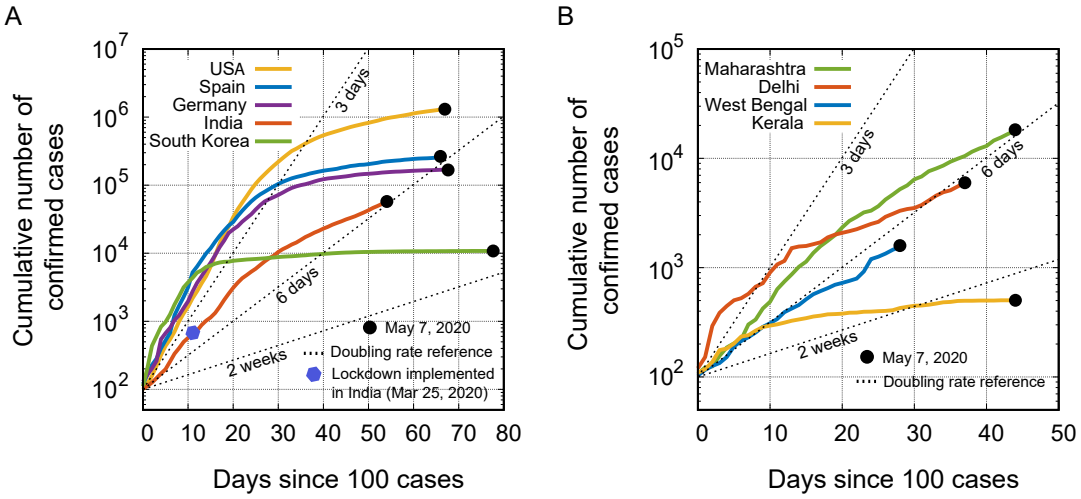

FIG. S1. Time progression of the cumulative number of confirmed COVID-19 positive cases from the days since 100 cases for (A) different countries (B) different Indian states, plotted on a semi-log scale.

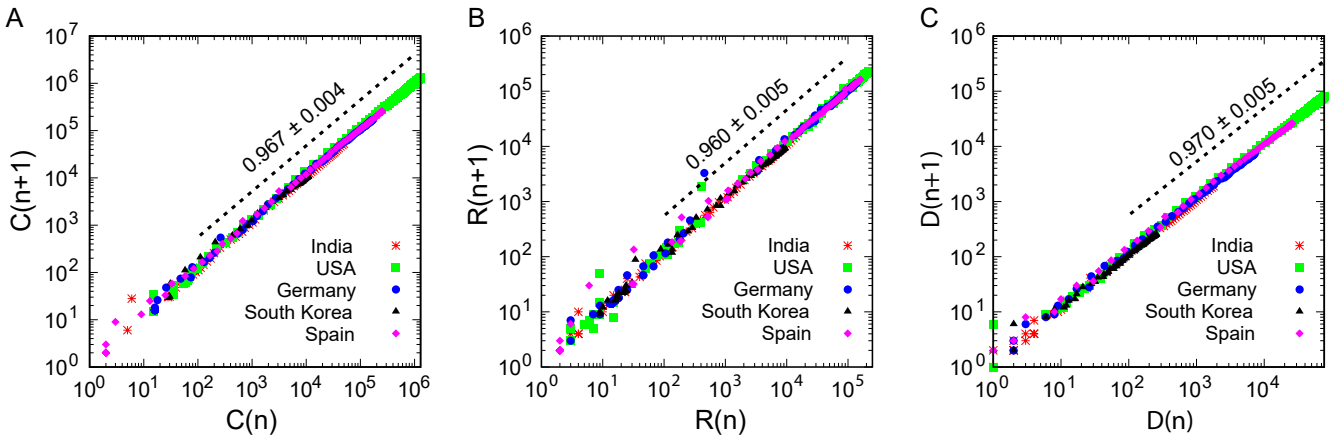

FIG. S2. The recurrence correlation between the population on day n and day $n+1$ plotted on a log-log scale. (A) $C(n)$ stands for the number of cumulative confirmed infective cases on day n. (B) $R(n)$ stands for total recovered population on day n. (C) $D(n)$ stands for total deaths on day n. The population count on n^{th} day vs population count on $(n+1)^{th}$ day plots for several countries, exhibit same power law of the following kind: $f(x) = ax^b$.

