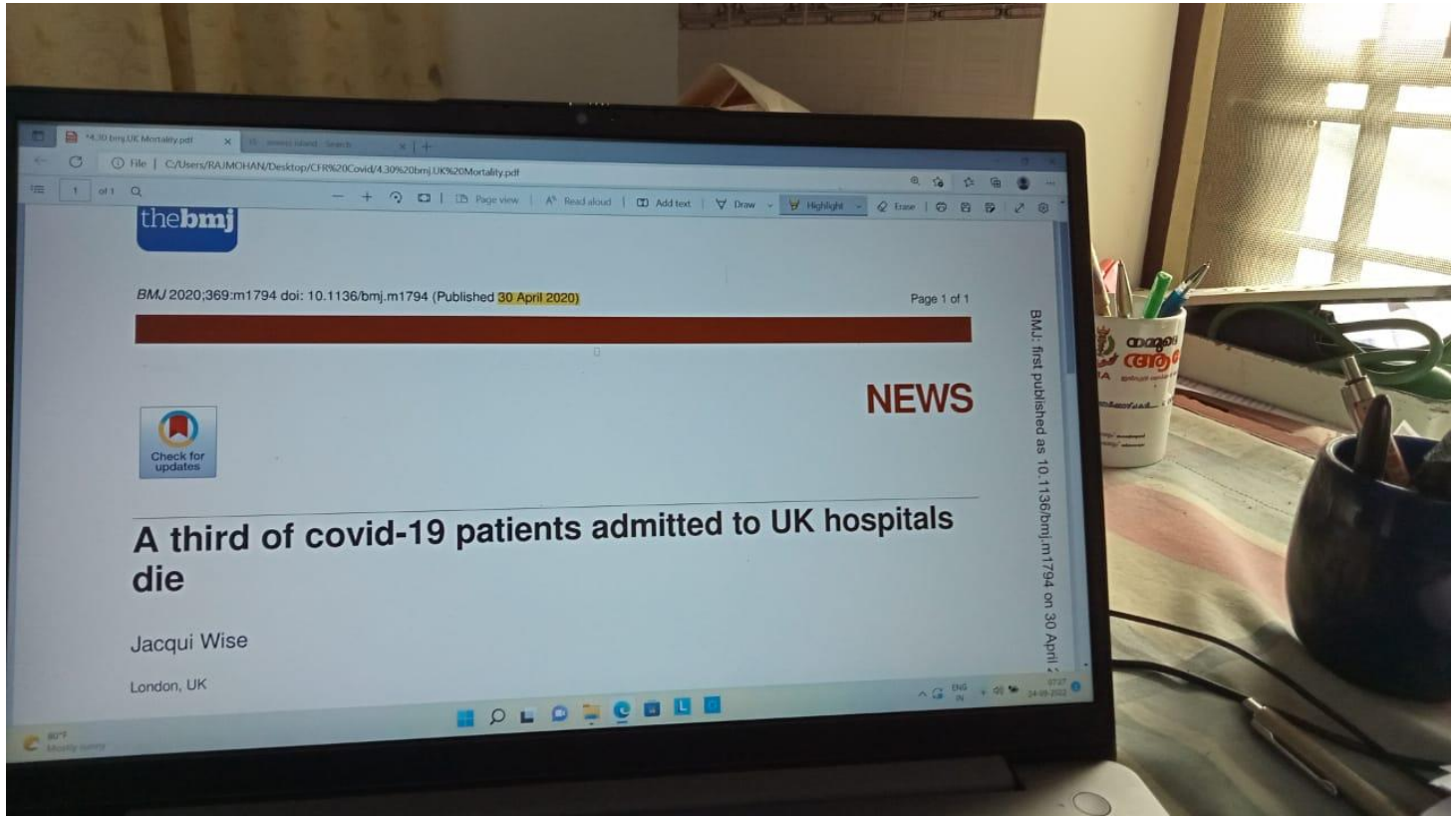
Covid Mortality in Kerala

A school of public health presentation


thebmj
BMJ 2020;369:m1794 doi: 10.1136/bmj.m1794 (Published 30 April 2020)
Page 1 of 1
NEWS
Check for updates
A third of covid-19 patients admitted to UK hospitals die
Jacqui Wise
London, UK
BMJ: first published as 10.1136/bmj.m1794 on 30 April

