Learning from Tamil Nadu's Response to COVID-19 Pandemic:

Lessons for the right to health agenda

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Research study by

Arogya Iyakkam Resources Group of
Tamil Nadu Science Forum & Pondicherry Science Forum
for the People's Health Movement
(Makkal Nalavazhvu Iyyakkam)

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Contents

Authors and Acknowledgements:

This book, **Learning from Tamil Nadu's experience to Covid-19 Pandemics: Lessons for the Right to Health Agenda** is a compilation of case studies from across the state.

This study was undertaken by the Health Resource Group of Tamil Nadu Science Forum, Pondicherry Science Forum & Makkal Nalvazhvu Iyyakkam which started the planning and preparation by September 2020 and on a pilot basis the study was conducted in the districts of Cuddalore and Chennai in December 2020. As the observations and findings suggested a need to upscale the study throughout the state, to document district specific experiences and challenges, the TNSF activists came forward to help in data collection. Therefore, a two-day training session was conducted for nearly 96 activists from 18 districts of the state, providing them with information on epidemiology and public health strategies of COVID 19 management as well as the objectives, tools, processes and skills required for the study. Further, a series of case studies were done across the state. This book documents about 15-20 case studies from each of the following districts Chennai, Cuddalore and Pondicherry, and 3-5 case studies from Pudukottai and Palani.

We express our gratitude to all the trainers, researchers and activists for their active participation in the roll out of training sessions and data collection.

Special thanks to our scientific committee members, who have helped in making this study right from its planning and preparation, for the on-time submission of field notes, reports, compilation of the case studies and for their co-operation which was crucial for the completion of this work .

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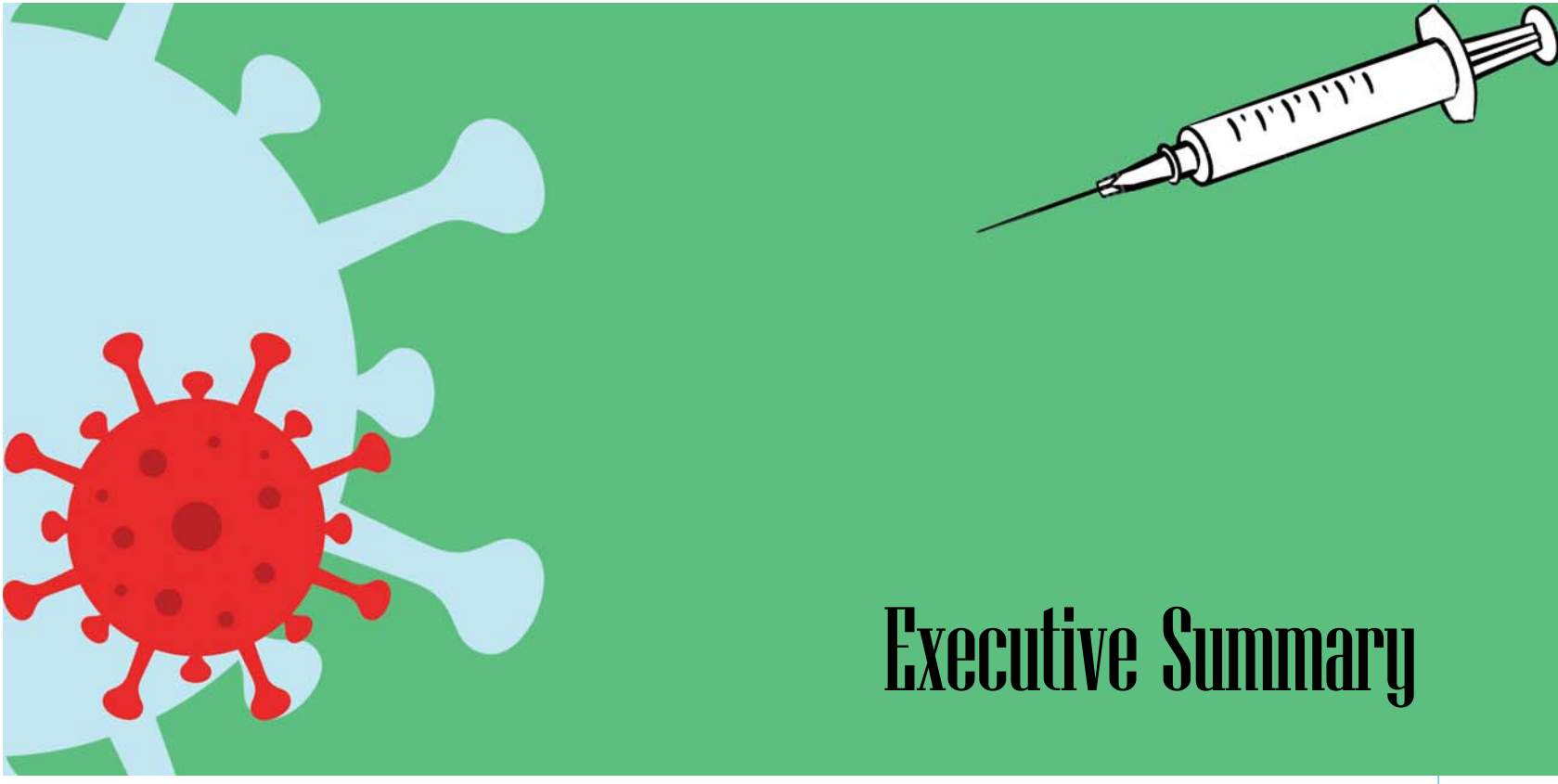
One would fail if we do not acknowledge our study participants for elaborating on their Covid 19 journeys in these unprecedented times. We are indebted to each one of them, without whom this study would not have been a reality.

T. Sundararaman



Executive Summary

Introduction:

The world has been in the grip of the Covid 19 pandemic since early 2020. The experience concerning the Covid 19 pandemic has been very different across different nations. Why is it that some nations did so well and others fared poorly? What can we learn from the Covid 19 response in different nations, so that we are better prepared for future waves of Covid 19 and other pandemics? Further across nations, the last year has seen a steep rise in economic inequity and health inequity. Is a greater increase in inequity associated with poor health systems preparedness and public health measures being dominated by a "law and order" approach? (The latter has also been termed the securitization or militarization of the Covid 19 response.) What does this mean for basic rights like the right to life, health, liberty, and livelihood, etc.?

It was therefore considered desirable by the health systems thematic group of the Peoples Health Movement to encourage analytic documentation of state and country experiences of the pandemic and the government and community response to the same. This report is a case study of the experience of the Covid 19 pandemic in Tamil Nadu, a Southern state in India, from March 2020 to January 2021. This is the story of how the first wave of the pandemic played out in the state, how the government and communities responded to it, and what we can learn from it for managing future waves of this pandemic and future pandemics. We hope this study will also provide insights into policy reforms that are required for improving health systems preparedness, strengthening health and economic security, and leading to the progressive realization of the right to health and healthcare.

Objectives:

- To understand health systems preparedness and government policy responses to the Covid 19 pandemic and implementation issues from the viewpoint of health and economic equity- with specific reference to Tamil Nadu- a state of India.
- To document the Covid 19 journeys of different communities with different levels of vulnerability. - how they experienced and perceived the pandemic; and its consequences on their health and their lives.

- Based on the above to identify sources of strengths and challenges to building resilient public health systems and communities for moving towards the realization of the right to health and health care.

Methods:

- The study was based on secondary data, interviews of key informants, and field studies. Secondary data analysis was based on government data and a media scan and used, along with key informant interviews to document the course of the pandemic in Tamil Nadu in the period from March 2020 to January 2021. This is given in chapter 3.

- Field studies consisted of group discussions and interviews in four districts of Tamil Nadu- Chennai, Cuddalore, Pudukottai, and Palani, and the neighboring union territory of Puducherry. The study consists of a series of family case studies embedded in a village or urban case study, which in turn were aggregated into district case studies. - These multiple case studies taken together constituted the Tamil Nadu case study. The choice of districts was purposive. To study the equity dimension, various community groups with different degrees of vulnerability were identified in each district. A selection of these case studies is presented in chapters 4, 5, and 6 and their findings are synthesized

- Activist research: One feature of this study was that it was done entirely by field-level health activists from a civil society organization in partnership with public health and social science academicians who were part of the same organizations. Many volunteers and academic professionals have given voluntary time and effort to this work. In all health activists from 12 districts were trained to undertake this study, and 5 of these were able to submit reports by March 2021, that we could then use to write up this report.

The Findings:

In Tamil Nadu, the pandemic has presented in two waves. The first wave of the pandemic began in March 2020, rising slowly initially, accelerating from June to a peak of about 7000 new cases per day at the end of July, and then subsiding slowly over the next two or three months. And then the pandemic accelerated again in late March 2021 to constitute a second wave that peaked on May 13th, 2021 at about 30,987 cases per day and then declined to about 1500 cases daily by August 2021.

The state response to the first wave can be considered across six components of the response. These are (1) the lock-down and its social and economic impacts, (2) Other behavioral changes induced by the pandemic and by state action, media, and community perceptions, (3) access to testing, (4) the contact tracing, quarantine, and isolation, (5) access to hospitalization services and (6) the continued access to other essential health services.

1. The Lock-Down: Was it necessary? Was it effective? Were its consequences equitable?

Tamil Nadu, like much of India, witnessed a very strict lock-down, especially in the first four months. This involved the abrupt closure of all workplaces except a very small group of essential services. It also involved the closure of all educational institutions and recreational sites, all cultural and religious sites and restraint on all gatherings including weddings and funerals, and the complete cessation of private and public transport. People were required to stay at home.

India initially presented its main objective as "*preventing the onset of community transmission*." By this

was meant, the spread would be limited to a few identified chains of transmission, which could be identified and isolated and this would contain the disease. In retrospect, we know that lock-down failed to achieve this objective. But this led to an abrupt, brutal, uncaring enforcement of all these restrictions at a time when the level of transmission was very low. Paradoxically when new cases were peaking in July 2020, lock-downs were being relaxed. Enforcement was largely in the hands of the security forces and was characterized by very high and unnecessary use of force. It also led to a stigmatization of those with the disease. Victims of disease were dealt with more as vectors of disease than as rights-bearing individuals. The stubborn denial of community transmission misdirected efforts at testing and tracking the disease.

In a mitigation approach, restrictions on social mixing are most necessary, when transmission peaks and hospitals are likely to run out of beds. However, we saw that when the disease spiked in July-August 2020, there were partial lifting of restrictions, and from October onwards the disease incidence dropped sharply though restrictions were even further relaxed. A mitigation approach to lock-downs was deployed during the peak of the second wave with considerable effect. But once again there was no evidence to guide its withdrawal.

The lock-down did give the government time to prepare and Tamil Nadu used it to get more testing capacity, more PPE kits, and more ICU equipment and oxygen in place and to designate more beds for treatment. But these preparations began late, and given the lack of human resources and infrastructure in public services before the pandemic, the scale of preparedness was inadequate.

Lack of evidence: Decisions on what activities to restrict, when and for how long were not driven by evidence and largely based on administrative authority, backed by opinions of medical leaders. A lack of understanding of social circumstances added on to make for lock-down restrictions that caused considerable harm but had dubious benefits.

Impoverishment and increased inequity.: Our case studies also re-affirm what is common knowledge- that the lock-down led to a huge loss of income, and livelihoods, perhaps the largest in living memory. Some government relief did reach families- but these were far short of what was required, even that was promised. These consequences of the lockdown exacerbated economic inequities greatly and unorganized workers with no social security who formed the majority of the workforce were affected most.

Violations of civil liberties and human rights: This took many forms. *One was* the criminalization of disease victims for the spread of disease as with the Tablighi Muslims. There were regular announcements in media of the increasing number of cases registered against transgressors as if this was an important achievement. Another was the incarceration of the families in their own houses by imposing a metal frame across their doors and posting yellow tapes and stickers on the house. And then there were arrests and public shaming. Almost all the arrests and filing of cases and the public shaming of lock-down rule violations fell on the poorer and more marginalized sections of the population.

2. Health Education/Behaviour Change Communication (BCC).

Stereotyped messages, not professional BCC: Public health efforts were focused on promoting the use

of masks, social distancing, and hand hygiene. Adoption of this was weak and inconsistent and governments held people accountable for this failure. Our findings are that poor adoption is related at least in part to a very weak BCC strategy, that relied overly on celebrity statements or law and order approaches and had almost no role for inter-personal communication or community engagement. Stereotyped, overly centralized mass communication measures failed to address the constraints that different sections of society faced.

High levels of Stigma and Denial: The presence of huge levels of stigma and even frank mass denial of the existence of the pandemic was a dominant feature at the community level- but the barrier this placed on all public health measures was under-recognized and the messaging to address this was absent.

3. Public Health Measures: Testing:

Access to testing in Tamil Nadu increased dramatically over the first few months. Tamil Nadu chose to use only RT-PCR tests and this made for greater reliability. Access to testing remained iniquitous. Sero-surveys showed that in Chennai city the number of positive cases by serosurvey was about nine times the reported cases, whereas in most districts it was about 30 times, and in the poorest performing districts it could be 80 to over 100 times. This inequity in access was in part due to reluctance from the population to get tested, in part due to government reluctance to report higher case numbers, and in part due to uneven development in laboratory capacity across districts. Delays in receiving test reports were another problem and so was follow-up action. Deaths too were seriously under-reported- and the actual number of deaths was at least 6 times the reported deaths.

4. Public Health Measures: Contact Tracing and Quarantine:

Contact tracing too was almost completely absent and so was quarantine. Quarantine of incoming international travelers by flight did happen, but no other category of contacts faced quarantines. In the first wave efforts at the isolation of positive cases were commendable, though incomplete. In the second wave even, this had decreased. The very poor record at contact tracing relates to a) high degree of stigma and denial b) lack of peripheral staff who could be spared for it and c) high reliance on Arogya Sethu a digital app, which however failed to deliver and d) conflicting advice from non-public health experts who downplayed its role. The state did place a high emphasis on fever surveys which had some value in detecting clusters. More often it relied on geographically localized lock-downs whose effectiveness was uncertain, since they did not necessarily correspond to social networks along which the disease spread.

5. Access to appropriate hospitalization services

S*ub-optimal management of mild cases*: Though patients with mild symptoms recover on their own it is important to isolate them to prevent spread and closely monitor them to ensure that worsening requiring hospitalization is detected and acted upon early. The Designated Covid Care Centres (DCCCs) were ideal for this, as effective isolation was difficult to achieve in homes and clinical observation easier to organize. Most DCCCs functioned well. However, over 70% were merely advised to isolate at home and home isolation went unsupported and unsupervised. Though most recovered, most deaths recorded

in our study and literature were of those where such un-supervised, unsupported home isolations led to delay in appropriate hospital care.

Are DCHCs required? For patients with moderate or severe symptoms, many hospitals were declared as Designated Covid Hospitals (DCH) and equipped with adequate oxygen supplies and ventilation equipment, and ICU management. There was another level of hospitals called Designated Covid Health Centres (DCHC) for moderately severe patients where hospitalization and oxygen were possible, but ventilators were not available. We find cases where admission to DCHC, only delays the onset of the appropriate level of care. Possibly the DCHC can be dispensed with.

Barriers to access to free care in government hospitals: Free care in government-designated Covid care hospitals is largely a reality. However, there are also many reports of being turned away from government hospitals because the beds are full or for other reasons. There are also widespread reports of patients and families having to search for an available bed by themselves and with little access to public or private transport with time delays and denials leading to fatalities. But much of this was in the three months of July and August and September 2020 when existing capacity was overwhelmed. October active cases decreased and enough beds had created capacity and systems and the crisis passed. This was to recur again in the second wave- but to a relatively lesser degree and limited to some districts as screening and triage centers ensured access to hospitalization for most. This was particularly true in Chennai.

Quality of care, and ICU performance in Government DH and SDH: The impression we get on quality of care in the govt sub-divisional hospitals and even district hospitals made into DCH is that quality of care was poor and they struggled with ICU care. The number of cases on ventilators and length of time on ventilation is relatively low, and this is not a good sign. We are cautious about generalization since we are purposively interviewing deaths too. However, the repeated reports of transfers out of the SDH when the cases become severe, the reports of some diagnostics having to be done outside, the referral away for co-morbidities, even If Covid 19 positive are all indicative of significant gaps.

Private Sector Hospitalization: Despite pre-existing partnerships with the private sector, capacity in the private sector could not be harnessed for free services nor could under-utilized capacity from private hospitals be brought under public authority for better management. The pricing of care in most private hospitals was exorbitant and even adherence to standards of care was weak in many. We came across many instances of denial of care, over-charging, cherry-picking of cases, inappropriate care, and inappropriate referrals. Though much is made of their role they provided care for less than 20% of cases and that too only after July. In the first three months, they were largely shut or refusing to handle Covid cases. Regulation of rates and reimbursement through PM_JAY/CMCHIS was introduced early- but seems to have made little difference to considerable levels of over-charging. Some patients in our study on approaching a private setting were immediately admitted in ICU even though mild illness and heavy charges were levied making them spend a minimum of 2-3 lakhs, mainly on needless "immune boosters". The pandemic was an opportunity for many smaller clinics and nursing homes to earn money by cheating people in the name of immune boosters, vaccines, etc. In moderate and severe patients in Chennai city charges varied, between 8-10 lakhs. In the state, though ICU capacity was

higher in the private sector, it was the public sector that had to be built up rapidly to take the increased caseload.

6. Treatment for Non-COVID conditions:

There are also serious concerns about major public hospitals which are the only source of hospitalization, secondary and tertiary care being re-purposed as Dedicated Covid Hospitals where treatment for other illnesses is cut-back or altogether stopped. This includes not only tertiary care services but even most primary healthcare where the poor have nowhere else to go. Therefore, for non-Covid health conditions, there is a huge increase of the burden of costs for the poor, problems of access to care, and as we see from one of our case studies, also a source of spread because they are positive and left to their own for finding a care provider. Such re-purposing is also to be seen as a denial of health care rights and an increase in health inequity- since there are no alternatives provided to the poor.

It was not only in the government hospitals. Even essential primary health care was disrupted. These disruptions were due to many reasons including fear among providers, lack of public transport, government health staff being diverted to Covid 19 duties, lack of information on the public for alternatives, and even administrative action to suspend these services. The mark of a resilient system is to be able to minimize such disruption of services, and we know of best practices where this was done.

7. In conclusion:

Despite a huge Covid 19 response of the government, the state could not avert a major epidemic. The poorer sections were the major sufferers, not only due to the pandemic itself but also due to the nature of the government response. The health systems were not prepared for such a challenge, and though it eventually did develop the capacity, it was a late start and an inadequate build-up. In some components of the program like contact tracing, quarantine, preservation of essential non-Covid hospital services in government hospitals, the government capacity is still minimal. The overall picture at the community level is dominated by the curious combination of a high level of stigma against the disease with the denial of the very existence of such a pandemic. However, if the government learns the right lessons, it can greatly improve its ability to face subsequent waves and future pandemics. But the heart of the strategy would have to remain a high reliance on public service delivery outside the influence of market forces, and the recognition of all public health services as a public good.

Recommendations from the TNSF/MNI Study:

The lessons from our study reiterate that it is only a health system that is designed to deliver health care as a public good that would have the capacity and resilience to withstand and perform through any health crisis. Our recommendations are therefore not only a guide to pandemic response but a path of building equitable health systems and progressive realization of the right to health. These recommendations were developed from a joint discussion with activists after sharing the study findings with them over online meetings.

I. Behaviour Change Communication- Health Education:

1. *Stigma and Denial:* Acknowledge co-existing stigma and denial of the pandemic as one of the major public health challenges faced and undertake several measures that are listed in the main text to deal with it.

2. *Engage with communities*, and with workers and trade associations, and community-based organizations to combat stigma and denial. Highlight instances of community cooperation in contact tracing and testing and community-supported quarantine.

3. *The preventive triad* of the use of masks, physical distancing, and hand hygiene should continue to be emphasized. But include messages on which situations this is most urgently required. Limit strict enforcement only in settings of high risk- like closed spaces with less circulation, and close contact situations- and not for traffic on the road or pedestrians, etc.

II. Lock-downs & Partial Restrictions on Public Activity:

1. *Limit total lockdowns* to situations of peak transmission where existing hospital capacity cannot manage the caseload or if initially some time is required for preparedness. Much more evidence is required to comment on how effective lock-downs are under other circumstances and to make the right choices on what activities are to be restricted.

2. *With Community Consultation and Participation:* When implementing social restrictions, discuss with the community and community representatives of the weakest sections in each area, which activities must be allowed and how restrictions can be implemented. This requires a considerable degree of organization and a better approach to local governance. Provide support to workplaces, markets, and even recreation sites so that they could remain functional but with greater precautions.

3. *Increase relief measures and improve its delivery.* If despite this lock-downs are resorted to, one has to ease the burden of the poorer sections of the community during the lockdown in containment zones by increasing quantum and variety of relief and by door-to-door provisioning of regular supplies of milk, vegetables, grocery, and other essentials.

III. Testing:

1. *Testing is an entitlement:* All testing should be free, accessible within administrative block/one hours' journey, and reports available within 24 hours. Such a service delivery standard requires improved strategies at the level of manufacture, pricing, and logistics of testing kits, a strengthened laboratory network, immunization of concerned staff, innovation of more reliable point of care approaches, and much-reduced stigma. *But potentially this is an achievable goal.*

2. *Testing is an important component of disease surveillance.*

IV Contact Tracing, Quarantine, Isolation

1. *Better contact tracing and quarantine:* Ensure a better understanding of the objectives of contact tracing, the protocols of contact tracing and create the human capacity and community trust require to do this well. Contact tracing must be followed by supervised quarantine, either at home or at the institution.

2. *Supervision of home isolation*: For those who test positive, a protocol should guide triaging to isolation centers; and ensure no one is denied care or provided lesser quality of care. Home isolation should not be encouraged. But if resorted to must have a good quality of medical visits, supportive care, and supervision.

3. *Institutional Isolation:* Institution isolation was well managed in Tamil Nadu through its network of DCCCs. This has to be as per the protocols and sustained. In the second wave, as sick cases increased the quality, the effort in isolation may have come down in some districts, which is unfortunate.

