

COVID Control in India: A Look Back

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Introduction:

Just as India witnessed one of the most stringent lockdowns in the world (25.03.20 to 30.5.20) ¹ to tackle COVID, and rumours are spreading faster than our minds can understand them, it would be good idea to look back at some of the controversies related to Lockdown and other strategies of COVID control, and what is the way forward. Let us look at some of the features of this virus first before going into a debate of strategies.

Nature of Epidemic:

The recent Pandemic of COVID is unique in many ways though Corona virus infection is not that uncommon in Human beings. The SARS on 2003 and MERS of 2012 were also caused by Corona virus, and though especially SARS had pandemic potential², it vanished suddenly. Probably the reason lies in the fact that SARS had lower incubation period than COVID 19 i.e. people got symptoms earlier and more severe that restricted their movements. Thus they started spreading the virus early; fell ill early, and there a lesser period of pre symptomatic or asymptomatic transmission. This certainly helped health sector to tackle the problem. Many cases (around 70%) of COVID are asymptomatic³, that is a nightmare for epidemiologist and that makes COVID a candidate not amenable to eradication. Also the case fatality rate of SARS was higher that killed more patients and thus it was unable to spread the epidemic, on the contrary SARS-COV-2 seems to be of much benign variety, it stays with its host to thrive.

Lockdown: A means or and end

There has been a lot of debates about lockdown and its implications. Instead of lockdown as a strategy to combat COVID, it would be prudent to think of it as a ploy to buy time. It would be an interesting exercise to revisit the lockdown now from the point of view of an epidemiologist. We take help of elementary mathematics for this. Suppose the epidemic spreads with $f(x)$ distribution, as a function of x

where x is the R_0 , a measure of infectivity of the virus. For time being we assume that only R_0 is the factor causing the epidemic and the distribution of $f(x)$ is the shape of curve of the epidemic. Now a lockdown of d days will shift the curve away from the origin and make it $f(x) + d$. The curve will again rise but later causing the same impact.

So, the next question that comes to our mind, was the lockdown needed. It was needed to allow the health system to get prepared in a better manner. It also curtailed super spreading events by not allowing people to come together and gave time to educate people. Health system preparedness was an important factor as you will appreciate that whatever was the preparedness, if there is a sharp rise of cases among which say 10% requires hospitalisation and 5% are critical, the Indian health system will get overwhelmed, causing a disaster to occur. Thus the lockdown was a good measure to increase capacity for treatment facility, Intensive therapy, and testing. But often there is a confusion of whether the lockdown was for "eradication" of infection, or a way of reducing transmission to zero, which was definitely not the case. On the other hand the lockdown caused huge disruption in economy, created a massive migrant crisis, and the routine healthcare services suffered. So, was the pain really required? That remains the question.

Our target should be to make the curve $f(x-u)$, (u being any positive integer that causes decrease in x) i.e. decrease the R_0 . And we can do that by Social distancing, handwashing, wearing masks, avoiding gatherings, testing and isolating cases⁴. The recent article by Kucharski⁵ suggests that three basic steps can reduce transmission by 65%, i.e. Self isolation in home or outside, Quarantine, contact tracing. We should not fail to mention the Kerala experience in COVID control which suggests that three steps of Quarantine of foreign persons, good contact tracing and early reporting, early quarantine of contacts and isolation if required, and most important of all strict vigilance regarding this, helped a long way in controlling the chain of transmission. Moreover, the

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resources that are to be spent for a full-fledged lockdown are huge in a country like India and are almost impossible. Thus a much better idea would have been contact tracing, fast reporting and isolation, thus cluster based containment. On the other hand, lockdown will not have far reaching effect, but it may actually give a false sense of security to the people and make things worse when it lifts, as evident in the 1918 Spanish Flu, when the lockdown lifted, there was a worse secondary peak.

The Myth of the containment Zone:

Cordon sanitaire, or containment zone has been a way of containing diseases since time immemorial. Be it the Black Death, cholera, or Influenza, this technique helped to segregate the diseased person. In fact this draconian measure is quite effective in diseases like cholera, provided the source of transmission is locally transmissible and restriction of people can prevent that. They can be a good measure to contain even respiratory borne infections when the lockdown was strict. But if people are moving and we know that probably he is going to spread most of his infections in his travel, office, the containment zone should be optimised instead of blanket bans, to keep economic activities going. Like this can be house in case of residence, or a residential apartment. In slums, houses sharing the same toilet or water source may be contact traced. Still it is very difficult to trace all contacts for a person, but at least workplace contacts can be traced. Also the houses are often being marked as Corona Flat or Corona House resulting in social discrimination. Over reliance of ArogyaSetu regarding this is not a good idea as it depends on self-reporting of cases and thus may be under reported and people can get a false sense of security.

About Models and Modelers:

The next peculiar thing in this COVID pandemic was a gush of models, modellers and another epidemic of article regarding COVID. Some basic points regarding the models should be borne in mind. These are abstract mathematical interpretation of natural processes. Neither a forecasting model (trend based) nor a mechanistic model, where the process has got more importance than the outcome, will perform good with the data regarding the parameter lacking. The various compartmental model theoretically fits the epidemic like the SIR, SEIR models, as well as more complex models like the individual models. It would be good to look into a recent article on the doings and misdoings of modelling in New England Journal of Medicine⁶ it looks through some of the reasons why most of the models have failed with respect to COVID pandemic. Not much is known about the transmission dynamics of the virus, its latent period, and other parameters, its novelty makes it difficult to model. Also there is a lot of parameter uncertainty like how many people have been infected, with the testing strategy determining the number of cases in different states. Thus the infected and reported are not the same number. Also the immunogenicity data is lacking, thus the compartment models are hard to

find. Most of the models assume the law of mass action to occur that is the number in a particular compartment determines the transmission to the next compartment. But this assume random mixing, often in this pandemic it is more of selective mixing rather than random mixing i.e. the healthcare workers are mixing with some patients, among their family members selectively, again the migrant workers have their specific genre of mixing, Thus a random mixing would be a oversimplification. Also, the R_0 may not be equal in all strata of people, this heterogeneity makes the modelling even more complicated. There are reasons to believe that the epidemic is not a single source, but multiple sources with different parts of India having the curves at different levels. Thus the spatial variation also exists with temporal variation. So, modelling becomes more difficult.

