Open access • Posted Content • DOI:10.1101/2020.03.26.20044743

Global, Regional and National Incidence and Case-fatality rates of Novel Coronavirus (COVID-19) across 154 countries and territories: A systematic assessment of cases reported from January to March 16, 2020 — Source link

Akshaya Srikanth Bhagavathula, Jamal Rahmani, Wafa Ali Aldhaleei, Pavan Kumar ...+1 more authors

Institutions: United Arab Emirates University, Shahid Beheshti University of Medical Sciences and Health Services, Central Agricultural University

Published on: 30 Mar 2020 - medRxiv (Cold Spring Harbor Laboratory Press)

Topics: Case fatality rate, Population and Incidence (epidemiology)

Global, Regional and National Incidence and Case-fatality rates of Novel Coronavirus (COVID-19) across 154 countries and territories: A systematic assessment of cases reported from January to March 16, 2020

Akshaya Srikanth Bhagavathula[1], Jamal Rahmani[2], Wafa Ali Aldhaleei[3], Pavan Kumar[4], Alessandro Rovetta[5]

[1]Ph.D student, Institute of Public Health, College of Medicine and Health Sciences, United Arab Emirates University, Al Ain, UAE

[2]Ph.D student, Department of Community Nutrition, Faculty of Nutrition and Food Technology, National Nutrition and Food Technology Research Institute, Student Research Committee, Shahid Beheshti University of Medical Sciences, Tehran, Iran

[3]Gastroenterology Fellow, Department of Gastroenterology, Sheikh Shakbout Medical City, Abu Dhabi, UAE

[4]Department of Horticulture and Forestry, Rani Lakshmi Bai Central Agricultural University, Jhansi-284003, India

[5]Mensana srls research and disclosure division, Via Moro Aldo 5 - 25124 Brescia, Italy.

Corresponding author

Dr. Akshaya Srikanth Bhagavathula, PharmD, PhD student,

Institute of Public Health,

College of Medicine and Health Sciences,

UAE University, Al Ain, UAE

Email: akshaypharmd@gmail.com

Phone: +971-543226187

Abstract

Background: The 2019 novel coronavirus disease (COVID-19) outbreak turned into a pandemic, with hundreds of thousands of cases reported globally. The number of cases dramatically increased beginning in early March 2020.

Aim: We assessed the cumulative change in the incidence and case-fatality rates of COVID-19 at the global, regional, and national levels from January to March 16, 2020, in 154 affected countries and territories globally.

Methods: We collected data of COVID-19 cases using the GitHub repository, which provided real-time surveillance information developed by the Center for Systems Science and Engineering (CSSE), Johns Hopkins University (USA). Information such as confirmed COVID-19 cases, deaths, and recoveries reported across all affected countries was collected from January 22 to March 16, 2020. We estimated the change in the incidence rate, case-fatality rate, and recovery rate from January 22 to February 29 and from March 1 to March 16, 2020.

Results: From January 22 to March 16, 2020, globally, the number of incident COVID-19 cases increased by 276.2%, and Europe recorded 65,281 new cases from March 1 to 16, 2020. Overall, the case-fatality rate was 3.92%, with a high COVID-19 fatality rate in Italy (7.7%), Iran (5.7%), China (4.2%) and the United Kingdom (3.6%). The estimated percentage change in COVID-19 cases from March 1 to 16, 2020, was highest in Belgium (105.8/100,000 population), followed by Qatar (439/100,000 population) and Portugal (331/100,000 population). The overall recovery rate of COVID-19 was 43%; China (35.5%) had the highest recovery rate, while the United States of America recorded a recovery rate of 0.3%.

Conclusion: Overall, all the COVID-19-affected countries showed an upward trend in incidence, with little change in the incidence rate of -0.20% from January to Mid-March. The case-fatality rate was found to be 3.92%, and the recovery rate was observed to be less than half (43%) among COVID-19 patients. Italy, Iran, and Spain had the largest numbers of new cases of COVID-19 from March 1 to 16, 2020.

Keywords: COVID-19, Novel coronavirus, Global burden of disease, Case fatality, mortality, SARS CoV-2

Introduction

In early January, a cluster of pneumonia cases of unknown etiology from Wuhan, Hubei Province in China, was identified as novel coronavirus, which is now referred to as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and the illness as coronavirus disease 2019 (COVID-19) [1]. In January, COVID-19 spread throughout Wuhan with several cases, and other countries started to report their first cases of the disease. The outbreak of COVID-19 continues to spread around the world and has become a significant public health problem [2]. Subsequently, several hundreds of thousands of cases were reported around the world, and on March 11, 2020, the World Health Organization declared COVID-19 a pandemic [3].