V. Hospitalization:

1. *Guaranteeing Care:* Massive public education is required on the reasons for early hospitalization and public awareness that hospitalization and free quality care in a public hospital or public administered hospital bed is a right. Once a patient with the disease reaches a government hospital, even if there are no beds there, it should be seen as the duty of the government to transfer the patient at government cost to the nearest place where there is appropriate free care and ensure that patient is admitted there.

2. *Prevent disruption of Non-Covid Services:* When government designates any hospital as a Covid 19 hospital- other health services should not be shut down unless there is another public facility in the vicinity that can take over these services. Re-purposing major public hospitals to do only Covid 19 care without alternative is completely unacceptable *and unnecessary*. There are many ways and examples of such re-purposing being done without shutting down existing services

3. *ICU capacity:* When a government increases ICU capacity, there is a need to attend to both increases in infrastructure, equipment, and human resources. There is also the challenge of ensuring hands-on supervision and training to learn the difficult skills of ventilation. The increase in the number of beds providing ICU care should not leave any district behind. To retain this capacity, all secondary hospitals should sustain ICU care even in non-pandemic times.

VI. Human Resources for Health

1. For health systems preparedness, the public health system must have the infrastructure and human resources of the level specified by Indian Public Health Standards. We also need at least a 30 percent surge capacity- excess beds and some excess in staff. The sudden increase in hospital capacity with the pandemic has gone on without an increase of staff or regular and fair terms of employment. This is undesirable and not sustainable.

2. A similar increase in staff and facilities and services is also required at the primary health care level. Tamil Nadu has fallen below norms in this area- largely because the growing urban areas do not yet apply the norms that exist for rural healthcare. Even in rural areas, the number of ANMs and village health workers is well below the requirements. This is one reason why non-Covid essential health services were seriously compromised and even Covid related activities like contact tracing could not be sustained.

VII. Private Sector Participation

1. It is essential to ensure that all hospitals irrespective of whether they are under PM-JAY or not continue to offer the entire range of services they have the capacity for, at rates, which are not above those fixed by PM-JAY. This is essential for Covid and non-Covid services. Good publicity of these measures, regular on-site monitoring, and state-run grievance-redressal center for patients should ensure that there is no withdrawal of services, denial, or over-pricing.

2. *Bring some private hospitals under public authority.* There is a case for the government taking over (bringing under public authority) private hospitals with unused capacity or designated Covid hospitals that refuse to undertake Covid care or persist with the problems listed earlier despite warnings. When the number of active cases peaks, taking over private hospitals with under-utilized capacity is far better than re-purposing public hospitals. But the financial, management, and staffing arrangements would have to be negotiated.

VIII. Scaling up Vaccination:

1. The commitment of the state of Tamil Nadu to universal vaccination is welcome. Everyone above the age of 18 presently has an equal right to get vaccinated, but it need not be made compulsory and enforced for the general population.

2. Those at higher risk should be prioritized for the vaccine. This is not only by age, and co-morbidities but also by occupational and socio-economic vulnerability.

3. Quality control mechanisms for the vaccines to test each batch of vaccines are important and must be immediately put in place. Continued surveillance for adverse effects following immunization (AEFI) with compensation for serious side effects requiring hospitalization or deaths is another urgent requirement.

4. Tamil Nadu must develop capacity for the manufacture of required vaccines and later also for the development of new vaccines and innovations. It has considerable unused infrastructure capacity in this area, which must be immediately put to use.

IX. Governance:

1. Re-think the governance of pandemics. The current arrangement of centralized decision-making by bureaucrats of the NDMA, Home Ministry, department of health research, and Niti Aayog undermines the role of public health leadership with training and experience in epidemiology and epidemic management. Given their complete lack of orientation and undue reliance is made on leading clinicians who can be equally clueless. Most of them have learned in the course of the pandemic- but it was learning on the job- and not much of health systems preparedness

2. There is a need to build up a technical leadership at the state and central level that not only knows the issues related to epidemiology, but also understands health communication, sociology of health, and public health management. A professional leadership will hopefully be more distanced from letting political priorities of the moment overwhelm decision-making.

3. There has to be a much higher level of consultation at state and district levels for the implementation of different measures and to secure public understanding of the pandemic and its management. Greater participation of civil society organizations working in the health sector could have made a major difference.

4. The involvement of local governments was almost missing and is one of the weakest links in the Tamil Nadu Covid 19 management. It was purely administration driven

5. All forms of community engagement or community participation were weak or missing. This is one

reason why there is such widespread stigma and denial and even frank mistrust at the local level with regards to the very existence of the pandemic and the intentions of the government. Though almost all of these are unfounded fears- their root lies in the lack of community engagement. This has been a big barrier to pandemic management.

X. Political Will

Eventually, the government of the day needs to have the political will to make three important commitments.

1. An increase in public health expenditure to over 70% of total health expenditure, and also to at least 3 to 5 % of GDP.
2. A clear commitment to strengthening public health services, and readiness in investing to build up the necessary infrastructure and human resources. Also, to ensure that a surge capacity is built-in and is kept ready to use in an emergency.
3. Ensuring health systems guarantee and protect health rights and to ensure that nobody is denied access to necessary health care irrespective of their ability to pay.

Chapter I.

Introduction:

The world has been in the grip of the COVID 19 pandemic since early 2020. The experience with regard to the COVID 19 pandemic has been very different across different nations. There are many nations, which have seen unprecedented increase in morbidity and mortality, and one year after its onset, the pandemic is unabated. On the other hand, there are other nations where the pandemic has been relatively well contained- with relatively low incidence of disease and even less mortality.

The level of health systems preparedness for facing the pandemic has varied widely across nations- and so also has been both effectiveness of strategies deployed and the impact on economic and health equity. Some nations contained the pandemic early, relying largely on public health teams and publicly administered healthcare systems. A measure of their success was that they could achieve this with very limited recourse to lock-

downs, and further had social security systems that were able to limit adverse economic consequences of the lock-down on more vulnerable sections. But in many nations, the existing healthcare systems were over-whelmed with the surge of cases, and control measures were dominated by an authoritarian law and order approach to imposing and maintaining physical distancing measures and rigorous lock-downs. Further across nations, the last year has seen a steep rise in economic inequity and in health inequity. It is quite likely that where health systems preparedness were least and law and order approaches dominated, the rise of inequity was worst- both due to the pandemic and due to the nature of community and government response to this.

It was therefore considered desirable by the health systems thematic group of the Peoples Health Movement to encourage a number of state and country case studies that document how well the mandate of international health regulations with respect to pandemic preparedness has been realised in different contexts, and which health systems were more resilient in responding to the pandemic. The key element in this documentation would be an analysis of the health equity dimensions of the outbreak, the pandemic response, and essential policy reforms required to prevent or mitigate future outbreaks, thereby strengthening health security and the progressive realization of the right to health. The findings will inform both policy makers and civil society in each country. A comparative and analytic synthesis of findings of district level case studies could lead to a state case study, and a similar synthesis of state case studies could constitute a national case study. Potentially a synthesis of country case studies at global level would provide an emergent consensus basis for post-COVID-19 social, economic, and environmental policy reforms that will reduce the risk of future pandemics and promote health equity more widely.

This is a presentation of the Tamil Nadu case study.

Chapter II

Study Objectives and Methods:

1. Aim:

- The aim of this case study is to assess and document the COVID 19 response in the state of Tamil Nadu in terms of health systems preparedness and resilience and issues of access (availability, accessibility and affordability) faced by peoples, especially more marginalized and vulnerable sections of society to health care (both COVID-19 and non-COVID care), both preventive and therapeutic. This would be the basis for a campaign to build public understanding on what governments need to do better and what people/communities to do better for responding to the current health crisis and for securing the right to healthcare. It would identify priority areas for advocacy, mobilization and health education.

2. Objectives:

- To understand government policy responses to the COVID 19 pandemic and implementation issues from the viewpoint of health and economic equity.
- To understand health systems preparedness in the state of Tamil Nadu- and relate it to problem of equity in access to diagnostics and hospitalizations
- To document the COVID 19 journeys of different communities with different levels of vulnerability. - how they experienced and perceived the pandemic; and its consequences on their health and their lives.
- Based on the above to identify sources of strengths and challenges to building resilient public health systems and communities for moving towards realization of the right to health and health care.

3. Methods:

- There was a documentation of the course of the pandemic in Tamil Nadu and Pondicherry from March 2020 to January 2021- and the main initiatives of the government in responding to the pandemic. This was largely based on government data- both from government documents and newspapers. Media scan also informed us of how implementation strategies played out and public response to the same.
- This was followed up by interviews with key informants to understand better the challenges and the rationale behind many of the policy initiatives. This was done both before and subsequent to the field studies.
- Field studies consisted of a qualitative cross-sectional study- in the form of group discussions and interviews in four districts, three of which are in Tamil Nadu and one of which is in the neighbouring

union territory of Puducherry. The latter is an enclave of about 1 million population. The population of Tamil Nadu is about 80 million. Within these districts a number of rural and urban habitations within an urban ward or a rural block was taken up for study. In each of these habitations- village, or urban ward- group discussions were conducted and the studies happened between November 2020 and February 2021. In order to fulfil the objectives of the study after taking necessary informed consent from the respondents in accordance with ethical guidelines, the data was collected using three-interview schedules- two of which were for guiding group discussions and one for interviews of families, which had experienced COVID 19. Care was taken to maintain physical distance and all necessary COVID 19 preventive precautions while conducting the interviews. It was the household and their entire health experience in this period and not only the affected individual, which was the object of study. The group discussions were with the village or the urban residential area community. Where possible local health care providers in this area were also interviewed.

- To study the equity dimension, various community groups with different degrees of vulnerability were identified in each district. These included:
    - Villages in rural areas
    - Middle class residential area both lower and upper middle class,
    - Slums/informal urban settlements of the poor.
    - Organized workers in a company town
- Activist research: One feature of this study, was that it was done primarily by activists who gave voluntary time and effort into this data collection and then through participatory discussion held over

zoom and in a state level workshop, arrived at a final report and action plan that will be used to inform and have a dialogue with the government and they took to the government as well as used to inform the civil society organization that they were part of (in this instance, the local chapters of the peoples science movement and peoples health movement). After the pilot studies, a training program was held in which leading activists from 12 districts of Tamil Nadu and the union territory of Pondicherry participated. The data presented is from three of the 12 districts and from Puducherry, which submitted detailed field reports and analysis by February. Other districts too have undertaken studies within their available resources.. The findings and draft report were presented in a state level meeting held on a virtual platform and a feedback was taken on the final report and recommendations. In April 2021, a state workshop of activists from all 12 districts, who participated in data collection, or analysis and write up is planned.. The information gathered and discussions in the workshop would inform the final report that would be disseminated. Dissemination would be to government authorities to influence their management of the second and subsequent waves as well as to advocate for the right to health care and universal healthcare. Dissemination would also be to civil society organizations and health activists so as to inform the community and local decision makers leading to a better quality, more informed community engagement in pandemic response and in the struggle for right to health.

Chapter III

The Pandemic and Tamil Nadu State Response:

1. The Epidemiology of COVID 19 in Tamil Nadu :

The first two cases in Tamil Nadu were recorded in early March, 2020 . Both had a history of international travel. (The Economic Times 2020b). By April the system was recording 73 cases per day on an average, and this peaked at 5877 cases per day in August, and then gradually declined to 693 cases per day in January, 2021(NHM, Tamil Nadu 2021). The table 3.1 gives the monthly details of number of new cases, case fatality rates, average tests conducted per day and the monthly test positivity rate. It is noteworthy that the case fatality rate increases gradually to peak at 1.9 in August- but then declines sharply by September and stays stead at about 1.1% thereafter. Since March 2021 there is an upward trend again and clearly a second wave is starting up. (NHM, Tamil Nadu 2021).

Table 3.1: Monthly details of number of new cases, case fatality rates, average tests conducted per day and the monthly test positivity rate

Month	New Cases/day: Monthly Average **A**	Case Fatality Rate for Month **B**	Tests/Day Monthly Average **C**	Monthly Test Positivity Rate-
March, 2020	7	0.8	111	5.3
April, 2020	73	1.2	3913	1.9
May 2020	645	0.7	12007	5.4
June 2020	2261	1.5	22624	10.0
July 2020	5022	1.8	47982	10.5
August 2020	5877	1.9	69516	8.4
September 2020	5652	1.3	84697	6.7
October 2020	4094	1.3	83941	4.9
November 2020	1913	1.0	70126	2.7
December 2020	1164	1.1	68732	1.7
January 2021	693	1.i	58977	1.2

Source: (NHM, Tamil Nadu 2021)

2. The Lock-down and its impact:

In early February, responding to reports of the spreading pandemic, the state instituted thermal and clinical screening of passengers arriving by air from COVID 19 affected countries. Those who came from either China, Iran and Italy and later a wider list of countries was added and were asymptomatic were put into 28 day quarantine (The Indian Express 2020e). Much of this was home quarantine. Those with symptoms were admitted in the hospital. This instruction was extended to all international travellers by early March. The first case in the State was reported on 6th March 2020 (The Economic Times 2020b). This led to more strict restrictions and starting up of number of quarantine centres in hotels in Chennai city and other cities receiving international flights (Deccan Chronicle 2020).

On 15th March Government announced closure of schools, theatres, commercial complexes and malls- before lock down started all over India. By March 20th, the prime ministers first speech on the pandemic had been aired, the state borders were closed, and a Janata Curfew was held on Sunday 21st. On 21st the nationwide full lock-down was announced (The Indian Express 2020c).

On March 23rd the whole country went into an abrupt and total lock-down. Tamil Nadu went one step further, declaring section 144 IPC from then on (The Indian Express 2020c). This was to stay in place till May 3rd. Though initially the declaration was for three weeks i.e till 14th April, it got extended again till May 3rd and then again till June 2nd and then to early July 5th. Each extension also involved relaxation of more restrictions, and in July the evidence of it in the cities and towns were much less.

From May, as cases continued to rise, Chennai corporation introduced the concept of containment zones (Hindustan Times 2020). Initially as per the government's initial containment plan, every infected person's residence was to be identified and a containment zones of 5 km to 2 km radius was to be demarcated around it. This was to be ringed by an additional '3 km 2 buffer zone'. The infected persons were isolated based on severity of the disease and admitted in dedicated COVID Care Center/Health center /Hospital. The area where they lived was added into the containment plan and the houses inside the containment zones were disinfected every day. It is doubtful as to whether this happened. These instructions were modified, and now if a street recorded more than five COVID-19 cases, it was designated as a 'containment zone' and the entire street was sealed. It was de-notified only when there was no positive case for at least 14 days. As of 9th June, Chennai had the most number of containment zones (369) in the state (The Indian Express 2020g). In practice a 2 km radius was far too much, and often containment would be limited to the street where the household was located. Within these zones, in areas identified as hot-spots, fever camps and door-to-door screening for fever were also to be carried out regularly.

Initially, stickers announcing that "COVID-19/Do not Visit/Home under quarantine," were pasted on the doors of houses of foreign returnees and the arms of

these individuals were stamped with home quarantine notice, so as to warn the public. Later on this arm stamping was given up, but stickers were used on houses for all those who tested positive or were in quarantine(*The Hindu* 2020a). In many instances, especially in Chennai city, affected houses were barricaded with specially constructed metal frames erected as physical barrier to movement on their doors (The Indian Express 2020f). This continued till almost July, when rising cases made it impossible to carry this out on large scale. The lack of success of such metal framing and stickers must have also been apparent, since the residents did have to come out for essential services and supplies including such essentials in slums as access to public toilets. The Government also launched a mobile application to allow people under home isolation and quarantine to interact with healthcare professionals for getting medical advice and counselling (Government of India 2020). A contact tracing/warning mobile app Arogya Sethu was also launched (Kodali et al. 2020).

The lock-down was extended from its first deadline on April 14th , by another month, to early May and then to early June. During subsequent extensions there were relaxations- mainly in the opening up of shops and government offices. Schools and colleges have however remained shut till February, 2021. Recreational sites both open air like beaches and closed like cinema theatres till December, 20- January, 21. Public transport too was highly restricted (Deccan Herald 2020). Till July migrants were forced to remain without work, at whichever site they were located. It was only in late July that provision was made through special trains and buses for migrants to go back to their native states and for Tamil Migrants in other states to return back to their state. At the time of the lock-down only a few hundred were affected nationwide and had return been allowed then, the spread would have been minimal. Now in the hostels and shelters where migrants had been confined, the disease had spread, and the return contributed to a peak in all states (Kumar 2020; Iyengar and Jain 2020).

The overall approach to enforcing the lock-down was by communicating it as a law and order measure. Since the National Disaster Management Authority was in charge, and since the NDMA is under the Ministry of Home Affairs which has over riding powers to deal directly with District Collectors and District Police Chiefs, an authoritarian law and order approach to enforcement prevailed (The Week 2020). The Government authorised District Collectors, Health Inspectors and Revenue Inspectors to collect fines for COVID 19 offenses like violation of quarantine norms (Rs.500/-), non-wearing of mask (Rs.200/-), spitting in public places (Rs.500/-) and not practising physical distancing (Rs.500) after issuance of proper receipt. The Joint Director of public health and preventive medicine (epidemics) was made nodal officer to monitor effective collection of fines and DDHS was Nodal officer at district level (The Times of India 2020b).

Much greater damage was done by criminalization of lock-down violations. This began in its most noxious form by the criminalization of those who had attended the Tablighi Jamaats congregation in Delhi. They were portrayed as "hiding" themselves, and "police were on the look out for them" and "authorities had to be firm in tracing and taking action against Jamaat workers."(The Indian Express 2020b) . There were angry demands

Much greater damage was done by criminalization of lock-down violations.

for police action articulated in television channels, and no less than the Secretary Health of the State repeatedly made the allegation that but for this Tablighi related increase, the state was doing very well in control of the pandemic (The Indian Express 2020d).

Newspapers also published in parallel with each days count of new cases, the count of people arrested across TamilNadu, the number of vehicles seized and the fines imposed On April 2nd, 38,387 had been arrested and 28040 vehicles had been seized(The Times of India 2020a). Newspapers carried pictures of policemen summarily punishing motorists and two-wheelers in public by making them do squats in the scorching sun and similar indignities to shame them for having ventured out breaking the curfew(The Times of India 2020a).

In the worst incidence of this type in June, 2020, two shopkeepers from Sathankulam town in Thoothukudi, father and son who failed to close their mobile shop before the night curfew, a technical lock-down violation, were arrested, tortured and lost their lives. It took a court intervention to bring the policemen to book, because by then high-handed police action had almost become the norm (The Indian Express 2020h)(Kaushik 2020).

The government was aware of the huge economic crisis that the lock-down was imposing, and the tremendous loss of livelihoods and earnings. To address this the government declared a Rs 3280 crores package (Kolappan 2020). In an article authored in The Hindu by the Chief Minister the promise was to provide rice, sugar, dhal and edible oil free to every family, which has a ration card, along with Rs 1000 (The Hindu 2020b). Certain categories of unorganized workers which were most hit were promised 15 kg of rice and one kg of the rest. Pavement vendors were to receive extra Rs 1000. Migrant workers were to be "accommodated in community halls and provide hot, nutritious cooked food.": Employment under MNREGA were announced to reach to rural households. He also concluded that he would be writing to Prime Minister for a Rs 9000 crore grant- and major relaxations to borrowing and state fiscal deficit (Business Standards 2020). These announcements were in addition to the Union Government package of 5 kg of rice per family per month for three months, Rs 500 per month for women holding Jan Dhan Yojana bank accounts, three months pension advance to senior citizens and differently abled and Rs 2000 more for MNREGA rural workers (India Today 2020).

Additional measures in urban areas were free meals through Amma canteen, deferment of rents to tenants, extension of electricity bills till July 31, and solatium for government workers battling COVID19 (Mahendran and Indrakant 2020).

It is worth noting that by August and September, there was little visibility of the remaining lock-down measures or even of public distancing. And these were the months when the pandemic was at its peak.

The questions that arise are:

1. *The lock-down is justified by three contradictory rationales. One- that it can contain the disease and prevent community transmission from setting in? This was the most highly publicised rationale that was used. Is this any longer valid? Second, that it can flatten the curve and reduce the rate of incidence of new infections. Did it do so, and if so for how long. At its peak, lock-down measures were weakest. Third, that it gives time for health systems to get prepared, but after that it has no role. This would mean that lock-downs always indicate a lack of preparedness, especially if it has to extend beyond the first few weeks.*
2. *Does restriction at home always lead to disease reduction- especially if homes are in overcrowded localities with no options for physical distancing?*
3. *If we break-down the lock-down to a number of individual restrictions- what was their rationale, were they sound public health action or knee-jerk uninformed reactions of a security apparatus. For example, the suddenness with which it was imposed without giving time for migrants and others to return home, limiting the hours when shops are open, night curfews, close down one day in a week, insisting on masks while driving alone in a car or two-wheeler, preventing persons from coming out even if alone or with a family member for a walk…What informed the choice of restrictions and what evidence validates it.*
4. *In a context when most of the workforce is unorganized and there are no social security measures, do the pandemic-control benefits of lock-down outweigh the tremendous harm done?*
5. *The lock-down led to a huge decrease in access to other health services- and thus total morbidity and mortality may have increased even if the pandemic was contained?*
6. *To what extent was the widespread repression and suffering of more marginalised groups and violation of individual dignity in the lock-down inevitable? Could the restrictions have been achieved in a much more humane and participatory way? What changes in governance would be required for this?*
7. *There are nations that managed well without ever taking recourse to lock-downs. Must LMICs re-think the way forward*

3. Public Health Measures: Changing Health Behaviours

The second step was to prevent the transmission of the infection by intensified public education to promote the practice of respiratory hygiene and surface disinfection of areas frequently touched by hands. This required the change of existing social behaviours and the introduction of a number of health related practices into daily life.

There was strong messaging on a) wearing masks b) on maintaining a distance of six feet or more- and avoiding close contact and c) hand-washing, repeatedly and well. These messages did have a very good penetration- but behaviour change was not easy. Further, in a majority of households, the practice of such

physical distancing was not possible.

With respect to the work-place, the Health and Family Welfare Department had issued Standard Operating Procedures(SOPs) for social distancing in offices, workplaces, factories and establishments in April 2020, that provided measures regarding disinfecting, transport of people, gatherings, guidance on use of common spaces, lifts and others(MoHFW 2020) **.** Within civil society there was a strong case made for using the term physical distancing to highlight the point, that under such conditions social support had to organized.

