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Mass masking in the COVID-19 epidemic: people need guidance

As the spread of coronavirus disease 2019 (COVID-19) outside China is accelerating, we urge policy makers to reconsider the role of masking.

The non-specific symptoms at early stages of COVID-19 and absence of clear transmission links have defied conventional containment strategy by case isolation and contact quarantine.¹ So far, only compulsory social distancing, coupled with mass masking, appears to be successful, at least temporarily, in China. However, whether such an approach is sustainable in the Chinese economy or enforceable in other social systems is doubtful.

WHO recommends against wearing masks in community settings because of lack of evidence.² However, absence of evidence of effectiveness should not be equated to evidence of ineffectiveness, especially when facing a novel situation with limited alternative options. It has long been recommended that for respiratory infections like influenza, affected patients should wear masks to limit droplet spread. If everyone puts on a mask in public places, it would help to remove stigmatisation that has hitherto discouraged masking of symptomatic patients in many places.³ Furthermore, transmission from asymptomatic infected individuals has been documented for COVID-19, and viral load is particularly high at early disease stage.^{4,5} Masking, as a public health intervention, would probably intercept the transmission link and prevent these apparently healthy infectious sources.

Global shortage of disposable surgical masks is a real and expanding problem. So-called mass mask panic has occurred irrespective of advice from public health authorities. Panic buying of masks in Hong Kong has gone unresolved for more than 30 days, and a similar situation seems to be developing in

Italy. People wear masks to protect themselves in close person-to-person contacts, but unintentionally, they are protecting each other through source control. Disposable surgical masks and their technical specifications were designed specifically for the protection of health-care workers during occupational exposures. Cloth masks were used by surgeons successfully during operations before disposable masks were available. In real life, most people in all seriously affected areas are reusing their disposable masks. All governments must prepare to handle the probable mass panic and explore other sustainable alternatives to the disposable masks for effective source control in community settings.

With the imminent pandemic, health authorities need to decide rapidly whether they should adopt mass masking in their own localities and make advance preparations to avoid confusion and chaos in the anticipated challenges ahead.

We declare no competing interests.

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Mitigate the effects of home confinement on children during the COVID-19 outbreak

In response to the coronavirus disease 2019 (COVID-19) outbreak, the Chinese Government has ordered a nationwide school closure as an emergency measure to prevent spreading of the infection. Public activities are discouraged. The Ministry of Education estimates that more than 220 million children and adolescents are confined to their homes; this includes 180 million primary and secondary students and 47 million preschool children.¹ Thanks to the strong administrative system in China, the emergency home schooling plan has been rigorously implemented.² Massive efforts are being made by schools and teachers at all levels to create online courses and deliver them through TV broadcasts and the internet in record time. The new virtual semester has just started in many parts of the country, and various courses are offered online in a well organised manner. These actions are helping to alleviate many parents' concerns about their children's educational attainment by ensuring that school learning is largely undisrupted.

Although these measures and efforts are highly commendable and necessary, there are reasons to be concerned because prolonged school closure and home confinement during a disease outbreak might have negative



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A Chinese child studies from home during the COVID-19 outbreak

effects on children's physical and mental health.^{3,4} Evidence suggests that when children are out of school (eg, weekends and summer holidays), they are physically less active, have much longer screen time, irregular sleep patterns, and less favourable diets, resulting in weight gain and a loss of cardiorespiratory fitness.^{3,5} Such negative effects on health are likely to be much worse when children are confined to their homes without outdoor activities and interaction with same aged friends during the outbreak.

Perhaps a more important but easily neglected issue is the psychological impact on children and adolescents. Stressors such as prolonged duration, fears of infection, frustration and boredom, inadequate information, lack of in-person contact with classmates, friends, and teachers, lack of personal space at home, and family financial loss can have even more problematic and enduring effects on children and adolescents.⁴ For example, Sprang and Silman⁶ showed that the mean post-traumatic stress scores were four times higher in children who had been quarantined than in those who were not quarantined. Furthermore, the interaction between lifestyle changes and psychosocial stress caused by home confinement could further aggravate the detrimental effects on child physical and mental health, which could cause a vicious circle. To mitigate the consequences of home confinement, the government, non-governmental organisations (NGOs), the community, school, and parents need to be aware of the downside of the situation and do more to effectively address these issues immediately. Experiences learned from previous outbreaks can be valuable for designing a new programme to tackle these issues in China.⁷

The Chinese Government needs to raise the awareness of potential physical and mental health impacts of home confinement during this unusual period. The government should also provide guidelines and principles in effective online learning and ensure

that the contents of the courses meet the educational requirements. Yet it is also important not to overburden the students. The government might mobilise existing resources, perhaps involving NGOs, and create a platform for gathering the best online education courses about healthy lifestyle and psychosocial support programmes available for schools to choose from. For example, in addition to innovative courses for a better learning experience, promotional videos can be useful to motivate children to have a healthy lifestyle at home by increasing physical activities, having a balanced diet, regular sleep pattern, and good personal hygiene.⁸ To make these educational materials truly effective, they must be age-appropriate and attractive. They require professional expertise and real resources to create.

