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1. Introduction

The COVID-19 pandemic and the associated socio-economic crisis are posing huge challenges before the governments and the common people in the affected regions of the world, raising many novel issues and imposing wrenching trade-offs. Though this crisis is global, but its impacts are deeply local.

The policy response to both crises, viz. the health shock as well as the socio-economic shock, needs to be rapid, even if it is rough around the edges. But countries cannot expect to pull this off on their own, rather the global crisis requires global solidarity and coordination.

There is no denying of the fact that every government needs to respond to this health emergency with decisions based on evidence, provide people with the best accurate information, and provide free or affordable COVID-19 testing and treatment. These health services should be backed by adequate health infrastructure particularly in public sector since higher costs of availing health services from private health care service providers may not fulfil the affordability principle in this regard. It is normally assumed that a country with higher health expenditure per capita, higher share of public expenditure on health can fight out the casualty of this pandemic in a better way.

Table-1 Global Scenario of Health Spending and COVID – 19 Pandemic

Country	Health Expenditure Per capita (2016) (US\$)	Health Exp as % of GDP (2017)	COVID death as % of total cases (As on 5 May, 2020)
USA	9869.74	17.06	5.76
Germany	4714.26	11.24	4.21
Canada	4458.21	10.57	6.34
France	4263.36	11.31	14.87
UK	3958.01	9.63	15.08
Spain	3259.8	8.87	11.14
Israel	2837.14	7.41	1.46
Italy	2738.71	8.84	13.72
S. Korea	2043.86	7.6	2.35
Saudi Arabia	1147.33	5.23	0.67
Russia	469.13	5.34	0.93
China	398.33	5.15	5.59
India	62.71	3.53	3.38

Source: WHO website, World Bank data website

2. Data Analysis

Herein, we review the correlation coefficient of health expenditure as percentage of GDP in 2017 (HLTHGDP) and COVID death as percentage of total confirmed cases (as on May 5, 2020) (COVIDD) across some selected nations including India, and we find a positive correlation where Spearman's correlation coefficient is also statistically significant. Similar result is also obtained in case of per capita health expenditure (2016) (HLTHPC) and COVID death as percentage of total confirmed cases (as on May 5, 2020) (COVIDD)[Table-2(a)-2(b)]. This seems to be counter-intuitive in the sense that a country that has a credibility of spending relatively higher (both public and private) share on health is expected to fight against any pandemic more efficiently with lesser casualties. But the situation is completely different.

An explanation to this puzzling result might be ineffectiveness of the existing treatment to cure the COVID-affected patients, the mindset of the people to compromise their freedom of movement and adhere to the government lockdown and social-distancing rules, the share of migrant labourers and the intensity of cross-border movement of workers, the possible distribution of the health expenditure among primary, secondary and tertiary health care services, the quality of support services provided by the government to the common people and health activists, the climatic condition in the country (it is apprehended that this virus becomes less fatal in hot and humid atmosphere), the type of this virus after mutation (medical researchers are of the opinion that the type of this virus found in Europe seems to be more virulent compared that found in Asian countries), the pattern of vaccination across nations etc.

Given the novelty of this virus, the medical world was in complete darkness about its possible treatment and most of the countries have been operating still now on a trial and error basis in applying necessary treatment. Hence, the health infrastructure, though needed to give better support to the affected people, failed to check the morbidity. Further, in most of the nations this virus has affected the urban people more in comparison with their rural counterparts. Thus, if the distribution of health expenditure has been more in favour of primary health in rural areas (though this is not the case with the developed countries) then also the urban centres would be incapable of tackling this problem. The mindset of the people and the level of democracy in a nation can also be a possible factor behind the initial spread of this virus since the people at large would not want to sacrifice their freedom of movement across regions and a democratic government may not take drastic steps to restrict such movements and business activities at the initial stage of this crisis (as happened in USA). Greater incidence of cross border movements of people in any region, if not restricted in time, can also raise the intensity of this crisis.

Table-2(a) Association between COVID Mortality and Health Spending (as per cent of GDP)

Measure of Association	Variable	COVIDD	HLTHGDP
Spearman's Rho	COVIDD	1.000	0.604* (0.029)
	HLTHGDP	.	.
Karl Pearson's Product Moment Correlation Coefficient	COVIDD	1	0.389# (0.189)
	HLTHGDP	.	.