The State government also invested in a number of highly visible and publicised sanitation measures involving disinfection drives by fire services using various modes like disinfectant tunnels, drones, and Royal Enfield's etc. Most of these were of doubtful efficacy, and after the first months of panic, these were quietly given up (India Today 2020)

From May, 2020 as cases continued to rise, Chennai Corporation introduced the concept of containment zones. As per the government's initial containment plan, every infected person's residence was to be identified and a containment zones of 5 sq km or 2 km radius was to be demarcated around it. This was to be ringed by an additional '3 km radial buffer zone'. These instructions were modified, and notification required a street recording more than five COVID-19 cases, it was designated as a 'containment zone' and the entire street was sealed. It was de-notified only when there was no positive case for at least 14 days. As of 9th June, Chennai had the most number of containment zones at 369 in the state (The Indian Express 2020g)**.** Within these zones and areas identified as hot-spots, fever camps and door-to-door screening were also carried out regularly

Initially, stickers announcing that "COVID-19/Do not Visit/Home under quarantine," were pasted on the doors of houses of foreign returnees and their arms were marked with home quarantine stamps to warn the public. Later on as community transmission was established, stickers were used on houses for all those who tested positive or were in quarantine. In addition, the instruction was that affected houses were to barricaded

and metal barriers erected on the doors (*The Hindu* 2020a). This draconian measure was carried out for many months, and was obviously most unsuccessful, since persons had to come out for essential needs. In slums, they had to access public toilets. Such measures were however huge sources for the generation of stigma that were to become a big impediment to disease control (Bagcchi 2020). These measures may also have undermined contact tracing.

When it came to work-places other than the government or corporate offices- places like vegetable and fish markets, or alcohol shops, or agricultural mandis-, physical distancing was advocated, but no non-coercive community based monitoring and support was envisaged. Physical distancing therefore did not sustain- and these were the sites of many outbreaks, both in the lock-down phase and after (BBC 2020c).

On public transport and recreational sites also considerable confusion and inconsistency of guidelines could be cited.

The questions that arise are:

1. *Did containment by cordoning off the affected areas and creating visible barriers to access lead to the tremendous increase in stigma and denial of the disease- which is one of the main findings of our study?*
2. *Does physical cordoning off of a one or two km radius geographic area around an index case make any public health sense? Did it become a substitute for contact tracing and undermine the latter?*

4. Public Health Measures: Test, Track and Treat:

About the time India had gone into lockdown, the World Health Organisation (WHO) Director General (DG) Dr Tedros Ghebreyesus was asked what should be the main strategy that countries should adopt. His reply was Test, Test, Test (BBC 2020a). WHO remain silent on the lockdown as a strategy. Later WHO modified it to test, track, and treat (WHO 2020).Tamil Nadu State set up its first laboratory for COVID-19 testing at the King Institute of Preventive Medicine and Research, Chennai and started testing about 90 samples per day in early March, 2020 (The News Minute 2020). Prior to this, samples were sent to the National Institute of Virology, Pune. By April end, with the addition of more testing centres, the testing capacity had reached around 4500 tests per day and currently it is over one lakh tests per day.

Such an expansion required the creation of a large number of laboratories There are currently 68 government laboratories and 186 private laboratories, which are accredited to do the testing. In May 2020, a decision was taken to ensure at least one government laboratory in every district, by repurposing existing RT-PCR platforms. In July expansion was further increased- by adding more machines to existing laboratories, running them on 24* 7 basis, as well as setting up a second or third laboratory in many districts and cities. A total of around 550 laboratory technicians and 250 lab attendants were appointed in this period. It is worth noting that though the number of government labs is less, overall 78% of the test load in the State is carried out by the government, and another 9% covered under Chief Minister Comprehensive Health Insurance Scheme (in private labs) as per government reports **(IJME, March 2020)**.

The 'RT-PCR test' was the main test that was used, and after a short but disastrous effort at adopting rapid antibody testing, it went back to RT-PCR as its main test and gold standard for diagnosis and increasing the testing capacity rapidly.

One major reason why utilization of government testing facilities was higher was because this test, which costs about Rs 2500/- per test in the regulated private sector, was made available free from all government hospitals. (this was under CHCMIS card. Without the card it was Rs 3000 per test in the private sector per test plus an additional Rs 500 for home visit).

One of the big strengths of Tamil Nadu's response was the famous TNMSC (TN Medical Services Corporation), which has established a very effective and efficient public health logistics system. The TNMSC could ensure that not only the required RT-PCR kits, but also the required RNA extraction kits, reagents, virus transport medium, that each test requires more procured in time and distributed appropriately. RT-PCR equipment purchase was also managed by TNMSC. The entire kit including reagents, when under public procurement costs less than Rs 200/-(DT NEXT 2020).

Despite these measures there was still a perceived difficulty in access to testing, this related a lot to the testing protocols. These protocols, released by ICMR initially restricted testing to only international travellers and their symptomatic contacts and then expanded to all close contacts of a positive case. Those who had influenza like illness or symptoms typical of COVID 19 were refused the test if there was no contact history. This was on the basis of an understanding that there was no community transmission. Community transmission was defined as cases happening without a clear history of contact- but since testing was not allowed for patients without a contact history however sick they were it was a misleading circuitous logic. It lulled the state into thinking that other than Talibaghi Muslims there was no chain of transmission. It is only after the outbreak from Koyambedu market in the month of May, -and the continued rise of cases in Chennai that testing policy was modified to include all symptomatic irrespective of contact, - but even then it was limited to declared hotspots (BBC 2020c). Once again this made early detection of new hotspots difficult. Within hotspots there was widespread testing even when there was no contact history or symptoms leading to misleadingly low test positivity rates. It was only about October that testing was potentially available for anyone with symptoms who wanted to be tested.

Unfortunately, in the first two months of the pandemic even all Severe Adult Respiratory Infections (SARI cases) or viral pneumonias were denied testing. Only a proportion of SARI cases were "sampled" which meant that deaths could take place without an attempt to rule out COVID-19 as the cause. This entire period of March to June, 2020 was a period characterized by Government denial of a growing pandemic, to justify which there was considerable under-testing and under-reporting of cases (Sundararaman 2020). Many who came to testing were told, that even giving a test, would lead to stickers on their houses and quarantine- and therefore encouraged to return without the testing (BBC 2020b) (personal communication). Mandating Aadhar

This entire period of March to June, 2020 was a period characterized by Government denial of a growing pandemic, to justify which there was considerable under-testing and under-reporting of cases

card or other ID as a pre-requisite for testing and this acting as a barrier, was reported from other states, but not from Tamil Nadu.

Test Positivity Rates.

This is the main indicator used for measuring the adequacy of testing. Ideally test positive rate of about 5 per cent is considered good. A higher test positivity rate may indicate limited testing, focussed only on very overt cases and a low test positivity rate could indicate either declining disease incidence or a number of tests being done on low suspect population. The test positivity rate increased from 5.3% in March to 10.5 % in July 2020, and then remained high till September, before declining to 4.9% in October and remaining at much lower levels since. The 10.47% in July could indicate that testing capacity was getting overwhelmed. During these months there could also be considerable delays ranging from 48 to 72 hours in getting the reports- especially in

the districts. These were the months when cases were rising sharply in Tamil Nadu(NHM, Tamil Nadu 2021) table 1 above).

The problems with testing positivity as an indicator are many. The main problem from the viewpoint of public health, is that we do not disaggregate and differentiate between tests done for different indications using different denominators and report them separately, we cannot make adequate actionable sense of the data.

In the least we need to report test positivity by four categories- tests done on symptomatic persons without contact history, on symptomatic persons with close contact history, on asymptomatic persons with close contact history and tests done for any other reason-(including testing done before discharge, or before surgery for unrelated causes etc).

This data is collected, but not used. If we knew the proportion of ILI and SARI cases testing positive than even field surveillance based on symptoms would let us suspect new areas of transmission and new cases.

Table 3. Infection fatality rate, undercount of infections, and testing by district.

District	Deaths	Confirmed cases	Tests conducted	Seropre-valence (%)	Population	IFR (%)	Ratio of actual to confirmed cases
Ariyalur	47	4191	76279	26.52%	754894	0.0235%	48
Chengalpattu	673	40241	399263	34.19%	2556244	0.0770%	22
Chennai	3862	207390	1350491	40.94%	4646732	0.2030%	9
Coimbatore	557	37932	458054	20.43%	3458045	0.0789%	19
Cuddalore	271	22170	263947	33.37%	2605914	0.0312%	39
Dharmapuri	48	4954	100746	19.06%	1506843	0.0167%	58
Dindigul	186	9465	168422	26.88%	2159775	0.0320%	61
Erode	124	8644	207777	18.88%	2251744	0.0292%	49
Kallakurichi	103	9802	133384	38.66%	1370281	0.0194%	54
Kancheepuram	385	23941	328692	34.30%	1166401	0.0962%	17
Kanniyakumari	246	14158	226184	35.40%	1870374	0.0372%	47
Karur	44	3664	65578	16.16%	1064493	0.0256%	47
Krishnagiri	106	5857	68403	18.92%	1883731	0.0297%	61
Madurai	424	18014	364893	38.00%	3038252	0.0367%	64
Nagapattinam	110	5959	93702	21.99%	1616450	0.0309%	60
Namakkal	94	7845	125838	17.04%	1726601	0.0320%	37
Perambalur	21	2010	43049	51.05%	565223	0.0073%	144
Pudukkottai	148	10001	137332	25.21%	1618345	0.0363%	41
Ramanathapuram	127	5778	105173	35.30%	1353445	0.0266%	83
Ranipet	177	14326	128022	45.09%	1210277	0.0324%	38
Salem	425	25144	377688	22.44%	3482056	0.0544%	31
Sivagangai	126	5580	107979	26.68%	1339101	0.0353%	64
Tenkasi	153	7702	108215	48.24%	1407627	0.0225%	88
Thanjavur	221	14486	257680	26.58%	2405890	0.0346%	44
The Nilgiris	38	5510	120113	11.12%	735394	0.0465%	15
Theni	193	15888	170530	44.33%	1245899	0.0349%	35
Thiruchirappalli	168	11645	196207	32.79%	2722290	0.0188%	77
Thiruvarur	99	8620	133411	21.56%	1264277	0.0363%	32
Thoothukudi	132	14391	198278	37.91%	1750176	0.0199%	46
Tirunelveli	208	13684	198389	43.47%	1665253	0.0287%	53
Tirupathur	117	5843	113189	23.93%	1111812	0.0440%	46
Tiruppur	176	10209	187803	19.71%	2479052	0.0360%	48
Tiruvallur	619	35320	450341	34.85%	3728104	0.0476%	37
Tiruvannamalai	262	16804	216551	36.18%	2464875	0.0294%	53
Vellore	306	16854	208871	27.72%	1614242	0.0684%	27
Villupuram	105	12712	205430	32.25%	2093003	0.0156%	53
Virudhunagar	221	14980	266562	37.92%	1942288	0.0300%	49

Notes. Death counts are up to 2 days after date of serological sampling. Test (RT-PCR, not serological) and confirmed case counts are up to 7 days before the median date of serological sampling. Population is from 2011 Census. Ratio of actual cases to confimred cases uses seroprevlanece times the population as the numerator and confirmed cases as the denominator.

Testing Efficacy:

Testing efficacy is affected by testing capacity, by testing protocols, as well as demand side factors. The main demand side factor, was stigma and denial- a large number of those who were symptomatic even if severe did not reach out to get tested. In terms of protocols we have mentioned how many protocols in use lowered the detection of positive cases. The practice of neighbourhood testingof largely asymptomatic cases in an area where someone tested positive, is less well known, but we were reported this in all our field areas. This could have led to a large increase in negative tests. Both are misleading ways of keeping the test positivity rates low. There were reports from other states, where district officers were to fulfil a certain quote of tests, and may therefore reach the quote without adhering to indications for testing. But in this chapter we do not discuss it since there is no policy awareness or policy initiatives with regard to these. However, we do present the overall assessment of access to testing- combining supply and demand side factors from table 3.2. It shows the number of cases that were reported as testing positive as a ratio of the number of cases that would have reported positive if all those who were sero-positive had been picked up by testing.

This figure varies widely across the state. The three states where testing efficacy were highest was Chennai- where 1 in 9 cases were picked up, 15 in Niligiris and 17 in Kancheepuram. At the other end in Perambalur only 1 in 144 were picked up and this was 88 in Tenkasi, 83 in Ramanthapuram and 77 in Trichy. In our study districts it ranged from 9 in Chennai to 39 in Cuddalore, to 41 in Pudukottai. Though, it is unrealistic to expect every single case of infection to picked up, it is obvious that the ratio of infected cases that were detected does depend closely on the districts testing capacity and stigma. Another way of saying it is that in effect for a number of reasons discussed earlier access to testing has been low. The fact that Chennai records a high proportion of cases of Tamil Nadu and many districts had negligible outbreaks could be more reflective of access to testing than actual disease spread.

Thus, test positivity rate varies widely across the district but comparing with table 3.2 districts low levels of reported cases as a proportion of what one would expect from their relatively high levels of sero-prevalence like Perambalur, or Ramanathapuram have also very low test positivity rates. It is likely that the testing did not occur in those population and those individuals where the disease was most prevalent.

The main questions that arise are:

1. *Though there is an impressive scale up of testing capacity, access to testing has been most iniquitous- with some districts having low capacity and low access.*
2. *What are the barriers that community reports in access to testing? What is their experience of access to COVID-19 tests? How were the above protocols of testing being implemented?*

5. Public Health Measure: Contact Tracing, Quarantine and Isolation:

Equally important was the follow up to a positive test. Two actions were required. One was the isolation of the positive patient. A second was detailed contact tracing to identify all close contacts. And finally once close contacts were identified they were to be quarantined. In our understanding the government performed remarkably well on the first and failed miserably on the second.

Isolation of Patients:

Whenever a patient tested positive the policy required him or her to be isolated. The laboratory would

inform the concerned village authorities- and neighbourhood health center who would then inform the patients family. Symptomatic patients when waiting to get tested, or when going to get tested or waiting for the test report, were also to be in isolation.

In the beginning there was an insistence of institutional isolation, with some exceptions for home isolation. The exceptions were only if home isolation was insisted upon and feasible plus the patient had no symptoms or symptoms had resolved. After September, in many districts, home isolation was actively encouraged and institutional isolation became the exception. Institutional isolation was limited to those with symptoms, and those who wanted institutional isolation because of lack of space or amenities or the presence of vulnerable persons in the house. A large number college hostels or community halls were taken over by district administration and re-purposed to act as isolation centres. These were termed COVID Care Centers. There were arrangements to provide quality food- meals thrice a day plus tea and snacks twice, a clean bed and clean toilets, and a medical check-up for fever and other symptoms once a day, and provision for exercise. If the symptoms worsened they were shifted to designated COVID 19 hospitals.

Contact Tracing and Quarantine:

In the months of February and certainly in March and April, there was a serious effort at screening for fever, and quarantine of international air travellers. Then such fever screening at was included for domestic travellers arriving from other stats also.

In the first month those who has no symptoms were advised home quarantine.. Arrangements for monitoring were to have been made. Reports are that monitoring was very weak. From April onwards, institutional quarantine was insisted on, and hotels near the airports were booked for the purpose and travellers given the option of staying there at their own costs, or opting to stay in a government guest house with modest facilities. But by June home quarantines for those testing negative on arrival was resumed.

In contrast to incoming travellers, institutional quarantine for close contacts of positive patients who were not international travellors, was never established. Formally contact tracing was the policy and there was a nodal officer in charge of this activity in each district. But even this was given up by November, 2020. This may be related to the belief that contact tracing had relevance only before community transmission was established or when caseload was low. But this fails to understand the cluster or social network based spread of the disease and the continued relevance of contact tracing.

Similarly, institutional quarantine (as different from isolation) for contacts of positive patients was never initiated- and even policy on this is unclear. Home quarantine was recommended, but monitoring was poor and its implementation uncertain. Government launched a contact tracing/warning mobile application called Arogya Sethu to identify contacts and monitor adherence to quarantine- but this did not pick up due to large number of glitches leading to confusing number of warnings. An media report on this in March 21 showed that in Tamil Nadu only 6.5% had ever downloaded the app Even data generated by this does not appear to have been used. There was another supportive mobile application to allow people under home quarantine to interact with healthcare professionals for getting medical advice and counselling.

What did happen was house-to-house search for fever cases where a positive case was identified as well as fever camps in hotspots so as to identify all symptomatic cases. Testing, even for asymptomatic cases in the neighbourhood was also introduced. This began in Chennai city in May-June 2020 and then was extended all

over the state in July 2020 The introductily on of hand-held thermal scanners made it a relatively easy task to perform. There are considerable positive media reports about this. While no doubt this helped to save lives by identifying cases early, and in a *more limited way to prevention, it is no substitute to contact tracing.*

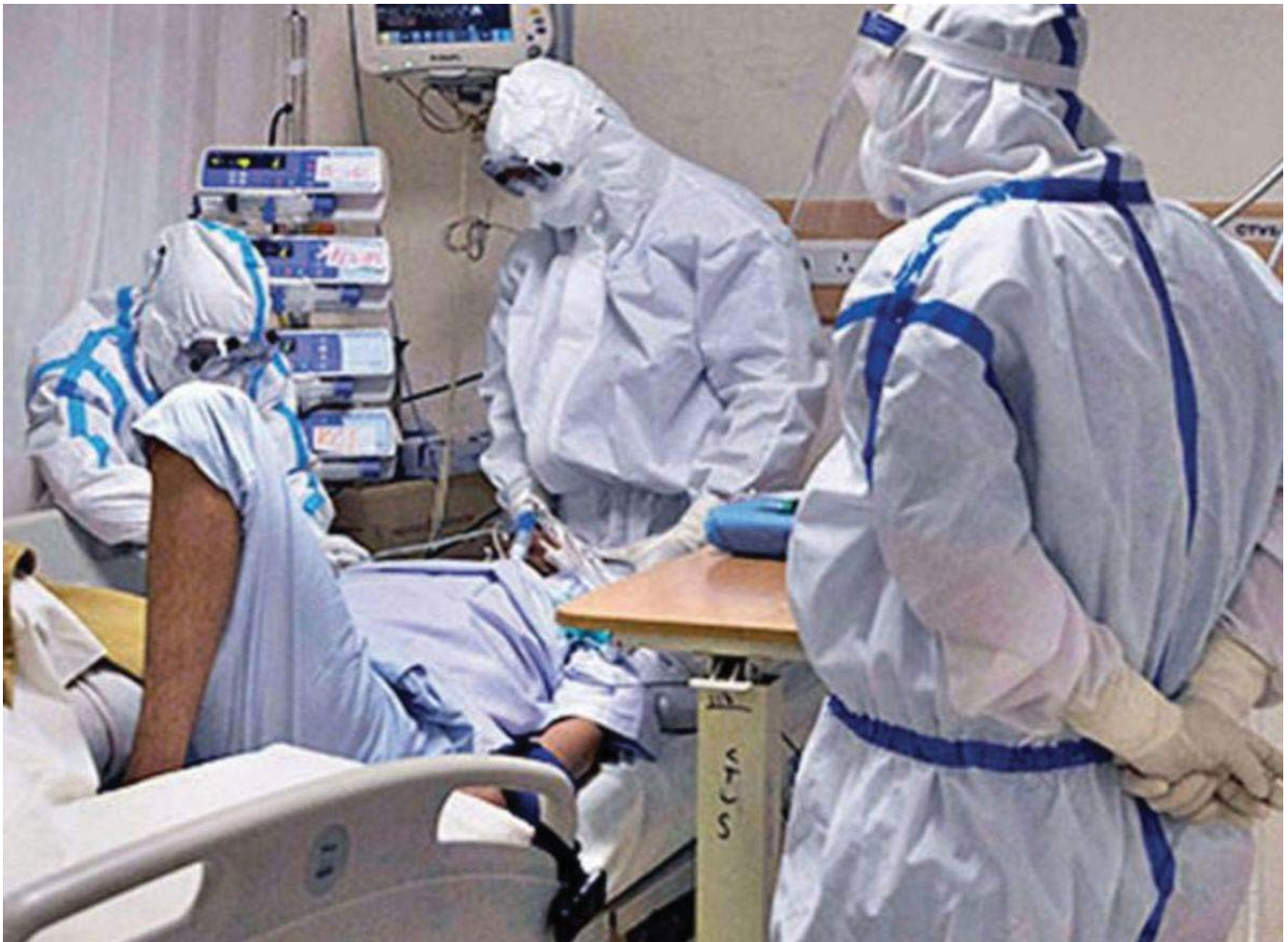
The main questions that arise are:

1. *What is the reported experiences with contact tracing?*
2. *Why has there been little progress in quarantine of any sort?*
3. *How does the choice between home isolation and institutional isolation of positives get made, and get implemented?*

6. Public Health Measures- Hospitalization Care

Third set of measures related to ensure adequate hospital care and isolation facilities, and protective equipment, protocols and skills for doctors, nurses. This required improvements in infrastructure, additional human resources and more laboratories. It required a number of hospitals with ICU facilities and with adequate oxygen supply.

Institutional facilities were categorized into Designated COVID Hospitals (DCH) to treat severe patients, Designated COVID Health Centres (DCHC) to treat moderate illness and Designated COVID Care Centres (DCCC) to isolate positive patients with mild or no symptoms. Tamil Nadu established a total of 167 dedicated COVID 19 hospitals (DCH) meant to treat those with severe symptoms who needed hospitalization and off these 85 were in the public sector and 82 in the private sector. It also established 105 Designated COVID health centers to treat moderate to severe cases and of these 44 were in public sector and 61 in private sector. **(Tamil Nadu dept of health website**)



The government established an equal number of COVID Care Centres but these were not in medical facilities. A message was put out that Southern Railway would convert 473 coaches with about 5000 beds as additional capacity for isolation. (**IE, April 02, pg 02**). But this seems to have been quietly given up, since we hear nothing about this later. The required capacity was created from requisitioned college hostels and community halls.

