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DISPARITY IN COVID-19 MORTALITY RATE AMONG COUNTRIES

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ABSTRACT

The COVID 19 pandemic continues to rampantly spread across the globe without prejudice and has significantly impacted the health and wellbeing of the entire population of the world. Each country and region has implemented different strategies to mitigate the spread of the virus; with the common underlying theme of social distancing and avoiding unnecessary travel and interaction. The significant healthcare and economic burden of this disease is related to the proportion of infected patients with severe disease and its high mortality. Recent studies have shown older patients (>60 years old) and those with chronic diseases are prone to having a severe and more critical COVID-19 clinical course along with higher mortality rates.[1,2]

INTRODUCTION

As of 4/19/2020, over 2.3 million COVID-19 cases and 163,663 related deaths have been reported worldwide.[3] We looked at the current number of COVID-19 positive cases across the world and identified countries with greater than 10,000 COVID-19 patients as of 4/19/2020.[3] We calculated the COVID-19 mortality rate among these 25 selected countries based on the reported number of COVID-19 deaths. We then collected data on median age of the population, healthcare expenditure per capita (US$), COVID-19 testing per million people, and baseline crude death rate per 1,000 people in each of these 25 countries from public sources.[Table 1].[3,4] We found an overall COVD-19 mortality rate of 6.9% in the world; this was however widely distributed with a range of 0.84-14.76% among the 25 selected countries with over 10,000 reported COVID-19 patients. We analyzed this data to evaluate for any correlation between the aforementioned factors with COVID-19 mortality rates. Surprisingly, countries with higher per capita spending on healthcare and lower baseline crude death rate, suggesting better healthcare resources, were not found to have reduced COVID-19 mortality. We found no significant correlation between COVID-19 mortality rate and population median age, baseline death rate or health care expenditure among these countries. We also found no correlation between COVID-19 mortality rate and COVID-19 testing per 1 million population in each country. (Table 1).

However, similar to the data emerging from China and other studies, we found that most countries with higher percentage of population over 65 years had a higher mortality rate with a Pearson correlation coefficient (r) of 0.38 with a trend towards statistical significance (p=0.063). (Table 1).

It is interesting to note no routine indices were found to explain the higher mortality rates in some countries compared to others and further studies are needed to evaluate the reasons for this disparity which could benefit healthcare planning and strategies to fight against this pandemic.

Table 1: COVID-19 cases, deaths, and indices among 25 countries arranged in order of increasing COVID-19 mortality rate.

Countries	Number of COVID-19 Cases	Number of COVID-19 Deaths	% COVID-19 Mortality rate (%)	Median age of the population (years)	Crude Death Rate (per 1000 people)	Healthcare expenditure per capita (US$)	COVID-19 Tests/1M population	Population over age 65 (%)
World	**2,373,096**	**163,663**	**6.90**					
Russia	42,853	361	0.84	39.6	12.785	585.87	13,294	14.2
Israel	13,362	171	1.28	29.9	5.328	3144.63	21,634	11.7
Chile	10,088	133	1.32	34.4	6.215	1381.99	5,945	11.1
Japan	10,797	236	2.19	47.3	10.646	4168.99	892	27
South Korea	10,661	234	2.19	41.8	6.111	2283.07	10,905	13.9
Turkey	86,306	2,017	2.34	30.9	5.444	444.65	7,521	8.2
Peru	14,420	348	2.41	28	5.539	332.57	4,360	7.2
Austria	14,749	452	3.06	44	9.896	4939.88	19,902	19.2
Germany	144,387	4,547	3.15	47.1	11.275	5033.45	20,629	21.5
India	17,137	556	3.24	27.9	7.273	69.29	291	6
Portugal	20,206	714	3.53	42.2	10.702	1908.03	23,133	21.5
Ireland	14,758	571	3.87	36.8	6.139	4976.86	18,358	13.9
Canada	33,951	1,509	4.44	42.2	7.758	4754.95	14,203	17
Switzerland	27,740	1,381	4.98	42.4	8.051	9956.26	25,566	18.4
USA	742,459	39,651	5.34	38.1	8.782	10246.14	11,666	15.4
China	82,735	4,632	5.60	37.4	7.261	440.83		10.6
Iran	82,211	5,118	6.23	30.3	4.866	475.48	4,068	5
Brazil	36,925	2,372	6.42	32	6.503	928.80	296	8.6
Spain	195,944	20,453	10.44	42.7	9.115	2506.46	19,896	19.4
Sweden	14,385	1,540	10.71	41.2	9.165	5904.58	7,387	19.9
Netherlands	32,655	3,684	11.28	42.6	8.812	4911.44	9,041	18.8
France	152,578	19,718	12.92	41.4	9.317	4379.73	7,103	19.7
Italy	178,972	23,660	13.22	45.5	10.566	2840.13	22,436	23
UK	120,067	16,060	13.38	40.5	9.398	3858.67	7,101	18.5
Belgium	38,496	5,683	14.76	41.4	9.789	4507.36	13,269	18.6
Pearson Correlation Coefficient (r)				0.33	0.28	0.23	0.00	0.38
p value				0.1047743	0.176277	0.270365	0.998388	0.063507

*Our data is based on publicly reported data and relies on the accuracy of this voluntary reporting.

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