



Early View

Correspondence

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Face masks, respiratory patients and COVID-19

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Several countries have applied exemptions of respiratory patients on the compulsory use of face masks indoor and outdoor during the coronavirus disease 2019 (COVID-19) pandemic. It must be strongly stated that such exemption is not evidence-based, and it may carry increased risk of personal infection to the estimated 544.9 million people worldwide suffering a chronic respiratory disease.ⁱ

Beyond hand hygiene and physical distancing, face masks are fundamental for personal and group protection to prevent the spread of infection both in patients and in their caretakers.ⁱⁱ

Ultimately, human behavior is certainly the main determinant of the spread or containment of the disease. Considering that the virus spreads largely through the respiratory tract, experts are proposing that beyond protecting others, face masks help their wearers. In the new (although not fully demonstrated) COVID-19 inoculum theory, it is proposed that universal masking reduces the inoculum or dose of the virus for the wearer, leading to milder or asymptomatic infection.^{iii,iv}

Many countries have already defined national policies to implement a compulsory use of face masks (**Figure 1**).^v Further, several countries have instituted penalties for non-compliant individuals. But there are exceptions. In Spain since May 21, 2020,^{vi} face masks must be worn in the “public street, in open-air spaces and any closed space that is for public use or that is open to the public, where it is not possible to maintain [an interpersonal] distance of two meters”. According to the Spanish order, ***people with respiratory problems, or those who cannot wear masks for other health reasons or due to a disability, are exempt from wearing them.*** In the US, certain "Face Mask Exemption Cards" are already circulating.^{vii}

At this stage, it is important to address the question: Are there medically justified exemptions for face coverings?.

Relieving respiratory patients from the obligation to wear masks could be highly deleterious for them, since by definition those patients with respiratory conditions who cannot tolerate face masks are at higher risk of severe COVID-19.

Although facemasks undoubtedly enhance breathing resistances, the degree of discomfort experienced by some patients is influenced by its affective component.

Dyspnea is a sensation, and supratentorial affects such as anxiety and claustrophobia might cause the added sensation of 'being unable to breathe' with a mask. Indeed, the WHO states that face masks of breathable material, worn properly, will not lead to health problems.

Whether persons not wearing facemasks play a role in the persistence or resurgence of COVID-19 in many countries is not firmly established. We must acknowledge that there is not a body of evidence (yet) to support the proposed approach of universally recommending facemasks in public. Any statement suggesting that all types of face masks have a protective role, needs to be accompanied by the underpinning need to differentiate their diversity.

Similar to 'drugs', the efficacy of face masks depends highly on a number of characteristics, some of which have been formally assessed and some have not or cannot easily (e.g. comfort, social

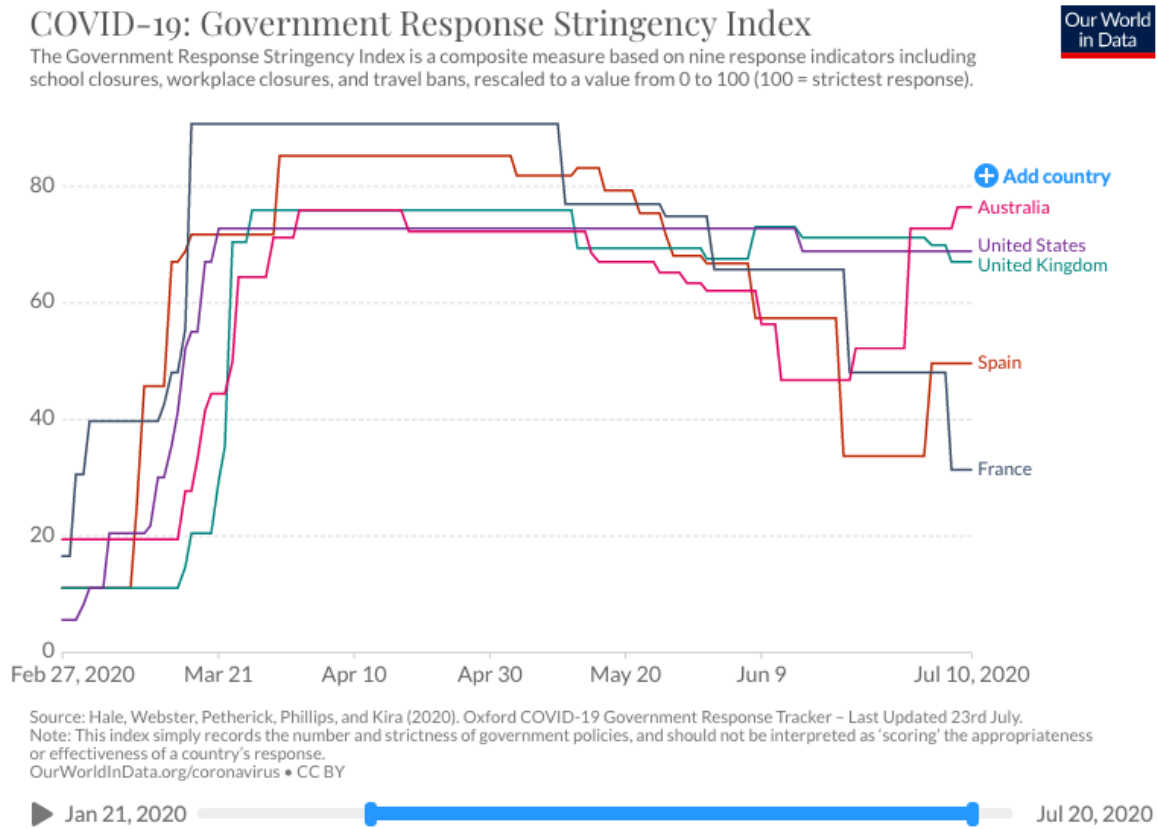
acceptance, ...). The second waves being experienced globally, despite widespread masking, confirm masks are insufficient interventions. With all likelihood, it is about a large number of issues, not just masks.