The increase in ICU capacity and oxygen beds in the public sector was one big challenge. Again thanks to the TNMSC such up-gradation was possible. The number of "oxygen beds", including ICU beds) which was only about 3000 when the pandemic began was increased to 22,000 in October, with about 6000 of these being ICU beds with ventilators. (**IJME, March 2021**)

In addition, the government planned to involve the capacity available in the private sector in a regular manner. In the early stages, these hospitals remained shut. Later there were charges of arbitrary denial of treatment and high pricing (The Indian Express 2020a). To manage this problem on 7th June, the State government issued an order capping the COVID-19 treatment fees charged by private hospitals in the state and issued guidelines; the maximum allowable daily treatment charges in higher grade (A1 and A2) hospitals was Rs. 7,500 and Rs. 15,000 for general and ICU wards respectively. In lower grade hospitals (A3 and A4), it was Rs 5,000 and Rs. 15,000 (The Economic Times 2020a). The monitoring and enforcement systems for this are unclear.

Despite all of this, the reports that came in in the month of July were a considerable cause of concern. There were reports of many struggling to get admission in government hospitals. Of being refused in one hospital and then searching for another, and also searching desperately for any form of transport, often at high costs, to reach the next hospital. Some many never made it? There was considerable uproar in media, and in

civil society on this issue. There were also delays due to referrals from the first hospital of admission to other hospitals because required ICU care was not there.

Main questions:

1. *What are the reported experiences with access to hospitalization? What are the barriers?*
2. *How is the choice between public provider and private provider being made.? What is the experience with each including the costs?*

7. Restrictions and Cessation of Other Essential Health Services:

One major adverse consequence of the re-purposing of busy, usually over-crowded public hospitals for only COVID 19 work, was the abrupt cessation of almost all other essential health services in these hospitals. The bulk of patients who come to these public hospitals are from the poorer sections of the population who cannot afford private services. These patients had nowhere to go. Even for those who could afford private services, there was a high level of cessation of private health care services, due to fear as well as due to knee-jerk local administration responses to local outbreaks in these hospitals.

Primary care attendance too declined all over the state, but more so in the private sector than the public sector (IIT Madras study at Shoolagiri). The reasons for such restriction were a) decrease access due to lockdown affecting public transport and even private transport b) fears of infection in the population and in the health staff .c) outbreak of covid leading to shut down of facility d) public health program staff being re-purposed for covid 19 duties e) administrative decision to shut down many of the essential services. f) lack of information on whether services are available and how to access these.

In conclusion:

This chapter sets out the policy responses of the state and central government to the COVID 19 pandemic. It also highlights some of the challenges that the system recognized and how it tried to address these. In the next chapters , we document the experiences of communities and households with respect to the pandemic and the government response to the same.

References:

Bagcchi, Sanjeet. 2020. "Stigma during the COVID-19 Pandemic." *The Lancet Infectious Diseases* 20 (7): 782. https://doi.org/10.1016/S1473-3099(20)30498-9.

BBC. 2020a. "WHO Head: 'Test, Test, Test.'" *BBC News*, March 16, 2020. https://www.bbc.com/news/av/world-51916707.

———. 2020b. "Coronavirus: India Home Quarantine Families Face Discrimination." *BBC News*, April 8, 2020, sec. India. https://www.bbc.com/news/world-asia-india-52201706.

———. 2020c. "Koyambedu: India's Coronavirus Cluster at a Vegetable Market." May 16, 2020. https://www.bbc.com/news/world-asia-india-52674639.

Business Standards. 2020. "COVID-19: TN CM Seeks Rs 9,000 Crore Grant from Centre." *Business Standard India*, March 28, 2020. https://www.business-standard.com/article/pti-stories/covid-19-

tn-cm-seeks-rs-9-000-crore-grant-from-centre-120032800673_1.html.

Deccan Chronicle. 2020. "In Tamil Nadu, If You Fly Back from Abroad, You Go to Quarantine Hotel. Period." August 15, 2020. https://www.deccanchronicle.com/nation/current-affairs/150820/in-tamil-nadu-if-you-fly-back-from-abroad-you-go-to-quarantine-hotel.html.

Deccan Herald. 2020. "Tamil Nadu Extends Covid-19 Lockdown till Aug 31, Ban on Public Transport Stays." July 30, 2020. https://www.deccanherald.com/national/south/tamil-nadu-extends-covid-19-lockdown-till-aug-31-ban-on-public-transport-stays-867424.html.

DT NEXT. 2020. "CMCHIS Packages for Treatment at Pvt Hosps Released." DtNext.In. June 12, 2020. https://www.dtnext.in/News/TamilNadu/2020/06/12035529/1235641/CMCHIS-packages-for-treatment-at-pvt-hosps-released.vpf.

Government of India. 2020. "Telemedicine Practice Guidelines." MoHFW. https://www.mohfw.gov.in/pdf/Telemedicine.pdf.

Hindustan Times. 2020. "Containment Zones Boost Chennai's Efforts to Efforts to Flatten Covid-19 Curve." Hindustan Times. May 9, 2020. https://www.hindustantimes.com/india-news/containment-zones-boost-chennai-s-efforts-to-efforts-to-flatten-covid-19-curve/story-O3emY2Yl73I95aoXQq6rVL.html.

India Today. 2020. "Coronavirus: Tamil Nadu Startup Uses Drones to Disinfect Roads, Buildings." India Today. March 2020. https://www.indiatoday.in/india/story/tamil-nadu-startup-drones-spray-disinfectant-chennai-coronavirus-1660786-2020-03-28.

———. 2020. "Govt to Provide 5 Kg Grains, 1 Kg Pulses for Free over next 3 Months: Nirmala Sitharaman." India Today. March 26, 2020. https://www.indiatoday.in/india/story/nirmala-sitharaman-coronavirus-govt-to-provide-5-kg-grains-1-kg-pulses-for-free-3-months-1659949-2020-03-26.

Iyengar, Karthikeyan P., and Vijay Kumar Jain. 2020. "COVID-19 and the Plight of Migrants in India." *Postgraduate Medical Journal*, August. https://doi.org/10.1136/postgradmedj-2020-138454.

Kodali, Prakash Babu, Sibasis Hense, Swarajya Kopparty, Gangadhar Rao Kalapala, and Banashri Haloi. 2020. "How Indians Responded to the Arogya Setu App?" *Indian Journal of Public Health* 64 (6): 228. https://doi.org/10.4103/ijph.IJPH_499_20.

Kolappan, B. 2020. "COVID-19: Tamil Nadu Chief Minister Announces ₹ 3,280 Crore Package for Low Income Groups." *The Hindu*, March 24, 2020, sec. Tamil Nadu. https://www.thehindu.com/news/national/tamil-nadu/covid-19-tamil-nadu-chief-minister-announces-3280-crore-package-for-low-income-groups/article31149592.ece.

Kumar, S. Vijay. 2020. "One Lakh Stranded Migrant Labourers Set to Go Back Home." *The Hindu*, May 11, 2020, sec. Tamil Nadu. https://www.thehindu.com/news/national/tamil-nadu/one-lakh-stranded-migrant-labourers-set-to-go-back-home/article31553012.ece.

Mahendran, A, and S Indrakant. 2020. "Amma Canteen Scheme: An Unexpected, but Pleasant Gift amid COVID-19." June 4, 2020. https://www.downtoearth.org.in/blog/food/amma-canteen-scheme-an-unexpected-but-pleasant-gift-amid-covid-19-70244.

MoHFW. 2020. "SOP on Preventive Measures to Contain Spread of COVID-19 in Offices."

NHM, Tamil Nadu. 2021. "Daily Bulletin – StopCoronaTN." 2021. https://stopcorona.tn.gov.in/daily-bulletin/.

Sundararaman, T. 2020. "Health Systems Preparedness for COVID-19 Pandemic." *Indian Journal of Public Health* 64 (6): 91. https://doi.org/10.4103/ijph.IJPH_507_20.

The Economic Times. 2020a. "TN Government Caps COVID-19 Treatment Charges in Private Hospitals at Rs 15,000 per Day in ICUs - The Economic Times." June 6, 2020. https://economictimes.indiatimes.com/news/politics-and-nation/tn-govt-caps-covid-19-treatment-charges-in-pvt-hospitals-at-rs-15000-per-day-in-icus/articleshow/76230615.cms.

———. 2020b. "Coronavirus in Tamil Nadu: Tamil Nadu Reports First Case of Coronavirus; Patient Quarantined in Chennai Government Hospital." September 3, 2020. https://economictimes.indiatimes.com/news/politics-and-nation/tamil-nadu-reports-first-case-of-coronavirus-patient-quarantined-in-government-hospital-in-chennai/articleshow/74529929.cms?from=mdr.

The Hindu. 2020a. "Stickers to Be Pasted on Quarantined Persons Houses," March 23, 2020, sec. Tiruchirapalli. https://www.thehindu.com/news/cities/Tiruchirapalli/stickers-to-be-pasted-on-quarantined-persons-houses/article31144338.ece.

———. 2020b. "¹ 1,000 Assistance Distribution from Tomorrow." *The Hindu*, April 1, 2020, sec. Coimbatore. https://www.thehindu.com/news/cities/Coimbatore/1000-assistance-distribution-from-tomorrow/article31223585.ece.

The Indian Express. 2020a. "Overcharging, Treatment Protocol Violation: 27 TN Private Hospitals Have Faced Health Dept's Wrath- The New Indian Express." 2020. https://www.newindianexpress.com/states/tamil-nadu/2020/oct/15/overcharging-treatment-protocol-violation-27-tn-private-hospitals-have-faced-health-depts-wrath-2210726.html.

———. 2020b. "The Tablighi Jamaat's Organisers Endangered the Lives of Hundreds — of All Faiths." March 4, 2020. https://indianexpress.com/article/opinion/editorials/tablighi-jamaat-nizamuddin-coronavirus-spread-covid-19-cases-6344671/.

———. 2020c. "COVID-19: TN to Be Locked down from 6 Pm Tuesday, Here's the List of Services Affected." The New Indian Express. March 23, 2020. https://www.newindianexpress.com/states/tamil-nadu/2020/mar/23/covid-19-tamil-nadu-to-enter-lockdown-mode-from-6-pm-on-tuesday-until-march-31-2120503.html.

———. 2020d. "Tablighi Jamaat Had Major Role in Spreading the Virus, Says Nitin Patel." *The Indian Express* (blog). April 8, 2020. https://indianexpress.com/article/india/tablighi-jamaat-had-major-

role-in-spreading-the-virus-says-nitin-patel-6352548/.

———. 2020e. "COVID-19: Tamil Nadu Scales 1000-Mark, 93,560 People Quarantined for 28 Days." The New Indian Express. April 13, 2020. https://www.newindianexpress.com/states/tamil-nadu/2020/apr/13/covid-19-tamil-nadu-scales-1000-mark-93560-people-quarantined-for-28-days-2129281.html.

———. 2020f. "Life behind the Barricades: Senior Citizens Face Lockdown Heat in Chennai." April 25, 2020. https://www.newindianexpress.com/cities/chennai/2020/apr/25/life-behind-the-barricades-senior-citizens-face-lockdown-heat-in-chennai-2135005.html.

———. 2020g. "In Chennai's COVID-19 Battle, 37 Containment Zones Active for over a Month Take Centre Stage." The New Indian Express. June 15, 2020. https://www.newindianexpress.com/cities/chennai/2020/jun/15/in-chennais-covid-19-battle-37-containment-zones-active-for-over-a-month-take-centre-stage-2156933.html.

———. 2020h. "Explained: How Tamil Nadu Police's Brutal Act of Revenge Claimed Lives of a Father and Son." *The Indian Express* (blog). September 24, 2020. https://indianexpress.com/article/explained/explained-tamil-nadu-police-custodial-torture-father-son-killed-thoothukudi-6479190/.

The News Minute. 2020. "Tamil Nadu Gets Its First Facility for Testing Coronavirus in Chennai." The News Minute. February 3, 2020. https://www.thenewsminute.com/article/tamil-nadu-gets-it-first-facility-testing-coronavirus-chennai-117382.

The Times of India. 2020a. "Tamil Nadu Police Book 39,000 for Section 144 Violation." The Times of India. February 4, 2020. https://timesofindia.indiatimes.com/city/chennai/tamil-nadu-police-book-39000-for-section-144-violation/articleshow/74940489.cms.

———. 2020b. "Who Can Collect Covid-19 Fine in Tamil Nadu?" September 9, 2020. https://timesofindia.indiatimes.com/city/chennai/who-can-collect-covid-19-fine-in-tamil-nadu/articleshow/78022882.cms.

The Week. 2020. "COVID-19 and the Ambit of the Disaster Management Act." April 26, 2020. https://www.theweek.in/news/india/2020/04/26/covid-19-and-the-ambit-of-the-disaster-management-act.html.

WHO. 2020. "WHO -T3: Test. Treat. Track Initiative." WHO. World Health Organization. 2020. http://www.who.int/malaria/areas/test_treat_track/en/.

Chapter IV

State Response at the District level: Chennai Case Study:

Area Profile: Chennai

Chennai is the capital of Tamil Nadu state and the fourth most populous metropolitan area in the country. The industrial developments, increase in economic activities and employment opportunities in the city and its suburbs has attracted large migrant population. It recent demographic data shows a population of 8.96 million with a growth rate of 7.8% in the previous decade (2001 – 2011) of which 30% reside in slums. As the city grew, slums also increased. The Chennai city population has 17.7% migrants and 30.9% slum population.. The slum population has a lower access to drinking water and sanitation and has lower income as compared to the rest. Most of its social and economic indicators are well above national and state averages, though this hides high degrees of inequity.

Table 3.1. Demographic and Health Statistics of Chennai city- 2015

City population (million)	8.96
Population growth rate of 2001-2011	7.8
Proportion of urban population	100%
% slum population (2013)	30%
MMR	36.9
IMR	6.1
Sex ratio	989
Sex ratio 0-6yrs	950
Birth rate	16.4
Death Rate	8.8
Literacy rate	90.2% (M-93.7%, F-86.6%)
Age at marriage	23.1
No.of beds per 1,00,000 population	159.6

Source: Director of Public Health and Preventive Medicine (Civil Registration System), Chennai

Health Profile and Health Infrastructure of Chennai city:

Key health indicators of Chennai are given in the table above. The death rate is 8.8 per 1000, but this also reflects and aging population. Most common cause of death was heart diseases and heart attacks (38% of total deaths) from 2006-2011 and other non-communicable The problem with infectious disease is however not over. Chennai accounts for the highest malaria cases in Tamil Nadu (57%) and a considerable prevlance of TB, which is higher in the slum population.

Under different forms of government ownership and management, there are 155 public primary health facilities, 4 secondary health facilities and 4 tertiary care facilities in the city. The tertiary care centres also serve as the top referral centres for the whole of Tamil Nadu. The majority of the primary health centers (140) and the secondary health facilities (3) are under the urban local body- the municipal corporation, while the medical college hospitals and the other healthcare facilities come under the state department of health. Though in a relative sense, Chennai has a better healthcare system as compared to other cities- there are still large gaps. The vacancy rate of doctors was 36% at primary health centers.

Chennai has a large private sector in health. There are about 466 private hospitals and more than 10,000 private medical practitioners in the city. Chennai is a hub for medical tourism attracting 30-40% of domestic health tourists. Of these 24 single hospitals, 115 multi speciality hospitals and 29 diagnostic centres in private facilities are empanelled under the government funded Chief Ministers Comprehensive Health Insurance Scheme,- which means that potentially that these private facilities, provide cashless service to the poorest 40% to 60% of the population for their tertiary healthcare needs.

COVID 19 in Chennai:

There were two cases of the disease in the first half of the month and 122 cases in the second half. In April there was an even sharper rise of cases- but this was dismissed as entirely due to a single super-spreader event (the Tablighi Jamaat conference) and but for this, there was no epidemic and no community transmission. However media documents many cases without a known primary contact- and it is likely that community transmission had set in even then. After the explosive outbreak of cases related to the Koyambedu market, denial of community transmission became a pointless rhetoric.. And from Chennai the pandemic spread to the rest of Tamil Nadu also.

Chennai had its peak in the month of July with 50,000 active cases and then started to steadily decline reporting only around 200-300 people with the disease in December. By Dec 31, 2020 the cumulative total was of 2,25,507 COVID cases, with 6625 active cases and 4005 deaths. Chennai has a case fatality rate of 1.8% which is similar to the the National average of 1.8-1.9% .

In the 6625 active cases as on December 31st, 60.9% were male and 39.1 % were female. By age group 3 % in 80 and above. 8.2% in 70-79, 13.3% in 60-69, 18.3% in 50-59, 16.3% in 40-49, 17.8% in 30-39, 17.4% in 20-29, 4.5% in 10-19, 1.2% in less than 10 yrs old. (computing data from covid19india.org and NHM data,)

The findings of the second sero survey published on Oct 2020 revealed that 32.3% of Chennai's population developed IgG anti-bodies to Covid-19 (twitter:chennaicorporation).

	Total Cases		Death		Tested		CFR
Month	During the Month	Up to the Month	During the Month	Upto the Month	During the Month	Upto the Month	Upto %
March	124	124			N/A		
April	786	910		15	N/A		1.6
May	13889	14799	117	132	N/A	85000	0.9
June	43528	58327	753	885	85701	170701	1.5
July	41467	99794	1225	2110	414165	584866	2.1
August	35803	135597	634	2744	382719	967585	2
September	31779	167376	463	3207	367792	1335377	1.9
October	32540	199916	441	3648	388321	1723698	1.8
November	15444	215360	199	3847	297481	2021179	1.8
December	10147	225507	158	4005	333969	2355148	1.8

(computing data from covid19india.org and NHM data,)

COVID 19 response in Chennai city:

The declaration and implementation of the lock-down and public education for social distancing was as described for the entire state. Chennai was however the most rigorous in the implementation of containment zones. It has 360 containment zones in June.

Testing protocols and the expansion of testing capacity also followed the state pattern. Currently there are 10 Government testing centers in Chennai and 50 + private testing centers.- but the majority of testing is in the public sector. In addition to those tests taken at hospitals and fever camps, samples were also taken from street vendors and marketplaces using mobile testing vehicles like vans and autos. Positive tests were followed up with isolation. Contact tracing was negligible but there was a very high level of screening for fever and fever camps

Treatment capacity was also increased. There are 20 dedicated COVID Hospital (20 DCH) in Chennai city; 5 Dedicated COVID health center (DCHC) to treat moderate illness. The Chennai Trade center, Nandambakkam was converted into a 550-bed COVID-19 quarantine ward on April 14 and as many as 747 marriage halls and 50 schools were converted as COVID-19 care centres. As of 4 May 2020, there were 4,000 such beds in Chennai at covid care centres and the Communicable Diseases Hospital in Tondiarpet. By 2 June, Chennai alone had 17,500 beds for COVID-19 care.

Chennai was however the most rigorous in the implementation of containment zones. It has 360 containment zones in June.

On the welfare side to ameliorate the economic consequences of the pandemic and response to the same the government provided free rations, free meals through Amma canteen and cash support of Rs.1000/ to each family. Essential commodity supply for slum dwellers, street vendors and free face masks were also announced,, Deferment of rents to tenants, extension of electricity bills till July 31, and solatium for government workers battling COVID19 were other measures put in place. , etc. were the announcements made by the Hon'ble Chief Minister of Tamil Nadu to meet the needs of the people during pandemic.

Study area:

The city has 200 divisions organized as part of 15 zones.This study was carried out in the Division no 182 of Thiruvanmiyur district . Thiruvanmiyur is a largely residential neighbourhood in the south of Chennai, Tamil Nadu. Recently, it has witnessed a boom in its economy as several IT parks, research centres and offices have been constructed and people from several cultural, religious and socio- economic background have made Thiruvanmiyur 'their home'. Among the 15 zones in Chennai, Thiruvanmiyur belongs to Adyar zone, which reported the 5th highest number of COVID cases. As on December 31st 2020, Adayar zone had a total of 18290 COVID 19 cases contributing to 8.1% of the total city cases and recorded 311 deaths which was 7.8% of total city deaths. The case fatality rate is 1.7% which is slightly less than whole Chennai city (1.8%).

Division no. 182 consists of about 20 broad streets with a population of around 1 lakh. There are 11 UPHC and one UCHC in Adyar zone and one UPHC in 182nd division of Thiruvanmiyur.

During this pandemic to carry out door to door contact and conduct fever survey, the Chennai corporation had appointed 80 COVID survey volunteers. They visited nearly 150-200 houses per day. At Thiruvalluvar Nagar, near the RTO office there is one Government testing center, which has been functioning since April 2020 and caters to both the divisions. On an average atleast 50 tests are taken here. Fever Clinics are conducted every day in 2 places on rotation basis. As per Dec 31st 2020, 7424 fever camps was conducted in Adyar zone with a total of 3,92,744 people attended (53 per camp) and 20928 identified as symptomatic cases (5% of total attended) and swab test was taken for 20584.

In the 182nd division, the following communities and households have been interviewed and written as case studies as follows:

Case Study 1: Slum/informal settlements

Case Study 2 : Metropolis urban lower middle class colony

Case Study 2: Urban middle class apartment complex.

Case study 3: Urban upper middle class Independent houses

During this pandemic to carry out door to door contact and conduct fever survey, the Chennai corporation had appointed 80 COVID survey volunteers. They visited nearly 150-200 houses per day.

Case Study 4: Group of Government appointed volunteers and officials

Chennai Case Study 1: Journey of family's living in a slum/informal settlements

The slum was one among the 5 urban slums in division 182 and covered an area of 1 sq km with a population about 800 - 850 families. The average family size is 4. It is informally referred to as 'Colony' by the local people, which usually imply that they are of Dalit community. Most of them lived in their own thatched house of maximum 200 sq.m area which comprised of a one small living room, one bedroom and one kitchen. There are tenants also living in this area paying a home rent of not less than Rs.5000/- Per month. Resources like water, sanitation and electricity are shared among the houses in the slum. For every 4 houses there is 1 common toilet and a common water pipe. They collect and store water in vessels and pots for kitchen use etc. The Government has arranged for two mobile hand washing facility during this pandemic.

In this area almost 30 people were infected with COVID. It was also said that, many people managed their symptoms at home itself by taking kabasura kudineer and kasayam as their area was highly stigmatized due to stickering and metal framing in front of the houses. Hence, they had not gone for testing. There was immense fear in the area as many feared loss of life and livelihood. A woman who delivered her baby recently said that, she feared taking the baby for Immunisation and only after fear subsided in their area she took the baby to the hospital. An old widowed lady who was living in the area said that, someone came distributing milk packets but I did not receive. A watchman living in the locality said that he has never felt so bad like this in his lifetime. For 2 months or more he was jobless and the entire family suffered more due to the loss of income than due to COVID. Even the ration and essential goods given by government did not reach everyone equally. "At 6'o clock in the evening when no one expects they come distribute the relief materials and go away. Few families enjoy the benefits but majority of us go without getting any".