*significant at 10 per cent (two-tail) #statistically insignificant

Table-2(b) Association between COVID Mortality and Health Spending (per capita)

Measure of Association	Variable	COVIDD	HLTHPC
Spearman's Rho	COVIDD	1.000	0.500# (0.082)
	HLTHPC	.	.
Karl Pearson's Product Moment Correlation Coefficient	COVIDD	1	0.301# (0.318)
	HLTHPC	.	.

#statistically insignificant at 10 per cent

Table-3(a) Association of COVID mortality with urbanization across the states in India

Measure of Association	Variable	WBCOVID	WBURB
Spearman's Rho	WBCOVID	1.000	0.532* (0.041)
	WBURB	.	.
Karl Pearson's Product Moment Correlation Coefficient	WBCOVID	1.000	0.499# (0.058)
	WBURB	.	.

*significant at 10 per cent (two-tail) #statistically insignificant

Table-3(b) Association of COVID mortality with per capita health expenditure across the states in India

Measure of Association	Variable	WBCOVID	WBHLEPC
Spearman's Rho	WBCOVID	1.000	-0.163# (0.562)
	WBHLEPC	.	.
Karl Pearson's Product Moment Correlation Coefficient	WBCOVID	1	-0.237# (0.394)
	WBHLEPC	.	.

#statistically insignificant at 10 per cent

Further, as against such inter-country comparison, we can have intra-country comparison of the impact of this virus. Let us consider 15 major states of India and look into the existing status of health infrastructure in those states along with the incidence of death due to COVID-19. The urbanization (share of urban population to total population as per 2011 census) pattern in each state has also been taken into account.

Here we observe a clear-cut negative correlation between the per capita public health expenditure across states (in 2014-15) (WBHLEPC) and the incidence of COVID death (WBCOVID). On the other hand, we get a positive correlation between the level of urbanization across states (WBURB) and the number of COVID cases (as on 5 May, 2020) (WBCOV). [Table-3(a)-(b)]. However the negative correlation of mortality due to COVID with per capita health spending has been found to be insignificant which is perhaps because of the presence of idiosyncratic variation in epidemiological factors among the states.

The linear regression analysis of morbidity and mortality from COVID-19 [as in Table - 4] reveals significant causal effect of urbanization on the degree of incidence of COVID-19 epidemic across the states in Indian, in particular, every one per cent rise in urbanization rate translates into over 9 per cent in morbidity from COVID-19 and over 10 per cent increase in mortality rate, on an average across the states. Moreover, it is hereby evident from the partial regression coefficient of per capita health spending being statistically significant that that role of health spending as preemptive factor against pervasion of COVID-19 is a justified case only after having controlled the impact of urbanization. In this regard, the regression analysis envisage a lower incidence of COVID-19 in terms of morbidity to the tune of more than 0.4 per cent and that in terms of mortality to the tune of more than 0.3 per cent, on average across the states. This in turn implies that the effectiveness of health spending in staving the backlash of COVID-19 in a given region depends crucially on the extent of urbanization persistent in that region. Moreover, this finding hints at the virulence or predominance of COVID-19 being significantly spatial in nature and thereof, holds a strong bearing with urban planning.

The COVID scenario has given us a new wake-up call. We must prepare ourselves accordingly keeping in mind the real sustainable development goals with added importance to natural balance. Both short-term and long-term policy initiatives would be needed particularly in developing nations. At first, a fiscal space has to be created through an increase in revenues of the government and through avoiding wasteful expenditure. The government has to allocate more resources to public health, economic stimulus and the social safety net. This, in turn, would mean that the government has to revise its priorities reflected in budget revenue, spending and financing. By doing so, they can contain increases in fiscal deficits and surges in public debt. It is true that defense expenditure is one of the important segments of the government budget and it is also true that military budget, either as percentage of GDP or in terms of per capita military expenditure, India's figure falls far short of the developed countries of the world. Still we can think in terms of a health infrastructure equivalence of military expenditure (Table-5).

Table 4: Linear regression analysis of the causality of COVID-19 Pandemic across the Indian states

Independent Variable	Dependent Variable	
	<i>Incidence of COVID-19 (in log) as of 5May,2020</i>	<i>Mortality from COVID-19 (in log) as of 5May,2020</i>
Intercept	6.5324* (0.0003)	3.1679# (0.0981)
Per capita health expenditure (inRs.) as of 2014 – 15	-0.0043* (0.0456)	-0.0032* (0.0392)
Urbanization	0.09921* (0.0105)	0.1141* (0.0218)
R ²	0.4327	0.3683
Adjusted R ²	0.3382	0.2631
F – statistic (overall significance)	4.5772* (0.0333)	3.4992* (0.0634)