As of March 31, 2020, over 800,000 cases of COVID-19 have been reported across 203 countries and territories, and more than 38,000 deaths had been reported [4]. Currently, the dynamics of COVID-19 are placing tremendous strain on countries, citizens, resources, and economies. In the absence of an antiviral treatment or vaccine against SARS-CoV-2, preventive measures such as hand hygiene practices, social distancing measures, movement restrictions, self-quarantines, closure of institutions, and other interventions have been intensified [5]. As these interventions are gradually implemented, early epidemiological estimates of COVID-19 distribution, cumulative changes in the incidence, and case-fatality rate are crucial for effective interventions. Therefore, we assessed the cumulative change in the incidence and case-fatality rates of COVID-19 at global, regional, and national levels from January 22 – March 16, 2020, across 154 affected countries and territories globally.

Methods

In our analysis, we used the GitHub data repository, a publicly available dataset of the newly confirmed COVID-19 cases updated daily [6]. First, we extracted the data of confirmed cases, death, and recovery reported from January 22 to March 16, 2020. Second, the collected information was filtered and categorized into regions. These data were used to assess the trends in COVID-19 cases, case-fatality rates, and recovery rates at the global, regional, and national levels. Thus, we calculated the relative change in the incident cases and deaths reported in each country and territory and truncated percentage changes in the new cases and the case-fatality rate during the January 22 – March 16, 2020 period. We also reported the recovery rate of the known cases in each country.

Statistical analysis

Frequencies and percentages are used to summarize the information. The case-fatality rate was defined as (number of deaths reported/total number of cases) x 100. The estimated percentage change was calculated using the formula: ((y2-y1)/y1)*100, where y1= initial value and y2= end value. All statistical analyses were conducted using STATA 16 data analysis and statistical software (StataCorp, LLC, TX, USA).

Results

As of March 16, 2020, the global incidence of COVID-19 increased to 181,546 cases across 154 countries and territories, with a case-fatality rate of 3.92% and a recovery rate of 43%. The distribution of COVID-19 at the regional and national levels is presented in Table 1. For European and North American countries, the number of new cases showed an upward trend, and Europe reported a higher case-fatality rate (4.2%) than Asia (3.8%). By the middle of March, China (n=81033), Italy (n=27980), Iran (n=14991), Spain (n=9942), South Korea (n=8236) and Germany (n=7272) reported the highest numbers of COVID-19 cases. However, of these, Italy (7.7%), Iran (5.7%), and China (4.2%) reported a higher mortality rate than the global average (3.9%).

From January to March 16, 2020, the COVID-19 incidence increased in a total of 154 countries (Figure 1A). Within a short period, the COVID-19 cases dramatically increased all over the world, except for in some sub-Saharan African countries. From March 1 to 16, 2020, the number of incident COVID-19 cases increased in a total of 152 countries (Figure 1B). The percent change in the incidence cases was less than 1000% in 70 countries, including China (102%), while the greatest increase in percentage change was observed in Belgium (1058/100,000 population), Qatar (439/100,000 population), Portugal (33,100%), and Denmark (310.6/100,000 population).

Globally, from January to March 16, 2020, the number of new COVID-19 cases worldwide increased by 276.2% from 555 cases to 153,312 [Table 2]. With a decline in the number of new cases in China, a slight change in the incidence of -0.20% was noticed during the first half of March 2020. However, the most pronounced increase in new COVID-19 cases was observed in Europe by 66,749%, from “0” cases in January to 1467 cases in February to 65,281 cases in mid-

March 2020. The affected countries and territories experienced an increase in incidence, except the cases in China, which had an incidence of -0.97%, and the cases reported from a cruise ship (-1.01%). In March, South Korea (0.62%), Singapore (0.38%), and Thailand (1.68%) showed a decrease in COVID-19 incidence rates compared to the previous period.

A total of 7126 COVID-19 deaths occurred globally as of March 16, 2020, with a relative change of 242.2% compared to the deaths that occurred through the end of February 2020 (Figure 2A). From March 1 to 16, a relative increase in the death rate was observed in Iran (8.53%) and Spain (3.42%) (Figure 2B).

Discussion

Between January 22 and March 16, 2020, the number of COVID-19 cases increased rapidly worldwide, and thousands of deaths have been reported in several countries. Our results indicate that the global trends in the ongoing COVID-19 pandemic rapidly emerged in all countries in early March 2020, and the observed incidence increased by 276.2%. In particular, an increase in incidence and mortality rates were prominent in most regions worldwide (albeit the majority of cases still occurred in China and Italy). Nevertheless, the incidence of COVID-19 cases varies significantly between countries and regions. The difference between the highest and the lowest incidence was 1088-fold (Belgium: 1056 versus China: 0.97), and the difference in the mortality rate was 26.6-fold (Italy: 7.71 versus Austria: 0.29). It is worth noting that countries such as South Korea, Singapore, and Thailand showed a decreasing trend in the COVID-19 incidence rates in early March 2020.

