

Factors associated with mortality from COVID 19: Indian perspective

Sir,

The article on COVID 19 pandemic in developing countries is really interesting.^[1] India, like other such countries, witnessed the onslaught by COVID 19. Till May 16, 2021, India recorded more than 274,000 deaths attributed to COVID 19.^[2] Keeping great variation in mortality rate noted in different parts of the country, the present study aimed to find out the association between different demographic factors and COVID mortality rate.

An ecological approach was adopted, considering 30 states. The number of confirmed cases from COVID 19 was retrieved till May 16, 2021. Economic condition was expressed in terms of per capita Net State Domestic Product for the year 2019–20.^[3] Some other factors such as the proportion of elderly people, comorbidities, and literacy were also considered.^[4,5] The association between COVID cases and different individual factors was determined, using correlation coefficient. $P < 0.5$ was considered significant.

States like Goa and Delhi recorded exceptionally high mortality rates ($> 1000/\text{million}$) while Bihar and Mizoram recorded low death rates ($< 40/\text{million}$).

Economic condition ($r = 0.751$, $P = 0.000$), diabetes ($r = 0.512$, $P = 0.005$), hypertension ($r = 0.464$, $P = 0.011$), overweight ($r = 0.518$, $P = 0.004$), obesity ($r = 0.588$, $P = 0.001$), and literacy ($r = 0.484$, $P = 0.022$) were seen to be associated with COVID 19 mortality [Figure 1]. Both

demographic and clinical conditions seemed to play roles behind COVID casualty.

On regression, economic condition, diabetes, hypertension, overweight, obesity, and literacy were significant. At multivariate level, only overweight (adjusted odds ratio = 30.304 [1.022–59.586]) was significant. The model could explain the death burden in 58.9% of cases.

The impact of socioeconomic status (SES) on susceptibility to COVID 19 is crucial. One study outlined a higher mortality risk among indigenous people and those living in areas with low SES. People with subsidized health insurance schemes, more often unemployed or engaged in informal work are more prone to succumb to the infection.^[6] For poor people, accessing medical services or affording out-of-pocket expenditure could be an important factor. A study from Chile noticed higher testing in wealthier areas. A high positivity rate was noticed in areas with low SES.^[7] When we consider the Indian scenario, it is no different. The testing rates were much higher in affluent states like Goa, Delhi than in poor states like Bihar and Uttar Pradesh.^[2] Poor health care infrastructure may find it difficult to count a high number of cases, expand surveillance systems within a small period, or track additional deaths.^[7]

Comorbidities are believed to play a significant role in determining mortality. Few studies from India suggested the same.^[8–10] The present study also found higher COVID deaths in states with a higher proportion of people with

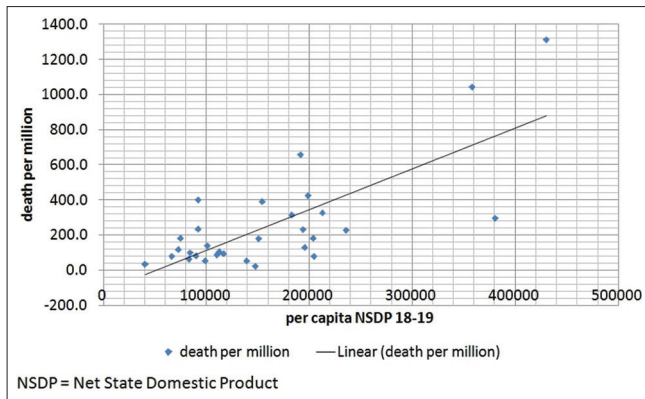


Figure 1: Relationship between economic condition and COVID 19 deaths per million in Indian states

diabetes and hypertension. However, no relation was found between preexisting chronic liver disease and COVID mortality. Overweight, particularly obesity was found to have a strong correlation with COVID deaths.

Literacy seemed to have a moderate correlation with the death burden from COVID. A study from Brazil also suggested that lack of education is a risk factor for mortality from COVID.^[11] Another study from Mumbai also suggested the same.^[8]

The present study suffers from the lack of individual patient characteristics. The study did not consider the availability of hospital beds in different states or overcrowding or the trend in the proportion of reported deaths over the years. Still, a national perspective with relevant demographic factors for COVID 19 mortality is the first of its kind from India. In the setting of a low-income country, the study highlighted the importance of demographic factors while planning strategies for mitigation of the impact of the pandemic. It is expected to pave way for other in-depth studies in future.

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Conflicts of interest

There are no conflicts of interest.

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REFERENCES

- Fahme SA, Walsh KF, Rouzier V, Chebrolu P, Jaka H, Kingery JR, et al. Practical recommendations for the prevention and management of COVID-19 in low-income and middle-income settings: Adapting clinical experience from the field. *Fam Med Community Health* 2021;9:e000930.
- COVID19INDIA. Available from: <https://www.covid19india.org/>. [Last accessed on 2021 May 17].
- Government of India. Ministry of Finance. Department of Economic Affairs. Economic Survey 2020–21 Volume 2. Available from: https://www.indiabudget.gov.in/economicsurvey/doc/echapter_vol2.pdf. [Last accessed on 2021 Feb 17].
- International Institute for Population Sciences (IIPS) and NPHCE. MoHFW. Longitudinal Ageing Study in India (LASI) Wave 1, 2017-18, Factsheets – States/UTs. Mumbai: International Institute for Population Sciences; 2020.
- Government of India. Ministry of Statistics and Program Implementation. Household Social Consumption on Education in India. New Delhi: NSS 75th Round; 2020.
- Cifuentes MP, Rodriguez-Villamizar LA, Rojas-Botero ML, Alvarez-Moreno CA, Fernández-Niño JA. Socioeconomic inequalities associated with mortality for COVID-19 in Colombia: A cohort nationwide study. *J Epidemiol Community Health* 2021;jech-2020-216275. doi: 10.1136/jech-2020-216275.
- Mena GE, Martinez PP, Mahmud AS, Marquet PA, Buckee CO, Santillana M. Socioeconomic status determines COVID-19 incidence and related mortality in Santiago, Chile. *Science* 2021;372:eabg5298. doi: 10.1126/science.abg5298.
- Gaur K, Khedar RS, Mangal K, Sharma AK, Dhamija RK, Gupta R. Macrolevel association of COVID-19 with non-communicable disease risk factors in India. *Diabetes Metab Syndr* 2021;15:343-50.
- Asirvatham ES, Sarman CJ, Saravanamurthy SP, Mahalingam P, Maduraipandian S, Lakshmanan J. Who is dying from COVID-19 and when? An Analysis of fatalities in Tamil Nadu, India. *Clin Epidemiol Glob Health* 2021;9:275-9. doi: 10.1016/j.cegh.2020.09.010.
- Jain AC, Kansal S, Sardana R, Bali RK, Kar S, Chawla R. A retrospective observational study to determine the early predictors of in-hospital mortality at admission with COVID-19. *Indian J Crit Care Med* 2020;24:1174-9.
- Wollenstein-Betech S, Silva AA, Fleck JL, Cassandras CG, Paschalidis IC. Physiological and socioeconomic characteristics predict COVID-19 mortality and resource utilization in Brazil. *PLoS One* 2020;15:e0240346.

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