Meenakshi 49 yr old woman, lived with her only son as a tenant in a thatched hut. Their house had only one small living room and a kitchen, where social distancing was impossible or difficult to follow. The house was poorly ventilated. Before lockdown, she worked as a domestic help in 3 houses and was paid Rs.3000/month in each house. Once COVID 19 lockdown was imposed, she lost her job and has been jobless since then.

Meenakshi was a known case of hypertension and diabetes, on regular medications from a local private pharmacy. On enquiring she said that the Government UPHC at Thiruvanmiyur did not have some of the medicines prescribed for controlling her cholesterol so she had to get it in private clinic.

She was fine until the last week of May 2020, when she developed fever, loose stools, cold cough, loss of smell and loss of taste. The fever was intermittent by nature spiking in the morning and evening which she did not take very seriously in the beginning. She was treated at Dr. K's private clinic, who prescribed injections and

> "I was hesitant because I did not want to know that I had COVID. I was afraid I will be taken away from my family and I will have to die alone".

medication. As the symptoms did not subside, she had visited the same clinic multiple times and spent around Rs.500/-. When it was almost a week, she developed anorexia, nausea, diarrhoea and generalized body weakness and felt fearful.

"Fear of death encircled me; I thought I was a prey to the deadly Corona virus".

Her son insisted her to get tested for COVID in the nearby Government testing facility, but she said that, "I was hesitant because I did not want to know that I had COVID. I was afraid I will be taken away from my family and I will have to die alone".

But as it was already a week now, her son convinced her and she was tested. In a day the result came and she was positive for SARS COV2. For further testing and investigations she was taken to Kings Institute in an ambulance. After assessing her, the doctors admitted her in Chetpet GH. She explained that, at the GH, though the nurses were available round the clock, it was difficult to see the doctors. She was started on IV antibiotics and was provided good food, time to time at the bed side. She was admitted here for an overall period of 8 days after which was sent to Pulianthope housing board Isolation facility. Her overall experience at the GH was satisfactory.

In a days' time she fell ill again at the Pulianthopu housing board Isolation facility and developed loose stools, nausea and vomiting. Hence, the nurse arranged for ambulance to Chetpet GH. By the time she reached the GH, her son had also come to meet her. They spent hours in the waiting area, from morning till evening, without being seen by a doctor or a nurse.

"I had severe loose motion and kept visiting the toilet frequently. My son went to the nursing station and asked why no treatment is given to my mother. No one gave a proper answer. I was not even admitted into the hospital."

In the evening as soon as the doctor arrived, all of patients were seen one by one. She was again started on IV antibiotics and oral medication and was admitted for 8 days. She said that, "Each time I recovered, I feared I will fall ill, I never thought I will survive".

Soon after the treatment in GH she was sent back to the Isolation facility at Pulianthoppu, which was a housing board complex converted into COVID isolation center. It was located near a crematorium in North Chennai. Each house had a single bedroom, a living room, a small kitchen and a bath attached toilet. In each house, two persons could stay, one in the bedroom and other in the living room where steel cots with mattresses, Chairs, table were available. Time to time, food was delivered in the room itself. She said that, "Every day morning they gave kabasura kudineer, breakfast from hotel Saravan Bhavan, mid -morning snack, lunch from hotel Sangeetha, evening snack, kabasura kudineer and 3 varieties of food like chappati, idiappam, rice for dinner."

She explained that, Government had arranged good food and care for COVID patients. The nurse checked their BP daily and gave the medicines.

"In Pulianthoppu Isolation facility, I had the worst times staying alone in an isolated room. Never ever in my life time I have stayed alone. It was my first time. I felt very difficult to sleep alone. I was scared of the dark. So, I kept the room light on all through the night. Lot of insects came in and gave me a lot of trouble. I

stayed awake all through the night and slept only during the day. I was counting the days to reach home"

After 10 days of isolation at Pulianthoppu, as she felt better, she was sent home in an ambulance. She said that, "I was prepared for the worst as I had a terrible time with corona virus. I really thank God. If not for Him I would have died."

On enquiring about her experience after reaching home from isolation facility, she said that, "on hearing the ambulance siren everyone in our area got alarmed. Our home was stickered and an Iron grill was installed in front of our door. None of my neighbors and relatives came to meet me. There was no one to enquire and share my burden as I battled the disease for almost a month. This hurt me a lot."

She also said that it was the corporation workers who came and provided them free vegetables,10 kg rice from ration shop and Rs.1000/- from govt. to meet the basic needs. This was a great help for them as she had lost her job ever since lockdown was imposed. Even after several months after complete recovery, she says that,

"Though I recovered from COVID no one is accepting me as house maid in their houses. It has been very tough to even eat and drink every day. We borrow money from relatives and neighbors. After I was tested positive for COVID, my son also lost his job. No one accepted him at his workplace. Despite his effort to get himself placed in multiple work places, he has not been able to secure a job for himself for more than 6 months now. I do not have any savings. Corona has drained away even the little that we had and made us jobless and helpless. It has been a nightmare for me and my son to survive each and every day."

They are in serious debt as they have been borrowing a lot of money from neighbors and relatives to meet their basic need. This area did not seem to have received appropriate essential care services. They only received when demanded from the government. Many of them were not even aware of what services they were eligible.

Case Study 1 B: Journey of families in a much poorer slum area

This slum adjacent to the above one had worse living conditions, lacking many amenities including water and sanitation. Few families were nuclear and few were joint families with an family size of 4-8. They said that they have been occupying this area for 30 yrs now.

Most of them lived in their own thatched house with only one room, which they used for multiple purposes. Cooking utensils, stoves, gas cylinders were kept in one corner on the floor, whereas television, clothes in another corner. The area appeared to have a lot of school-going and under five children and living conditions were even more unfavourable for them.

"Though I recovered from COVID no one is accepting me as house maid in their houses. It has been very tough to even eat and drink every day. We borrow money from relatives and neighbors. After I was tested positive for COVID, my son also lost his job. No one accepted him at his workplace.

There was no common toilet and a common water pipe provided by the Government in this area. They had to go to the main road to fetch clean water. They stored water in pots, vessels and buckets for kitchen and bathroom use. In this area, there was no mobile hand washing facility arranged by the Government. Open defecation was the norm.

The women in the area worked as maid servants and men as daily wage workers. They said that for 3 months during the lockdown men and women were at home without any job. The lockdowns were very difficult and we solely depend on ration supplied by Government like Rs.1000, 35 kg rice and other grocery item. There were also migrants who did not have ration card, they could not avail any services. They either paid money and got the ration supplies from neighbours or shared with them.

On talking to them about health status or pandemic, we could see lot of fear in their eyes. They said that, they solely depend on meagre wages and they can not imagine falling sick as they will not be able to work. They did not like to talk about the disease.- and no details of who was affected and who died were available. No one was sent to isolation or hospitalized from this slum.

The people in this area leave their home early for work and are available only on Sundays. They said that a COVID survey volunteer used to visit their houses on Sunday for thermal screening. They said that they were provided with free face masks.

During heavy rains, water is prone to enter in their houses and they suffer huge losses. Also during the recent Nivar cyclone, they were shifted to nearby school for shelter and were given free food in amma canteen for a week.

Chennai Case Study 2. This urban lower middle class colony, is at TK street, visited Nov. 25.There were 25 houses in the cramped colony accommodating 60 people.

Amal a 24 yr old male, was the first case with COVID 19 in this colony. He lived in a family of 5, with his parents, sister and grandfather in a small house with a living room, one bedroom and a small kitchen. The bathroom and toilet were available outside the house. They were Hindus and belonged to the fishermen community. His father was the only breadwinner of the family until a year back when Amal started working in an IT company. The earnings from their fish business was around Rs.300/- per day. They bought fish from the fishermen and sold in markets. It depended on their sales of fish in the market.

During this lockdown the fish business was completely hit. Amal has been the sole breadwinner, the family has been looking up to. He works from home for an IT company and earns around Rs. 20,000/-per month.

This family earlier lived in Kuppam near Kottivakkam for several years as they were below poverty levels. Recently due to the employment of their son their financial status had improved. They had shifted to this colony in the month of June 2020 as tenants. Soon after they shifted to the new area, Amal, developed fever, sore throat, cough and on the fourth day he was disturbed as the pandemic was known to be spreading. As he was new to this area, he was not familiar with the clinics nearby, so he visited a clinic near Kottivakkam along with his mother and got medicines and returned home. As the symptoms did not resolve and he came to know that his neighbor of the house he resided earlier, developed COVID he was shocked. It was initially difficult for him to accept but as he was concerned about the people in the new area, he immediately volunteered and went to the nearby Government testing center. His family was completely against his decision to go to the Government

testing facility. His mom even said, "I will make kasayam and kai marunthu (home remedies) and you will be perfectly alright, but please do not go to the Government for testing. They will take you to some far away Corona treatment center."

In the testing center, though he presented with fever, cold, cough they turned him away as he did not have a proper referral slip from a doctor. (at that time symptomatic cases were, by policy, denied testing unless they had a medical prescription. The fear was of unnecessary testing).

So he went to the Kottivakkam private clinic once again and got the recommendation from the doctor for COVID test. After which at the testing center he was tested and on the 3rd day he was informed that he had COVID. This is now over a week since the onset of symptoms

For further testing and management he was taken to Kings Institute in an ambulance and blood test, SPO2, and BP were taken. Every parameter was normal and by then he was asymptomatic, but as there was a space constraint for isolation at home and no separate toilet he was taken to Isolation facility at Pulianthoppu.

Government Isolation center at Pulianthoppu, was a housing board residential complex, as yet unoccupied, that was converted into COVID isolation center. It was located in North Chennai. Each house had a single bedroom, a living room, a small kitchen and a bath attached toilet. In each house, two persons could stay, one in the bedroom and other in the living room where steel cots with mattresses, Chairs table were available. Time to time food was delivered in the room itself.

He said that, "I definitely took a bold decision to get myself treated at the Government, but after seeing the reluctant attitude of the nurses, the room service persons, other patients in the center, I lacked trust on the entire government system. I even started having thoughts like, I had an ordinary fever only, as my mother said, but probably had a false positive at the testing center. I started having fear of COVID now only because, I feared I will get from other patients. No one wore a mask. I made a wrong decision to come to the Government. I had the worst experience in the COVID Isolation center."

Every morning the nurse monitored the vital signs of patients who stood on a long queue after which kabasura kudineer (a indigenous medical decoction) and breakfast (usually, Idli, Dosa or Idiappam) were given. There were, fruits for midmorning snack, a traditional simple lunch with rice, dhal, rasam for lunch, and "sundal" boiled chickpeas as evening snacks and then Dinner.

"As they initially advised me on a 10 day Isolation plan at the facility, I was waiting when the 10 days will get over. But on the 2nd day I developed severe chest congestion and cough; no one was there to help. I asked for hot water to drink to multiple persons, the dietary service man, the sanitary worker, to the nurse but no one

Government Isolation center at Pulianthoppu, was a housing board residential complex, as yet unoccupied, that was converted into COVID isolation center.

helped me. No one was there to give me a glass of hot water; the whole night I coughed and suffered. If at all I stayed at home in this situation I would have had my mother by my side and she would have got me a glass of hot water whenever I needed. When I asked for a chest X ray due to my persistent cough and chest congestion, the nurse turned me off saying Chest X ray is not needed for my age. I still regret for the decision I took to get treated in the Government."

The other co-patients admitted there were having lots of fun. They were playing cards, watching TV etc. They enjoyed the food.

He added saying, "We all were initially told we will have to stay here in the isolation center for 10 days but some were discharged in 2 days, some in 3 days. There was no uniformity followed. Though the treatment was free of cost for us, I see this as a loss to the Government as this involves a lot of corruption. Individual needs were overlooked. Is it enough if food is given on time? I can have good food even at home, but I'm here so that my disease is treated. I was not informed of anything clearly and I lost my trust on the system. Overall, I was not at all satisfied with the treatment."

On enquiring with the family members of their experience, the mother said that, "Our house was the first in the area to be infected with COVID. The main door was stickered and iron grill was installed in front of the door. Already there was no ventilation and the Iron grill installation in front of our door made it very stuffy inside. Moreover we were worried of how our son will be in the treatment center."

The sister added saying, "we were new to the area, and we did not know anyone. My brother was the one who helps us with all outdoor activities and communications. As soon as he was taken to the isolation center, we were also quarantined and our movement was restricted. One day, the gas cylinder for cooking got over; we did not know what to do. Even in that situation we had to call our brother who was in the isolation center and get it arranged through his friends".

After 3 days of treatment at the Isolation center, Amal was discharged and sent home in an ambulance. The area people had pressurized the house owner to get them vacated. Amal's mother said that, "The people in the area did not want our family to stay there. They used to slam the door whenever they saw us .Our neighbors looked at us as 'theendathagathavargal' (untouchables). But somehow our house owner was gracious enough to allow us to stay in the house. If Amal had listened to me and not gone to testing center, we would not have undergone all this disgrace. Our time was not good".

None of the family members even stepped outside the house for several months even after recovery, as people continued to see their family with fear. Whenever they saw Amal outside his home, the others would immediately cover their mouth with their kerchief's or put on their mask. They did not even go to get the free

"The people in the area did not want our family to stay there. They used to slam the door whenever they saw us .Our neighbors looked at us as 'theendathagathavargal' (untouchables).

rations provided by the Government and the cash aid of Rs.1000/-.

Amal felt that, through the entire process, his family suffered a lot more, as simple things became more complicated during COVID quarantine.

There were multiple phone calls from the Government to Amal, asking if he was in contact with anyone in the last week before testing positive but he refused to reveal his friends name as he did not want them to unnecessarily undergo the stigmatizing process he said.

He contacted all his friends on phone with whom he was in contact with and informed them of the services provided at the Government testing and isolation centers. He warned them not to go to the Government health facility at any cost. Only in case of serious symptoms he advised them to seek medical help otherwise he asked them to take healthy diet and stay on home quarantine.

He said that, during his illness and the days spent in isolation, his company was so co-operative. They had paid his full month's salary.

He said that, "It is nearly 5 full month's post his recovery, and the things have changed a lot. Government rules and regulation are no more the same they have been relaxed. I feel it's far better now but we don't know who is positive or negative. I wonder why it is so? everyone is walking around carelessly without masks but when I was COVID positive we as family had to face a lot of discrimination and were ultimate victims of COVID 19. I often think it's all a foul play by the Government"

Observations:

The case studies clearly brought out the slum fabric, showing the stark inequities within slums and between slums with extreme differences in access to safe drinking water, sanitation and housing and health care services etc. socio economic status; We see that, the slum dwellers are daily wage earners who have been living hand to mouth to keep their families alive. The stringent lockdown measures have been really hard on the poorer sections of the society. Many families had nothing to eat and drink. They had to step out daily amid the lockdown to either arrange for food or to meet their toilet needs. The essential supplies provided by the Government have benefitted only some sections of the poor showing denial of services and flawed field level implementation.

Though they are more vulnerable to COVID19 and its spread the commonly followed protection measures (like wearing of masks, hand washing, physical distancing) are not possible here. Similarly, the containment strategies like stickers on houses and metal framing of houses failed to serve the purpose here as the patient

"The stringent lockdown measures have been really hard on the poorer sections of the society. Many families had nothing to eat and drink."

and the close contacts continued to use the same common toilets with others in the area. There was no alternate arrangements, special sanitation drive and disinfection campaign in the entire slum area. Only one slum had hand washing station but in some slums even common toilets were absent.

The people here considered talking about corona virus itself as a 'taboo' because they feared falling sick and a day without income were unimaginable. Also the stigma associated with the disease made many slum dwellers lose their jobs. So many did not reveal their disease to the Government and preferred taking medication at home or managing minor symptoms at private clinics where they had been treating patients with fever for more than a week without referring them for COVID testing.

But in those who sought treatment at government in the first 3 months, Chennai Corporation had arranged for autos, vans, bus, ambulances to transport patients to and fro the testing and treatment centers. Almost all infected slum dwellers were taken to the housing board complex at Pulianthope where good food, shelter was provided and the expenses were completely borne by the Government.

But, there was also a clear flaw in the field level execution of services nullifying the public health measures of lockdown, contact tracing, testing, quarantine and Isolation. One of these failures was the failure to ensure people's basic needs for survival during lockdown. Another was the non-cooperation of the patients for contact tracing as there was a breach in trust between provider and patients at the isolation centers. A third was the failure to quarantine the close contacts and family members and a fourth was the large turnaround time in testing centers, There was also an absence of special sanitation drives to make common toilets more usuable and more safe.

Chennai Case Study 3: Urban middle class apartment complex.

The two person research team visited two middle class apartment complexes and conducted in-depth interviews with two affected households in each. Focus group discussions were undertaken with a group of people living in those apartments.

The middle class apartment complex located in Thiruvanmiyur division, Chennai was visited on Nov 20th 2020. The apartment complex was a four-storied building occupied by 10 families. We went to meet Gajendran family who resided in the second floor of the building since 8 years. They were Roman Catholics by faith. Their house was well ventilated with double bedroom and was quite spacious.

Gajendran is the breadwinner of the family, who owns a catering unit and earns Rs.1 Lakh per month. His wife Ezhilarasi is a homemaker and their children Rajalakshmi and Ramesh are doing their internship and final year in Dentistry and Mechanical Engineering respectively. In their family 2/5 members were infected with SARS COV2. Hence, after getting their consent, we started our interview with the Ezhilarasi and her children. At the time of interview Gajendran had gone out for his work. During the interview we could find radical differences in opinion between the mother and her son with regard to the way they had perceived the disease and its stigma.

It all started when Ramesh a 21 yr old male developed high grade fever, sore throat, myalgia on June 9th . He had frequently gone out to shops for buying household essentials and also spent time with his friends. He had no prior co-morbidities and said that he was perfectly fine until the previous night when he rose to have symptoms. As the symptoms set in, he felt fearful.

"I felt scared to even inform of my symptoms to my family as they would get disturbed. It was the time when none of us wanted to get fever".

The same day he went to a nearby private clinic (Dr. G's clinic), where IV line was started and Inj. Paracetamol was given. The next day the doctor had called him over telephone and advised him to get tested for COVID 19 in her clinic at the cost of Rs.4500/- per test. Meanwhile, the local COVID 19 survey volunteer had come for thermal screening and informed about the free testing that is done at the Govt.testing facility. She had also informed about the COVID 19 autos that have been deployed for transport of the patient to and fro. So he agreed to visit the local testing facility that was located within 1 km. He said that, "the health care personnel in the testing centre was very kind enough to clarify my fears and took the test in a matter of 3 minutes".

Soon after test was taken a brown sticker was stuck on the house main door, indicating that the household members and neighbours should stay cautious as the person with fever may be contagious for COVID 19.

In a day or so his mother, a 48 year old female developed high grade fever, anosmia and sore throat. She is a patient with chronic depression and is on anti-depressants since 3 years. She said that, "Initially I was afraid to go to the Government testing facility because we see in the TV that they are taken away from the family and put in hospitals on ventilators. Even before dying they cannot speak to the family. So I hesitated. I did not want anyone to know about my symptoms. I tried to hide. But I had to go for testing" The local survey volunteer convinced her and took her to the local testing facility and got her tested. She said that, "Even when I was back home, I was doing the regular household chores like cooking, cleaning etc. no one in my family realised the seriousness of the disease on me. They did not take my symptoms seriously until the test results were positive for COVID 19"

On the third day after testing, Ramesh's result was positive for SARS COV2 and he was taken in a van along with 15 other patients to Kings Institute, where blood test, BP,SPO2 were checked. As all parameters were normal, he was given two options: either to go to the COVID Isolation Center (CHCC) or remain in Home isolation. As he preferred to be home isolation, after checking for home isolation feasibility at his house, the health care personnel agreed to home isolation.

"I thought I would be taken to some isolation center, but knowing that I was going home I was so much in relief". He also expressed that, "on hearing the ambulance siren, people in my locality got alarmed. The ambulance dropped me in the main road itself which was quite embarrassing as people were looking at me with fear. People in my apartment did not face me as I was entering in. I wish the ambulance dropped me right in front of my home."

> The grandfather had to be sent to his second son's house, where he was not accepted and had to listen to words like, "You want all of us to get Corona and die". This resulted in familial discord. So, as the family amidst the pandemic was wondering what to do, the local area COVID survey volunteer immediately opened her house for the old father in law.

Now, as Ramesh was on home isolation, his mother's results came and were suggestive of SARS COV2. The main door was stuck with a green sticker indicating that the case is confirmed for COVID 19. She was taken in an ambulance to Kings Institute where her vital signs like BP, SPO2 were examined. A whole Blood test and X ray was also taken. This time the health care personnel was reluctant to permit her on home isolation, as her son was already on home isolation in a house with 2 other healthy members and an elderly. So, she was advised to go to the Government COVID Isolation center which put her in a tough situation.

"I was waiting to get back home as I had never been away from my family. More than the disease I feared dying alone in the hospital so I refused to go to the Government Isolation Center. I convinced the doctor that we will send my father-in-law to our relative's house"

She was permitted to be on home isolation and returned home in an ambulance that dropped her on the main road itself. She said that, "It was really difficult for me to walk from there to my home. I was scared if others will get infected because of me. I felt very weak and difficult to keep my foot on the ground .Probably if I paid some money to the ambulance driver he would have dropped me home as I saw a few patients giving money to the driver".

Meanwhile, as Ramesh and his mother occupied the two bedrooms, his sister and father stayed in the living room. The grandfather had to be sent to his second son's house, where he was not accepted and had to listen to words like, "You want all of us to get Corona and die". This resulted in familial discord. So, as the family amidst the pandemic was wondering what to do, the local area COVID survey volunteer immediately opened her house for the old father in law. This has really scarred their relationship with close relatives.

As the room occupied by Ramesh's mother did not have an attached toilet, she had to use the common toilet. But she said that each time she used the toilet she used to flush and clean up the area with boiling hot water so that germs might die. She also expressed that, "the 14 days of isolation was really tough as we have to spend the time alone in the room. It is definitely hard when the women in the family fall sick. That is the time the entire family gets stuck. Every meal we had to get from hotels"

Ramesh remembered the multiple phone calls he received from the Government enquiring their health status and also phone calls from corporation enquiring his recent contact history. But he said that he was not aware of who exactly spoke to him, whether they were health care professionals or any other.