Our estimates of the case-fatality rate of COVID-19 in Italy and Iran are nearly double that of the global case-fatality rate (3.9%). These findings reflect the situation in these countries. This suggests that the situation of COVID-19 in these countries is particularly dire and requires intensive support to reduce fatalities. Moreover, insufficient healthcare resources in many countries, inadequate screening among travelers, lack of preparedness of healthcare workers, and misconceptions among the general public can lead to substantial diagnosis gaps, which may have caused the disproportionate distribution in incidence and mortality. Our data are in agreement with the estimates of the worldwide incidence and mortality from the World health organization (WHO), the United States Centers for Disease Control and Prevention (CDC), and the European Center for Disease Prevention and Control (ECDC) [7-9]. Regarding the regional variations in

the incidence of COVID-19 from March 1 to 16, the highest values were found in South America and Africa and the lowest were found in Australia and parts of Asia.

Improvement in early screening, diagnosis, and strict adherence to preventive measures may play a key role in halting the global epidemiological transition, including the numbers of incident cases and deaths. These factors might have been responsible for the sharp changes observed in China, Singapore, Hong Kong, Taiwan, and South Korea [10-12]. Indeed, mainland in China and neighboring countries experienced a sharp increase in incidence, as well as in death, in February 2020. The following factors may have contributed to the gradual leveling off in incidence: a) responding aggressively by implementing travel restrictions on passengers to prevent transmission [13], b) early recognition and epidemic preparedness with 124 "action items," including border control, school closures, and work policies [14] and (c) rigorous detection and strict quarantine measures to break the long chain of COVID-19 outbreaks [15]. However, further epidemiological analysis addressing the current situation, knowledge gaps in its etiology, and comprehensive management of COVID-19 at national and regional levels are warranted.

The study has some unavoidable limitations. Our analysis relies on epidemiologic data reported through March 16, 2020. Therefore, the accuracy of the results depends on the quality of the data reported. In terms of quality, the Center for Systems Science and Engineering (CSSE) at John Hopkins University (USA) obtained confirmed information from respective centers prior to the collection of information and is coordinated by a team of experts from John Hopkins University [16]. Most of the information presented in the GitHub repository by the CSSE is consistent with the data reported by the WHO [16]. There may be missing information due to limited reporting resources, delays in investigations, and reluctance to update the information in some countries. Thus, information bias is inevitable. Due to the limitations of the data, we cannot perform further investigation in regard to the clinical, etiological, treatment and risk stratification of the COVID-19 cases.

Conclusion

Overall, all the COVID-19-affected countries showed an upward trend in incidence globally, with little change in the incidence rate of -0.20% from January to Mid-March. The case-fatality rate was found to be 3.92%, and the recovery rate was observed to be less than half (43%) among

COVID-19 patients. Italy, Iran, and Spain had most new cases of COVID-19 from March 1 to 16, 2020.

Acknowledgment: We thank all the John Hopkins institute, USA for providing the data

study participants for their voluntary participation and for providing essential information.

Authors' contributions

ASB, JR designed the study, developed the study, collected the data, analyzed the data, and prepared the manuscript. WAA, PK and AR designed the study tools, conducted the analysis, and conducted the literature review. ASB, WAA, PK and JR filtered and analyzed the data. All authors read and approved the final manuscript.

Funding: No source of funding

Available data and materials

All data obtained through data respiratory are readily available and can be contacted to corresponding author.

Consent for publication: Not applicable.

Competing interests: The authors declare that they have no competing interests.

References

1. Tan W, Zhao X, Ma X, Wang W, Niu P, Xu W, Gao GF, Wu GZ. A novel coronavirus genome identified in a cluster of pneumonia cases—Wuhan, China 2019– 2020. China CDC Weekly. 2020;2(4):61-2.

2. Wang C, Horby PW, Hayden FG, Gao GF. A novel coronavirus outbreak of global health concern. The Lancet. 2020;395(10223):470-3.

3. WHO Director-General's opening remarks at the media briefing on COVID-19 - March 11 2020. World Health Organization: Geneva; 2020. Available from: https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-atthe-media-briefing-on-covid-19---11-march-2020.

4. World Health Organization. Novel coronavirus (COVID-19) situation. Available online: https:// https://experience.arcgis.com/experience/685d0ace521648f8a5beeeee1b9125cd (Accessed on 31 March 2020).