Mortality estimates are based on,

1. Reported Mortality (True)
2. Model based estimates
3. Excess Mortality estimation

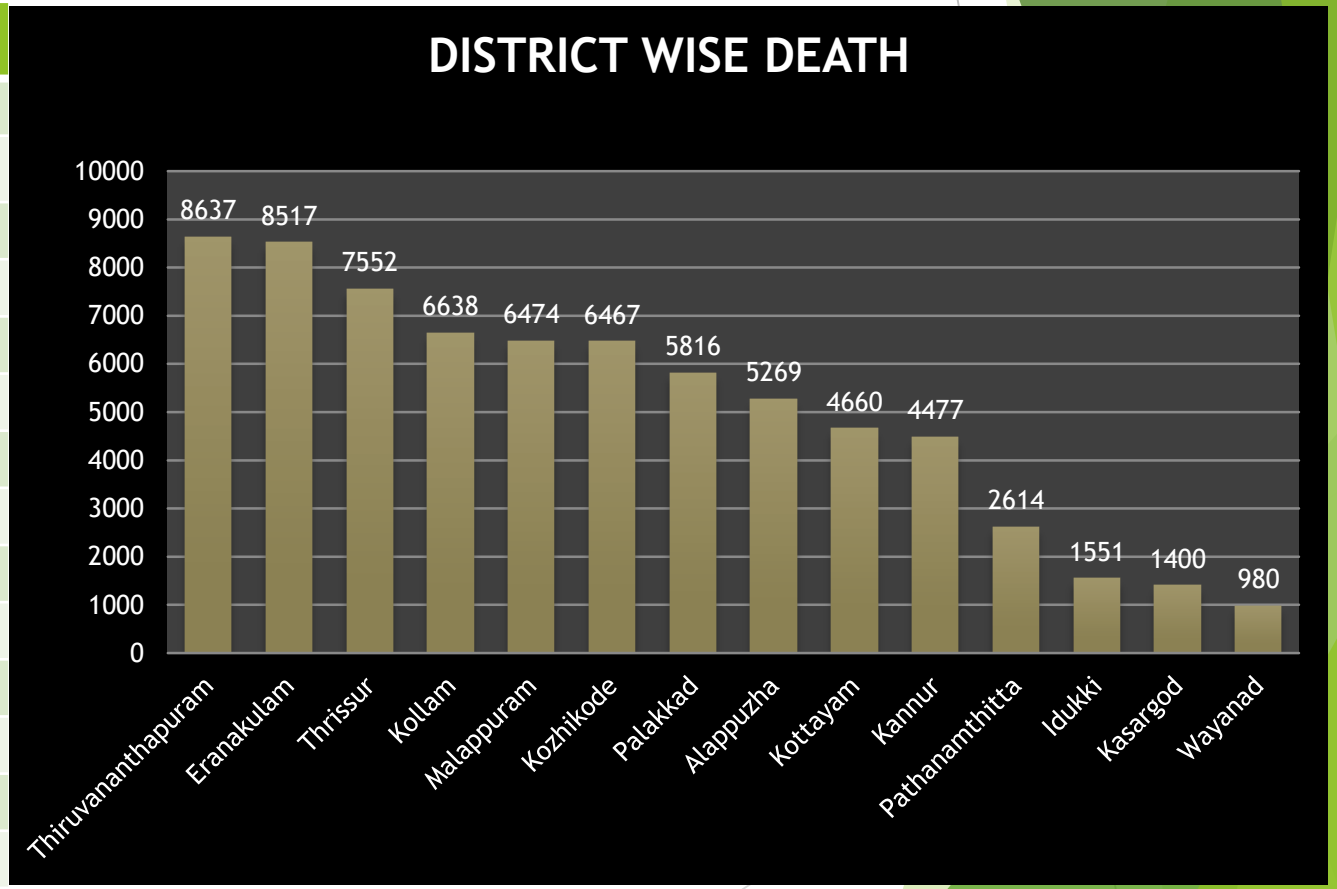
Covid death after adjudication

- Cause of death analysis BMJ the mortality
- Model based estimate depends on the assumptions of model and the assumptions need not always be true. Any model also depends on the value independent variables or how far these influence to the best and realistic estimates is the question.

Geospatial Distribution

Cumulative death report district wise as on 2020

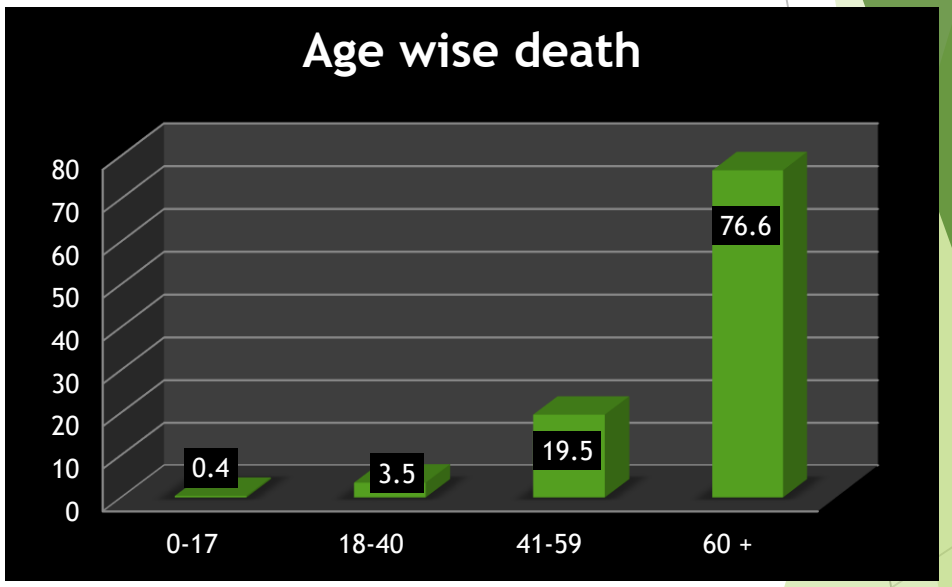
District	Deaths	Per million pop
Thiruvananthapuram	8637	2611
Eranakulam	8517	2596
Thrissur	7552	2428
Kollam	6638	2524
Malappuram	6474	1574
Kozhikode	6467	2093
Palakkad	5816	2069
Alappuzha	5269	2483
Kottayam	4660	2354
Kannur	4477	1773
Pathanamthitta	2614	2186
Idukki	1551	1400
Kasargod	1400	1074
Wayanad	980	1200



Age distribution of deaths

Broad age groups

Age Group	Deaths	Percentage
0-17	128	.4
18-40	1282	3.5
41-59	7139	19.5
60 +	28019	76.6



- Availability of age details in Covid dashboard is 36568.