The following week the daughter and father also suffered from symptoms like high grade fever, anosmia. This time they realised not to go to Government testing facility because by now they faced immense problems and pressures from society. As soon as brown colour sticker was stuck on their main door, four families in their apartment feared and had left to their native place; all the houses in their apartment were stickered with a white colour sticker; and on their main door a green colour sticker was pasted, indicating the patient is confirmed positive for COVID; in front of their house iron grill was installed;; their movement was restricted. Each time they wanted to purchase something they had to depend on volunteers who were available only till 2 pm.

"My neighbour has two small children, because of us they too had to stay home, be under quarantine and suffer. We do not know how they managed the family needs. I was also praying earnestly that they should not get COVID"

In order to prevent others in the apartment from suffering problems due to the 14 days quarantine once

again, the daughter and the father refrained from going to Government, but got themselves tested at the private clinic. In the clinic the doctor convinced them to take an injection to prevent relapse of COVID in future at the cost of Rs.50,000/- . Ramesh believed that private clinics were making money in the name of COVID. He felt bad that he could not convince his family and said that, "Though I brought home the COVID, all my treatment expenses were borne by the Government and I had nothing to spend for my disease except Rs 10,000 that I spent for my first day at the private clinic, but I really feel bad that private clinics have used this pandemic to make money"

The fearful journey with COVID, isolation and stigma made Gajendran, Ezhilarasi and Rajalakshmi take the injection at the cost of Rs.1,50,000. Also as Ezhilarasi felt very weak, the private clinician had prescribed Immune boosters at the cost of Rs.30,000/-.The COVID and lockdown situation has definitely had a huge impact on this family. They had to spend from their savings and also borrow from relatives to meet the expenses incurred.

Although the entire family is back to normal and have started resuming back to their work, the mother still feels deeply hurt. She said that," even after 2 months after recovery I'm deeply hurt and I do not want to go out and meet people. It is difficult to reconcile with all those relatives who did not stand with us during our tough times". She also added that, when we suffered from the disease the government was really strict, but now we don't know who is positive or negative; everyone is walking around carelessly without masks".

On 18th December, the research team had a focal group discussion with a group of women in an apartment complex in a containment zone in SM street, a densely populated area. It was a four-storied building occupied by 50 families. Each house had a small living room, one bedroom and a small kitchen. All the occupants of this apartment were migrants from different parts of Tamilnadu and stayed as tenants. They narrated their story of how they were affected during the pandemic.

In the month of May, an occupant who was a vegetable vendor contracted the disease after which the entire street was locked and titled as 'containment zone'. It was barricaded and metal framed for a height of 6 ft with 2-3 police men seated near the entrance all through the day, so that no one can go out. While discussing on the issue, A lady said that, to have decent living, our husbands have to go out for job, but 28 days of the month we were locked down. We did not have much savings. Another women with a toddler said that, when milk was asked to the volunteers at 7 am we would get it by 12 noon only. Even to get milk for our children we suffered. The diapers that we ordered for the children, were rudely throw inside our home. They also said that for all the 28 days no one came in, even the door to door survey volunteer did not come for thermal screening. They were not satisfied with any of the government officials as no one stood by them when they needed help.

> "To take the COVID patient from the locality, officials and volunteers came in groups, the police in fact came with lathi, as if they were taking a criminal. "

Even when some of them had an ordinary head ache or stomach ache they failed to solve their issue but rather were forcing them to get corona test done.

To quote one paraticipant : “To take the COVID patient from the locality, officials and volunteers came in groups, the police in fact came with lathi, as if they were taking a criminal. “ He added “This is just a microscopic virus and the infected person has not done any crime for the police to come with lathi.”

When the gas cylinder that was booked in one house reached the gates for delivery the police were neither allowing anyone to reach out nor the cylinder man to deliver. When the help line phone numbers were contacted no one responded. Similarly they were unable to pick up the biscuits and milk powder which they ordered online. They said that, “The police always turned us away like animals when we reached out to them. They also said don’t come out and give us the disease. Even drinking water cans which we ordered did not reach us”.

A women said that, “We only ate what was available in our house. Many times “rasam sadam” (boiled rice with a thin gravy) was only available. Even when any commodities like mask or gloves or kabasura kudineer was given only first few houses would receive. The interior ones would not receive any. We felt like prisoners”

Many raised concerns on why the close contact/ family members are tested in the 5th or 6th day? Is it to extend the lockdown for 14 more days? Why can’t they be tested along with the patient itself? When the patient is taken for isolation why the family members are not? Why they are still kept in the community? Why should 50 families and neighbourhood suffer because of one family? And many more questions that showed their level of awareness on the disease and the transmission.

On enquiring about removal of the metal frames, a 30 yr old male in that apartment said that, “the officials informed them that only after their required payment is received from the Government, and the bills and payment tallied they would open up the frames.” Also the people believed that for each COVID patient tested positive, the officials got Rs.2500/-. So whenever the corporation officials and volunteers came for screening and testing they feared and fled. They never co-operated.

On enquiring about care for NCD’s and other health issues, the people said that, there was a pregnant lady in the apartment who used to get regular phone call from the GH inquiring her health status but for other problems like diabetes, hypertension even getting tablets was difficult. Few of them got tablets in bulk for 2-3 months and few got help from volunteers.

There was a woman who lost her husband because of delays in dialysis for renal failure. Here is what she narrated :

A 57 yr. old retired Government driver who worked at the TN housing board was a known case of Chronic renal failure and on regular biweekly dialysis since 2 years. Initially the family spent nearly Rs.6000 per dialysis session which lasted for 4 hrs. but as they could not afford they shifted to VHS hospital nearby (this is a not-for profit hospital with relatively modest charges). In February 2020 he had an episode of breathlessness for which he was admitted in VHS ICU. They spent nearly 2.5 lakhs there but even after 2 weeks of treatment in ICU his condition did not progress so they took him in a private ambulance paying 3500 and admitted in Rajiv Gandhi Government General Hospital (RGGGH). Within 2 days he became normal and was discharged. During the pandemic, the wife said that, going to hospital was very difficult but they got help from a known auto driver and visited VHS regularly for dialysis. They got pass from VHS for easy transport during lockdown.

In the last month his condition worsened and, on Thursday after his last dialysis session, he developed breathlessness. VHS advised a local checkup with showed high blood sugars (550mg/dl). So they went to Kottivakkam private hospital at 9 pm.,There they advised for immediate dialysis, but as there was no facility in that hospital, they waited until morning and reached VHS at 7 am as it opens at that time only. For the entire night he was charged Rs 20,000/ at the private hospital . At VHS dialysis was done but the breathlessness did not reduce. The wife said that, "The hospital forced us to take corona test so we agreed. While taking corona test he screamed and He died in ½ hour. We really do not know what happened."

She added saying, "if we knew he was so serious we would have taken him to RGGGH but people said that during lockdown even in RGGGH dialysis units were not functioning as all spaces were converted to treat COVID patients. So we did not take him there".

At the VHS the family members were completely dissatisfied as no doctor came and inquired about patient's condition on time nor anyone monitored the patient during dialysis. The wife said that, "Every month one person at least dies here as no proper treatment is given to patients. Even after his death the hospital asked us to pay 10,450/-. His body was parcelled with blue cover. His face was also covered. The nurses were giggling when they were parcelling. We really felt bad. He is an important person in our family. They did not allow to bring the body home. Around 60 people from our relatives went directly to crematorium. There the last ceremonial rights were done. They opened the face only in the crematorium."

Here in this patient's case, the family had spent so much by even applying so many loans but they lost the patient.

Observation:

In the middle class apartment, they had inadequate awareness on COVID 19 and its management, therefore each one had their own conceptions and belief and predominantly believed the messages circulated in social media and failed to understand the science behind the pandemic. It was observed that, they were confused regarding how the disease spreads? When patients are infective? When they can be declared non-infective? Many were not aware of the transmission cycle, so they were not able to appreciate why the close contacts were tested later on 5-6day and not earlier itself. Many could not appreciate the 14 day quarantine and containment strategies. This inadequate awareness resulted in enormous anxiety and fear among these families. Protection measures like hand washing, wearing masks, physical distancing were strictly adhered and followed by them. Extra precautions like consuming Kai marundhu, kasayam, kabasura kudineer , hot water and homeopathy tablets , keeping their toilets clean by pouring boiling water, salt and turmeric water etc. was followed.

> Lack of awareness was also noted among Govt officials, volunteers .There is clear asymmetry of information between the Government and public, resulting in lack of trust and co-operation of public which needs to be rectified.

Lack of awareness was also noted among Govt officials, volunteers .There is clear asymmetry of information between the Government and public, resulting in lack of trust and co-operation of public which needs to be rectified.

Secondly, the occupants of the apartments were mostly tenants and worked as vegetable vendors, business men or in small private firms who could cooperate with the lockdown for maximum 1 month but cannot go further as many do not have adequate savings. When an area was marked as containment zone the officials were quick to lockdown and disinfect, and put up sticker sand metal frames on the houses but were least bothered to inquire the health status of the patient or even shift the patient out to isolation centers. No one has visited for thermal screening or monitoring the home isolated cases. The people in containment zones largely suffered due to the petty corruption and apathy. Even when they paid the cash to them for purchasing essential commodities like milk for children, water cans etc. it did not reach them on time; nor did they get back the change. The unfriendly stigmatising attitude of the officials broke the trust of the public on Government system ultimately leading to poor co-operation.

Thirdly, most of the patients were admitted in isolation centers at Chennai Trade Center and few of them were home isolated. The treatment at isolation centers was appreciated by the patients but the family members who were left behind had to face enormous stigma from community; though few were symptomatic they did not reveal to the government as they feared extension of their quarantine period burdening others in their apartment. So they preferred going to private clinics and getting their fevers resolved. We could also see that, patients on home isolation visited private clinics as they were not satisfied with the treatment. Meanwhile, the private clinics have used the pandemic as an opportunity to make money in the name of immune boosters, vaccines (there were no vaccines available then) and other irrational treatment, for which many families paid large amount of money.

Fourthly, due to stigma the affected families preferred to vacate the area on their own or were forced to leave; their houses were labelled as 'corona house' and no one came forward to stay in these houses for many months.

Lastly, the pandemic has overlooked other non-COVID emergency conditions both from provider and patient perspective. People believed that all hospital spaces were converted to treat COVID only, thereby curtailing access for other conditions. Except pregnancy all other conditions like hypertension, diabetes and renal disease have not been ensured regular follow up nor provided with necessary medications during the lockdown.

Due to stigma the affected families preferred to vacate the area on their own or were forced to leave; their houses were labelled as 'corona house' and no one came forward to stay in these houses for many months.

Chennai Case Study: 4 Covid 19 Journey of Upper middle class family living in an Independent House.

The research team visited two upper middle class independent houses in Thiruvalluvar street and Journalistn colony on Nov 21st 2020 and Nov 22nd 2020 respectively.

We went to meet Krishnan, a retired Government police officer who was residing in this area since 25-30yrs; they were Hindus. As we opened their gate we could see a hand written notice that said, "No one is permitted to enter the house without prior permission". There were handwritten boards kept that said, "Please remove foot wear before entering the house Their house looked adequately spacious and well ventilated. ". A bucket with water, hand sanitizer, soap was kept in a corner with a board stating, "enter the house only after hand washing".

Initially they were reluctant to speak to us but after introducing ourselves and getting proper consent, we started our interview with Thamarai. She was a homemaker married to Krishnan and had a daughter who was studying in 9th standard. Their monthly income was 50,000/- per month. In their family 2/3 members were infected with SARS COV2. At the time of interview Krishnan had gone out to the shop but joined us towards the end.

Thamarai was a 55 yr old female with Type II diabetes mellitus since 10 yrs and on regular medication whose sugar control levels were not known. She was also a hypertensive on medications. She said that she had gone to the ration shop to get necessary rations for her family wearing her mask and gloves. She remembers it was a long queue and did not go anywhere else. In 3-4 days' time she developed high grade fever on October 15,2020 and went to a private clinic but the fever did not subside.

The family members generally do not welcome any outsiders; The COVID 19 survey volunteer also expressed difficulty in getting the household members checked for fever. But that day while he was visiting their home for thermal screening he advised her to get tested for COVID at the Government testing facility. He also explained that the test is free of cost. She got herself tested and within a day's time the result was positive for SARS COV2. She was taken to Kings Institute where her vital signs, BP, SPO2 were checked. Chest X ray and blood test was also taken. She was advised home isolation.

Meanwhile her daughter was sent to her sister's home. When it was her 5th day of home isolation, on October 20th 2020, her husband, Krishnan a 65 yr old male, who was a known case of hypertension for 15yrs on regular medication developed high grade fever with breathlessness and was immediately taken to Chettinad Private Hospital by his sister in their own car. Due to his presenting symptoms and history of contact with infected person at home he was immediately tested for COVID and the result was positive. So he was admitted in COVID ICU on the same day.

Now Thamarai who continued on home isolation said that, "At home there was no one to take care of me and there was no follow up from the Government regarding my health status. I felt all alone. I was scared if any complication would occur." Her sister advised her to get admitted in the same hospital where her husband was admitted. She said that, "the COVID testing experience was my first exposure to the Government facility and did not have enough trust on the system. Also as I am a diabetic and hypertensive, I preferred staying in the hospital where my husband was admitted in".

In the private hospital, she was admitted for 5 days and was started on IV antibiotics. During discharge her blood glucose levels were high so they had advised her to take insulin. After education on self administration of Insulin she was discharged.

Whereas, Krishnan was admitted in the COVID ICU for 15days where he was on oxygen and supportive care. On enquiring about the expense at the Private hospital, he said that his overall expense at the hospital was 3 lakhs (2 laks for his treatment and 1 lakh for his wife's treatment). He said that the fact that he is hale and hearty is by itself a miracle. He explained that it was really a difficult and frightening experience in the ICU due to his age factor and co-morbid status. He feared that he may not recover, but gives the entire credit to the treating doctors at the private hospital. He was highly satisfied and appreciative of the services.

Post COVID the family is high on precautions and have not gone out because he says that, it will atleast take 3 months' time for them to become normal. Until then it is important to take adequate rest and eat healthy food.

On enquiring about stigma, they said that they did not feel any stigma because no one knew that were infected with COVID 19. Also by this time there was no practice of stickers or installing iron grill in front of the house.

Journey of Upper middle class family who lost their family member:

The researcher and the local COVID survey volunteer visited Subash, a 70 yr old, retired journalist who lived in the metropolitan urban upper class colony in Thiruvanmiyur on Nov 21st 2020 . His house was an independent single storied building, well ventilated and spacious and was located in the main area with recreation facility, beach nearby. There were nearly 200 independent houses in the area with adequate spacing in between them.

Subash's family consists of 4 members, his wife, and 2 sons. They have been living in this area since 25years. He is a retired journalist and his wife a retired college professor. Their sons have been working in software companies. The first son was not yet married and was staying in his parents' house, whereas the second son got recently engaged. Due to COVID 19 lockdown there has not been much impact on their jobs and income as they are pensioners and children have been working from home.

All the family members were doing apparently well till September 4, when the second son's marriage was conducted in their home itself with 20 people invited. It was a day long occasion and their very close family members and friends were invited.

> "At home there was no one to take care of me and there was no follow up from the Government regarding my health status. I felt all alone. I was scared if any complication would occur."

But, two days after the wedding, later the first son, David, a 35yr old male, developed fever. He had no significant past medical history. As many in their area were already affected with COVID, keeping the health of the elderly parents as priority, he immediately went to the Government community testing center and got tested. At this time there was no transport arranged by the Government like corona auto services. The next day the result was positive for SARS COV2. For further investigation he was asked to go to the Kings Institute and get his blood investigations, X ray, BP and SPO2 tested. There was no free transport arranged by the Government now. Patients get the 108 ambulance services only on request. At the Kings Institute, he said his SPO2 was 100%. As there was enough facility for home isolation at his home he preferred the same and got back.

Meanwhile ever since lockdown, considering the well being of the elderly parents the family members have been following respiratory etiquette and hand hygiene. Even they stopped their domestic helper from coming to their home. The corporation workers had now come to sticker their house as he was isolated in the first floor of their house.

In 3 days after the son tested positive, Subash's wife, Kalaivani, a 71 year old woman, a Known case of Bronchial asthma, on Metered Dose Inhaler, since past 35 yrs, developed symptoms of high fever, cough and difficulty in breathing. As she was recently (a month back) admitted for asthma, without much delay they immediately took her to a private hospital, where they have been taking treatment since last 25yrs.

Subash explained that, "The doctor in the private clinic is an old friend of mine and all ICU doctors and nurses are like a family to us. They call us appa and amma, and we feel so comfortable in this hospital. So we preferred my wife getting treated in this hospital itself."

As soon as they got her admitted in the hospital on 10th September 2020, her SPO2 was only 86% so she was immediately put on Oxygen support by Non-rebreather mask(NRBM); COVID test was taken and she was confirmed for SARS COV2. The doctor explained that there are chances of hypoxia induced encephalopathy as her SPO2 was not picking up despite the adequate oxygenation. She was immediately shifted to corona ICU and was put on non-invasive ventilation. This again did not work well with her. She developed tachypnea, her consciousness deteriorated. So she was intubated and put on invasive ventilator. Three days (?) after admission, she passed away.

In 2-3 days, after Kalaivani developed symptoms, the second son, Christopher, who was newly married developed high fever. He was 33yr old male, with previous history of renal disease. So he was immediately taken to the same private hospital. He was also tested positive for SARS COV 2 and was admitted. He did not develop any complications. He was admitted for 7 days and discharged.

Christopher's wife, who was 30 yr old and Nancy, a 30 yr old journalist who was staying in their house since the lockdown also developed COVID. Within 2-3 days gap everyone in the house except Subash developed COVID.

Observation:

Among the upper middle class societies the first choice is to go to a private hospital which they are familiar with and trust. This family got the infection, though they took extra precautions like washing the vegetables with turmeric and salt water before taking it inside the house and stopping the newspaper service, maid servants

and started managing household chores themselves. They also went for regular walking wearing mask in the early hours of the day or in their terrace. They got the infection from a super-spreader event- the wedding, even though guests for it had been very limited. The disease spread to everyone in the house but curiously spared the eldest male and head of the household despite co-morbidities.

The first son were tested in government facility everyone and on home isolation. It is likely that the disease could have spread within the household from him. None of the patients on home isolation were monitoring their saturation levels. It is not at all safe option for those with co-morbidities or even others as they can have a drop in their SpO2 and develop complications. The door to door survey volunteers who visited these patients also did not check SpO2. These patients did not feel the tele-consultations were enquiring their personnel health status. As they were getting multiple calls from different officials they could not relate with their health care provider. Also they felt it a nuisance most of the time as they did not understand the importance. Home isolation was perhaps under such circumstances a dangerous option for patients.

The elderly lady who died had developed symptoms, but seems to have reported late to the hospital by which time the SpO2 was already affected. Would earlier admission have helped? This is difficult to state.

Case Study 5 : Interview with group of Govt appointed volunteers & officials

A focus group discussion was held with a group of government teachers who were involved with contact tracing and follow up of COVID patients in the area.

Contact tracing

In the 15 zones of Chennai, the government teachers were assigned with the task of contact tracing. Among the 3000 teachers who were involved, the female teachers did day shifts and male teachers did night shift. At any point of time 25 teachers were on duty at Adyar zonal office on 8 hr duty in 3 shifts. Each teacher was given a paper at the beginning of their shift and they had to contact the COVID patients and get the list of close contacts and give it to the supervisor. At the end of the shift for each COVID patients they had to get at least 10 contacts.

A teacher explained that contact tracing process was so haphazardly planned as many of the Government officials kept contacting the same COVID patient eg. Teachers, doctors, volunteers, corporation workers, help desk people etc. so it was a nuisance to the patient.

A teacher who was involved in contact tracing explained that, during their duty they were not given masks, gloves, and sanitizers even the toilet facility was not proper. They was no social distancing followed.

“None of the patients on home isolation were monitoring their saturation levels. It is not at all safe option for those with co-morbidities or even others as they can have a drop in their SpO2 and develop complications.”

She added saying even aged teachers with co-morbidities were part of this exercise of which many contracted the disease and even died. In 2-3 families their husbands too contracted the disease and they died.

Another teacher said that, contact tracing would not work out on phone call because in Chennai people do not even know their neighbours. When a question is asked where all you went, who all you contacted it is difficult for them to give their names and contact numbers, as no one would even know their neighbours contact number. So this exercise was an utter failure.

For one teacher who died due to corona even the solatium fund was not given to the family as the corporation noted it as death due to heart attack.

One of health officials told us that we just mapped a newly infected COVID 19 patient with some already affected person, in order to deny "community transmission". Denial of community transmission had been a bureaucratic obsession for much of the first months of the pandemic.

Experience of a teacher during the COVID 19 pandemic:

Teresa a 48 yr old teacher works in a government school at Thiruvanmiyur since 20 yrs. She lives in the ground floor of her 2 storied building and has given the other portions for rent where nearly 25 people live there. In the middle of May 2020, one of the tenants residing in the 2nd floor suddenly developed fever and was at home for 3 days. He was a 23 year old male from Bihar who was working in a company at Palavakkam. As the company advised him to join back only after testing for COVID he got tested at Apollo and the result was negative, but as they advised him to get tested in Palavakkam governmnet testing center, he gave swab test there also. At 11.30pm the test result was announced as positive over phone. On hearing this everyone staying in the apartment got frightened. The teacher immediately locked the gate and insisted all her tenants not to leave anywhere. At 6 am, police and the corporation workers wrapped in PPE reached their home. They were busy marking the area as containment zone but even after several hours the patient was not even inquired of his health status nor shifted to the hospital. So the teacher informed her cousin working in the commissioner's office at Ezhilagam, who advised them to contact the Kancheepuram and Chennai helpline numbers. On calling the helpline, the call center informed them that all ambulances were busy and only after they are disinfected they will send the ambulance to pick the patients which would take 2-3 hrs. So they adviced to home isolate the patient. But as the teacher was not satisfied she informed her cousin again at around 12 noon and within an hour ambulance arrived. The teacher said that, "He was initially taken to Guindy hospital, where more than 15000 patients were there but later shifted to Omandurar Multi speciality hospital as he was referred by Commissioners office, where the facilities and treatment was much sophisticated". Their street was locked,

"One of health officials told us that we just mapped a newly infected COVID 19 patient with some already affected person, in order to deny "community transmission". Denial of community transmission had been a bureaucratic obsession for much of the first months of the pandemic."

end to end and the entire area was labelled as containment zone curtailing the movement of people in the area.Massive disinfection was undertaken in lorries and everyday bleaching powder was put in and around their house. “The COVID survey volunteer who came for thermal screening was agitated as no one notified about the fever case in the area to her. Her only worry was that police was notified before her but was least bothered to inquire about the health status of the patient or others. No information was provided on how to use the kabasura kudineer sachets or homeopathy tablets or masks was given to the people. In the entire process we realised that none of the corporation officials was concerned about meeting the needs or ensuring health of the community. So we ourselves took necessary precautions like drinking kai marunthu, kasayam, hot water and took more lemon, ginger, turmeric in our diet. We were really scared if anyone will get COVID in those 14 days”. She added saying, “A group used to come in the morning blowing whistle to help us get our needed things. But when we pay them money we never got back the change. Just because they came to know I was also a government official , they gave 4 bags of Rice, 10 kg each palm oil, 4 packet dhal. It was not given to any of our tenants. So my husband and I divided the things and gave to needy people in our apartment.”