5. World Health Organization. Considerations for quarantine of individuals in the context of containment for coronavirus disease (COVID-19): interim guidance, February 29 2020. World Health Organization; 2020.

6. COVID-19 data repository at GitHub. Available at: https://github.com/CSSEGISandData/COVID-19.

7. Coronavirus disease (COVID-19) Pandemic. World Health organization. Available at: https://www.who.int/emergencies/diseases/novel-coronavirus-2019 (Accessed 23/03/2020)

8. Coronavirus (COVID-19). Centers for disease control and prevention. Available at: https://www.cdc.gov/coronavirus/2019-nCoV/index.html (Accessed 23/03/2020)

9. COVID-19. European centre for disease prevention and control. Available at: https://www.ecdc.europa.eu/en/novel-coronavirus-china. (Accessed 23/03/2020).

10. What we can learn from Singapore, Taiwan, and Hong Kong about handling Coronavirus. Available at: https://time.com/5802293/coronavirus-covid19-singapore-hong-kong-taiwan/ (Accessed 23/03/2020).

11. The city where the coronavirus outbreak first took hold reports no new cases. https://time.com/5806180/wuhan-china-covid19-no-new-cases/ (Accessed 23/03/2020).

12. Normile D. Coronavirus cases have dropped sharply in South Korea. What's the secret to its success?. Science. https://www.sciencemag.org/news/2020/03/coronavirus-cases-have-dropped-sharply-south-korea-whats-secret-its-success (Accessed 23/03/2020).

13. Chinazzi M, Davis JT, Ajelli M, Gioannini C, Litvinova M, Merler S, y Piontti AP, Mu K, Rossi L, Sun K, Viboud C. The effect of travel restrictions on the spread of the 2019 novel coronavirus (COVID-19) outbreak. Science. 2020 March 6. Doi: 10.1126/science.aba9757.

14. Wang CJ, Ng CY, Brook RH. Response to COVID-19 in Taiwan: Big Data Analytics, New Technology, and Proactive Testing. JAMA. 2020. Doi: 10.1001/jama.2020.3151.

15. Niehus R, De Salazar PM, Taylor A, Lipsitch M. Quantifying bias of COVID-19 prevalence and severity estimates in Wuhan, China that depend on reported cases in international travelers. medRxiv. 2020. Doi: 10.1101/2020.02.13.20022707.

16. Dong E, Du H, Gardner L. An interactive web-based dashboard to track COVID-19 in real time. Lancet Infect Dis. 2020. Doi: 10.1016/S1473-3099(20)30120-1.

Table 1: Global distribution of COVID-19 cases, mortality, and recovery from until March 16, 2020

Characteristics	End of February, 2020			Mid-March, 2020			Case-fatality rate (%)	Cure rate (%)
	Cases	*Died*	*Recovered*	*Cases*	*Died*	*Recovered*		
Global	86012	2941	39782	181,546	7126	78088	3.92	43
Region								
Asia	83715	2903	39659	108376	4207	74190	3.88	68.4
Africa	3	0	1	411	8	42	1.94	10.2
Europe	1467	31	88	65748	2803	3474	4.2	5.2
Australia	25	0	11	377	3	23	0.8	6.1
North America	92	1	13	5277	93	32	1.76	0.6
South America	2	0	0	650	5	2	0.76	
Oceanic	1	0	0	11	0	0	-	
Cruise ship	705	6	10	696	7	325	1	47
Asia								
China	79356	2837	39320	81033	3430	28804	4.23	35.5
Thailand	42	43	123	147	1	12	0.68	8.1
Japan	241	16	27	825	27	113	3.27	13.7
Singapore	102	5	32	243	0	37	-	15.2
Korea, South	3150	0	18	8236	75	1110	0.91	13.4
Taiwan*	39	0	0	67	1	11	1.49	16.4
Malaysia	25	0	1	566	0	24	-	4.2
United Arab Emirates	21	0	72	98	0	18	-	18.4
Vietnam	16	0	0	61	0	-	-	-
Cambodia	1	0	28	7	0	-	-	-
India	3	1	1	119	2	10	1.68	8.4
Nepal	1	0	0	1	0	-	-	-
Philippines	3	0	0	142	12	1	8.45	0.7

