

Weak evidence for strong pandemic interventions: a 2019 WHO warning for the current COVID-19 crisis

COVID-19
crisis

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Received 29 April 2020
Revised 1 May 2020
4 May 2020
5 May 2020
Accepted 6 May 2020

Abstract

Purpose – Social distancing. Travel bans. Confinement. The purpose of this paper is to document that more than 50% of the world population is affected by World Health Organization (WHO) recommendations for the 2020 coronavirus crisis. The WHO admits that the evidence quality for the effectiveness of these recommendations is low or very low.

Design/methodology/approach – This self-contradiction is confirmed by a WHO document published in October 2019 as well as supporting documentation from the European Centre for Disease Prevention and Control.

Findings – This viewpoint concludes that an obvious resolution of this self-contradiction would be to limit restrictions and interventions to those for whose effectiveness the WHO's document reported that there was at least moderate evidence.

Originality/value – A shift of focus is suggested from discussions on the commensurability and social costs of anti-COVID-19 interventions to their actual effectiveness.

Keywords COVID-19, Coronavirus, Pandemic, Evidence, Non-pharmaceutical interventions

Paper type Research paper

Introduction: a therapeutic double bind

There is little doubt that many, if not most, of the current problems of the COVID-19 crisis are caused by non-pharmaceutical interventions (NPIs) rather than by the virus itself. This collateral damage of the “war against a virus” includes the confinement of more than 50% of the world population (Euronews, 2020), an “asphyxiation of the mobility of people, goods, and capital” (Correia, 2020), an economic crisis that could push half a billion people worldwide into poverty (Sumner *et al.*, 2020) and the most serious threat to freedom of opinion in decades.

Voices concerning whether the NPIs are worse than the disease are, if not entirely silenced, swiftly disqualified as misguided or cynical, whereas the pursuit of the ultimate end of the still-dawning 21st century – life extension (Harari, 2017, p. 24f) – naturally justifies all means. The World Health Organization (WHO) regional director for Europe, therefore, encounters little resistance when he declares:

Now is not the time to relax measures [. . .]. It is the time to once again double and triple our collective efforts to drive towards suppression with the whole support of society. (France 24, 8 April 2020)

Arguments for the precedence of life over all other considerations are both popular and robust, and would remain so even if, as mounting evidence suggests (Correia, 2020; Roth



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et al., 2020; Streeck *et al.*, 2020), the coronavirus turns out to be hardly more dangerous than an influenza virus. In fact, the more systematically the two viruses' disease burdens are compared, the more we begin to realise how grim a reaper influenza has been all these years. If the WHO (WHO, 2017) is right that influenza accounts for "up to 650,000 deaths annually", and if all these lives could be saved by precisely the same measures as those implemented in the current COVID-19 crisis, then why would we not maintain or extend these measures to prevent as many deaths from existing and future strains of influenza as possible, too?

Supporters and sceptics of strong NPIs disagree on the commensurability and feasibility of the interventions already implemented and those proposed. But both camps' implicit assumption is that these NPIs are truly effective.

Yet, this assumption has been contested by none other than the WHO itself, most recently in a 2019 document (WHO, 2019a, p. 2), which reports that the "evidence base on the effectiveness of NPIs in community settings is limited, and the overall quality of evidence was very low for most interventions" such as contact tracing, isolation, quarantine or closures of schools, workplaces and borders. The WHO (2019a, 2019b) defines those measures as *effective* which mitigate the risk and impact of epidemics or pandemics.

This viewpoint, therefore, reports and draws on this WHO document to raise the concern that more than half of the planet's population is experiencing the severe side effects of WHO NPI recommendations, for most of which the WHO itself says the evidence quality is low or very low. This viewpoint concludes that an obvious resolution of this self-contradiction would be to limit the restrictions to those recommendations (such as hand hygiene and mask usage) for whose effectiveness the WHO's October 2019 document reported at least moderate evidence (mainly in health-care settings).

WHO 2019: weak evidence for non-pharmaceutical pandemic interventions

Published in October 2019, the WHO document "Non-pharmaceutical public health measures for mitigating the risk and impact of epidemic and pandemic influenza" (WHO, 2019a) reads like a prophecy of not only the current coronavirus pandemic but also those NPIs and measures that have been implemented by governments or discussed in the mass media. With the aim of providing "recommendations for the use of NPIs in future influenza epidemics and pandemics based on existing guidance documents and the latest scientific literature" (WHO, 2019a, p. 1), the document evaluates the benefits of four types of NPIs:

- (1) *Personal protective measures* such as adequate hand hygiene, respiratory etiquette (mainly referring to recommended coughing or sneezing behaviour) and the use of face masks.
- (2) *Environmental measures*, including the cleaning of surfaces or objects or the use of ultraviolet light, alternative ventilation patterns or different levels of humidity to inactivate or destroy viruses.
- (3) *Social distancing measures* such as contact tracing, the isolation of sick and the quarantining of exposed individuals, school and workplace closures and general crowding avoidance measures.
- (4) *Travel-related measures* such as travel advices or warnings, airport entry and exit screenings, travel restrictions within countries and international border closures.

