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Cite this as: *BMJ* 2021;*373*:n1239  
<http://dx.doi.org/10.1136/bmj.n1239>  
Published:

## Measuring the impact of covid-19

### We must look beyond mortality to the wider burden of pandemic related harms

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Over the course of the covid-19 pandemic, daily releases of national statistics on cases and deaths have been widely reported and used to support interventions and judge the success or failure of control measures around the world.<sup>1</sup> However, differences in rates of testing and in reporting of deaths have led to uncertainty about whether national headline figures on deaths are directly comparable. Excess mortality is an alternative metric, which gives a measure of the number of deaths above that expected during a given time period and thus accounts for additional deaths from any cause during the pandemic, irrespective of how covid-19 deaths are defined.<sup>2</sup>

In the linked paper (doi:10.1136/bmj.n1137), Islam and colleagues present a comparison of excess mortality between 29 high income countries.<sup>3</sup> In modelling expected deaths for 2020, the authors account for age and sex differences between countries, as well as for seasonal and yearly trends in mortality over the five preceding years. According to their estimates, except for Norway, Denmark, and New Zealand, all countries examined experienced significantly more deaths than expected in 2020, with almost 1 million excess deaths in total and 94 400 excess deaths in the UK alone.

#### Role of covid-19 in excess mortality

Islam and colleagues found wide variation in the extent to which registered covid-19 deaths account for this increase in total excess deaths. In Israel and France, twice as many reported covid-19 deaths as excess deaths occurred, whereas reported covid-19 deaths accounted for only 20% of excess deaths in Lithuania and South Korea. The cause of this variation is unclear, but it may result from differences in access to testing and in both how covid-19 deaths are defined and how doctors complete death certificates,<sup>4</sup> leading to deaths being counted as related to covid-19 in some countries and not in others.

Alternatively, variation may arise from deficits in deaths from other causes. In addition to deaths caused directly by covid-19, deaths will have been caused indirectly by covid-19, through the economic and social effects of the pandemic and disruption to health systems. Admissions for acute coronary syndromes and referrals from primary to secondary care in the UK, for example, fell during the first wave of the pandemic, which may have indirectly contributed to increased deaths from non-covid-19 causes.<sup>5,6</sup> By contrast, reduced incidence of conditions such as influenza and changes in environmental factors such as air pollution may have indirectly contributed to lower deaths from some other causes.<sup>7,8</sup> The contribution of covid-19 to all

cause mortality is therefore difficult to define precisely, without a better understanding of how all causes of death changed during the pandemic.

#### Beyond excess mortality

Measuring excess mortality alone offers only partial insights into the impact of the covid-19 pandemic on the health of nations. If we are to truly understand and intervene to mitigate the impact of the pandemic, we must also look to quantify excess morbidity within and between nations. A focus on deaths alone gives only a partial picture of the impact of covid-19 on populations, particularly among younger people in whom death from covid-19 is rare. The importance of “long covid,” for example, has recently been highlighted, but the true burden of this condition has yet to be quantified, and policies are urgently needed to overcome its long term challenges.<sup>9</sup>

The covid-19 pandemic has resulted in widespread disruption to health systems across the world. Diagnostic and treatment pathways for cancer and other time sensitive conditions have been disrupted,<sup>10,11</sup> and the monitoring of long term conditions has often taken place through novel telemedicine platforms, if at all. By April 2021 more than 4.7 million people in England were waiting for hospital treatment, the highest number since records began.<sup>12</sup> Such disruption is likely to lead to poorer health and earlier deaths in countries across the world for many years to come, particularly where covid-19 remains endemic and where health services are unable to function normally. Establishing where health systems have fallen behind, and characterising the true extent of unmet need, is a critical step towards reducing these ongoing harms.

Islam and colleagues’ findings confirm the huge toll of the covid-19 pandemic on mortality in high income countries in 2020. However, its full impact may not be apparent for many years, particularly in lower income countries where factors such as poverty, lack of vaccines, weak health systems, and high population density place people at increased risk from covid-19 and related harm.<sup>13</sup> In the UK, life expectancy in lower socioeconomic groups has fallen in recent years, an inequality likely to be exacerbated by the covid-19 pandemic, without concerted action.<sup>14</sup> Finally, although mortality is a useful metric, policy informed by deaths alone overlooks what may become a huge burden of long term morbidity resulting from covid-19. An urgent need exists to measure this excess morbidity, support people with long term complications of covid-19, and fund health systems globally to tackle the backlog of work resulting from the pandemic.

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