Sri Lanka	1	0	0	28	0	-	-	-
Afghanistan	1	0	0	21	0	1	-	4.8
Bahrain	41	0	3	214	1	77	0.47	36.0
Bangladesh	0	0	0	8	0	2	-	25.0
Brunei	0	0	0	54	0	-	-	-
Indonesia	0	0	5	134	5	8	3.73	6.0
Iran	593	1	9	14991	853	4467	5.69	29.8
Iraq	13	0	-	124	10	26	8.06	21.0
Israel	7	0	-	255	0	3	-	1.2
Jordan	0	0	-	17	0	1	-	5.8
Kazakhstan	0	0	1	10	0	-	-	-
Kenya	0	0	0	3	0	-	-	-
Kuwait	45	0	-	123	0	9	-	7.3
Lebanon	4	0	0	99	3	1	3.03	1
Maldives	0	0	-	13	0	-		-
Mongolia	0	0	-	1	0	-		-
Palestinian	0	0	0	1	0	-		-
Oman	6	0	-	22	0	8		36.3
Pakistan	4	0	-	136	0	2		1.4
Qatar	1	0	-	439	0	4		0.9
Saudi Arabia	0	0	-	118	0	2		1.7
Turkey	0	0	-	18	0	-		-
Uzbekistan	0	0	-	6	0	-		-
Europe								
Italy	1128	29	46	27980	2158	2703	7.71	9.6
Spain	45	0	2	9942	342	528	3.44	5.3
Germany	79	0	0	7272	17	-	0.23	-
France	100	2	0	6650	148	-	2.23	-
Switzerland	18	0	0	2200	14	4	0.64	0.2
United Kingdom	23	0	8	1551	56	13	3.61	0.8
Netherlands	6	0	0	1414	24	2	1.70	0.1
Norway	15	0	0	1333	3	1	0.22	0.07
Sweden	12	0	0	1103	6	1	0.54	0.09

Belgium	1	0	-	1058	5	-	0.47	-
Austria	9	0	0	1018	3	6	0.29	0.6
Denmark	3	0	0	932	3	1	0.32	0.1
Greece	4	0	0	331	4	8	1.21	2.4
Portugal	0	0	0	331	0	3	-	0.9
Czechia	0	0	0	298	0	3	-	1
Finland	3	0	1	277	0	9	-	3.2
Slovenia	0	0	-	253	1	-	0.40	-
Estonia	1	0	0	205	0	1	-	0.5
Iceland	1	0	-	180	0	-	-	-
Poland	0	0	0	177	4	13	2.26	7.3
Ireland	1	0	-	169	2	-	1.18	-
Romania	3	0	0	158	0	9	-	5.7
San Marino	1	0	0	109	7	4	6.42	3.7
Russia	2	0	2	90	0	6	-	6.6
Luxembourg	1	0	-	77	1	-	1.30	-
Slovakia	0	0	-	63	0	-	-	-
Croatia	6	0	0	57	0	2	-	3.5
Serbia	0	0	0	55	0	1	-	1.8
Armenia	0	0	-	52	0	-	-	-
Bulgaria	0	0	-	52	2	-	3.85	-
Albania	0	0	-	51	1	-	1.96	-
Hungary	0	0	0	39	1	1	2.56	2.5
Belarus	1	0	0	36	0	3	-	8.3
Latvia	0	0	0	34	0	1	-	2.9
Cyprus	0	0	-	33	0	-	-	-
Georgia	1	0	16	33	0	1	-	3
Malta	0	0	0	30	0	2	-	6.6
Bosnia and Herzegovina	0	0	-	25	0	-	-	-
Moldova	0	0	-	23	0	-	-	-
North Macedonia	1	0	0	18	0	1	-	5.5

Lithuania	1	0	0	17	0	1	-	5.8
Monaco	1	0	-	7	0	-	-	-
Ukraine	0	0	-	7	1	-	14.2	-
Liechtenstein	0	0	-	4	0	-	-	-
Andorra	0	0	0	2	0	1	-	50
Guernsey	0	0	-	1	0	-	-	-
Holy See	0	0	-	1	0	-	-	-
North America								
United States of America	68	1	7	4632	85	17	1.83	0.3
Canada	20	0	6	415	4	9	0.96	2.1
Panama	0	0	-	55	1	-	1.81	-
Mexico	4	0	-	53	0	4	0	7.5
Costa Rica	0	0	-	35	0	-	0	-
Martinique	0	0	-	15	1	-	6.66	-
Dominican Republic	0	0	-	11	0	-	0	-
Jamaica	0	0	-	10	0	2	0	20
Guadeloupe	0	0	-	6	0	-	0	-
Honduras	0	0	-	6	0	-	0	-
Cuba	0	0	-	4	0	-	0	-
Trinidad and Tobago	0	0	-	4	0	-	0	-
Puerto Rico	0	0	-	3	0	-	0	-
Guatemala	0	0	-	2	1	-	50	-
Jersey	0	0	-	2	0	-	0	-
Kosovo	0	0	-	2	0	-	0	-
Saint Lucia	0	0	-	2	0	-	0	-
Antigua and Barbuda	0	0	-	1	0	-	0	-
Greenland	0	0	-	1	0	-	0	-
Liberia	0	0	-	1	0	-	0	-
Saint Vincent	0	0	-	1	0	-	0	-