They said that at the isolation center the patient was given healthy food like lentils, egg, vitamin tablets. To give medicines nurses did not come to the bed side but the sanitary workers. After 14 days when the people in the community were still under strict restrictions, the patient was dropped home by an ambulance. As soon as he reached he sold his bike and left to Bihar. But the containment zone was opened only after 5-6 days after much pressure from the people in the area. The officials had left without removing the metal frames too. Lastly the teacher said that, the pandemic has definitely affected so many families and government has tried taking a lot of steps but at the field level the measures have not been implemented properly. “The salaried government officials had looted a lot of people’s money, even to install the metal frames in our containment zone, the material was taken from a local shop without paying him but they had mentioned it as Rs.25,000/- in official records. The stigma due to this disease has also affected us because even after our tenants left to their native place our house has not been occupied yet as it was labelled as Corona House.”

COVID19 survey volunteers

Poongothai, a 50 yr old social activist resides in Thiruvanmiyur for more than 20 yrs now with her husband and her 10 year old daughte who is in school. She has emerged as a COVID warrior, a saviour, tireless service provider to the people in her area. Her long strenuous journey during the pandemic started in April 2020 when she took the bold step to join the Chennai Corporation as a COVID survey volunteer. She has always cherished working with people but this has given her completely new experience of being responsible for people’s health and wellbeing. From the beginning of the pandemic, whether its a scorching summer or rainy day she has been working even on Sundays without missing on her visits and is into 10 months of this job.

She explained her journey saying, I remember, it was the time when many were fighting for their lives and fear encircled countries and nations not knowing what was next. The Chennai Corporation had called for volunteers to help. As all my days I cherished working with people I took this up as an opportunity. The first day we were instructed to meet at the Adayar zonal office where I met more than 150 volunteers who had joined for this work. We were trained by the Corporation officials, medical officer on personal protection, our roles and responsibilities. Everyday our day started at 8 am after signing our attendance at the Corporation office where our areas to visit was allotted. Initially for 2 months we were given good breakfast, kabasura kudineer, masks by the government after which we went on a door to door survey checking peoples temperature, oxygen saturation. We went either by walk or by own vehicle. These tasks were quite new to us

but the training helped us a lot. We were the only ones walking in the streets those days trying to meet our set target of 130 houses a day. When we knocked on the doors and approached the families almost everyone feared seeing us. They refrained from opening the door or welcoming us. It was challenging to complete our jobs and was quite discouraging at first. Many volunteers had opted out from job due to the harsh behaviour of the public. But, I tried to casually build rapport with them by talking to small children or elderly in the family first. I used to look out for people who were needy and immediately set out to help them. One such experience was when I met a couple who got married recently without their parents' consent. The girl was 19yrs old in her 3rd trimester of pregnancy but feared to access health care services. During lockdown she developed labor pain and luckily as we were around we arranged for an ambulance and she delivered a low birth weight baby in the government hospital. The baby was kept in the incubator and managed for 3 months and discharged. We used to visit her regularly and I gave her nutritious food from my home. Not only the family many in the neighbourhood appreciated our services and started welcoming us. This was a breakthrough in my journey as a COVID survey volunteer –she said.

She recalls her first COVID 19 positive encounter in her area in April two weeks after she joined duty. She was initially scared and did not know how to approach the situation. But on visiting, she realised he was an elderly person and ensured she visited him regularly instilling hope and reassured him in his tough time. Also when other people in the community were curious to know whose house was denoted by stickers or who was taken to hospital, or who died, she handled it very diligently by not disclosing details of patients.

Apart from just testing and screening she spent time with people understanding their unmet needs and gave them the needed information and services. She had convinced several people across all socioeconomic status to come and get tested in the Government testing center.

When it came to helping senior citizens, slum dwellers, differently abled in the community she (Community Health Volunteer) was quick in mobilising funds from her known contacts and provided them with essential kit consisting of 10 kg rice, grocery, Dettol, sanitizer, soap, mask, bed sheet etc . She helped people get food from amma canteen and rations. In the containment zones and slum areas she ensured disinfection drives and sanitation to the best of her ability as she says that, "Many times only when we say repeatedly we can get the job done. It is very difficult to work for the supervisors as well as meet the needs of people".

When she was assigned new areas, where people had bad opinion on volunteers it was difficult because she had to earn the trust and respect of the people again. She says, "There has been insults and mockery, but I don't take them seriously, I just remember the good things that happened; the one that worries me the most are the rumours that are spreading in social media. I wish all the field level workers, doctors, nurses and officials

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work sincerely and truthfully."

It was definitely a tiring journey as she ends her days task at 3pm every day after which she enters all details gathered during home visits from her notebook into an android application in her mobile phone called the COVID care app. Then she spends time with her daughter who keeps waiting to get some time for her.

She said that right from the health care personnel to volunteers and patients everyone faced stigma. Initially they were seen as agents of disease transmission .No one would get the temperature or SpO2 checked. At some point of time temperature screening became easy but the pocket pulse oxy-meter was never allowed by any of them as it came in contact with their skin, and they feared contracting the disease from it as multiple persons were checked using it. Though we had sanitizers and sterilised them they refused to check the SpO2.

There was one instance when a COVID affected family facing enormous stigma was wondering where to send their elderly father for shielding from infection, as he was not welcomed by any of their relatives who feared he would bring infection into their homes. At that time this volunteer, with the support of her husband and daughter, opened her house to the elderly man and welcomed him to stay with them. He stayed until the family members recovered from COVID in her house - this earned her great respect in her neighbourhood. Her neighbours became more kind and supportive to her family by taking care of her daughter and providing her food when she was out for work. Many of her neighbours saw her good work and reached out to her and with improved trust utilised the services of the government instead of private clinics

Though many had slammed their doors earlier, they have become familiar faces who are singing her (Community Health Volunteer) praises. There were instances when she was welcomed as a special guest and given a grand lunch at a person's home. The family were keen to acknowledge and appreciate her efforts.

She has also been a sense of motivation to her colleagues,. One example is what Nagarajan shared "I was working as an auto driver but the lockdowns made it difficult to earn my living. At that time Poongothai had encouraged me to join as a volunteer. She convinced my family members and eased my financial burden. But as the cases started rising very high, my wife refused to send me for the job as it involved several risks. So I opted out but again, she visited us and convinced my family members. She has definitely been a pillar of support in helping me to give back to the society in small ways".

These community health volunteers are paid Rs.500/- per day. As there are considerable drop outs and turn-over in this volunteers workforce there were days when she had to cover up her co-workers areas.

Observation:

The concept of COVID survey volunteers introduced by government is definitely appreciable. It helped to reach out to families to identify cases early. More important, it helped to support families and individuals who were affected by the disease or by the state response to the disease. It helped continuity of services- and above all it helped to educate the families about the disease thus reducing fear and stigma.

It is important to ensure adequate training and fix proper roles and responsibility for community health volunteers. Fixing of targets or bullying by any means will not serve the purpose.

The proper use and functioning of devices like pulse oximeter, temperature guns needed to be checked and audited routinely. Better inspections and supportive supervision at field to check the delivery of services by these volunteers is required. There was not too much of this in evidence.

In the case of Poongothai a long association with a NGO active in science communication and health and womens rights (the Tamil Nadu Science Forum) helped her gain both a people friendly perspective and peoples skills as well as a motivation for such work. But for the average volunteer faced with such hostility on the field, training and the support would be required to ensure their effectiveness.

While it is noteworthy that the Chennai corporation readily introduced a community volunteer when it was needed, such vertical single disease schemes and staffing will not serve on a long run.. Door to door monitoring and support for other conditions like pregnancy, TB, HIV and NCDs is essetinal for better health outcomes. These were all adversely affected by the pandemic. The national policy makes provision for a community health worker- known as ASHA- in all states and urban bodies. But Tamilnadu has not made use of this provision- and therefore relied on a ad hoc cadre for this work. The challenge would be in sustaining this.

CHWs would also hae been very useful for contact tracing. In this case study contact tracing was carried out in a haphazard manner. The data collected in the name of contract tracing or transmission is not reliable. The lack of CHW was only part of the problem. Other problems was the reluctance to accept that community transmission was ongoing and to sustain a myth that it was not; as well as inadequate understanding of how this is to be done and how it helps. Finally the high levels of stigma and use of implicit force to deal with contacts and cases made contact tracing almost impossible.

Health care personnel deserve dignity and respect for the services they provide. It is important to ensure adequate protection measures like PPE . This too was a major gap.

Chapter V:

State Response at the District Level: Cuddalore District of Tamil Nadu

This study was carried out in Cuddalore district in three communities:

a) in Neyveli township - a community of organized workers
b) two rural villages in Cuddalore district - both in Panruti block.
c) a urban slum in Panruti town of Cuddaore district

District profile:

Cuddalore district is one of the backward districts in the State of Tamil Nadu. It is divided into 7 administrative units called "taluks" of which Panruti is one. Of the total population 26.05 lakhs in the district, 34% live in urban areas. The density of the population in the district was 704 persons/sq.km against the State level of 555. The literacy rate of the district was 78% which is lower than the literacy level of the State (80.1%). The literacy rate for males (85.9%) was higher than the females (70.1%).

Neyveli is a company town, built around Neyveli Lignite Corporation- one of the largest and oldest pithead power generating plants in India. It has over 2 lakh population. The employees in this town fall into three categories- permanent or regular employees of NLC or related governemnt departments, contractual employees of these industries and other families who are providing support services and therefore not officially a part of the organized workforce.

Panruti taluk is largely a rural area with 42 village and two muncipalities and three town panchayats(local self-government bodies). Its population of 4.12 lakhs and a literacy rate of only 68 %. The taluk is into horticulture in a major way with major crops being cashew and jackfruit. Our study included two rural villages of this taluk and one urban ward in Panruti municipality. Panruti Municipality is headquarters town of Panruti taluk in district of Cuddalore. The Panruti Municipality has population of 60,323. The town is divided into 33 wards

Cuddalore district recorded the sex ratio of 987 as against the State sex ratio of 996. The life expectancy at birth in the district in 2013-14 was 72.4 and this was marginally lower than the that of the State (73.4). The Maternal Mortality Rate (MMR) in the district was 50 and Vriddhachalam block reported highest MMR 130. In the district, 55% and 19% of deliveries took place in government hospitals and Primary Healthcare Centres

respectively in 2014 and 25% of deliveries took place in private hospitals. Interestingly all blocks in the district had nearly 100% vaccination coverage, except Panruti block which had 92.3% coverage for vaccination. The health performance of the district which reflects both its social determinants and its health systems performance, is about the median for the state.

COVID 19 in Cuddalore district:

As of 28th November 2020, Cuddalore district reported 24,156 Covid-19 cases as against the State count of 7,77,616 cases. This is the eighth highest incidence among 37 districts of the state.

The first cases were in April. Then in early May, subsequent to the market links with the Koyambedu market, over 114 tested positive- and this is reported as source of spread into the district. By month end it had become 443 cases and in June it was 621 cases. This rose abruptly to 2010 cases in July, and peaked at 8383 in August, flattening to 8650 in September and then declining to 3070 in October and tapering off in the next two months. The first reported death was a 49 year old woman was in May 12, 2020. Until December 278 deaths due to Covid-19 has been recorded

	Total Cases		Death		
Month	During the Month	Upto the Month	During the Month	Upto the Month	%
March	0	0	0	0	0
April	27	27	0	0	0
May	443	470	1	1	0.2
June	621	1091	4	5	0.5
July	2010	3101	26	31	1.0
August	8393	11494	92	123	1.1
September	8650	20144	101	224	1.1
October	3070	23214	45	269	1.2
November	995	24209	6	275	1.1
December (Upto 13th)	223	24432	3	278	1.1

Rajah Muthiah Medical College and Hospital (RMMCH) in Chidambaram was the only facility which had RT-PCR lab to undertake Covid-19 tests and later in August, another laboratory was added on in Cuddalore General Hospital. All public hospitals and 24*7 PHCs are sites of collection of samples for testing.

Cuddalore district had four government hospitals and two private hospitals which were designated COVID 19 hospitals, where patients with severe infection are to be treated. . The government hospitals are Chidambaram SDH, Vridachallam SDH and Cuddalore GH, and the Raja Muthiah Medical College and Hospital (RMMCH), tertiary care seemed limited to the Cuddalore GH and RMMCH. RMMCH was a private hospital and part of Annamalai university, taken ovr by the government in 2013. The two private hospitals are Krishna Hospital and the Subha Andal Medical center, of which the latter is a Designated Covid Care Medical Centre. (DCCMC) : DCCMC is for moderate cases- inbetween a DCH and a designated covid care center.

The district had two major Dedicated Covid Care Centers- the engineering college hostels in Chidambaram and another engineeging college hostel in Cuddalore. Each are about 400 beds. These are for isolation of mild and asymptomatic positive cases. These are the only new capacity created. All the rest has been only the re-purposing of existing beds for covid 19 care. No functional quarantine center was reported.

Case Study- 1: Neyveli township- a community of organized workers.

The Context **:** The number of permanent employees in NLC are limited and all of them are covered by employer funded health insurance through their own network of hospital and clinics. The mines employees are larger in number and also receive coverage from the NLC health network. The main component of this health network is the NLC general hospital that offers a wide range of primary and secondary care and many elements of tertiary care. For further tertiary care the employees can be referred to the private sector with reimbursement of the costs of care.

There are over 18,000 contractual workers- and the numbers could be much larger. Of these there are 7000 are both salaried daily rate contractual workers who get ESI coverage and about 5000 piece rate workers and another 5000 state government contractual employees whose health insurance cover is limited. None of these workers get access to the Neyveli company hospitals and they have to go to nearby Vridachalam sub-divisional hospital (SDH) or Cuddalore district hospital (DH), the Chidambaram SDH or the Villupuram medical college hospital for healthcare. There is n ESI primary care center in the 17th block, but this has no beds, and is more used for referral.

Overall in Neyveli there are 1074 cases reported and 55 deaths at the time of survey (December 2020). This is perceived as very low- when it would work out to about 275 deaths per million or a case fatality rate of 5.1% which is quite high.

For testing, Neyveli despite its extensive health infrastructure is only a sample collection site- and tests have to go to Chidmabaram(about 40 km) or more often Chennai- (over 300 km away) for testing. Reports are therefore usually two days after testing.

The community visited in Neyveli township.

We visited Neyveli thrift and cooperative society at about 11.00 am on the 19th of November, 2020. We were accompanied by district TNSF secretary Damodaran, and science and health movement activist Parameswari. The interviews were conducted in the office of the society, and the five of the six persons in the workforce there who had tested positive were available for the interview.

This society is organized by the state government to promote labour welfare. It has board which has representatives of the labour unions. Its office is a two storied structure inside the township. This was purposively selected because of a covid 19 outbreak that happenned there plus the fact that the organizing team had links with the labour union and could therefore secure cooperation.

The disease outbreak:

This office had seen an outbreak in July end and the first week of August. It began when one employee GD

For testing, Neyveli despite its extensive health infrastructure is only a sample collection site- and tests have to go to Chidmabaram(about 40 km) or more often Chennai- (over 300 km away) for testing.

developed fever on July 16th and took sick leave thereafter. The patient was reported as having had visitors from Chennai and he himself had visited Chennai in the previous weeks.

He remained at home with fever, but then on 24th it worsened and they shifted to Virudachalam GH where he was tested. He was also admitted. The test came back as positive. By then he had worsened and after one day he was shifted Villupuram governemnt medical college hospital hospital on the 25th of July , where he was for two days before he died on the 27th. (the informant was a close colleague of this patient).

The epidemic response:

This set up an alert and soon after, on the 30th of July, all employees of that office were tested. In all 25 employees were tested- and of these 6 came as positive. The report came after two days- on August 1st. All those tested were shifted to nearby Designated Covid Care Centers (DCCC)- in Chidambaram and Cuddalore.

One of those shifted to Chidambaram was our informant, Vignesh, (66 year old male). He was a patient with diabetes which was well controlled and hypertension. He had mild fever which lasted two days. He and his wife were shifted to what was a ladies hostel of an engineering college, now re-purposed as a DCCC. Here they stayed for 10 days. Then they were discharged and went home- but at home they kept themselves in quarantine for a further week. He reported that they had a morning and evening visit on all days by the doctor accompanied by a nurse. In the vist SpO2 was checked with a pulse oximeter and so was temperature. There was no segregation between patients just coming in and persons who had been there longer, but physical distancing was well observed. They were also given multi-vitamin tablets. There as no further testing. In all there were 400 persons isolated in the hospital. Food and amenities was adequate- and not a matter for complaint.

Vignesh had been a regular employee when he drew about Rs 35,000 per month, but after retirement he was re-employed on a contractual basis and paid a salary of Rs 7000 to 12,000 per month. These wages were continued despite the long period of absence- for him and for all the other employees.

There was no charges made – and their stay and care had been completely free. They were taken to hospital on government expense, but found their own transport back home.

Similar history was also recorded from Swarna who was also put up in Chidambaram and Uma who was put up in Cuddalore Covid Care Centre, The other two were not formally interviewed- but in conversation communicated similar history.

We also interviewed Manikam, a CITU leader and a member of the board of this society who had a covid history. He volunteered to be interviewed. His journey began when he developed fever in mid July and the fever lasted for three days. He, as well as his wife and son went to Neyveli General Hospital for testing. The test was done on 21st June and the results came in on 25th June. He tested negative, but his wife and son who were asymptomatic tested positive. All three were admitted for 10 days in the Neyveli GH. After this they were discharged at advised another 10 days isolation at home. The recovery was uneventful.

And as a regular permanent employee of NLC, all treatment was free and his salary too was paid without any deductions. This was true even during the lock-down period for all regular employees.

Concluding observations.

Covid Control measures in this community of organized workers have been good. In our case study we find that after the first six cases reported in August no other case was reported from that office. The outbreak was controlled by testing all those in the office, identifying six as positive and effetive institutional isolation (as

different from home isolation) for all the six. There was no insistence on quarantine for those who had close contact but tested negative- but since all were tested more than a week after contact, that is reasonable. The efforts at contact tracing other than those available in the vicinity seemed weak.

Institutional isolation had been in hostels of government colleges now converted into covid care centers and the quality of stay and care there had been reasonable. All five interviewed had no complaints whatsoever. They were taken by ambulance, but made their own transport own when discharged after ten days and then remained for a week in home isolation. They had incurred no costs whatsoever but for the minor expense on the trip back home.

When it came to hospital care for the sick, for permanent employees of NLC, and its mines employees the NLC company hospital which is a tertiary care facility and its 50 bed extension was good enough. Severe cases however were referred to tertiary care centres in Pondicherry or Chennai.

While this is a near ideal situation in the Indian contexts, there is a sharp difference between the less organized section of contractual workers and the rest of the workforce in access to hospitalization services. These sections had to make their own way to Vriddachalam GH, where facilities were inadequate for severe cases, and when they were finally referred to the Villupuram medical college hospital or Cuddalore GH, the results were not optimal- either due to delay in arrival or the range of care available

This difference is seen also in access to non covid essential health services. The regular employees were able to get anti-diabetic drugs- and even benefit from home delivery of the medicines- but not so for those who are contractual, who had to make their own arrangements for access to medicines, and usually failed to do so. In this section of contractual workers- there are two sub-categories one with ESI coverage and another without. The ESI coverage helped access the private hospitals in Pondicherry for the sick, if they were aware of this possibility and approached it through the sole ESI dispensay in the township. But many could not do so.

Stigma was present in this community- but not strong enough to be a barrier .Clearly the union leaders were acting as community leaders guiding their members to access better care. A struggle to get access for contractual workers to the NLC hospital did not succeed.

Case Study 2 : Two villages of Panruti Block:, Cuddalore district

Vllage A has a population of over 5500 and about 4300 adults. There are 1341 families. Main occupationis agricultrure- but there were also many who worked on contractual basis in NLC and its associated operations. The basis of selection of the village was that the study team had community level contacts and could therefore get cooperation.

In village A population of children with age 0-6 is 618 which makes up 11.18 % of total population of village. Average Sex Ratio of village A is 968 which is lower than Tamil Nadu state average of 996. Child Sex

There is a sharp difference between the less organized section of contractual workers and the rest of the workforce in access to hospitalization services.

Ratio as per census is 781, lower than Tamil Nadu average of 943. This village has lower literacy rate compared to Tamil Nadu. In 2011, literacy rate of village A was 72.05 % compared to 80.09 % of Tamil Nadu. In Male literacy stands at 85.17 % while female literacy rate was 58.86 %.

The village has 3 pharmacies/dispensaries and a clinic that has been started recently. The nearest health sub-centre is 5-6 km away. For regular health requirements the villagers travel more often to Iruppur in Vridachalam. The designated Primary Health Centre for this village is 9 kms away. This is also utilized. However people from this village prefer to go to Iruppur PHC, although it comes under Vridhachalam block, due to both proximity and convenience of the transport facility.

In August, health department conducted Covid-19 testing camp in a marriage hall at the and identified 6 positive cases for Covid-19. In the same village, after the death of 48 year old man, health team conducted mobile testing near the habitation of the deceased and all 15 tested found to be negative.

