



Perspective on Excess Mortality of COVID-19 for Various Situation Worldwide

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Abstract

COVID-19 pandemic has given crucial impact on global mortality. Among them, to investigate excess death in various countries and situation would be important. Global excess deaths were previously estimated to be 5.42 million, but recent report showed approximately 14.83 million, that is 2.74 times. In Japan, the negative value of excess death was formerly persisted, which was from continuing perfect infection control by Japanese people for long. After that, cumulative excess deaths in Japan from Jan 2020 to Sep 2022 were estimated to be 50-140 thousand. Excess mortality includes uncertainty and substantial heterogeneity associated with political and scientific interest.

Keywords: COVID-19 pandemic; Excess mortality; Excess death; World Health Organization (WHO); Japan

Commentary Article

How does COVID-19 influence global mortality rates? It has been crucial to investigate the related factors which govern the severity and spread [1]. World Health Organization (WHO) and UN department of economic and social affairs have presented the results concerning estimating global and COVID-19-related death rate [2]. WHO has obtained a mandate to collect and analyze statistics on mortality, and then tracked the progress of COVID-19 pandemic after Jan 2020 [3]. The estimation of excess mortality has been an adequate measure for the overall impact of the crisis. Excess mortality has been defined as the difference of the total deaths in a crisis in comparison with those under usual conditions. It can account for both of total death number and those of indirect impact including travel disruptions or discontinuation of health services [4].

The excess mortality has been considered as the approach for evaluating the mortality of short-term period [5]. However, it seems to be difficult to find a universal effective method to show perfect excess mortality [6]. Excess deaths include deaths from diseases other than COVID-19. It could have been avoided if it was in usual year. However, current situation has been shown

medical shortages during the epidemic. From a long-term perspective, the COVID-19 epidemic may lead to a decline in cancer screening rates, and the lack of appropriate treatment for chronic diseases such as hypertension and dyslipidemia. Furthermore, the economic stagnation due to restrictions on activities may also have an adverse effect [7]. Global excess deaths for COVID-19 were previously estimated to be 5.42 million. As to the latest report, however, the value was calculated to be 14.83 million for 2.74 times [7]. Wider variations exist in excess death calculating from six regions of WHO.

Each country has reported its excess mortality. It can summarize the burden of COVID-19 associated with presenting public health policy and also needs in the future [8]. The group of COVID-19 Excess Mortality Collaborators have showed the crucial study. As a result, 18.2 million excess deaths spread across 191 countries and territories in the first 2 years of 2020-2021 [9]. As many countries have data paucity, and then ensemble-based of estimating excess mortality has been calculated. Concerning European countries, the Euro MOMO would be recommended, which means standard approach for monitoring mortality for Europe [10].

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Concerning the data for Japan, confirmed COVID-19 cases (n=32,990,844) and deaths cases (n=70,923) are reported during 2020 Jan 3 – 2023 Feb 15 by WHO [11] (Figure 1).

Figure 1: Japan Situation of COVID-19 in Feb 2023.

Japan Situation

32,990,844

confirmed cases

(Feb 15, 2023)

70,923

deaths

Source: World Health Organization
Data may be incomplete for the current day or week.



Among them, total vaccine doses were administered (n=371,971,415) until 2023 Jan 5. In Japan, there was no excess death in 2020, which was found to be negative value [12]. The negative situation of excess death was persisted in Japan, which was rather rare case over the world [13]. The reason was that Japanese people continued perfect infection control measures with voluntary movement restrictions [14]. After 2021, excess deaths became from negative to positive values in Japan as well. The cumulative excess deaths in Japan from Jan 2020 to Sep 2022 were estimated to be 50-140 thousand. Compared to other developed countries, excess deaths were extremely small. As to the hospital survey in Japan, 67 thousand patients with COVID-19 were hospitalized [15]. Their characteristics were 54 years old in mean, 53.0% of female ratio, serious mental illness as 3.27%. By fully adjusted model, mental illness showed significant association with mortality as odds ratio 1.49. Authors and collaborators have presented several reports on COVID-19 [16,17]. In May 2023, the status of COVID-19 will be lowered from category 2 to category 5. However, it does not mean that infection control measure will become unnecessary.

During 2020-2021, data of total excess deaths were found from all 194 countries. As a result, minus value of excess death was observed in only Japan, Australia, New Zealand and Norway [7]. It showed some patterns for quality of mortality data, which were available from each respective country, such as satisfactory fully data, partial data, mixed data, no data, or not applicable. Global

excess death during 2020-2021 seemed to have 13.2-16.6 million excess deaths [7]. This degree was more than 2.4-3.1 times than that of officially reported COVID-19-related deaths. About 80% of excess deaths were found in middle-income countries. In comparison with previous data, more refined and detailed estimates were presented by adjusting several factors for underlying trends for some countries [18].

Consequently, some problematic inferences were performed. Regarding COVID-19, the severity, timing and spreading within countries were not uniform, then detail investigation would be required [19]. Thus, a variety of data were calculated from subnational to national degree. As the interrelationships exist between the infection of COVID-19 and influenza, calculating models are already observed which can adjust the influenza-related mortality [20]. Then, novel approach method has been proposed for the adjustment of excess mortality of COVID-19.

Mortality statistics are crucial data for public health management. Recent report showed the estimated excess mortality of COVID-19 from 191 countries and districts, associated with 252 subnational units for Jan 2020 to Dec 2021 [9]. From the reported data worldwide, totally 5.94 million deaths from COVID-19 were observed for 2 years. However, the estimated excess death would be 18.2 million (17.1-19.6, 95% uncertainly interval) by COVID-19 pandemic. Globally excess mortality of all-age by COVID-19 pandemic was estimated as 120.3 deaths (113-129.3) per 100 thousand population. Thus, excess mortality rate was calculated in



21 countries, which showed more than 300 deaths per 100,000 population.

In summary, excess mortality of COVID-19 pandemic has been of political and scientific interest [21]. Furthermore, uncertainty and substantial heterogeneity are present in estimation of excess mortality. This article will hopefully contribute the development of research in COVID-19.

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