFECTS ON MENTAL HEALTH

Finally, mental health issues abound in these times of social isolation and pandemic-related fears and anxieties.^(23,24) While adults can seek comfort from information-gathering via various means, children may not fully grasp the concept of a pandemic or the measures implemented that have disrupted their daily routines. Depending on the age of the child, they may be relying only on their caregiver for understanding of the current situation. They may also struggle to understand the need for new practices like hand hygiene, mask-wearing and social distancing. Adjusting to these changes requires resilience that can only come with time, careful attention, and counselling from their caregivers.

While suspension of school may alleviate the stressors that stem from school bullying, mental strength is further tested when time spent online increases, placing children at increased risk of cyber-bullying and social media trolls. Online learning modalities are also avenues for hackers to leverage on, and abuse of video-conferencing platforms and displays of lewd content have been reported.⁽²⁵⁾

In addition, there is a reduction in developmental opportunities gained from group learning that can only occur in schools, such as time management, self-reliance and resilience. Children could subsequently face adjustment difficulties when school resumes, especially after a prolonged absence from rigorous school life. This could be partly due to multiple changes in their daily routines or secondary to the after-effects of relatively less efficient learning at home.

Finally, lockdowns and social distancing measures inevitably result in feelings of loneliness and isolation in children, especially adolescents, who thrive on social connection and peer validation.⁽²⁶⁾ Aside from loneliness, those who have been exposed to containment measures have been reported to develop depression, acute stress disorder, adjustment disorder, grief and post-traumatic stress disorder.⁽²⁷⁾

PREVENTIVE STRATEGIES

Parents, healthcare providers and members of the community play an important role in helping children deal with the potential problems that they may face because of this pandemic. Here, we discuss some strategies that may be helpful.

Child safety

Healthcare providers can opportunistically identify children at risk of domestic violence through potential warning signs in appearance, behaviour, emotion and verbal cues. Abused children may have injuries that do not appear accidental, behave fearful or distressed that they may be hurt, or display aggressive or withdrawn behaviour. They may also drop hints that they do not feel safe at home. More attention should be paid to those who have a history of family violence. Community services and helplines (Box 1) are available for cases not in imminent danger; otherwise, a police report and urgent referral to a tertiary paediatric hospital should be made.

Box 1: Helplines for child protection issues:

- **Tinkle Friend (for primary school students)**
Helpline: 1800 2744 788 (Mon to Fri: 2.30pm to 5.00pm)
Online Chat: www.tinklefriend.sg (Mon to Thu: 2.30pm to 7.00pm; Fri: 2.30pm to 5.00pm)
- **Big Love**
Tel: 6445 0400 (Mon to Fri: 9am to 6pm)
Facebook: @BigLoveCPSC
- **HEART @ Fei Yue**
Tel: 6819 9170 (Mon to Fri: 9.30am to 5.30pm)

Facebook: @FeiYueCommunityServices

- **PAVE Integrated Services for Individual and Family Protection Specialist Centre**

Tel: 6555 0390 (Mon to Fri: 9am to 1pm, 2pm to 6pm)

Facebook: @PAVEitsaboutrespect

- **Ministry of Social and Family Development Child Protective Service**

- Tel: 1800 777 0000 (Mon to Fri: 8.30am to 6.00pm; Sat: 8.30am to 1.00pm)

Facebook: @MSFSingapore

Physical health

It is important that children are educated on basic, easy-to-understand information on personal hygiene and safety, such as proper handwashing technique, the importance of mask-wearing and social distancing while shielding them from excessive fear of the virus. Healthcare providers can help to provide anticipatory guidance regarding other important areas of child health when possible, such as reinforcing the importance of receiving appropriate and timely vaccinations and maintaining healthy eating habits and an active lifestyle.

Mental health

Parents play a central role in their child's mental health during this pandemic. They are an important constant as children adapt and adjust to changes in their home and school routines. There are many resources available to guide parents through this time, including self-care strategies that enable them to have the bandwidth to support their children optimally. Healthcare providers can provide parents with these resources (Box 2) opportunistically. In a nutshell, it is important for parents to provide routine and structure in areas that can be controlled, listening to their children's concerns and supplying age-appropriate facts to alleviate any anxiety.

Box 2: Parenting resources:

- **My Hero is You: How Kids Can Fight COVID-19:**
<https://interagencystandingcommittee.org/system/files/2020-04/My%20Hero%20is%20You%2C%20Storybook%20for%20Children%20on%20COVID-19.pdf>
- **Let's Fight COVID-19!**: <https://www.superherome.sg/covid19>

- **National University Hospital – COVID-19 Resources for Parents and Caregivers:**
<https://www.nuh.com.sg/our-services/Specialties/Paediatrics/pages/covid-19-resources-for-parents-and-caregivers.aspx>
- **Parenting for Lifelong Health:** <https://www.covid19parenting.com/#/home>
- **World Health Organization:**
 - <https://www.who.int/publications/m/item/covid-19-parenting-when-children-misbehave>
 - <https://www.who.int/campaigns/connecting-the-world-to-combat-coronavirus/healthyathome/healthyathome---healthy-parenting>
 - https://www.who.int/images/default-source/health-topics/coronavirus/risk-communications/general-public/stress/children-stress.jpg?sfvrsn=343355fd_2
- **UNICEF:** <https://www.unicef.org/coronavirus/covid-19-parenting-tips>

Protecting the mental health of our future generations is only feasible with a robust education and healthcare system. We need adequate resources and qualified manpower to overcome this crisis. As children adapt to the new ‘normal’ lifestyle changes and return to school in an entirely unprecedented setting, we foresee more children having mental health issues and a subsequent need for more support from school counsellors and child psychologists. Comprehensive school health systems are required to deliver timely assistance to affected and at-risk students. Students requiring professional help and intervention may need to be referred to Child Guidance Clinics situated at the Institute of Mental Health or Health Promotion Board. This may be done via direct referral or school counsellors through the REACH (**R**esponse, **E**arly intervention and **A**ssessment in **C**ommunity mental **H**ealth) Programme.⁽²⁸⁾

CONCLUSION

We must not forget our children while we ourselves try to cope with this pandemic. This is extremely challenging. Children are much more vulnerable in many ways, especially those who are already at risk due to suboptimal family or financial backgrounds. We hope to increase awareness of these issues among community healthcare providers. With a heightened index of suspicion for the aforementioned issues during routine health-related encounters with any child, children who are at risk can be identified earlier. This gives us a chance to reduce their exposure to adverse childhood experiences, which have been shown to elevate the risk of

disease in adulthood,⁽²⁹⁾ which in turn will leave a long-lasting mark upon their health outcomes in the future. We can take this opportunity to teach children resilience and adaptability. We should also be aware of the multitude of available resources for parents, children and healthcare providers. Amidst the buzz surrounding the direct effects of the pandemic on our mortality and morbidity, let us not neglect the possible long-lasting impact on our children.

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