More specific age groups

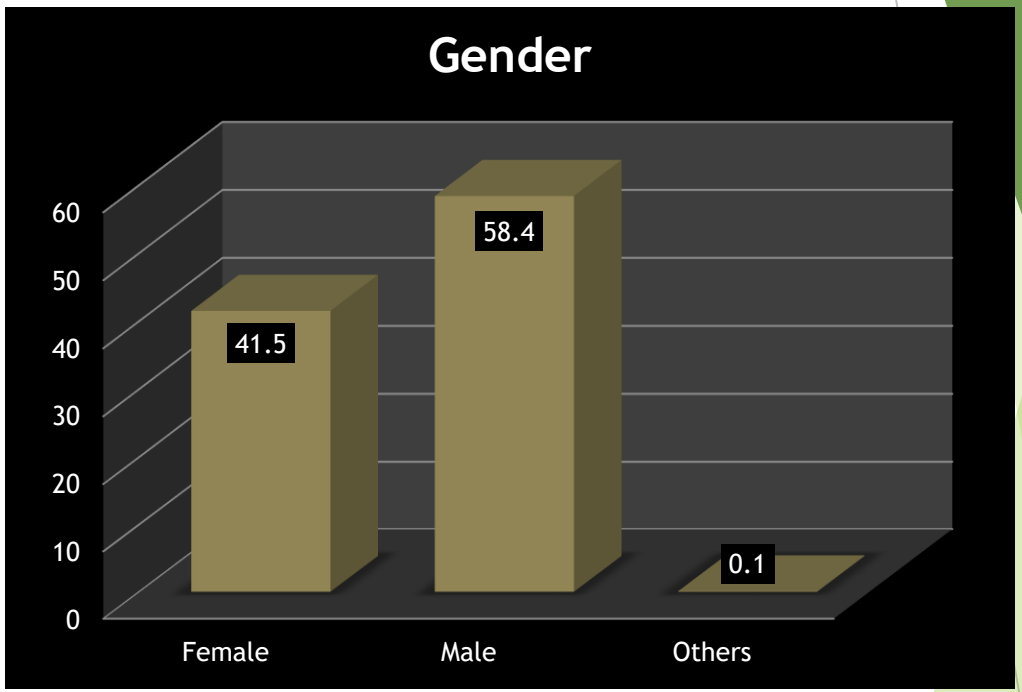
Age group	Death numbers	Percentage	Age specific Mortality rate
0-10	53	.2	1.61
11-20	70	.2	2.13
21-30	266	.8	8.09
31-40	910	2.8	27.67
41-50	2322	7.1	70.59
51-60	5327	16.2	161.93
61-70	8945	27.2	271.92
71-80	8786	26.7	267.08
81-90	5216	15.9	158.56
91-100	954	2.9	29.00
Above 100	47	.1	1.42
Total	32896	100.0	

2021						Standard population 2011	
Age	Total a	Population in that age group as percentage b	Total Covid Deaths in that age group c	Percentage of deaths in that age group d	ASDR(# of deaths in that age group/Total population in that age group)x100000 e	Percentage of that specific age group in standard (population of 2021) f	ASMR (xf)
0-14	6686703	19.24	97	0.3	1.4506	23.5	34.09
15-39	11856179	34.12	1120	3.1	9.4466	38.7	365.58
40-59	10686876	30.75	7332	20.1	68.6075	25.2	1728.91
60-69	3378176	9.72	10897	29.8	322.5705	7.3	2354.76
70+	2145343	6.17	17122	46.8	798.1008	5.3	4229.93
Total	34753277	100	36568	100	1200.1760	100	8713.28*

- Total: 8713 standard Deaths per 1,00,000 populations in 2021.

Gender distribution of deaths

Gender	Frequency	Percentage
Female	14466	41.6
Male	20618	58.4
Others	1	0.1



- Availability of death details out of 35085 deaths 41.6% females 58.4 males and 0.1 others. Data collected up to August 31st 2022.

Case fatality rate district wise

- Overall case fatality rate in India 1.34%

District	Case fatality rate	Confidence Interval	
		Upper Limit	Lower Limit
Alappuzha	1.29	1.33	1.26
Kannur	1.27	1.31	1.23
Palakkad	1.27	1.30	1.24
Kollam	1.25	1.28	1.22
Thiruvananthapuram	1.14	1.16	1.12
Thrissur	1.1	1.13	1.08
Malappuram	0.99	1.01	0.97
Kottayam	0.99	1.02	0.96
Kozhikode	0.94	0.96	0.92
Pathanamthitta	0.93	0.97	0.90
Eranakulam	0.91	0.93	0.89
Kasargod	0.83	0.87	0.79
Idukki	0.72	0.76	0.69
Wayanad	0.58	0.62	0.54

Comorbidities (MCCD report Kerala, 2019)

Comorbidities	Total death	Percentage
Diabetes mellitus	565	56.6
Hypertension	536	53.7
CAD	252	25.2
CKD	178	17.8
CVA	80	8
COPD	98	9.8
Cancer	53	5.3
Bedridden	3	0.3
CLD	29	2.9
Bronchial asthma	11	1.1
TB	16	1.6
No comorbidities	51	5.1

- Based on death audit report available on public domain

Source : Comorbidities as per Covid death audit conducted

Presence of Comorbidities among the COVID -19 deaths audited

As per death audit report, DHS Dec 2020

Comorbidities	Number of death	Percentage
Diabetes mellitus	565	56.6
Hypertension	536	53.7
CAD	252	25.2
CKD	178	17
CVA	80	8
COPD	98	9.8
Cancer	53	5.3
Bedridden	30	0.3
CLD	29	2.9
Bronchial asthma	11	1.1
TB	16	1.6
No comorbidities	51	0.3

Background death rate and excess deaths due to Covid

Kerala death as per CRS Report 2020

Age	Total Death	Percentage
<1	2293	0.91%
1-4	417	0.16%
5-14	790	0.31%
15-24	2720	1.08%
25-34	4012	1.5%
35-44	8252	3.28%
45-54	20003	7.96%
55-64	39641	15.7%
65-69	28814	11.4%
>70	143768	57.2%
Age not stated	273	0.10%
Total	250983	100%

