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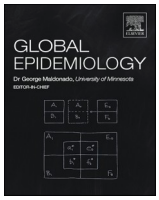

Commentary

Who is responsible for global health inequalities after Covid-19?

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Broadbent and Streicher [1] argue that the epidemiological community played a central role in contributing to global health inequalities by universally recommending lockdowns, including to low-income countries. They continue to argue that the negative effects of these recommendations, including especially "deprivation of livelihood; disruption of health services for other conditions; and disruption of education" were foreseeable, but that epidemiologists did not weigh these foreseeable consequences against their recommendations because they did not treat those consequences as "salient." In so doing, Broadbent and Streicher argue, epidemiologists put the interests of the richest and most privileged people in the world ahead of those of the poor.

Of course, all emergency measures are likely to be accompanied by negative effects. So, to argue that epidemiologists knowingly put the interests of the rich ahead of the poor, it does not suffice to show that they knew the policies they recommended were likely to benefit the rich but have serious negative consequences for the poor. Epidemiologists would also need to have known, or at least it would be necessary to show that they ought to have known, that the policies they recommended would also *fail to benefit* the global poor. Broadbent and Streicher show this by arguing that epidemiologists should have been able to foresee that "overcrowding and unavoidable non-compliance [with lockdown orders]" would make it impossible to achieve the massive reduction in social contact rates that epidemiological models were projecting would be necessary for lockdowns to be successful (i.e., a minimum 75% reduction in social contact rates, with anything less failing to push the basic reproduction number below 1). Thus, the thrust of their argument goes like this:

1. Epidemiologists played a central role in recommending lockdowns for not only high-income countries but also for low-income countries.
2. Epidemiologists knew, or should have known, that these policy recommendations would have very high costs and very low benefits for the global poor, especially.
3. Therefore epidemiology, as a discipline, bears some special degree of responsibility for the large increase in health inequalities that resulted from the measure they recommended.[1]

Broadbent and Streicher's conclusion is correct, but the argument can benefit from an added premise. How so? Suppose that I recommend to you that you jump out of a plane. And suppose that, indeed, but for my recommendation, you probably never would have jumped out of the plane. And suppose furthermore, that it is foreseeable to me that the harms of you jumping off the plane outweigh the benefits. Suppose, finally, that you do indeed jump out of the plane. Do I have some special degree of responsibility for the harms that ensue? Arguably, not if it was equally foreseeable to you as it was to me that the harms outweighed the benefits. But also arguably, my moral responsibility is higher if I am the pilot, and you have reason to think that your assessment of the costs and benefits is less reliable than mine.

Thus, a question we might want to ask is: should policy makers, journalists, pundits, and other non-experts who influenced policy *also have known* that the harms of lockdowns on the global poor would have outweighed the benefits? Or was it reasonable to defer to experts? Some reasonable amount of disagreement is possible here. On the one hand, it seems likely that everyone could foresee the negative effects of these recommendations. One does not need to be an epidemiologist to foresee that lockdowns would result in "deprivation of livelihood; disruption of health services for other conditions; and disruption of education." But the question of whether the benefit was attainable is less obvious. Here, the question is: could non-epidemiologists have foreseen that the purported benefits of lockdowns would be impossible to achieve for the global poor. It does seem relatively clear, in retrospect, that a 75% reduction in contact rate would be extremely hard to achieve for people

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[1] Broadbent and Streicher never use, exactly, the language of moral responsibility, but it is clearly implicit in what they write: investigating who, exactly, is "responsible" for the promotion of these policies and articulating the degree to which the discipline "allowed itself" to be represented as uniformly supporting these policies.

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who live in over-crowded slums. But it is less clear if it is reasonable to have expected non-epidemiologists to understand, very well, that achieving anything less than a 75% reduction in social contact rates would make lockdowns futile anyway (even according to the models). So one way to bolster Broadbent and Streicher's argument is to highlight the degree to which epidemiologists were uniquely well positioned with respect to understanding the degree to which the purported health benefits of their recommended interventions would be elusive for the global poor.