Communities can serve as valuable resources in managing difficulties of family matters. For instance, parents' committees can work together to bridge the needs of students with school requirements and to advocate for children's rights to a healthy lifestyle. Psychologists can provide online services to cope with mental health issues caused by domestic conflicts, tension with parents, and anxiety from becoming infected.⁷ Social workers can play an active role in helping parents cope with family issues arising from the situation, when needed. Such a social safety net could be particularly useful for disadvantaged or single-parent families,⁹ but action is needed to make it accessible to them.

Schools have a critical role, not only in delivering educational materials to children, but in offering an opportunity for students to interact with teachers and obtain psychological counselling. Schools can actively promote a health-conscious schedule, good personal hygiene, encourage physical activities, appropriate diet, and good sleep habits, and integrate such health promotion materials into the school curriculum.³

In the event of home confinement, parents are often the closest and best

resource for children to seek help from. Close and open communication with children is the key to identifying any physical and psychological issues and to comforting children in prolonged isolation.^{10,11} Parents are often important role models in healthy behaviour for children. Good parenting skills become particularly crucial when children are confined at home. Besides monitoring child performance and behaviour, parents also need to respect their identity and needs, and they need to help children develop self-discipline skills. Children are constantly exposed to epidemic-related news, so having direct conversations with children about these issues could alleviate their anxiety and avoid panic.^{10,11} Home confinement could offer a good opportunity to enhance the interaction between parents and children, involve children in family activities, and improve their self-sufficiency skills. With the right parenting approaches, family bonds can be strengthened, and child psychological needs met.¹²

Since the COVID-19 epidemic is no longer confined to China,¹³ school closure and home confinement-related issues also become relevant in other affected countries. As children are vulnerable to environmental risks and their physical health, mental health, and productivity in adult life is deeply rooted in early years,¹⁴ close attention and great efforts are required to address these emergency issues effectively and avoid any long-term consequences in children. Any sustainable programme must involve local professionals to culturally adapt the interventions to the administrative system and to the regional and community environment, and it must develop contextually relevant material for children and adolescents.⁷ Finally, children have little voices to advocate for their needs. The latest Commission¹⁴ on the future of the world's children urges a holistic strategy in preparing for the uncertainty that all children are facing. It is the responsibility and keen interests of all stakeholders, from

governments to parents, to ensure that the physical and mental impacts of the COVID-19 epidemic on children and adolescents are kept minimal. Immediate actions are warranted.

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Has China faced only a herald wave of SARS-CoV-2?

The attack rate of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) calculated by mathematical models, from estimates of the basic reproduction number, R_0 , of 2–3, suggests that 50–60% of the population should eventually be infected because the population seems to be entirely naive to the new virus.¹ The observed attack rate on board the *Diamond Princess* cruise ship remained slightly below 20% (705 of 3711 passengers and crew members became infected).¹ It is of utmost importance to know whether the SARS-CoV-2 outbreak in China is subsiding, as local authorities and the entire international community might wish. With 80 026 COVID-19 cases officially reported from China as of March 2, 2020,² the proportion of the population affected remains far from 50%, or even 20%, of China's 1.4 billion people. Has China just experienced a herald wave, to use terminology borrowed from those who study tsunamis, and is the big wave still to come?

Serosurveys can help answer these questions precisely.³ To serosurvey

the outbreak would involve testing sera of blood samples from the most representative sample of the population at the epicentre of the epidemic, Wuhan. Serology analysis with neutralising antibodies from the 1000 people could allow for the rate of SARS-CoV-2 infections to be estimated with good accuracy. This rate could be extrapolated to the city's entire population and thus inform more precisely whether the provisional attack rate during this period was a few cases per thousand or perhaps affected 1–2% of the population, 20%, or more. Serosurveys should be seen as polls before elections; they can be repeated several times,³ week after week, to monitor the epidemic precisely.

There is no reason to wait for the end of the epidemic before doing serosurveys. The results would be tremendously informative to China, first and foremost, and to the entire international community, on the risk of big secondary epidemic waves.

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Full spectrum of COVID-19 severity still being depicted

Chaolin Huang and colleagues¹ first reported the clinical features of patients infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2; previously known as 2019-nCoV),



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