Total COVID -19 cases, total deaths, and case fatalities in Kerala, 2020-2021

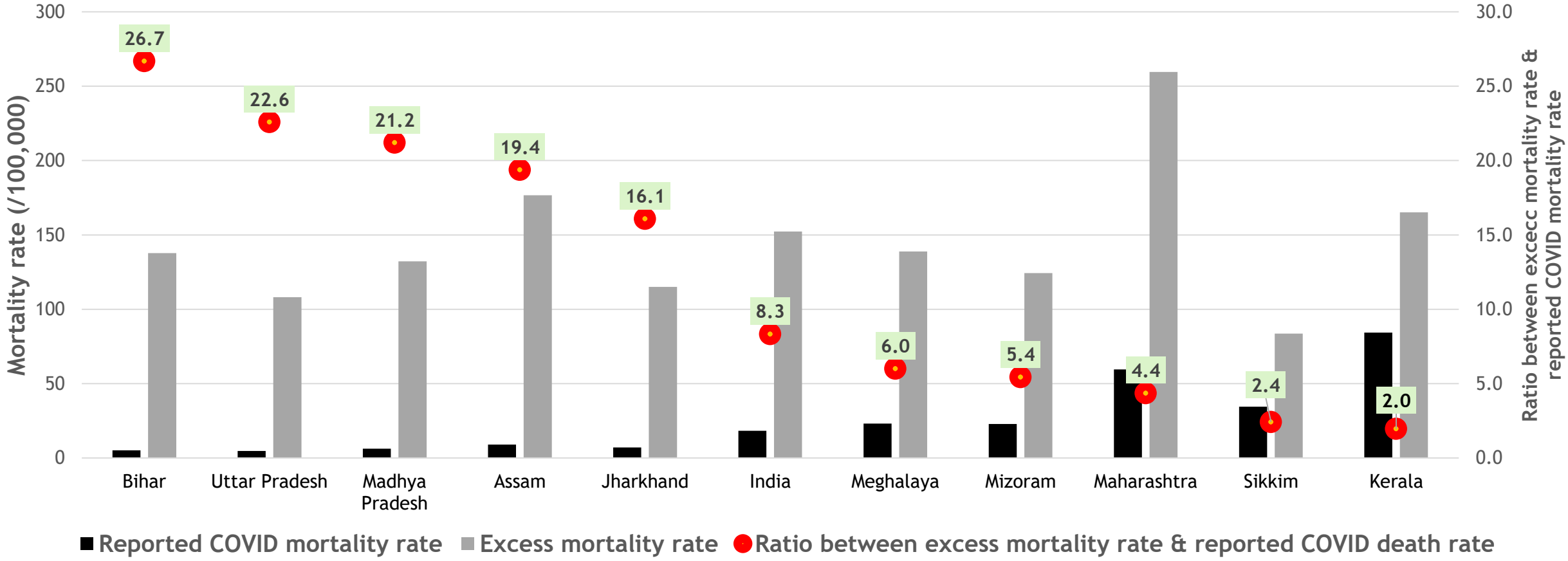
Gender	Total cases	Total Deaths	Case Fatality %
Female	2708870	19031	0.70
Male	2422378	28763	1.19
Total	5247177	47794	0.91

Age group in years	Total Cases	Total Deaths	Case Fatality %
0-10	412422	114	0.03
11-20	628254	80	0.01
21-30	943771	354	0.04
31-40	946504	1309	0.14
41-50	853776	3595	0.42
51-60	708032	8127	1.15
61-70	469737	13022	2.77
71-80	204886	12583	6.14
>80	79795	8610	1079

Issue of Excess mortality

- Excess mortality was a universal problem
- The discussion was initiated by media
- WHO intervened and produced model based estimates and a dedicated platform illustrating the methodology
- Later on GOI released a descending note as press release
- Many Academic experts came forward disagreeing to WHO opinions and finally WHO corrected the stand.
- The following news splits are evidence for this

COVID-19 excess mortality



ആശങ്കയാവുന്ന മരണനിരക്ക്

വീടിനകത്തും ജാഗ്രത വുലർത്തണം

കഴിഞ്ഞ വർഷം മേയ് 23: ആന്ന് 62 പേർക്കാണു കേരളത്തിൽ കോവിഡ് സ്ഥിരീകരിച്ചത്. ആകെ ചികിത്സയിലുണ്ടായിരുന്നത് 275 പേർ. അന്ന് ഒരു മരണം പോലും ഉണ്ടായില്ല. കോവിഡ് മൂലം അതിനകം കേരളത്തിൽ ആകെ മരിച്ചതു നാലു പേർ മാത്രമായിരുന്നു. കൃത്യം ഒരു വർഷത്തിനുശേഷം ഇന്നലെ നാം കേട്ടതോ: 1,13,205 സാംപിളുകളുടെ ഫലം വന്നപ്പോൾ പോസിറ്റീവായത് 25,820 പേർ. 37,316 പേർ കോവിഡ് മുക്തരായപ്പോൾ ചികിത്സയിലുള്ളത് ആകെ 2,77,598 പേരും. കോവിഡ് മരണങ്ങളുടെ എണ്ണം ഏറ്റവും ഉയർന്ന് ഇന്നലെയെത്തിയത് 188 എന്ന വലിയ സംഖ്യയിൽ.