Based on this assessment, the WHO concludes that, in the case of a "pandemic defined as a global epidemic caused by a new influenza virus to which there is little or no pre-existing

immunity in the human population” (WHO, 2019a, p. 3), all personal protective measures (except for face masks for the general public), the isolation of sick persons and travel advice are recommended at any severity level. These interventions should be supplemented by crowding avoidance measures at a moderate severity level and by face masks and school closures at high severity levels. Workplace closures and internal travel restrictions are recommended only for an extraordinarily severe pandemic. The WHO states that contact tracing, the quarantine of exposed individuals, airport entry and exit screenings and border closures are “(n)ot recommended in any circumstances” (WHO, 2019a). Apparently, numerous governments are fighting a WHO-declared pandemic with measures that the WHO itself has declared ineffective.

Even more remarkable, however, is the evidence base of the remaining recommended interventions. In the executive summary, the WHO states that their:

[. . .] document provides recommendations for the use of NPIs in future influenza epidemics and pandemics based on existing guidance documents and the latest scientific literature. The specific recommendations are based on a systematic review of the evidence on the effectiveness of NPIs [. . .]. The information provided here will be useful for national authorities that are developing or updating their plans for mitigating the impact of influenza epidemics and pandemics (WHO, 2019a, p. 1).

The desired policy impact of the recommendations is clear. Yet their evidence base is less so. The “Annex: Report of systematic literature reviews” (WHO, 2019b) provides details regarding the scientific foundations of the NPI impact assessment presented in the main document (WHO, 2019a), including the design and outcomes of the academic database and literature search and review procedure. The results are then combined in tables such as Table 1.

Table 1 describes a number of multifaceted interventions and their reported impact. Yet the most remarkable column is at the far right: GRADE evidence. The WHO assesses the quality of the collected evidence using Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach, which has four grades: very low, low, moderate and high. In other words, the evidence for the effectiveness of all interventions in Table 1 received the lowest possible grade.

Table 1 is typical for the “Annex: Report of systematic literature reviews”. In fact, the WHO concludes that the evidence quality provided by the vast majority of NPI impact studies is low or very low. The only cases of moderate and the one case of high evidence pertain to the protective effects of hand hygiene and mask usage (WHO, 2019a, p. 13f; mainly in a health-care setting [WHO, 2019a, p. 11]). The rest of the annex pertains to observational studies and simulations.

Consequently, the WHO itself admits that there is actually little to no evidence for its recommendations for the other NPI in general and severe interventions such as travel restrictions and social distancing measures in particular.

The WHO document and its annex are also not the only texts to report on the low to non-existent benefits of very similar sets of NPIs. The European Centre for Disease Prevention and Control’s (ECDC) “Guide to Public Health Measures to Reduce the Impact of Influenza Pandemics in Europe”, for example, contains similar tables (ECDC, 2009, p. 3ff) that report on minor or unproven benefits of particularly the drastic social distancing measures and travel restrictions adopted in the current crisis. Like the WHO, however, the ECDC did not let poor evidence quality prevent it from promoting these measures in its guide’s executive summary, which also features an early version of a now notorious chart (Figure 1).

Table 1.
Summary of
epidemiological
studies

Author, year published	Influenza strain or transmissibility (r ₀)	Type of study	Study setting and population setting	Intervention	Results and findings	GRADE evidence
Chu C, 2012 (83)	A(H1N1)pdm09	Outbreak investigation	Outbreak in a physical training camp in China with 3,256 persons	Combination of isolation with other interventions, including oseltamivir treatment and prophylaxis, cancellation of training and group activities, face mask usage, ventilation and disinfection (implemented within a few days of surge in ILI)	(1) 72.7% clinical cases were reported before intervention, 27.3% after intervention (2) The clinical attack rate recorded for the outbreak was 18.2%, while the projected attack rate in absence of previous exposure, immunity and any interventions was 80.9%.	Very low
Gaillat J, 2008 (84)	Seasonal	Outbreak investigation	Outbreak in elderly home with 81 residents in summer (recorded attack rate of 39.5%)	Sick residents were immediately isolated, and face masks, oseltamivir treatment and post-exposure prophylaxis were given to residents and staff	No new case was reported among residents and staff within two days of intervention	Very low
Markel H, 2007 (85)	1918 pandemic H1N1	Analysis of historical data	Forty-three large cities in the USA; used historical mortality data from the US Census Bureau and other historical archival documents	Combination of SC, public gathering bans and isolation and quarantine (enforced and mandated respectively)	(1) All 43 cities implemented at least one intervention, and 15 cities implemented all three interventions. Cities that started implementation earlier had lower peak mortality and total mortality	Very low