*significant at 10 per cent #insignificant at 10 per cent

Table-5 Health infrastructure equivalence of military expenditure

SL No.	Military expenditure on	Cost (USD Million)	Health infrastructure equivalence	Numbers
1	Virginia class submarine	2800	Fully equipped ambulance	9180
2	FREMM Class Frigate	936	Doctors' appointment	10,662* (in a year)
3	F-35 Fighter Jet	89	ICU Bed Maintenance	3244* (in a year)
4	Trident-II Missile	31	Masks	17 million
5	Leopard -2 Tank	11	Ventilators	440

Governments should use stimulus funds and incentives for a significant section of population that need them the most. This would mean channeling sizeable parts of such stimulus packages to small and informal businesses, the vulnerable and poor, and avoid the use of stimulus funds and incentives that enrich the well-off. Small and Medium Enterprises (SMEs) and informal enterprises are the most affected businesses, with informal workers who consist of about 90% of the workforce of India. They are expected to be the hardest hit by the economic shock. The ILO expects a devastating 6.7 percent loss in working hours globally in the second quarter of 2020, equivalent to 195 million full-time workers, 125 million of which are in Asia and the Pacific

Migrants, displaced people and informal workers are facing a stark trade-off between safeguarding their lives and livelihoods. Already 100 million migrant workers in India are on the move in search of safety and basic sustenance, defying a nationwide lockdown. Governments should make it easier to conduct business by improving public services and making them accessible through digital technology. They should support small, medium-sized and informal enterprises. If we make an international comparison between the fiscal stimulus declared by some COVID affected countries, we find that India's present position is 5th in that ranking (Table-6).

Table-6 Post-COVID Fiscal Stimulus Package across Countries

Sl.No	Country	Fiscal Stimulus as % of GDP (%)
1	Japan	21.1
2	USA	13.0
3	Sweden	12.0
4	Germany	10.7
5	India	10.0

6	France	9.3
7	Spain	7.3
8	Italy	5.7
9	UK	5.0
10	China	3.8
11	South Korea	2.2

Source: STISTA Infographics Bulletin, USA

3. Conclusion

We now have an opportunity to build a new, just and fair social contract between governments and people. This includes universal social safety nets and health insurance. The fiscal stimulus package must also address this issue. A sustainable solution to present crisis needs global coordination among countries and optimization of the COVID-19 response. This endeavour would make development more sustainable.

The global spread of the virus in our interconnected world offers little chance of success if each country takes a piecemeal approach towards health and economic response on its own. To make the response more effective and reduce the cost of the crises, strong coordination and cooperation among governments is needed, coupled with clear and transparent communication between the stakeholders. These will help enhance governance and build public trust inside and across borders.

Appendix

Incidence of COVID across the Indian states vis-à-vis Health Spending and Urbanization

States	Per Capita Public Exp on health in 2014-15(Rs.)	Health Exp as % of GSDP in 2014-15	Urbanization (2011)	COVID Cases (5May 2020)	COVID death	Death as % of confirmed cases
Andhra Pradesh	1030 (7)	1.92	33.36	2018	45	2.23(7)
Assam	1137(5)	1.83	14.09	65	2	3.08(10)
Bihar	530(15)	1.45	11.29	747	6	0.80(4)
Gujarat	1156 (4)	0.8	42.6	8541	513	6.01(16)
Jharkhand	750 (11)	1.14	24.05	160	3	1.88(6)
Karnataka	1043(6)	0.7	38.67	862	31	3.60(13)
Kerala	1437 (1)	0.97	47.7	519	4	0.77(3)
MP	722 (12)	1.14	27.63	3785	221	5.84(15)
Maharashtra	931(9)	0.61	45.22	23401	868	3.71(14)
Odisha	913(10)	1.19	16.69	414	3	0.72 (2)
Punjab	1001(8)	0.78	37.48	1877	31	1.65(5)
Rajasthan	1303(2)	1.52	24.87	3988	113	2.83(9)
Tamil Nadu	1162(3)	0.73	48.8	8002	53	0.66 (1)
UP	665(13)	1.36	22.26	3573	80	2.24(8)
West Bengal	665(14)	0.82	31.87	2063	190	9.21(16)
India Average	973	0.98	31.1	70756	2293	3.24(12)

Source: National Health Profile 2017, GoI; Mahalaya Chatterjee (2017): Regional Variation in Urbanization in India & the Emergence of New Towns, Center for Urban Economic Studies, CU; Covid Tracker: GoI Portal. [Fig. in () shows ranking]