But perhaps a more powerful way to bolster their argument is to highlight the degree to which epidemiologists used rhetorically powerful models to make it difficult for non-experts to trust their own judgment on these matters. Indeed, when Broadbent [5] himself warned, in April 2020, that "The biggest public health risk in Africa is not Covid-19, but the consequences of regional and global measures designed to reduce its effect on public health. The cost-benefit analysis of these measures yields a different result in Africa than in Europe, North America and large parts of Asia,"[2] it was retorted by an epidemiologist that "Broadbent's cost-benefit analysis leaves out many of the costs, appeals to speculative data and is *not based on careful and detailed modelling of the sort that is needed for an actual cost-benefit analysis*." [2].

Indeed, much epidemiological modeling that came out in March and April of 2020 seemed to be specifically directed at over-riding the lay intuition that lockdown couldn't possibly be a good strategy in the developing world. Consider an Op-ed piece published in the New York Times by epidemiologists Natalie Dean and Carl Bergstrom that drew attention to the purported effect of "overshoot" that one sees in simple SEIR models of disease spread. [3]. In a series of companion tweets, Bergstrom [4] used this model specifically to overcome the intuition that lockdown was a poor choice for developing nations. He acknowledged in the thread that "in some countries [the harms of failure to achieve suppression] may be unavoidable. Some nations may simply lack the economic resources, technological capacity, and political will to contain the virus until a vaccine can be developed." Nevertheless, Bergstrom used an SEIR model to argue that, even though it would be unreasonable to expect, for example, India to lockdown until a vaccine was available, a 30-day lockdown period "reduces the total fraction infected from 90% to 70% by eliminating much of the overshoot" and that in India this "would save >5 million lives".

The rhetorical force of both of these passages is clear: ordinary intuition may suggest that lockdown is a poor choice in developing nations, but "detailed modeling" reveals otherwise. Indeed much of the epidemiological modeling that we saw in the spring of 2020 shared a single characteristic: it aimed to show that the exponential[3] nature of epidemic growth puts paid to lay intuitions about the relative costs and benefits of lockdowns. We see this both in Bergstrom and Dean's Op-ed and tweets, and in Reports 9 and 12 of the Imperial College COVID-19 Response Team, as well as many other places. Broadbent and Streicher draw attention to this themselves when they highlight the following feature of Report 9: "The difference between locking down at 0.2 deaths per 100,000 population per week and doing so at 1.6 is the difference between 1,858,000 and 10,452,000 deaths globally over 250 days." [6] This, in effect, makes the model *self-recommending*. It says: do not question the assumptions of this model, for if you do, the time it takes you to question it will cost >8 million lives. Again the moral is clear: only epidemiologists with skill in model-building have reliable opinions about whether the costs of lockdowns in the developing world will outweigh the benefits. Not you, but only I, can reliably determine if it is a good idea for you to jump out of the plane.

But the degree of certainty that epidemiologists attached to these conclusions was not warranted, even prospectively. In fact, conclusions like these, that massive differences in the casualty rate hinged on how quickly policy makers acted, are a direct consequence of two features of models. 1)That the contact rate could be brought down dramatically with lockdown orders and 2)That so long as the contact rate was above a very low number, the virus would grow exponentially until it burned itself out; that nothing but aggressive public health orders would ever slow the virus.

But in the Spring of 2020, there should have been, at the very least, tremendous uncertainty about whether this second feature, a feature on which the policy recommendations for the developing world *entirely* rested, was also a feature of the real world. There was plenty of evidence that many past epidemics, including influenza epidemics, came in waves, and that these waves were the result of natural phenomena. And there was plenty of evidence that corona viruses, in general, exhibit strong seasonal patterns [7,8]. By obscuring the reasonable degree of uncertainty one ought to have had about this central assumption, epidemiologists were using their models effect powerful rhetorical effect. This adds, one might argue, to the degree to which the epidemiological community bears a special moral responsibility for the increased global health inequalities that accrued during the Covid-19 pandemic.

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[3] Strictly speaking the simplest models of disease spread give rise to logistic growth, not exponential growth, but these are relatively indistinguishable until much of the population is infected.