and the Grenadines								
The Bahamas	0	0	-	1	0	-	0	-
South America								
Brazil	2	-	-	200	0	1	-	0.5
Argentina	0	-	-	56	2	1	3.57	1.7
Aruba	0	-	-	2	0	-	-	-
Bolivia	0	-	-	11	0	-	-	-
Chile	0	-	-	155	0	-	-	-
Colombia	0	-	-	54	0	-	-	-
Ecuador	0	-	-	37	2	-	5.40	-
French Guiana	0	-	-	11	0	-	-	-
Guyana	0	-	-	4	1	-	25	-
Paraguay	0	-	-	8	0	-	-	-
Peru	0	-	-	86	0	-	-	-
Suriname	0	-	-	1	0	-	-	-
Uruguay	0	-	-	8	0	-	-	-
Venezuela	0	-	-	17	0	-	-	-
Africa								
Algeria	1	-	0	54	4	12	7.4	22.2
Egypt	1	-	1	150	2	27	1.3	18
Nigeria	1	-	-	2	0	-	-	-
Benin	0	-	-	1	0	-	-	-
Burkina Faso	0	-	-	15	0	-	-	-
Cameroon	0	-	-	4	0	-	-	-
Central African Republic	0	-	-	1	0	-	-	-
Congo	0	-	-	3	0	-	-	-
Cote d'Ivoire	0	-	-	1	0	-	-	-
Equatorial Guinea	0	-	-	1	0	-	-	-
Eswatini	0	-	-	1	0	-	-	-
Ethiopia	0	-	-	5	0	-	-	-

Gabon	0	-	-	1	0	1	-	100
Ghana	0	-	-	6	0	-	-	-
Guinea	0	-	-	1	0	-	-	-
Mauritania	0	-	-	1	0	-	-	-
Mayotte	0	-	-	1	0	-	-	-
Morocco	0	-	-	29	1	1	3.4	3.4
Namibia	0	-	-	2	0	-	-	-
Republic of the Congo	0	-	-	1	0	-	-	-
Reunion	0	-	-	9	0	-	-	-
Rwanda	0	-	-	5	0	-	-	-
Senegal	0	-	-	24	0	2	-	8.3
Seychelles	0	-	-	3	0	-	-	-
Somalia	0	-	-	1	0	-	-	-
South Africa	0	-	-	62	0	-	-	-
Sudan	0	-	-	1	1	-	100	-
Tanzania	0	-	-	1	0	-	-	-
Togo	0	-	-	1	0	-	-	-
Tunisia	0	-	-	20	0	-	-	-
Australia	16	-	9	377	3	14	0.8	3.7
New Zealand	1	-	-	8	-	-	-	-
Guam	0	-	-	3	-	-	-	-
Cruise ship	705	6	10	696	7	325	1	46.7

Table 2: Temporal trends in the COVID-19 pandemic from January-March 16, 2020

Characteristics	Through January 26, 2020	New cases identified through February 29, 2020	Change in incidence (%)	New cases identified from March 1 to 16, 2020	Change in incidence	Overall incidence change from January to Mid-March (%)
Global	555	85457	152.9	67855	-0.20	276.2
Region						
Asia	554	83161	150.1	24,664	-0.70	193.6
Africa	0	3	3	404	133.6	407
Europe	0	1467	1467	65,281	42.8	66,749
Australia	0	25	25	352	13	378
North America	1	92	91	5187	56	5278
South America	0	2	2	648	323	650
Oceanic	0	1	1	10	9	10
Cruise ship	0	705	705	-9	-1.01	696
Asia						
China	548	78808	142.8	2225	-0.97	3.1
Iran	0	593	593	14398	23.28	593
South Korea	1	3149	3148	5087	0.62	5086
Japan	2	239	118.5	586	1.45	292
Malaysia	0	25	25	541	20.64	25
Qatar	0	1	1	438	437	1
Israel	0	7	7	248	34.43	7
Bahrain	0	41	41	173	3.22	41
Singapore	0	102	102	141	0.38	102
Philippines	0	3	3	139	45.33	3
Indonesia	0	0	0	134	134	0
Pakistan	0	4	4	132	32	4
Saudi Arabia	0	0	0	118	118	0
India	0	3	3	116	37.67	3
Iraq	0	13	13	111	7.54	13
Thailand	2	40	19	107	1.68	52.5
Europe						
Italy	0	1128	1128	27980	22.80	27980

