**Background/objectives**

The worldwide case-fatality rate (CFR) of COVID-19 varied in different countries, regions, and continents of the world.The objective of this study was to understand the variation of CFR of COVID-19 globally over time and to identify variable(s) that explains such variation.

**Methods**

We collected COVID-19 related data from the WHO daily COVID-19 situation reports from January 01 to June 30, 2020. Further, we collected exploratory variables for each country from United Nations or other reliable sources including population density, gross domestic product (GDP), worldwide governance indicator (WGI), Global Health Security Index (GHSI), the median age for the national population. We used beta regression models to investigate the association between the CFR of each country with reported incidence rate ratios (IRRs).

**Results**

As of August 10, the global reported CFR is 4.9% with top-five countries are: Yemen (26.9%), France (18.2%), Belgium (15.8%), Italy (14.4%) and Hungary (14.1%). The weekly cumulative CFR of COVID-19 reached to the peak at 17th Epidemiological week, i.e. week starting at 10th April 2020 (considering January 1st 2020 as the starting date of epidemiological week). Before CFR reached to the peak, the median age of the country (IRR: 1.05, 95% CI: 1.02-1.07), the prevalence of diabetes in the country (IRR: 0.91, 95% CI: 0.87-0.94) and GHSI (IRR: 0.98, 95% CI: 0.97-0.99) were the most important explanatory variables. After CFR passed the peak, WGI (IRR: 1.26, 95% CI: 1.07-1.50) remained as the only significant variable explain the variation of CFR over time.

**Conclusions**

Our study indicates that during beginning of the pandemic the age of population and comorbidity (diabetes) played a key role in CFR while post-peak period countries governance showed a difference in reporting CFR.