

# Confirmed and Unreported COVID-19 Death Counts: An Assessment of Reporting Discrepancy

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## Abstract

**Objective:** We aim to assess the reporting discrepancy and the difference between confirmed and unreported COVID-19-like death counts.

**Study Design:** The study is based on time-series data.

**Methods:** We used publicly available data to explore the differences between confirmed death counts and deaths with Codiv-19 symptoms between March 8, 2020, and July 11, 2020, in Bangladesh.

**Results:** During the week ending May 9, 2020, the unreported COVID-19-like death count was higher than the confirmed COVID-19 death count; however, it was lower in the following weeks. On average, unreported COVID-19-like death counts were similar to the confirmed COVID-19 death counts during the same period. However, the reporting authority neither considers these deaths nor adjusts for potential seasonal influenza or other related deaths, which might produce incomplete COVID-19 data and respective mortality rates.

**Conclusions:** Documenting unreported deaths with COVID-19 symptoms needs to be included in provisional death counts because it is essential to estimate a robust COVID-19 mortality rate and to offer data-driven pandemic response strategies. An urgent initiative is needed to prepare an acceptable guideline for COVID-19 death reporting.

**Keywords:** COVID-19, Unreported COVID-19 Death, Provisional COVID-19 Death, Death Reporting Discrepancy, Bangladesh.

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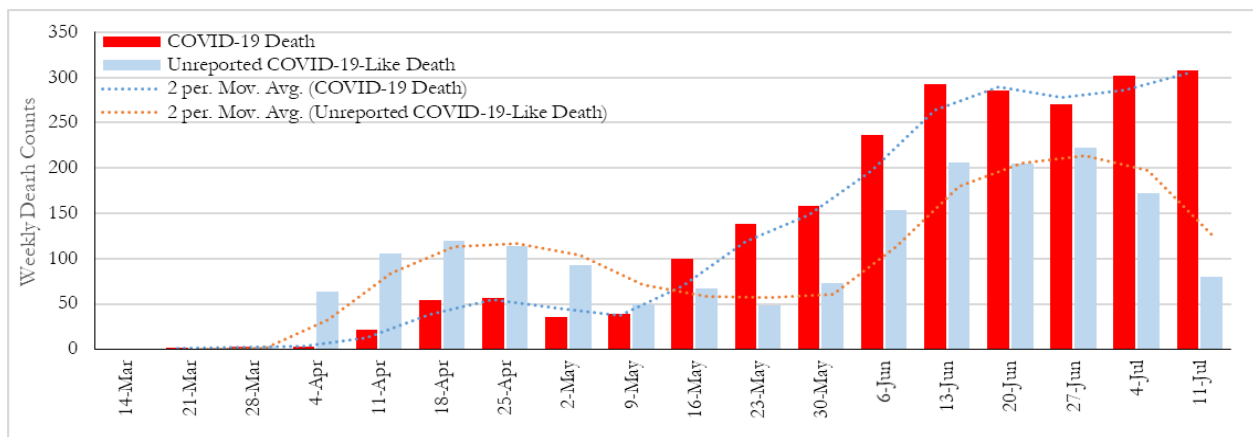
† An opinion article based on this manuscript has been published in *The Business Standard* on July 20, 2020, and you can find the piece [here](#).

## 1. Introduction

Underreporting COVID-19 death statistics, either by coincidence or deliberate, is not uncommon across the world, with countries including China and Italy adjusting their death counts after their first wave of the pandemic. Since the beginning of the pandemic, evidence has emerged that the Institute of Epidemiology Disease Control and Research (IEDCR), a government-affiliated reporting institute in Bangladesh, has reported coronavirus deaths without maintaining any reporting standard. However, the World Health Organization suggests including “death resulting from a clinically compatible illness in a probable or confirmed COVID-19 case”<sup>1</sup> for pandemic surveillance.

Between March 8 and July 11, 2020, a total of 2,304 COVID-19 deaths were officially recorded by the IEDCR.<sup>2</sup> By contrast, a total of 1,776 people died with symptoms consistent with COVID-19 (hereafter, unreported COVID-19 death) during the same period, according to the Centre for Genocide Studies (CGS) in Bangladesh.<sup>3</sup> That is 1,776 more deaths than were unreported, which raises questions about the reliability of the number of coronavirus deaths. On average, unreported COVID-19-like death counts were similar to confirmed COVID-19 deaths during the same period, which suggests a high-level discrepancy in COVID-19 death reporting.

This has potential research and policy implications regarding the COVID-19 mortality rate and pandemic response strategies based on actual death counts and mortality. Documentation of both confirmed and unreported death counts by the responsible reporting authority have become essential. We, therefore, assessed and compared confirmed and unreported death counts to explore any reporting discrepancy in the absence of a practical COVID-19 death reporting guideline.



