Rapid Reviews COVID-19

Review 4: "Deaths of Despair and the incidence of excess mortality in 2020"

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RR:C19 Evidence Scale rating by reviewer:

- **Potentially informative.** The main claims made are not strongly justified by the methods and data, but may yield some insight. The results and conclusions of the study may resemble those from the hypothetical ideal study, but there is substantial room for doubt. Decision-makers should consider this evidence only with a thorough understanding of its weaknesses, alongside other evidence and theory. Decision-makers should not consider this actionable, unless the weaknesses are clearly understood and there is other theory and evidence to further support it.

Review:

The paper by Casey B. Mulligan seeks to understand whether the Coronavirus pandemic in 2020 has led to an elevated rate of so-called “deaths of despair” — those caused by drug abuse, alcohol abuse, and suicide (Case and Deaton, 2015). Because data on cause-specific mortality for 2020 has not yet been released, the author must assess this indirectly.

The question raised here is deeply important. As the author describes, there are plausible pandemic-associated factors that may have elevated the risk of “deaths of despair” as well as factors that may have decreased the risk. Ultimately it is an empirical question whether mortality from these causes of death increased in 2020. However, the indirect assessment made in this paper does not provide compelling evidence of such an increase.

The author finds a large number of excess deaths for men aged 15-54 not directly attributed to Coronavirus. This finding is striking and worthy of further study. However, the author’s broader conclusion that “the demographic and time patterns of the non-COVID excess deaths (NCEDs) point to deaths of despair rather than an undercount of COVID deaths” does not appear to follow from the empirical results shown in the paper, or to accord with my own preliminary analysis using other currently available data.

The main analysis calculates excess deaths by week for different demographic groups defined by sex and age. The exact method for estimating excess deaths differs slightly from that of the CDC but the main patterns appear similar. Deaths officially attributed to Coronavirus are then subtracted and the remainder is reported as “non-COVID

excess deaths." An estimate is then made of undercounting of Covid deaths for March and April, but for the remainder of the year, no additional adjustment is made for undercounting.

It is then shown that in the second half of 2020 non-Covid excess deaths are i) near zero for those over 85 and ii) substantial for men aged 15-54. The author argues that because deaths of despair are rare for the first group and common for the second that the non-Covid excess deaths are likely attributable to deaths of despair.

However, this analysis and argument selectively ignore mortality patterns of those aged 75-84 which appear inconsistent with the author's conclusions. In particular, Appendix Figures I and II show that the author's measure of non-Covid excess deaths is *also* large in the second half of 2020. As deaths of despair are also quite rare for those aged 75-84 these patterns appear inconsistent with the author's argument. The timing of the increases in these "non-Covid excess deaths" also closely track officially reported Covid deaths for that group, suggesting undercounting of Covid deaths is a plausible explanation for these patterns.

The 75-84 age group is also selectively excluded from the main analysis in Figure 4. Had this age group been included it seems likely that the stated finding that "Deaths of despair (drug overdose, suicide, alcohol) in 2017 and 2018 are good predictors of the demographic groups with NCEDs in 2020" would've been substantially weakened, if not reversed.

My own preliminary analysis of weekly mortality in 2020 from selected causes of death also casts doubt on the interpretation of non-Covid excess deaths as wholly or primarily representing deaths of despair. While the CDC has not released cause-specific mortality data for 2020 in full, they have released weekly estimates of deaths from a set of selected causes which represent potential comorbidities of Coronavirus. The CDC has also reported a quite simple estimate of cause-specific excess deaths by week for these select causes. These selected causes of death are "internal" and do not include causes of death usually termed deaths of despair. Notably, these estimates also do not count deaths for which Coronavirus was listed as the primary cause of death.

In an accounting sense, excess mortality from these selected internal causes appears to account for nearly all of the increase in non-Covid excess deaths in the second half of 2020 found by the author. Excess mortality from these causes increased from around 1,000 in the 22nd week of the year to around 4,000 by the 30th week of the year and remained above 2500 for nearly all remaining weeks analyzed by the author.

These estimates appear similar to the non-Covid excess death counts reported in Figure 2. Excess deaths from circulatory disease, Alzheimer's disease, and dementia alone reach a peak of 3,226 by the 29th week of the year and remained above 2,000 for nearly all of the remaining weeks analyzed by the author.

It, therefore, appears plausible, from this very preliminary analysis, that the "non-Covid excess deaths" are largely attributable not to deaths of despair but to these selected internal causes of death. This could represent undercounting of Covid deaths, or be due to other factors such as decreased hospital capacity and reduced access to healthcare. Of course, this also does not rule out the possibility that deaths of despair also increased in the second half of 2020, and that these increases were offset by declining mortality from other causes of death. It does however make it difficult to argue that all residual excess deaths should be attributed by default to the category "deaths of despair."

A definitive answer to the important question asked in this paper — whether the Coronavirus pandemic has also caused an increase in "deaths of despair" — will likely not be available until complete cause-specific mortality data is released for 2020. In the meantime, a more thorough analysis of the weekly cause-specific mortality for select causes which has been released could be beneficial. A comparison of cross-state patterns in excess deaths, by age and cause-of-death, could also be informative.