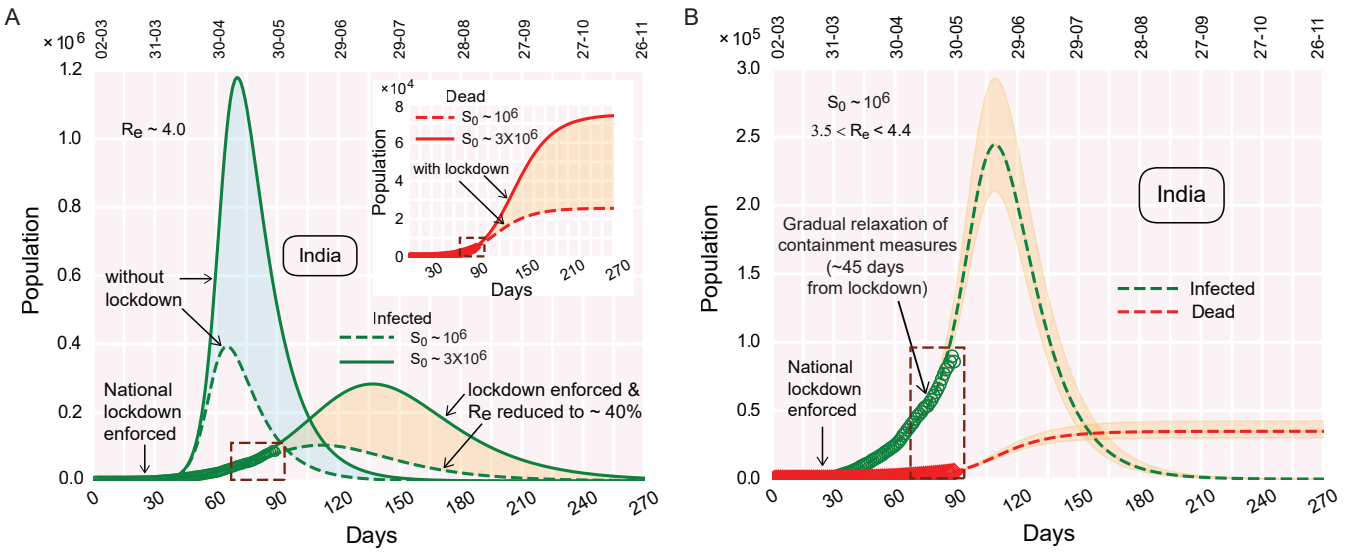

FIG. S3. Evolution of the COVID-19 in Indian context with real data (points) compared up to May 29. (A) Time evolution of the infected population (and deaths, inset), when containment measures (lockdown) are enforced. The color shades enveloping the curves denote the variation in susceptible population S_0 ('cyan' shades: without lockdown, 'orange' shades: with lockdown). (B) Time evolution of the population of infected, if, $\sim$ 45 days from lockdown, the containment measures are gradually relaxed/phased out within a time window of $\sim$ 30 days. The real data considered for fitting are from March 2, 2020. The data points enclosed within the dashed boxes are from May 7 to May 29. Previously, the model analysis had been carried out with real data up to May 7. Later on, as the pandemic situation evolved with time, additional real data until May 29 have been added for comparison with the theoretical curves in these two plots.

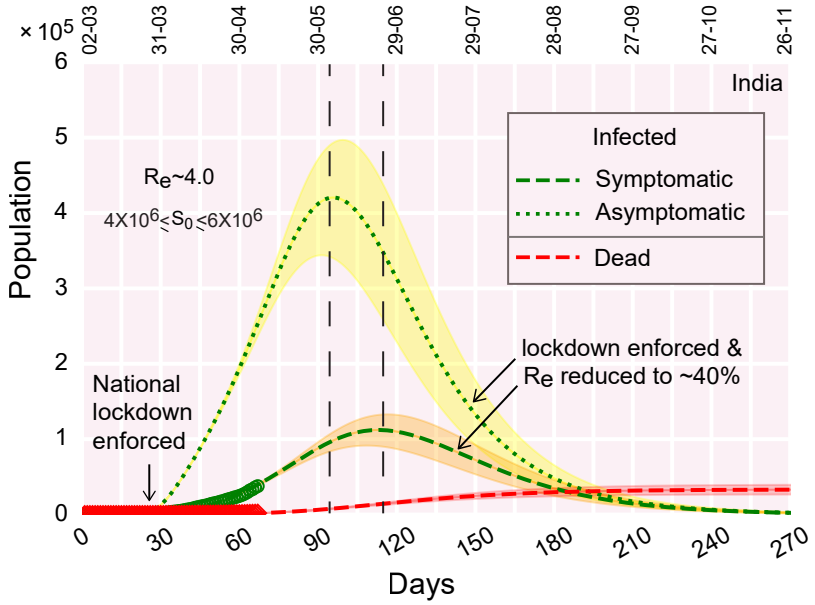

FIG. S4. Evolution of the COVID-19 in Indian context when the outspread is transmitted through both symptomatic and asymptomatic subpopulation. Relevant rate parameters (day^{-1}): $\beta = 0.18$, $\beta' = 0.341$, $\nu = 0.045$, $\nu' = 0.085$, $\delta = 0.0031$, $\alpha = 0.015$; lockdown related parameters: $\tau = 30$ days, $T = 7$ days, $\zeta = 0.42$.