പോസിറ്റീവ് ആകുന്നവരുടെ എണ്ണം ഇപ്പോൾ കുറയുന്നുണ്ടെന്നു പറയാമെങ്കിലും പ്രതിദിന മരണം കഴിഞ്ഞ 10 ദിവസം കൊണ്ട് ഉയർന്ന് ഇരട്ടിയോളമായെന്നതു നമ്മെ ആശങ്കയുടെ മുൾമുനയിലെത്തിക്കുന്നു. ഔദ്യോഗിക കണക്കനുസരിച്ചു തന്നെ സംസ്ഥാനത്തു 11 ദിവസത്തിനുള്ളിൽ 1305 കോവിഡ് മരണങ്ങൾ ഉണ്ടായിക്കഴിഞ്ഞു. ഈ മാസം 12നാണ് ആകെ മരണം 6000 കടന്നത്; 22 ആയപ്പോഴേക്കും 7000 കടക്കുകയും ചെയ്തു. കോവിഡ് സ്ഥിരീകരണ നിരക്ക് (ടിപിആർ) ഇപ്പോഴും 20 ശതമാനത്തിനു മുകളിലാണ്.

സംസ്ഥാനത്തു കോവിഡ് കേസുകളുടെ എണ്ണം കുറയുന്നുണ്ടെങ്കിലും വരുംദിവസങ്ങളിൽ മരണസംഖ്യ ഉയർന്നേക്കാമെന്നാണ് ആരോഗ്യവിദഗ്ധരുടെ അഭിപ്രായമെന്നു മുഖ്യമന്ത്രി പിണറായി വിജയൻ വ്യക്തമാക്കിയിട്ടുണ്ട്. രണ്ടാം തരംഗത്തിൽ ഏറ്റവും കൂടുതൽ കേസുകൾ റിപ്പോർട്ട് ചെയ്തത് ഈ മാസം 12ന് ആണ് – 43,529. അന്നും സമീപദിവസങ്ങളിലുമുണ്ടായ വൈറസ് ബാധ മുൻകൂട്ടി കാണാനും മരണം സംഭവിക്കുന്നതു ഇപ്പോൾ മുതലാണെന്നു വ്യക്തമാക്കാനും. ഇപ്പോൾ രേഖപ്പെടുത്തുന്ന മരണങ്ങളിൽ മിക്കതിനും കാരണമായ വൈറസ് ബാധ ഉണ്ടായത് 2 മുതൽ 6 വരെ ആഴ്ച മുൻപാണെന്നതിനാലാണിത്. എല്ലാ ആശുപത്രികളിലും ഓക്സിജൻ, വെന്റിലേറ്റർ കിടക്കകൾ എന്നിവ ഉറപ്പാക്കണമെന്നു കലക്ടർമാരോടു നിർദേശിച്ചിട്ടുണ്ടെന്നും മുഖ്യമന്ത്രി വ്യക്തമാക്കിയിരുന്നു.

വാക്സിൻ എടുത്തവരിൽ ചിലർ പുലർത്തുന്ന അമിത ആത്മവിശ്വാസം ജാഗ്രതയിൽ വിള്ളലുണ്ടാക്കുന്നതാണ്. ഒരു ഡോസ് വാക്സിൻ എടുത്തവർക്കും പൂർണ പ്രതിരോധമില്ലെങ്കിൽ പോലും സുരക്ഷിതത്വം ലഭിക്കാം. എന്നാൽ, ഇവരും വൈറസ് വാഹകരാകാം. വാക്സിൻ എടുത്തവർക്കു കോവിഡ് ഉണ്ടാവുന്നതു വലുപ്പച്ചെറുപ്പം അനുസരിച്ചാണെന്നാണ് അനുമാനം. അതിനാൽ ഇവരും കൃത്യമായി കോവിഡ് പെരുമാറ്റച്ചട്ടം പാലിക്കുകതന്നെ വേണം. പുറത്തുനിന്നു വീട്ടിലെത്തി, വേണ്ട ജാഗ്രതയില്ലാതെ പെരുമാറുന്നവർ വൈറസ് വാഹകരാണെങ്കിൽ വീട്ടിലുള്ള മറ്റുള്ളവർക്കു കോവിഡ് പകരാനുള്ള സാധ്യത ഗണ്യമായതോതിൽ കൂടുന്നു.

രാജ്യത്തു പ്രതിദിന വാക്സിൻ കുത്തിവയ്പു കുത്തനെ ഇടിയുകയാണെന്നതു മറ്റൊരു ആശങ്കയാണ്. ഏപ്രിൽ ആദ്യവാരം ദിവസം 40 ലക്ഷം പേർക്കു വരെ കുത്തിവയ്പു നൽകിയ സ്ഥാനത്തു കഴിഞ്ഞ ദിവസം നൽകിയതു 16.31 ലക്ഷം പേർക്കു മാത്രമാണ്. ഈ വർഷം അവസാനത്തോടെ 18 വയസ്സിനു മുകളിലുള്ളവർക്കെല്ലാം വാക്സിൻ നൽകുകയെന്ന കേന്ദ്ര ആരോഗ്യമന്ത്രി ഡോ. ഹർഷ് വർധന്റെ പ്രഖ്യാപനത്തിനു തിരിച്ചടിയാണിത്. ഇത്ര കുറഞ്ഞ വേഗത്തിലാണു കുത്തിവയ്പെങ്കിൽ ലക്ഷ്യം നേടാൻ മറ്റൊരു വർഷം വേണ്ടിവരുമെന്നു പറയുന്നു. 18–44 വയസ്സുകാരുടെ കുത്തിവയ്പ് പല സംസ്ഥാനങ്ങളിലും നിലച്ചു കഴിഞ്ഞു. കേരളത്തിലും വാക്സിൻ കുത്തിവയ്പ് പിന്നോട്ടു കൊണ്ടുപോകാൻ ആരംഭിച്ചിരിക്കുന്നു.