Spain	0	45	45	9942	218.93	9942
Germany	0	79	79	7272	90	7272
France	0	100	100	6650	64.50	6650
Switzerland	0	18	18	2200	120.22	2200
United Kingdom	0	23	23	1551	65.43	1551
Netherlands	0	6	6	1414	233.67	1414
Norway	0	15	15	1333	86.87	1333
Sweden	0	12	12	1103	89.92	1103
Belgium	0	1	1	1058	1056.00	1058
Austria	0	9	9	1018	111.11	1018
Denmark	0	3	3	932	308.67	932
Greece	0	4	4	331	80.75	331
Portugal	0	0	0	331	33	331
Czechia	0	0	0	298	298	298
Finland	0	3	3	277	90.33	277
Slovenia	0	0	0	253	253	253
Estonia	0	1	1	205	203	205
Iceland	0	1	1	180	178	180
Poland	0	0	0	177	177	177
Ireland	0	1	1	169	167	169
Romania	0	3	3	158	50.67	158
San Marino	0	1	1	109	107	109
North America						
United States of America	1	67	66	4612	67.83	4679
Canada	0	20	20	395	18.7	415
South America						
Brazil	0	2	2	148	73	151
Chile	0	0	0	155	155	155
Africa						
Egypt	0	1	1	149	148	149

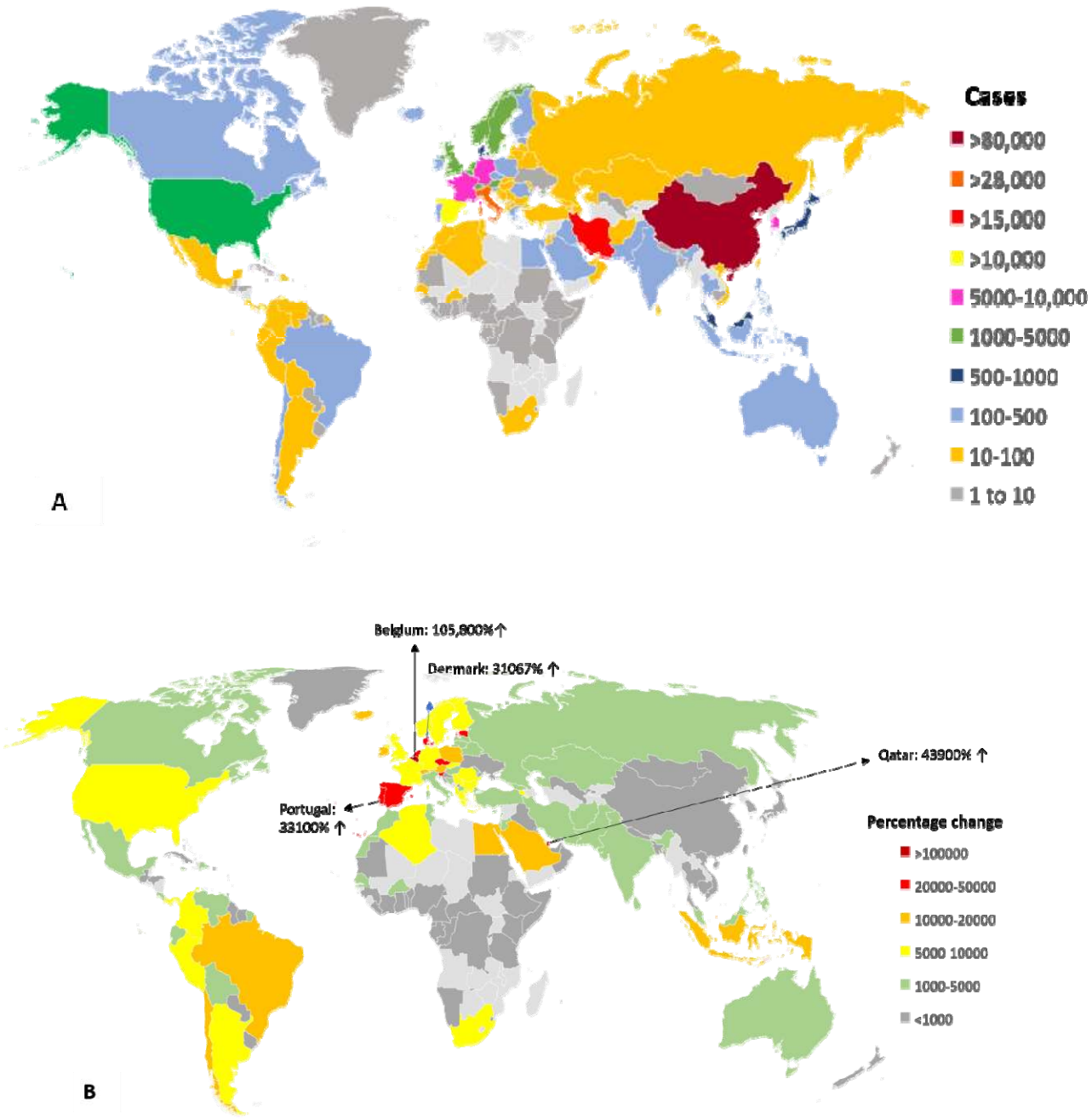

Figure 1: The global burden of COVID-19 across 154 countries January to March 16, 2020. (A) Total number of cases reported; (B) The relative change in incident cases from March 1 to 16, 2020.