Abbreviation	Meaning	Value
	Parameters for **India**	
β	rate of infection	0.2945 day^{-1}
γ	rate of recovery	0.073 day^{-1}
δ	rate of death	0.0028 day^{-1}
ζ	infection/interaction parameter	0.435
τ	The day from which the containment measures are implemented counted from day 0	30 days
T	delay in number of days before the effect of containment measures becomes prominent	9 days
S_0	initial susceptible population	1.0-3.0 $\times$ 10^6

TABLE S1. List of parameters chosen for the best fit with real data in Indian context.

Abbreviation	Meaning	Value
	Parameters for Indian state **Kerala**	
β	rate of infection	0.26 day^{-1}
γ	rate of recovery	0.092 day^{-1}
δ	rate of death	0.004 day^{-1}
ζ	infection/interaction parameter	0.18
τ	The day from which the containment measures are implemented counted from day 0	22 days
T	delay in number of days before the effect of containment measures becomes prominent	4 days
S_0	initial susceptible population	10^4
	Parameters for Indian state **Maharashtra**	
β	rate of infection	0.27 day^{-1}
γ	rate of recovery	0.0576 day^{-1}
δ	rate of death	0.0038 day^{-1}
ζ	infection/interaction parameter	0.55
τ	The day from which the containment measures are implemented counted from day 0	20 days
T	delay in number of days before the effect of containment measures becomes prominent	15 days
S_0	initial susceptible population	0.8-1.6 $\times$ 10^5
	Parameters for Indian state **West Bengal**	
β	rate of infection	0.314 day^{-1}
γ	rate of recovery	0.086 day^{-1}
δ	rate of death	0.008 day^{-1}
ζ	infection/interaction parameter	0.452
τ	The day from which the containment measures are implemented counted from day 0	14 days
T	delay in number of days before the effect of containment measures becomes prominent	13 days
S_0	initial susceptible population	0.8-1.6 $\times$ 10^5
	Parameters for India's capital territory **Delhi**	
β	rate of infection	0.24 day^{-1}
γ	rate of recovery	0.06 day^{-1}
δ	rate of death	0.004 day^{-1}
ζ	infection/interaction parameter	0.54
τ	The day from which the containment measures are implemented counted from day 0	24 days
T	delay in number of days before the effect of containment measures becomes prominent	13 days
S_0	initial susceptible population	0.8-1.6 $\times$ 10^5

TABLE S2. List of parameters chosen for the best fit with real data in Indian states Kerala, Maharashtra, West Bengal and Indian capital territory Delhi.

Abbreviation	Meaning	Value
	Parameters for **Germany**	
β	rate of infection	0.305 day^{-1}
γ	rate of recovery	0.1 day^{-1}
δ	rate of death	0.0030 day^{-1}
ζ	infection/interaction parameter	0.24
τ	The day from which the containment measures are implemented counted from day 0	39 days
T	delay in number of days before the effect of containment measures becomes prominent	8 days
S_0	initial susceptible population	10^6
	Parameters for **South Korea**	
β	rate of infection	0.45 day^{-1}
γ	rate of recovery	0.1 day^{-1}
δ	rate of death	0.001 day^{-1}
ζ	infection/interaction parameter	0.1875
τ	The day from which the containment measures are implemented counted from day 0	12 days
T	delay in number of days before the effect of containment measures becomes prominent	7 days
S_0	initial susceptible population	10^5
	Parameters for **USA**	
β	rate of infection	0.3085 day^{-1}
γ	rate of recovery	0.08865 day^{-1}
δ	rate of death	0.003 day^{-1}
ζ	infection/interaction parameter	0.42
τ	The day from which the containment measures are implemented counted from day 0	35 days
T	delay in number of days before the effect of containment measures becomes prominent	15 days
S_0	initial susceptible population	1.0-1.6 $\times$ 10^7
	Parameters for **Spain**	
β	rate of infection	0.467 day^{-1}
γ	rate of recovery	0.096 day^{-1}
δ	rate of death	0.007 day^{-1}
ζ	infection/interaction parameter	0.262
τ	The day from which the containment measures are implemented counted from day 0	22 days
T	delay in number of days before the effect of containment measures becomes prominent	11 days
S_0	initial susceptible population	10^6

TABLE S3. List of parameters chosen for countries Germany, South Korea, USA and Spain.