

# Health inequality among different economies during early phase of COVID-19 pandemic

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## Short Report

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# Abstract

**Background:** New corona virus outbreak originated in Wuhan, China, started in January 2020 is escalating as pandemic across the globe in March 2020. It causes unprecedented morbidity, shocked health systems and the supply chains in new epicenters such as Italy, Spain and the US., claiming thousands of lives. Meanwhile, the pandemic is reaching swiftly and silently, to low-income countries where international medias cover less. How likely health outcomes among the countries with different economies may differ during the pandemic has not been reported yet.

**Method:** We conducted analysis of COVID-19 deaths comparing case fatality rate (CRF) among countries with different income categories, applying COVID-19 global data from European Centre for Disease Control including 199 countries' data as of 31 March 2020, in the early phase of pandemic. We categorized countries into high income countries (HIC), upper-middle income countries (UMIC), lower middle-income countries (LMIC) and low-income countries (LIC) according to World Bank classification by income as of 2020.

**Result:** Statistically, countries in different income groups are significantly different in term of new cases identified in last two weeks and case-fatality rate. (Manova P value <0.001). New tests and detected case numbers shot up in HICs where CFR shot up in LMICs and LICs. The results of this analysis pointed out an important gap among countries with different economic status during ongoing pandemic.

**Discussion:** In the HIC, contact tracing, testing capacity and outbreak response as well as clinical services are strong. In the LICs, there is low capacity of outbreak response which is reflected by the significantly lower number of diagnosis tests. Consequently, reported number of COVID-19 cases in LICs may not reflect the actual burden of the pandemic. Without effective prevention, the pandemic can readily break into the weak health system, and over-burden the hospitals, and clinical services in poor countries.

**Conclusion:** This finding is showing health inequality between the rich and the poor being amplified by COVID-19 pandemic. Addressing such a gap though the local governance and integrated global responses will not only prevent unprecedented deaths, but also preserve the momentum towards SDGs

## Background

New corona virus outbreak originated in Wuhan, China, started in January 2020 is escalating as pandemic across the globe in March 2020.(1, 2) It causes unprecedented morbidity, shocked health systems and the supply chains in new epicenters such as Italy, Spain and the US., claiming thousands of lives. Meanwhile, the pandemic is reaching swiftly and silently, to low-income countries where international medias cover less. How likely health outcomes among the countries with different economies may differ during the pandemic has not been reported yet.

## Method

We conducted analysis of COVID-19 deaths comparing case fatality rate (CRF) among countries with different income categories, applying COVID-19 global data from European Centre for Disease Control including 199 countries as of 31 March 2020.(3) We categorized countries into high income countries (HIC), upper-middle income countries (UMIC), lower middle-income countries (LMIC) and low-income countries (LIC) according to World Bank classification by income as of 2020.(4) Stata version 16 (StataCorp, Special Edition College Station, Texas 77845 US) was applied to analyze the data. Ethical approval is not required using open source secondary data without identity.

## Result

Descriptive analysis showed obvious differences in new cases identified in previous two weeks overshooting in HIC whereas CFR overshooting in LMIC and LIC. (Figure 1). Statistically, countries in different income groups are significantly different in term of new cases identified in last two weeks and death rate. (Manova P value <0.001) This finding is showing health inequality between the rich and the poor being amplified by COVID-19 pandemic.

## Discussion

World Health Organization encouraged testing and identification of new cases.(5) Currently, relatively low number of new cases identified in LMIC and LIC may reflect either the start of the epidemic curve or low testing capacity.(2) Moreover, CFR indicated how vulnerable are the health systems to pandemic.

In the HIC, contact tracing, testing capacity and outbreak response as well as clinical services are strong. (6) In the LICs, there is low capacity of outbreak response which is reflected by the significantly lower number of diagnosis tests.(7) Consequently, reported number in LICs may not reflect the actual burden of the pandemic. Without effective prevention, the pandemic will readily break into the weak health system, and over-burden the hospitals, and clinical services.(8)

Mitigation and suppression measures interact with businesses, culture and health literacy in each population whereas testing capacity and health service resilience really depend on economic status. These inevitable temporary measures also will hinder many of LIMCs and LICs in the journey of sustainable development goals (SDGs).

The results of this analysis pointed out an important gap among countries with different economic status during ongoing pandemic. Addressing such a gap though the local governance and integrated global responses will not only prevent unprecedented deaths, but also preserve the momentum towards SDGs.