The question of “Community Transmission”

The facts about modelling especially the spatio-temporal variation will also hold true for another much hyped topic in this milieu that is whether there has been Community Transmission or not. Needless to say this has transgressed the boundaries of an epidemiological question into the field of politics and media. There has been a perceived tussle between “believers” and “non-believers” of community transmission which has featured in National Media, Social Media and in the table of political tug of war. If the reader is able to recall the simple equation that was discussed early in this article, this will be clear that the Community Transmission is inevitable. It is just a matter of time and an important part of the building of Herd Immunity provided that vaccines are not yet available.

India’s top research organisation, Indian Council of Medical Research is currently doing rounds of sero-surveillance in India measuring presence of antibody that indicates previous infection. The results of first round, tells us that community transmission has not occurred. There is a serious debate regarding this as the sampling frame was the whole of India, and they assumed 40% allowable error. They selected cases strata wise from three zones, according to the case loads and testing done in those areas. But forecasting for whole of India was probably not a prudent idea. Different regions of India are having different stages of epidemic, so area wise demarcation of Community Transmission would have been a better idea.

Stigma is the name of the game

In the current scenario, probably the main driver of the epidemic is stigma and discrimination. There are stigma at different levels, like stigma in general population against a person suffering from the disease and healthcare workers working for the cause, stigma among patients of the disease against themselves, stigma among the health care workers to avoid the problem of treating the patients.

Among the community members the chief fear is that if anyone is detected as a COVID patient, police will pick him up, and admit him to some place. Even if he dies, the family will be never able to see him, or know what has happened to him.

The segregated practices of last rite have rendered the fear in community more. As a result people are reluctant to report themselves as ILI cases or seek care early in case of any discomfort. Thus decrease of care seeking is adversely affecting the treatment outcome. The patients who have recovered are ostracised in their communities and often by other healthcare workers too. On the other hand the health care workers, trying to avoid the situation are running the risk of a false sense of protection, and thus may miss out the Standard Precautions in the “COVID patient” “Non-COVID patient” binary, which will increasingly become blurred as the Community Transmission is taking place. Thus the situation will be affected in an adverse manner in this environment of stigma and discrimination.

Way forward

So in all these grim situation and criticism, what may be the way forward? Let us try to imagine what will happen to the epidemic. With an infection fatality rate of 0.03% a doomsday prediction like everyone will die and the world will cease to exist does not hold. Next, there can be herd immunity or mass vaccination and the virus will stay with us like an endemic disease, occasionally causing epidemics. It even may have a seasonal character. All of this is speculation, but the herd immunity theory is now most commonly acclaimed by epidemiologist. So, with this background, what can be the way forwards for us?

Firstly, draconian lockdown should be used only as a last resort. There can be secondary peak of the epidemic, and Government should focus more on cluster containment than complete lockdown unless the situation becomes out of hand. The test, track, treat strategy shall have to be used properly with justice to each of the steps. Innovative techniques like Community Volunteers can be used to identify cases. GPS bands can be tried to keep people in complete isolation. Home isolation can be tried only after proper visit, otherwise Isolation have to be institutional. Points of entry of newly infected people like airports, Migrant workers entering the state should be carefully monitored. Reverse quarantine, i.e. protecting the geriatric members who are more prone to die can also be a good technique.

Secondly, a clear information flow should be maintained at all levels, between various sectors like Health, Local councillor, patients, hospitals regarding test reports and other parameters. Video calls can be arranged between patients and their near ones, or relatives can be made to see the dead body through glass partition in case of unfortunate demise of a patient. Only Political commitment and community ownership can help us remove the barriers of stigma and discrimination.

Thirdly, epidemiologist and public health specialists can be installed at key positions to make contributions to the entire process. Medical Colleges should be involved as far as possible to work with the district in various aspects. Decisions should be taken on scientific evidences.

Fourthly, continued efforts should be given for upscaling of tertiary care of COVID in form of Intensive care and treatment of complicated cases. Proper training and infrastructure upscaling should be a priority of the government.

Lastly, routine health services should be resumed as the breakdown of routine services will affect the health system even more.

To summarise, a particular thing should be kept in mind. Human race has seldom seen a crisis of this scale throughout the world. Also the type of the crisis is an invisible enemy instead of a tangible enemy like in warfare. Also the weapons in the hands of the human race are limited, and non-pharmacological interventions are the mainstay instead of a pill to cure all. Thus this requires immense lifestyle modification from the part of mankind, that has always posed to be a challenge than medications. Also over dose of information is making the human kind less rational as they are not able to decide which information to cherry pick (bounded rationality). This is having a taxing effect on the cognitive capacities of mankind. Thus we can end by iterating the words of 7 Stephen Kinzer who mentions this as a “failure of imagination” from the part of human thinkers, who failed to even predict that a disaster of this magnitude can come and hit the world.

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