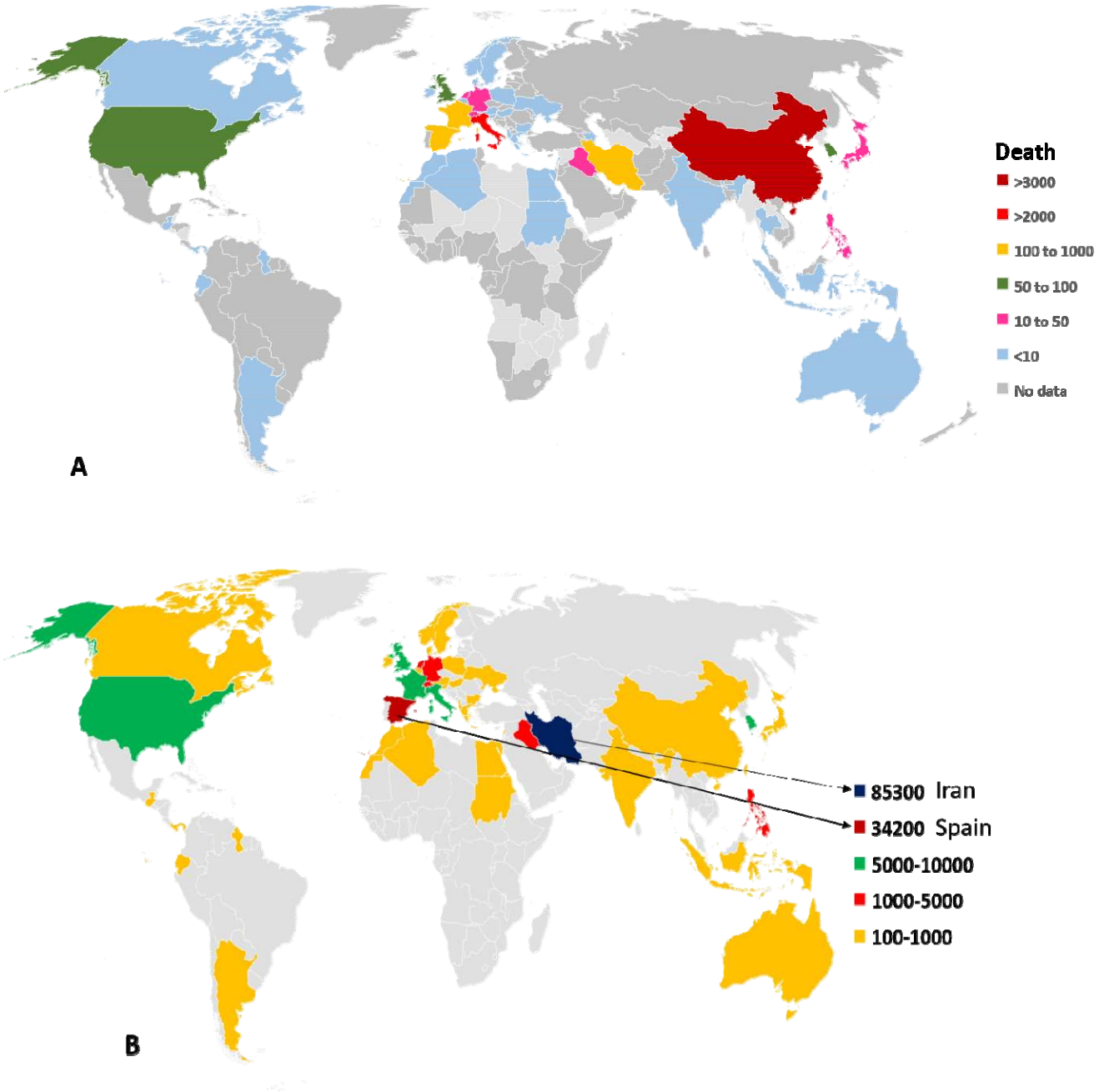

Figure 2: Global mortality associated with COVID-19 pandemic from between January to March 16, 2020. (A) Total number of deaths reported and (B) The relative change in incident deaths (EPC: estimated percentage change) March 1 to 16, 2020.