മരണനിരക്കു കുറച്ചുകൊണ്ടുവരാനും ഗുരുതരാവസ്ഥയിലുള്ളവരെ ഒരു പരിധിവരെയെങ്കിലും പിടിച്ചുനിർത്താനും നമ്മുടെ ആരോഗ്യസംവിധാനങ്ങൾക്കുള്ള മുഴുവൻ ചികിത്സാസംവിധാനങ്ങളും ഉപയോഗിക്കണമെന്ന വെല്ലുവിളിയാണിത്. അങ്ങനെയല്ലാത്ത പക്ഷം വ്യാപനത്തെ സർവനാശം വിതയ്ക്കാൻ പാകത്തിൽ ഇപ്പോഴത്തെ തരംഗം തുടങ്ങുകയും വേണം.

WHO estimates 4.7 million COVID-linked deaths in India

The figure is nearly 10 times the government's official count for 2020 and 2021

JACOB KOSHY
NEW DELHI

There were likely 47 lakh deaths, directly or indirectly attributable to COVID-19, in India in 2020 and 2021, a report by the World Health Organization (WHO) said on Thursday. These are the highest, by far, for any country and make up nearly a third of the 15 million such deaths estimated by the agency globally.

India officially estimated only 4.8 lakh cumulative deaths linked to COVID-19 as of December 2021, which implies that the WHO estimate is nearly 10 times the government count. As of May, India's official COVID-19 death toll is 5.2 lakh.

Minutes after the WHO released its estimate, India reiterated its "objection to the methodology" used.

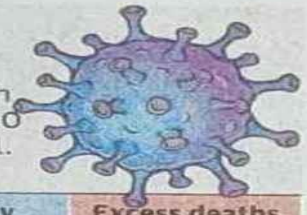
"These sobering data not only point to the impact of the pandemic but also to the need for all countries to invest in more resilient health systems that can sustain essential health services during crises, including stronger health information systems," WHO Director-General Tedros Adhanom Ghebreyesus said. "WHO is committed to working with all countries to strengthen their health information systems...."

Excess deaths are calculated as the difference between the number of deaths that have occurred and the number that would be expected in the absence of the pandemic based on data from earlier years. Excess mortality includes deaths associated with COVID-19 directly or indirectly (due to the pandemic's impact on health systems).

CONTINUED ON ▸ PAGE 8

Scary count

According to WHO's calculations, 4.74 million excess deaths associated with COVID-19 occurred in India between 2020 and 2021, nearly 10 times the official toll. A look at top 10 countries



Country	Cumulative excess deaths associated with COVID-19 in million	Officially reported COVID-19 deaths in million	Excess deaths as a multiple of official COVID-19 deaths
India	4.74	0.48	9.8
Russia	1.07	0.30	3.5
Indonesia	1.03	0.14	7.1
U.S.	0.93	0.82	1.1
Brazil	0.68	0.62	1.1
Mexico	0.63	0.30	2.1
Peru	0.29	0.20	1.4
Turkey	0.26	0.08	3.2
Egypt	0.25	0.02	11.5
S. Africa	0.24	0.09	2.6

India will contest report, say officials

BINDU SHAJAN PERAPPADAN
NEW DELHI

India will take up the "glaring anomalies" in the WHO report on excess mortality estimates associated with the COVID pandemic at the highest and appropriate forum, said sources in the Health Ministry on Thursday. "The numbers are nowhere close to reality," the Ministry said.

"This reflects a statistically unsound and scientifically questionable methodology of data collection for making excess mortality projections in the case of India," it said. The WHO should appreciate the fact that mortality is a sensitive topic and any speculative report on this can have multiple and needless adverse effects, it added.

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Estimating COVID-19's excess deaths

Why is India concerned about the World Health Organization's methodology?

SRINIVASAN RAMANI

The story so far: Reports published in the website devex.com and *The New York Times* indicate that the World Health Organization (WHO) was set to release an estimate of excess deaths during the pandemic period the world over and that the report had been delayed for months because of objections from the Indian government. The report is expected to show at least 4 million excess deaths in India, the highest such tally for any country in the world, according to the *NYT*. The Indian government responded to the report saying its basic objection to the report centred on the "methodology adopted for the same".

What are excess deaths? How are they measured?

The excess deaths approach to calculating mortality considers the difference between the registered deaths before the pandemic and those during the pandemic period. This gives a robust estimate of the true impact of the pandemic – deaths due to the disease and those that occurred because of the pandemic overwhelming health systems among others.

In most developed countries, death registration is full or nearly full and therefore, calculating excess deaths is relatively easier as deaths data are reliable and readily available. In such countries, most deaths are medically certified with cause of mortality and therefore a clear picture on excess deaths with causality can emerge quickly. Countries such as the U.S., the U.K., Italy and Germany, for instance, have near 100% registration of deaths with the cause of mortality known in every case, enabling excess deaths to be known in near real time.

The corresponding figure for India is 92% (as per the Annual Report on Vital Statistics of India based on Civil Registration System-2019) and only 20.7% of the deaths are medically certified. There is substantial variation in registration and certification across States in India. Some States such as Tamil Nadu, Kerala, Karnataka, Gujarat, Maharashtra, West Bengal, Telangana, Andhra Pradesh, Haryana, Goa, Tripura, Odisha, Punjab, Mizoram and Sikkim have 100% registration, according to CRS-2019, while others such as Manipur (21.4%), Nagaland (30%), Arunachal Pradesh (38.6%), Bihar (51.6%), Jharkhand (58.8%), Uttar Pradesh (63.3%) and Jammu & Kashmir (66.7%) have much lower levels of registration.

Besides there is variation in the online availability of death registration numbers and there is also a significant variation in the delay in registration of deaths across States. Only in 11 of them, 90% of deaths are registered within 21 days of occurrence; there are 10 States including Karnataka and Kerala, where deaths registration is 100%, where 50% to 80% of the deaths are registered within 21 days and in two (Nagaland and Arunachal Pradesh), less than 50% of the deaths are registered in this manner.