**Fig.1:** Weekly confirmed and unreported COVID-19 death counts, March 8– July 11, 2020, BD. The horizontal axis indicates the last dates of respective weeks.

## 2. Data and Findings

We used publicly available data to explore trends and assess the differences between confirmed and unreported death counts between March 8, 2020, and July 11, 2020, in Bangladesh. Officially confirmed daily COVID-19 death data were obtained from [www.worldometers.info](http://www.worldometers.info). Unreported weekly COVID-19 like death counts were collected from the weekly report of the CGS.<sup>3</sup> The CGS has collected all information for COVID-19-like death counts from daily newspapers after retracing each case and removing duplication. We further calculated the weekly confirmed COVID-19 death counts to be comparable statistically with unreported death counts. We also estimated the two-week moving average of both death counts. Both descriptive and statistical analyses were conducted using Stata version 16.1.<sup>4</sup> Data and code used in the study will be available at Harvard Dataverse.<sup>5</sup>

Fig. 1 shows weekly counts of both confirmed and unreported COVID-19 deaths. Though the confirmed COVID-19 death counts show an increasing trend over the study period, the unreported death counts exhibit a decreasing trend in recent weeks. The mean number of confirmed COVID-19 deaths was 128 (95% CI: 67.61-188.39) per week and of unreported deaths with COVID-19 symptoms approximately 99 (95% CI: 63.69-133.64) per week.

On the week ending May 9, 2020, the confirmed COVID-19 death counts exceeded the unreported COVID-19-like death counts (Fig. 1). Before this week, unreported death counts were higher than confirmed COVID-19 death counts (average: ~24 vs 61); however, it was lower in the following weeks (average: ~232 vs ~136). No statistically significant mean differences existed between confirmed and unreported COVID-19 death counts ( $t = 0.887$ ,  $p = 0.381$ ). On average, the percentage of unreported COVID-19-like death counts was 55% of total deaths (sum of confirmed and unreported) from March 8–May 9, 2020, decreasing to 36% from May 10–July 11, 2020 (Table 1).

**Table 1:** Mean confirmed and unreported COVID-19 death counts, March 8– July 11, 2020, BD.

COVID-19 Death	Time Period			
	March 8–May 9, 2020	May 10–July 11, 2020	$t$	$p$ -value
<b>Confirmed</b> (mean, 95% CI)	23.7 (5.93-41.40)	232.3 (171.26-293.41)	-7.566	0.000
<b>Unreported</b> (mean, 95% CI)	61.0 (22.31-99.69)	136.3 (83.16-189.51)	-2.642	0.019
Unreported (%)	55%	36%	-	-

Notes:  $t = t$ -statistic,  $p$ -value: Probability Value, CI: Confidence Interval.

### 3. Discussion

The percentage of unreported COVID-19 death counts is surprisingly high, and almost half of the total deceased who showed COVID-19-like symptoms were either not tested after death or not reported appropriately. The reporting authority neither documented these deaths nor adjusted for potential seasonal influenza deaths per the relevant guidelines,<sup>6,7</sup> which might produce unclear COVID-19 data and mortality rates. These significant numbers of unreported deaths may incorrectly suggest that Bangladesh has been little affected by the coronavirus; this, in turn, can be problematic from two different, but interlinked perspectives.

First, public health researchers and policy analysts will not truly understand the dynamics of COVID-19 without accurate data as it has spread. This will limit their ability to accurately identify and predict the existing and peak stages of coronavirus spread and respective death counts. Second, the death reporting gap may be problematic when preparing response strategies for the future wave of the pandemic. Inaccurate data reporting can thus undermine ongoing public health response efforts and limit access to public health aid and assistance (e.g., vaccine) now and in the future; poor people will ultimately be affected the most.

In conclusion, we recommend that the IEDCR should responsibly continue real-time tracking and reporting of both confirmed coronavirus deaths and COVID-19-like deaths as provisional deaths, complying with the World Health Organization's suggested definition of COVID-19 deaths,<sup>1</sup> which might be analogous to the role of National Center for Health Statistics of the Centers for Disease Control and Prevention of the United States.<sup>8</sup> These confirmed and provisional numbers will enable scientists, public policy analysts, and development partners to accurately estimate the COVID-19 mortality rate in Bangladesh and to offer data-driven pandemic preparedness and policy action with necessary health assistance.

#### Author Statements

**Authors' Contributions:** MGA conceived the original idea and gathered data jointly with FT. MGA analyzed the data and wrote the first draft using literature jointly sourced by MGA and FT. All authors approved the present version.

**Ethical Approval:** Ethical approval was not sought as this study used publicly available data.

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**Competing Interest:** None declared.

#### Appendix A: Supplementary Material

Supplementary data and code of the article can be found at Harvard Dataverse (<https://doi.org/10.7910/DVN/H9RHWN>) upon relevant request.

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