At this time, professional associations have not provided clear recommendations on exemptions (or lack thereof). Within the Respiratory Effectiveness Group, we do not see asthma, COPD and other respiratory diseases as an impending factor to wear a face mask, unless the person is in active acute respiratory distress, in which case going out in public is not advised. Therefore, we propose the cautionary step not to exempt respiratory patients on the compulsory use of face masks.

Our duty remains to encourage patients to follow strictly the measures aiming at protecting them from getting or transmitting the disease. Adaptations of their activities (less time spent in public spaces) may be required to decrease the time during which they need to wear a face mask, and whenever possible other protective measures could be privileged (social distancing).

COVID-19 is a new, devastating, but potentially preventable disease, and a key priority is to identify the combination of measures that minimizes societal and economic disruption while adequately controlling infection.^{viii} It is crucial for patients with respiratory conditions to wear face masks when they are in public spaces where social distancing cannot be applied easily.^{ix} Developing new models of face masks dedicated at patients with impaired lung function could be of help.

Figure. Government Response Stringency Index (GCSI) in selected countries, by calendar time.



Footnote: GCSI ranges from 0 to a 100, and includes face mask population coverage

References

ⁱ GBD Chronic Respiratory Disease Collaborators. Prevalence and attributable health burden of chronic respiratory diseases, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet Respir Med*. 2020 Jun; 8 (6):585-596. doi: 10.1016/S2213-2600(20)30105-3.

ⁱⁱ Verbeek JH, Rajamaki B, Ijaz S, Sauni R, Toomey E, Blackwood B, Tikka C, Ruotsalainen JH, Kilinc Balci FS. Personal protective equipment for preventing highly infectious diseases due to exposure to contaminated body fluids in healthcare staff. *Cochrane Database Syst Rev*. 2020 May 15;5:CD011621. doi: 10.1002/14651858.CD011621.pub5. PMID: 32412096

ⁱⁱⁱ Gandhi M, Beyrer C, Goosby E. Masks Do More than Protect Others during COVID-19: Reducing the Inoculum of SARS-CoV-2. *Journal of General Internal Medicine* 2020 (in press).

^{iv} Guallar MP, Meiriño R, Donat-Vargas C, Corral O, Juvé N, Soriano V. Inoculum at the time of SARS-CoV-2 exposure and risk of disease severity. *Int J Infect Dis*. 2020;97:290-292. doi:10.1016/j.ijid.2020.06.035

^v Coronavirus government response tracker. University of Oxford website. [Accessed June 24, 2020]. <https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker>

^{vi} Estado de alarma. Medidas urgentes. Boletín Oficial del Estado: miércoles 20 de mayo de 2020, Núm. 142. <https://www.boe.es/boe/dias/2020/05/20/pdfs/BOE-A-2020-5142.pdf> [Accessed July 29, 2020].

^{vii} Who is exempt from wearing a face mask during the COVID-19 pandemic? Experts say very few people qualify for a medical exemption. <https://abcnews.go.com/US/exempt-wearing-face-mask-covid-19-pandemic/story?id=71871707> [Accessed July 26, 2020].

^{viii} Wiersinga WJ, Rhodes A, Cheng AC, Peacock SJ, Prescott HC. Pathophysiology, Transmission, Diagnosis, and Treatment of Coronavirus Disease 2019 (COVID-19): A Review. *JAMA*. 2020 Jul 10. doi: 10.1001/jama.2020.12839. Online ahead of print. PMID: 32648899.

^{ix} Esposito S, Principi N, Leung CC, Migliori GB. Universal use of face masks for success against COVID-19: evidence and implications for prevention policies. *Eur Respir J*. 2020 Jun 18;55(6):2001260. doi: 10.1183/13993003.01260-2020. Print 2020 Jun.