Therefore, for countries like India, calculating excess deaths is not an easy task. The best way to do it is to individually calculate excess deaths for States with near 100% registration (based on a proper baseline for comparison) and to use suitable models to extrapolate deaths from limited data in others. News reports in *The Hindu* and others in 2021 managed to calculate excess deaths for 11 States and Union Territories, besides some cities as well. *The Hindu*'s Data Team estimated that the excess deaths in these 11 States and UTs were 5.8 times the reported COVID-19 death toll there till May 2021 (the end of the second wave of the pandemic). Some States such as Madhya Pradesh (24 times), Andhra Pradesh (18), West Bengal (11) had high excess deaths multiples, others such as Haryana (seven), Tamil Nadu (four), Maharashtra (four), Punjab (four) and Karnataka (four) had moderate multiples and some such as Kerala, Delhi (two) and Himachal Pradesh (two) had low multiples. (The baseline mortality for these States/UTs were taken as the average number of deaths in the corresponding months of the last two years (2018 and 2019) before the pandemic.)

In September 2021, *The Hindu* also reported the excess death multiples for countries such as the U.S. (1.2), Mexico (2.2), Peru (1.1), Russia (3.7), the U.K. (0.8), Italy (1.1), Colombia (1.1), France (0.9), Germany (0.8), Spain (1.2), and Chile (5.7). Only Chile's (5.7) was comparable to the 11 States and UTs for which data was available in India.

What do studies based on these data and others say?

Later studies (both peer-reviewed and preprints) utilised these reports in *The Hindu* and elsewhere that used CRS data, besides other databases and surveys to infer that the reported death toll due to COVID-19 in India was undercounted and excess deaths were several multiples higher than the reported toll (see graphic).

What are the findings by the WHO? How did they go about it?

The WHO has not released the final report as yet. But the report in *The New York Times* says that the excess deaths estimated by the WHO in India exceeded 4 million, nearly eight times the reported death toll of more than 5.2 lakh.

Explaining the methodology in an extract from the unreleased WHO report, the authors of the report (Victoria Knutson, Serge Aleshin-Guendel, Ariel Karlinsky, William Msemburi and Jon Wakefield) write that they based their estimates on all-cause mortality data from 17 States and one Union Territory in India. They used this approach — using data from subnational regions — in Argentina, China, Indonesia and Turkey as well, where national all-cause mortality data was not available. They go on to add, "for India, we use a variety of sources for the registered number of deaths at the State and Union Territory level. The information was either reported directly by the States through official reports and automatic vital registration, or by journalists who obtained death registration information through Right to Information requests". They then estimate the total number of excess deaths for the country by looking at the variations in the subnational level and their contributions to the overall death toll before the pandemic and the data for these subregions during the pandemic.

Why is the Indian government dismissive of the report?

Reacting to the *NYT* report, the Ministry of Health and Family Welfare stated it was concerned as "to how the statistical model projects estimates for a country of geographical size and population of India also fits in with other countries which have [a] smaller population. Such one-size-fits-all approach and models which are true for smaller countries... may not be applicable to India". It also said that "the model gives two highly different sets of excess mortality estimates... when using the data from Tier I countries and when using unverified data from 18 Indian States."

The authors of the WHO report emphasise that "for India the global predictive covariate model is not used and so the estimates of excess mortality are based on data from India only", thereby negating the argument from the Health Ministry that a "one-size-fits-all approach model" was used. Other concerns such as an assumption of "inverse relationship between monthly temperature and monthly average deaths", besides lack of uniformity in "test positivity rate" expressed in the Ministry's press release, do not seem to be borne out in the method as described by the authors in their extract from the WHO report. The Ministry also claims that the data published in the newspapers were "unverified",though these were data that was accessed through various means, including Right to Information requests from the Civil Registration System for States for whom this data was available. The full report by the WHO should enable us to assess the pandemic's true impact in India.

Estimates of pandemic-related mortality in India

Study	Outlet	Excess mortality/COVID mortality estimates	Reference period	Database
Jha et al. (2022)	Science	3 Million+	Till June 2021	C-Voter Survey, CRS, HMIS
Guilmoto (2022)	PlosOne	3.2-3.7 Million	Till November 2021	Death rates:Kerala, Indian Railways, MLA's
Leffler, Lykins and Yang (2021)	MedRxiv Pre-print, September 2021	2.0M-3.6M	Till August 31 2021	CRS
Malani and Ramachandran (2021)	NBER Working Paper August 2021	4.5M	Till June 2021	CMIE survey
Banaji and Gupta (2021)	MedRxiv Pre-print, October 2021	2.8M-5.2M	April 2020-June 2021	CRS
Anand, Sandefur and Subramanian (2021)	CGD Working Paper, July 2021	3.4M- 4.9M	Till June 2021	CMIE survey, CRS, IFR estimates
Micro-Studies				
Lewnard et al. (2021)	The Lancet	Under-reporting factor of over 4 during second wave	Till June 30 2021	CRS Chennai
Acosta et al. (2021)	MedRxiv Pre-print, August 2021	16K for 54 Gujarat municipalities comprising 5% of State population	March 2020-April 2021	Wall of Grief database on Gujarat death registers
Bamezai et al. (2021)	Pre-print, August 2021	300K for Bihar	April- June 2021	Private survey based extrapolation

Notes: K= Thousand, M=Million, CRS= Civil Registration System, HMIS= Health Management Information System, CMIE= Centre for Monitoring Indian Economy, MLA= Member of Legislative Assembly

(Graphic courtesy, Prof. Chinmay Tumbe, Indian Institute of Management, Ahmedabad)

Settling India's COVID-19 mortality data

WHO's coronavirus mortality count is more than a subject of disagreement — it poses questions to the establishment

CHAPAL MEHRA

Over the last year, the World Health Organization (WHO) has been busy, in an unprecedented effort, to calculate the global death toll from COVID-19. This effort, however, has India's health establishment up in arms. Globally from an estimated six million reported deaths, WHO now estimates these deaths to be closer to almost triple the number. India, deeply affected by successive COVID-19 waves, is not delighted with this revision.