## Conclusion

To turn down the pandemic curve is urgent global target. Further, seriously challenged health services and civil participation will leave vulnerable populations in profound death, poverty, hunger and chaos.

Therefore, we call for international collaborative efforts to save the humanity and leaving no one behind towards SDGs.

## Declarations

Ethics approval and consent to participate: Not required as the data is from open source

Consent for publication: Not required as the data is from open source

Availability of data and material: Upon request, the data set used in analysis will be delivered.

Competing interests: none

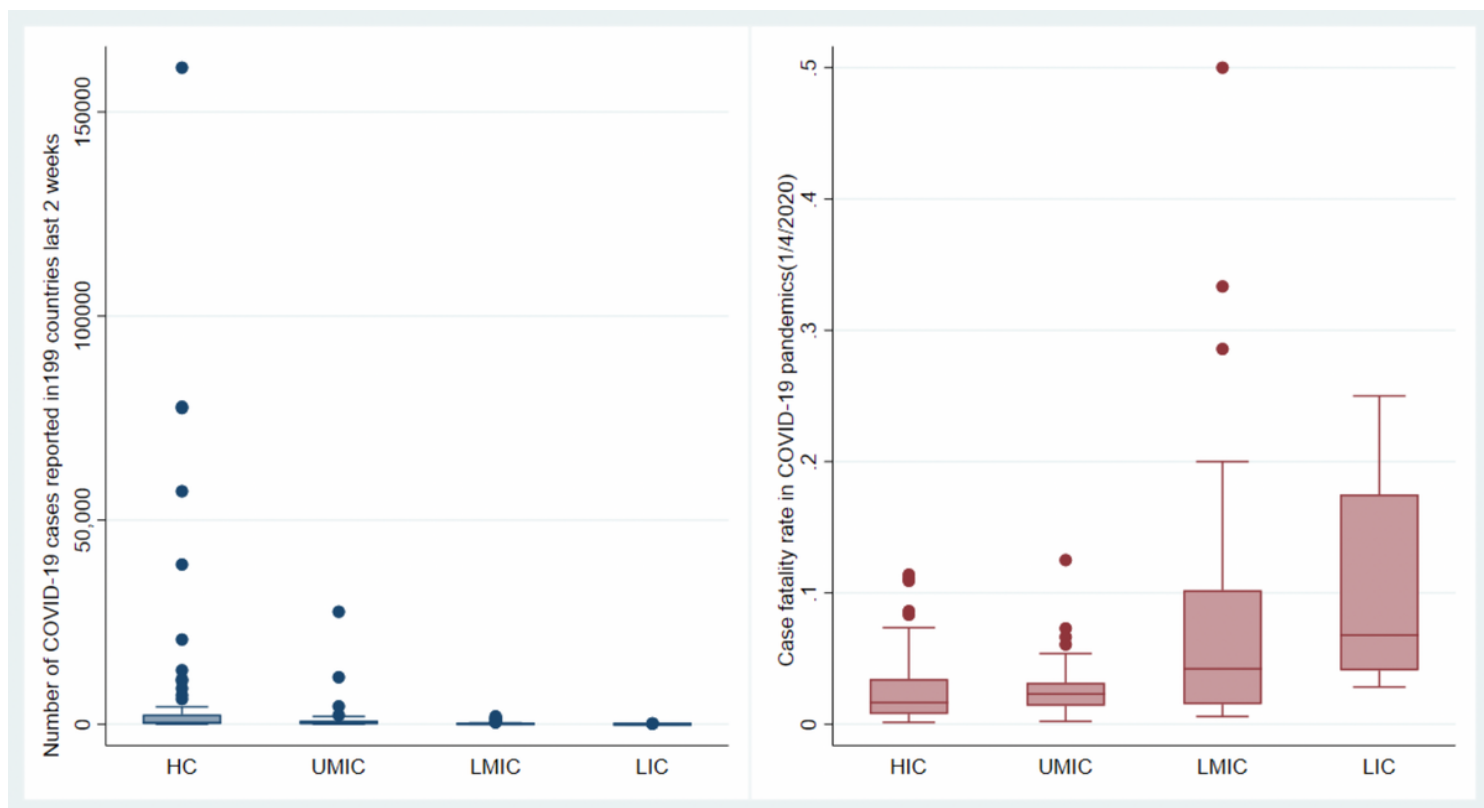
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## Figures



**Figure 1**

New cases of COVID-19 (left) and death rate (right) observed globally in countries with different income status as of 1 April 2020