Evidence Based Health Policy, Management & Economics

Factors Affecting Mortality Rate Regarding Covid-19 Pandemic

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Dear editor

According to the World Health Organization (WHO), COVID-19 is a contagious disease caused by the new coronavirus (nCoV-2019). Coronavirus is one of the major pathogens that primarily targets the human respiratory system. The beginning of this disease was reported in Wuhan, China in late 2019. The symptoms of this disease are respiratory problems such as cough, shortness of breath, etc.(1) Numerous factors such as demographic structure, socio-economic status, governance structure, ability to manage and deal with the risk of a possible epidemic, etc. affect the incidence and mortality rate of Covid-19 pandemic.

Higher population densities in urban areas, transportation networks, and community presence strengthen the Covid-19 transmission chains (2). Contrary to expectations, countries with better governance and higher Gross Domestic Product (GDP) per capita experienced higher morality. With a democratic system, an open economic structure, and a higher middle income, these countries create more opportunities for leisure or work, resulting in more domestic and international travel. As a result, they have intensified the spread of Coronavirus disease (3). A review of the sources indicated that countries with better governance identified and reported cases of Covid-19 sooner than other countries. Although these countries had more cases and deaths, they performed better than countries with weak governance. This was due to rapid identification, immediate action in treating the infected people, and not hiding the truth and covering up the epidemic (4). The results of the study demonstrated that the Global Health Security (GHS) index, ageing population, GDP per capita, urbanization and generally, increasing population density along with competent governance, had a positive correlation and a significant effect on the mortality rate of Covid-19.

The mortality rate in pre-and post-vaccination periods for 156 countries indicated that the countries in the top or middle of the GHS index had 5.71 and 4.57 times more death cases per 1000 population than the poorer countries, respectively. After vaccination, this ratio decreased to 3 and 3.76 times (Table 1). Besides, mortality rate comparisons revealed that from the onset of the epidemic to the start of public vaccination, the mortality rate of Covid-19 in older countries on average was 5.71 times more than that of younger countries. In the second period, i.e., from the start of vaccination to September12, 2021, this ratio decreased to 4.07 times. In general, there is an obvious difference between countries with an ageing population and other countries regarding the incidence of Covid-19 and its mortality rate. The mortality gap between younger and older countries has narrowed with the increase in vaccination. Furthermore, the impact of demographic structure has been greater than economic status and governance, as the leading countries in terms of per capita income and governance index, contrary to expectations, had suffered more deaths so far. Based on the results of this study, countries with older population had more death cases. Contrary to expectations, countries with high GHS scores recorded higher deaths than poorer countries. Therefore, this indicator alone cannot measure the readiness of countries to deal with a possible epidemic. As mentioned, several factors can explain differences in mortality rates. Based on our findings, vaccination coverage, health systems, climatic conditions, the epidemic of non-communicable diseases can be effective on Covid-19 mortality rates.

Table 1. Comparison of mortality rates in 2 periods for countries with different GHS

Periods	Average death per 1000 population		
	Least prepared GHS score < 33	More prepared 33 ≤ GHS score < 67	Most prepared GHS score≥ 67
Pre-vaccination (January 2020 – December 2020)	0.07	0.32	0.40
Post-vaccination (December 2020 – September 2021)	0.21	0.79	0.63

References

1. Bogoch II, Watts A, Thomas-Bachli A, Huber C, Kraemer MU, Khan K. Pneumonia of unknown aetiology in Wuhan, China: Potential for international spread via commercial air travel. Journal of Travel Medicine. 2020; 27(2): taaa008. doi: 10.1093/ jtm/taaa008.
2. Ray D, Subramanian S. India's lockdown: An interim report. Indian Economic Review. 2020; 55(1): 31-79. doi: 10.1007/s41775-020-00094-2.
3. Gesesew HA, Koye DN, Fetene DM, Woldegiorgis M, Kinfu Y, Geleto AB, et al. Risk factors for COVID-19 infection, disease severity and related deaths in Africa: A systematic review. BMJ open. 2021; 11(2): e044618. doi: 10.1136/ bmjopen-2020-044618.
4. Baris OF, Pelizzo R. Research note: Governance indicators explain discrepancies in COVID-19 data. World Affairs. 2020; 183(3): 216-34. doi: 10.1177/ 0043820020945683.