There are gaps

Several news reports have pointed at a significant gap in India's COVID-19 story — significantly under-reported mortality figures. The unreleased WHO estimates have been prepared by leading global experts but have left India's health establishment perturbed, with its strong objections to these estimates.

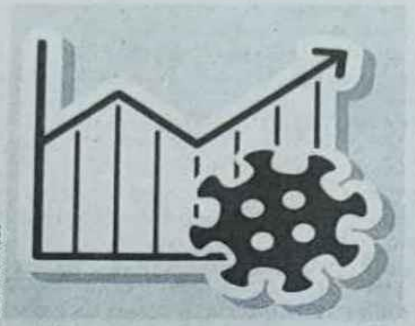
Why? Because as in these figures, India would have had close to four times the COVID-19 deaths reported-a figure that varies highly from India's previously self-reported figures. This would make India's tally of COVID-19 deaths amongst the highest globally.

Not surprisingly, India is in serious disagreement with the WHO-prepared COVID-19 mortality estimates. In fact, its continued objections have been holding back the Global WHO Report. The argument being made by India's health establishment through a public clarification is that this is an overestimation, and the methodology employed is incorrect.

The new estimates also take into account formerly uncounted deaths, but also deaths resulting from the impact of COVID-19. For example, millions who could not access care, i.e., diagnosis or treatment due to COVID-19 restrictions or from COVID-19 cases overwhelming health services.

The methodology for this estimation, led by global experts, is unlikely to be faulty. India's disagreements with the methodology can be easily addressed through consultation. Also, the need to plump up India's COVID-19 deaths unnecessarily would serve little or no purpose.

Why then this objection? A quick study of India's COVID-19 response is insightful. India's COVID-19 response has been replete with delays and denials. For instance, for the longest time that India's COVID-19 number rose, the health establishment continued to insist that community transmission was not under way. It took



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months and several lakh cases before they agreed that COVID-19 was finally in community transmission.

Second wave's devastation

The end of the first wave saw a slew of congratulatory and adulatory messages by the political leadership applauding India's leadership in ending COVID-19 in the country. India's people were told that the war against COVID-19 had been won and over. Until the deadly second wave arrived and crept up on the country which had turned complacent.

The devastation of the second wave showed how unprepared we were to combat the deadly Delta variant. People began dying from lack of access to basic health facilities and infrastructure such as oxygen, beds, ventilators and therapeutics. The wave devastated India's citizens in unimaginable ways. Crematoriums ran out of wood, people were forced to bury their family members on the banks of rivers. By the time the wave subsided, India's population was devastated, and helpless, seeing dignity neither in disease nor in death.

Potential fallout

The need then to deny these new mortality figures is much like the case of the emperor's new clothes. The establishment shudders to think what these figures reveal to the public not just about the lack of preparedness but also the human costs to the country, and communities.

Also, at this time, there is rising unemployment, rising fuel prices and inflation in India. The figures then also have enormous political relevance. They are the much-needed ammunition that a beleaguered and often out of sync and clueless Opposition needs to counter the Government's victory drumbeat against COVID-19.

These new figures also have the power to revive public memory which is otherwise short-lived. Human tendency is also to gloss over suffering and believe in the mainstream narrative which makes loss more bearable and often easier. These numbers then are important because they can revive the memories of the desperation and the helplessness millions of Indians faced during the devastating second wave.

The COVID-19 mortality data from WHO is more than a disagreement. It is food for thought and poses several questions to India's health establishment. Were these deaths avoidable? Could India have been better prepared? Was India's health establishment dismissive in the face of global warnings? Should India have gone to elections in the middle of a pandemic? But the most important question is — why not count the dead?

Even for the Government's most fervent supporters, these questions are difficult to answer or deflect when faced with such overwhelming mortality figures. It is no surprise then that those figures create fear and spark denial. The figures ratchet up not only issues of administrative but also moral accountability for governments that they have been previously side stepped through effective and misleading media narratives. But, most importantly, these figures pose several key questions before us, the people of India. How much lack of accountability under-reporting are we willing to accept? Do these reduced figures not amount to an erasure of our collective suffering, grief and loss? And who, if anyone, will be held accountable if these figures are accurate? Perhaps it is just as well that death is the end of all questions.

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Conclusions

- Kerala is a state which experienced phenomenal covid mortality. We need further comparison studies with in the country and other identical places outside the country.
- Efforts has been already initiated to conduct death audit. The death audit exercise needs to be completed for all covid deaths. This can be done at the institutional level. There is a training need for medical certification of cause of death for certifying physicians and the importance of documentation of underlying cause of death need to be sufficiently emphasized. If the system was strong about ascertainment of cause of death many confusions would have been avoided.

- Mortality is the culmination of progression of disease and a proper epidemiological study of near miss cases at ICU setting would be desirable for at lese a sample of cases from tertiary care centers. This can be the first phase for prediction modelling for risk factors of mortality among covid cases. As the case records are available at facility institutional teams can be assigned for this work.
- The issue of excess deaths can be considered as a closed chapter once we get the MCCD for 2020 and 2021 for the state from the department of vital statistics. This report will have sufficient number of sample size to make valid and generalizable conclusions on covid and non- covid deaths.
- The granularity of the available data needs further expansion for end users who are researchers.

THANK YOU…