(continued)

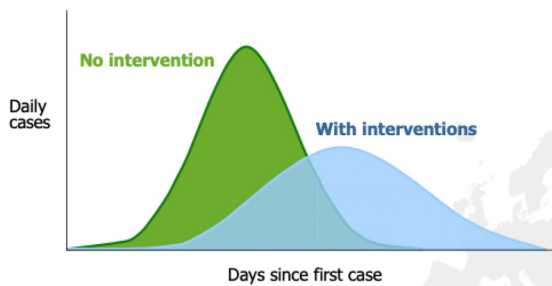
Author, year published	Influenza strain or transmissibility (r_0)	Type of study	Study setting and population setting	Intervention	Results and findings	GRADE evidence
Vera DM, 2014 (86)	A(H1N1)pdm09	Outbreak investigation, stochastic model	Outbreak on a navy ship with 355 crews	Suspected IILI cases were placed in isolation; active case finding, face mask usage, hand hygiene and antiviral provision	<p>(2) Excess death rate in New York decreased to baseline when isolation and quarantine were implemented; similarly, in Denver when SC, isolation and quarantine were implemented.</p> <p>(1) Significant reduction in reproduction number during implementation of interventions (54.4%, from 1.55 to 0.7). The projected reproduction number without isolation was 4.5</p> <p>(2) Clinical attack rate recorded was 23.9%, while the projected rate was 97%.</p>	Very low

Source: WHO (2019b, p. 43)

Table 1.

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- Delay and flatten epidemic peak
- Reduce peak burden on healthcare systems and threat to other essential systems through high levels of absenteeism
- Somewhat reduce total number of cases
- Buy a little time



Source: ECDC (2009, p. 1)

Figure 1.
Objectives of
applying public
health measures
during a pandemic

Figure 1 is accompanied by a list of familiar arguments for the equally familiar range of measures:

including personal actions, like hand-washing and mask-wearing, and pharmaceutical interventions [...] and, late in the pandemic, specific vaccines, as well as community social distancing measures. It is thought by many that combinations of measures will be even more effective than single measures [...]. Both modelling work and common sense suggest that early interventions will be more effective than waiting until a pandemic is well advanced.

It is hard to imagine that measures like those within the category of social distancing would not have some positive impact by reducing transmission of a human respiratory infection spreading from human to human via droplets and indirect contact. However, the evidence base supporting each individual measure is often weak. It is also unclear how a number of them will interact. Specifically, will the effect of social distancing measures be cumulative? In some cases this lack of clarity is due to a lack of research [...]. (ECDC, 2009, p. 1)

Even more so than the WHO document, the ECDC report's summary tables and the tonality and wording of its executive summary reflect the clear lack of evidence for the benefits of the proposed measures. Yet the proposals have not changed, even though ten years of research between the ECDC (2009) and the WHO (2019a, 2019b) documents failed to make the evidence for them stronger.

Conclusions: an obvious resolution

"We found that there is a limited evidence base on the effectiveness of non-pharmaceutical community mitigation measures" (WHO, 2019b, p. 6). This anticipated impact self-assessment of the WHO-prescribed and governmentally administered therapies for the coronavirus pandemic is a euphemism.

Last October, the WHO (2019a, 2019b) found moderate evidence for the effectiveness of just two NPIs: hand hygiene and face masks (mainly in a health-care setting). It graded the evidence for all other measures – including contact tracing, lockdowns, social distancing and travel restrictions – low or very low.

This year, however, the very same WHO has recommended, on a global scale, the implementation of precisely those NPIs for the effectiveness of which it failed to find sufficient evidence just a few months before.

The fundamental tension between these two messages and the resulting double bind cannot be avoided simply by claiming that the 2019 WHO assessment pertains to the management of pandemic influenza and that the COVID-19 pandemic is caused by an unknown and probably much more dangerous virus. On the one hand, the WHO assessment explicitly pertains to a new virus “to which there is little or no pre-existing immunity in the human population” (WHO, 2019a, 2019b, p. 3). On the other hand, if the 2019 assessment pertained to only influenza pandemics, why would the 2019 list of obviously dubious anti-influenza pandemic measures be essential for the management of the supposedly more dangerous 2020 coronavirus pandemic?

The obvious solution to this self-contradiction would be to limit the restrictions to those recommendations for whose effectiveness the WHO’s October 2019 document reported that there was at least moderate evidence. The less obvious solution would be to try to prove the hypothesis that ineffective “interventions could be effective if implemented in combination” (WHO, 2019a, p. 4) by what might, in hindsight, be perceived as the biggest, most expensive and probably even fatal social experiment in the history of mankind.

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Further reading

Neue Zürcher Zeitung (2020), "Interview: Petra gössi: 'Es wird zwei generationen dauern, bis wir die schulden wieder abgetragen haben'", 04 April.

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