In our formal community interview, there was no clarity on when the first case occurred or in total how many cases they knew off. There was an effort to maintain that there has been only two or three cases. Our key informant was the TNSF activist who is a resident of the village, but he too was part of the denial,shutting up those who came up with a higher number. Eventually three households with positive cases were identified and visited. We also spoke to many bystanders at the first interview site, and from informal conversations the actual figure of those with fever who were tested could be even higher- more like 30 to 40.

All three households visited belong to the vanniyar community which falls in the MBC category in Tamil Nadu. In the first household, we spoke with members three members, of which two had been positive. In the second household we spoke with a woman whose husband had passed away due to covid-19. In the third household we had a brief interaction with a woman whose husband was diagnosed and admitted in the hospital for covid 19 and her son, both of whom had also probably been positive.

In the first household the key informant has done his B.Tech in chemical engineering and before the crisis was working abroad. Once the lockdown was imposed, the company paid for their isolation, and he took the Vande Bharat flight to India on 16th July 2020. While this was not free, the tickets were provided at a slightly subsidised rate of Rs 16000 as vs almost 25000 in normal times. The flight was to Kerala where he checked for Corona and as the tests came negative, he was allowed to proceed. Coming into TamilNadu, he had to quarantine for 15 days in an institution in Panrutti after which he was allowed to go home. His brother drives an auto and that is the primary income source for the household currently.

It is worth noting that the informant and the mother were part of the community interview which began with almost complete denial. But as general discussion goes on, the key informant breaks rank, and informs that both he and his mother were tested positive. It took half an hour of discussion for this fact to emerge and even then, the mother is very hesitant to admit it. The informant (maybe because he is well-educated, better informed and has some exposure) is not so reluctant about sharing details of being affected by the disease.

They came back from the covid care centre on Sept 1. They were in the hospital for about 8 days and were tested 3 days before that – so approximately were symptomatic from 21st August. The symptoms for the mother were both fever and vomiting. The son had fever for a day or so but no other symptoms and not very noticeable. What we understand is that he found his mother was suffering from fever and possibly breathlessness and insisted, against the general trend, that they go for testing – (in Iruppur PHC in Vridhachalam block). The results took around 48 hours or a bit more to come. In this period, while the informant says that he was at home and in isolation, the mother informs that she was going to the shops and generally going outside as usual.

The test results did not come directly to them. The health inspector informed both the family and Uraichi thalayvar(Village President) that they have tested positive.

The same day (Monday, August 24), the ambulance (108 service) comes to take them (family asked ambulance to wait outside the village instead of coming to their house to pick up them) to the Krishnasamy College in Panruti where all asymptomatic cases were kept. After the check up at the hospital they are informed that home isolation would be sufficient. But they say that they have insufficient space at home and are therefore admitted in Krishnaswamy college, a designated covid care center- which was referred to as the hospital admisssion. They were satisfied with the care in general. While the food was not particularly impressive, for an 8 day stay it was of manageable quality. There was checking of spo2 twice a day but except for that initial fever they did not have further worsening of symptoms. They did have any particular expenses in this process.

On their return, the impression of stigma in the village differs considerably between the son and the mother. The son (the informant) said that he did not face any issues and his friends did not treat him differently because of it. The mother on the other hand was emphatic about isolation and stigma in the village. She said that for a period people would almost run away if they went somewhere. In the nearby tea shop not only both of them, but even their relatives were not spoken to. People would talk about them and look at her strangely when she went out even for a considerable time after she came back. While they stayed in home for two days after returning, no steps were taken by the health officials to check on this. There was some spraying of bleach or some other chemical outside their house in the name of prevention of disease spread.

There is some vagueness on the other members of the household. The mother said that her other son, the informants elder brother lives with his wives and children at a relative's place. At the end of the discussion, when the elder brother passed by it seemed as though he may also have been staying on the same house. The children were definitely frequent visitors but it was not clear if they had been tested. The perception of both elder brother and group participants was that two were found positive because they went and were tested for it, if not, it would not have been a problem. The neighbour who was present goes into the virtues of local medicinal drinks 'kashayam' and other nutritive food that keeps them healthy. So, while he was a frequent visitor to their household in their infective stage, he did not see the need to go for testing. Even the mother tries to excuse her son (the informant) that he went for testing only because her ill health necessitated it. The son on the other hand was clearer that the testing was necessary and beneficial for them and maybe also the community.

While there has been no major health decline nor expenses because of covid. But they have faced an income loss due to lockdown. The brother was unable to take his auto out in the lockdown months and even after that customers were low. Only in the last month customers has picked up. They were highly dependent on the rations that were provided which they termed 'modi' rice – though there was some laughter on calling it such. They also were able to use some of the savings that the informant had earned from working abroad. The informant was earning about INR. 60,000/month while working abroad, and that is completely lost now – and

They were highly dependent on the rations that were provided which they termed 'modi' rice – though there was some laughter on calling it such.

he is unsure about whether he can get back.

Our second key informant was Veeralakshmi (35 years old) who had tested positive for covid-19. Her husband (48 years old) who also tested positive, passed away from covid on 26th September, 2020.

Veeralakshmi has a D-pharm and was running a shop that sells medicines in the village. Her husband had obtained ITI skill training and worked as apprentice in NLC but not employed after his apprenticeship. He was active in the trade union movement. They had around an acre of land but main family income was from her job which came to around Rs.5000 per month. They have two children, a son who is 12 years old and a 15-year-old daughter.

Her husband, Kumaran was admitted to the general hospital in Vridachalam on 22nd September due to breathing difficulty – she described it as wheezing. He had fever for two days before that, and on closer inquiry had been unwell for at least a week before that. Symptoms then included lost of taste and mild cough and malaise. She had fever for just one day- - but that was earlier. Despite his fever coming down, due to breathing difficulty he had to be admitted to the hospital. As even her close relatives like her brother were unwilling to take him in their car as they were afraid of the disease, they had to call the 108 ambulance. She followed behind in a relative's vehicle.

They were both tested for Covid-19 in the hospital in Vridachalam on the 23rd. But even before the test results came, on 26th morning, her husband had to be transferred urgently to Cuddalore general hospital. Tests that came later that day showed both were positive. That night her husband passsed away. He had been given intravenous fluids and medication, but further details were not know. They had tried giving him oxygen but he was not cooperative, perhaps because of delirium. Some blood tests had been taken but some samples were to be given to an outside laboratory. This could not be done as she could not go out as she was in isolation, and they had no other attendant. A few relatives came next morning to take the body directly for cremation. She was unable to go for it because though asymptomati, her in-hospital isolation. So they took her signature on some papers, showed her his face briefly, and the cremation was carried out, while she had to remain as in-patient for one more week. before she was released from the hospital. The patient had an alcohol addiction and there was some concern that she had jaundice.

He had probably picked up the infection in his trips to the town- but there was no-one who enquired on this. The public health response was a visit by a medical team that offered testing to those in surrounding houses. About15 were tested- all negative. While their children were also tested, both of them tested negative.

She faced considerable stigma- there was a period in which people in the village were not associating with the children. Worse, even in the hospital, post her husbands death, isolating her was even more severe. After discharge she stayed at home for further one to two weeks. According to her, the circulation of news that it was possibly jaundice to blame for her husband's death and not necessarily Covid, made it more acceptable to the people in the village.

She herself was in denial of her condition, and even of her husband. There was a sense of shame - a stigma that one imposes on oneself. She told us, "I was most worried, but then I told myself- this is not covid, the doctors have got it wrong- and immediately I felt better." About her husband she states that the public hospital was treating him only for covid. In a private hospital they would have considered another cause and he would have survived, because he cannot have had covid. Having gone through the disease, and seeing others (even people who are older) in the hospital ward get though it safely, she feels that the disease is not something to be afraid of.

Financially, she was even earlier the main earner in the household, but there was competition from other

pharmacies, a high level of overhead costs and her illness and bereavement- and now the shop is no longer viable. The family is dependent on relatives who stay nearby.

The past few months have been difficult for the family, as earlier in the year the husbands elder brother son passed away in a road accident. In the beginning of the lockdown period, around April 10th , her mother-in-law who would be above 70 years old also passed away. There are no indications that this was due to covid and she was also suffering from other ailments which necessitated frequent hospital visits. During the lockdown it was difficult for them to go to the hospital or organize the same level of medical care for her.

Our third informant, Tamizhselvi was very reluctant to discuss about the disease or who and how it affected them. She started with denial, and gradually she and her son conceded more information. She accepted that her husband (58 years old) had got the disease. He first went to the local pharmacy. As symptoms persisted, he went to Vadalur, to a private clinic where he was given an injection. Due to continuing breathlessness issues, he went to the hospital at Vridachalam and a CT showed features of covid. His test results came positive on 9th Sept 2020. Treatment was inadequte there, and therefor he took his daughthers advice and went to Chennai, 300 km away and got admitted in Omandur government hospital, where he was admitted for a week. Then he came home and took two more weeks to recover.

The son admitted that both he and his mother had tested positive but back-tracked at his mother's urging. This is a relatively well to do house where the mother has been an elected panchayat head, and the father carrying out the actual panchayat leader role. According to the son the family income would come to Rs 30,000 month, after deducting costs.

Our next informant was a 55 year old man from a village also located in Panruti taluk but quite close to the town of Panruti. It has a total population of 3,122 peoples, 650 households. Asaithambi who is a tenant farmer managing 4.5 acres of horticultural crops. He has a wife and 4 daughters and one of the daughter is a ward Councilor.

Asaithambi developed fever, in the month of August, and he continued working in his agricultural field. After few days of fever, he got body pain, and went to the Panruti General Hospital which provides free care. This time too they provided care, but after "few days" they called him to inform that he got tested positive for Covid-19. They organized to send a 108 ambulance, which he requested stay 2 kms outside the village near the railway gate. But the ambulance did not come and when he returned home, , his relatives got around and pressured him not to go to the hospital saying he doesn't have Covid-19. Next day they came with him towards the railway gate to turn the ambulance to go back, but Asaithambi. that he would prefer to go to the hospital instead of staying in the village and spreading the virus. He was quite confused and distressed when the ambulance took him to a college hostel instead of the hospital where he reached instead at about 11 pm. But next day, after experiening breakfast, and the morning exercise and above all that many educated, and well do do officers, were also staying there he happily accepted the center. He was particularly excited and impressed

> There was a sense of shame- a stigme that one imposes on oneself. She told us, "I was most worried, but then I told myself- this is not covid, the doctors have got it wrong- and immediately I felt better." About her husband she states that the public hospital was treating him only for covid. In a private hospital they would have considered another cause and he would have survived

by having shared space and statyed together with persons of that class, who treated him well. ("….they had even brought wires to heat their water in the room... they got a lot of biscuits and other tasty snacks from home- and when they left, they let me have it.)

Health workers in the Covid-19 care centre also persuaded him to bring his wife and daughter and son- -in law to the care center, and there they all tested positive and were admitted. The family was resistant to come to the hospital but his persistence and persuasion by health care workers brought them to the Covid-19 care centre, though when his daughter she was "furious at her father and took hold of my shirt and shouted at him, that because of you they had all to come to the Covid-19 care centre. ". The message was that it was wrong and reckless of him to have gone and got tested. He was discharged after 10days. Family members had to stay for a few more days to complete their 10 days. He was back at work one month after the discharge.

When we asked him about whether people in his village got similar symptoms of fever and cough he confirmed this, and even indicated one death, but quickly added-" I am free to talk about myself, but I will not give you names or details about others. That the village will not like." The general opinion in the village is that "nowadays if a patient with fever goes to a private hospital they get medicine and come back but when you go to government hospital, they capture you as Corona patient and take them to the hospital." A number of bystanders confirmed this understanding, There had been no testing in the village or even fever surveys. They repeatedly said- "the epidemic has not affected our village. If this old man did not go to the governent hospital, he also would not have got it."

Concluding Observations:

In rural areas of Cuddalore district, we see that the response to the pandemic has played out very differently. The overwhelming feature is stigma and denial and the very many forms that this takes. There is social isolation of those who are affected- but this is the least of it, and most easily overcome. Then there is a collective community denial of the reality of the pandemic and a dominant perception/understanding that it is better not to be tested, unless symptoms become severe. To test positive carries the fear of being persuaded into institutional isolation- and this is more both because of the stigma attached and a fear that such admission increases risk of severe disease and death. Then there is self-stigmatization- a sense of shame, where even declaring oneself as having had the disease is itself a 'unsocial" or at least a socially inappropriate act. The socially appropriate response is to be silent about it, with either a polite denial, or an apologetic stance. Polite denial can go along with offering details of their covid 19 journey.

The public health systems response is active. The sites for collecting samples are nearby and well publicised. Test reports take 48 hours, rarely more and positive tests are communicated efficiently through feedback channels. Effective use is made of 108 ambulance to shift patients to isolation. Ambulances do not come to the door-step in view of stigma, unless patient is very sick, but to an agreed upon pick-up point. Covid care centers are functioning very well- and those who have been admitted are very positive about the experience

"The general opinion in the village is that "nowadays if a patient with fever goes to a private hospital they get medicine and come back but when you go to government hospital, they capture you as Corona patient and take them to the hospital."

and have an altogether better understandig of the disease. However there is no element of contact tracing and quarantine (as different from isolation) is almost unheard of. In response to a positive test, a medical team arrives, searches for symptomatic cases nearby and offers testing services to those who volunteer for being tested and leaves. Even this is an exception rather than the rule. But this is not the same as contact tracing and quarantine- which concept, does not seem to have arrived.

Hospital systems are difficult to comment on- and since we have purposively interviewed deaths and severe cases, may give an unduly negative picture. But clearly, most public hospitals seem to have gaps in the quality of medical and supportive care.

All households interviewed had been severely affected economically by the lock-down, but appeared to take it stoically. In two of the three households the rations supplied by the public distribution system was a huge help.

Case Study 3 : Visit to Urban Slum - in Panruti Town.

This slum in Panruti town is a crowded, congested, with very narrow lanes, a stagnant open sewer running through it, and garbage piled up on its banks and at street corners.

Our first informant here was Arthi (39 years old), and she was the wife of the patient S who was 45 years old and a painter by occupation. She herself was a former domestic worker. They had 2 sons at the age of 20 years (college student) and 18 years (+2 student)

Key informants husband work as a painter and earn INR.500/day and he used to get a minimum of 10 days of work in a month (any where in and around Cuddalore dist and Pondicherry). Husband provide INR.400/ day to wife for household expenses on the days when he goes for work. On the day of our visit (19th Nov 2020) husband has gone out in search of job after staying back in home for several months since he had recovered from Covid-19. Arthi worked as a domestic worker until few months before Covid-19, when for

health reasons (complaints of swollen leg, probably filarial) she stopped working. Husband is the only breadwinner of the family. Elder son who is going to college also attending a coaching class to prepare for competitive exam for Police recruitment. The family has been badly hit by the loss of work for the husband, and further because of hospital expenses and then illness related inability to work. They had borrowed over Rs 30,000 at 36% annual interest other than having sold jewels as their only assets. They had received rice as rations, but other than this there had been no support, and they were in deep economic and health suffering.

Sahayam was a known hypertensive and heart disease, who was on regular drugs from local public hospital. When the patient complained of discomfort, wife immediately took him to Panruti G.H., but health workers informed that they don't have heart specialists therefore recommended to go to Cuddalore G.H. Since there was not any public transport available (due to govt restriction on public transport) around that time, wife took her husband in an auto to Cuddalore from Panruti, which cost them INR. 500/- In Cuddalore G.H., again, the patient's BP measured 210 and health workers informed the caretaker that there is no heart specialist available in the hospital and recommended with a referral slip to go to JIPMER hospital in Pondicherry. But hospital didn't provide any ambulance service to transport the patient and let the caretaker to search for transport on their own. Arthi scrambled for transport and hired a private ambulance service. Private ambulance service asked for INR.3000/- to drop the patient and his wife and accompanying son in JIPMER, Pondicherry.

Upon reaching JIPMER, all 3 of them were tested for Covid-19 test and husband tested positive for Covid-19 and admitted in the hospital for 15 days. Arthi didn't tell us directly whether herself and elder son got a positive test result for Covid-19 but she confirmed to us during the interview that doctors have advised both of them (mother & son) to isolate themselves.

On discharge all 3 of them left back to Panruti in a taxi which costed them INR.6000/- . This is a hugely exploitative rate- about four times the fair rate. When they arrived their home in Panruti, municipality asked them to isolate for 20 days and barricaded their house completely and prevented access to their street. Her relatives brought them ration once a week and left outside the house until barricade was removed. During these period Arthi and her family survived with the free ration provided by the government for about 6 months (April-Sept) consisting of 50 kgs of rice, 1 litre of oil, 2 kgs of dhal and 2 kgs of sugar. Her husband and severe post-covid symptoms- fatigue, breathlessness etc, but due to economic compulsion has had to go out in search of work.

She owns the house which was built 5 years ago. She was not forthcoming about any other positive cases- and did not complain about stigma- though they themselves chose not to go out and mix withothers for more than a month.

Our second respondent here was Divya, a 23 year old young woman from SC community and homemaker who developed fever in the first trimester of her pregnancy and a RT-PCR test came out positive. The husband, and her 49 year old mother-in-law and her 4 and 2.5 year old children did not develop symptoms and were not tested for the virus. Their family income was monthly 15,000 for a family of five.

The test was done because the doctor at the panruti goverment hospital had insisted on it as pre-condition to doing antenatal care, and thre report took three dayss to come in which time she was home and not isolated. On the third day, they were informed that it was positive, and that ambulance would transport her for admission. She was admitted in female ward of Covid care center in Cuddalore, for 10 days. Medical are was good, with a daily medical reviews, blood tests and medicines. Amenties including food was also good. All of it was free.

The main problems the family faced was stigma and economic hardships and later the denial of other essential service.

With regard to stigma, the mother-in-law narrated that they underwent lot of struggle and shame on the day when her daughter-in-law was taken to the hospital. None of them had food or tea whole day when her daughter in law was taken to the hospital in the ambulance. Mother-in-law was "defending" her daughter in law from the charge of Covid-19 infection. "If she would have contracted the virus, she wouldn't be able to walk or eat, must have bedridden as we have heard about the disease narrated by others". Family strongly believed that since "doctors want to show admission of patients to the government authorities to earn more money", they took my daughter-in-law as covid-19 patient.

As was typical for entire district, ambulance didn't come upto patient's house but stayed on the main road- because of fear and stigma among the public. The patient had to walk all the way to the main road to get into the ambulance. On the day of discharge husband took an auto from Panruti to fetch his wife from the hospital. Although there were share autos available nearby the hospital, auto drivers refused to take Covid patients discharged from Covid Care Centre. Approximately husband had spent about 600 rupees for auto who is a known person for the family and accepted to bring the patient from the hospital. Doctors advised the patient to isolate for another 10 days at home from the date of discharge.

In addition to this the municipality erected an iron sheet perimeter on the street, around her house preventing anybody to get into the street. This iron sheet restrained entry and exit of three households, hers and the two neighbours. In the neighbours, there were large joint families with 12 members and they suffered a lot without adequate ration and no help to procure groceries, vegetables & milk.

Earlier they had been working in a town about 100 km away but with the lockdown they had to return to home town and stay with the husbands mother. Her husband started working in local rice mill, but once his wife tested positive, the owner of the mill asked him to stop working and stay at home. Even after the quarantine period, nobody wanted to give him a job fearing that he would also have Covid-19 and he remined unemployed for couple of months. Some financial help from wifes family and relatives of about Rs 10,000 also helped. Other than this the local Councilor provided 5 kgs grain and vegetables from his own pocket for one time. Govt had provided rupees 1000 (one time) through ration shop in terms of 20 kg rice, sugar, pulses, one litre cooking oil

The story did not end there. On the day after discharge, Divya developed blood discharge, which usually implies threatened abortion. The first doctor did a scan and advised abortion. They consulted a private doctor who prescribed medicines and asked her to come after 7 days. On the 6th day bleeding increased and was with abdominal pain. No affording private care they went to Cuddalore GH, but because of the crowd they were asked to come back after two days for consultation. This despite she being a clear emergency. They went back home and next day went back to first private doctor whose charges were prohibitive (though treatment plan was probably appropriate) and therefore went to second doctor who prescribed medicines for a medical abortion (probably inappropriate).

"As was typical for entire district, ambulance didn't come upto patient's house but stayed on the main road- because of fear and stigma among the public. The patient had to walk all the way to the main road to get into the ambulance."

The loss of the baby was a matter of grief, but as they consoled themselves, it had been an unplanned pregnancy. So the family decided to opt for a female sterilzation surgery. At the local public hospital they were turned away, since family planning services and indeed even emergency services had been suspended due to the pandemic. This was true of private sector also, though private sector was operational for minor ailments. The couple went back to the patients home town where with parental support on 7th september, they visited a private clinic for thee family planning surgery they went to, who asked them to come back after two months.

Our third patient was a 11 year old boy and school child named Nandan. The informant was the mother. The child had been tested for covid 19 because he had fever and it was positive. The father, mother and brother were also tested on the same day but they tested negative and were also asymptomatic. Testing had been done for the whole family since their tenant living in the neighbouring house had tested positive. Their monthly income was 35,000 and this family was also of SC community. The testing was done on 25th July and report recived three days later.

The tenant Surendran who had tested positive, was 24 yers old, working in a mobile phone show-room and lviing with parents and grandmother. He had complaints of flu and headaches and so had many in his place of work. So he voluntarily went ahead and got tested in Panruti municipal hospital for covid-19 without informing anybody in his house. He stayed at home for 5 days due to his sickness but he was doing normal chores and playing with neighbourhood children. Health workers called Surendran over phone and informed that 'he has got Covid-19 and asked him to prepare his clothes for few days of hospitalization". They told him not to worry and he will get back home in couple of days after brief admission in Covid Care centre. On the day the patient was taken to the Covid care centre in Cuddalore (SKCC), patient's house as neighbouring two houses was sealed with iron sheets and neighbours of 3 households asked to go for voluntary Covid testing in the Panruti G.H. Eleven members got tested and only one other, the 11 year boy tested positive. As usual the ambulance was sent to pick them up.

In the afternoon, ambulance arrived near the temple (500 mts from the house) and the boy had to walk alone to the vehicle while the whole family was standing & crying. Father, who was a policeman asked whether he could also accompany his son in the ambulance, but health workers refused as there were already several Covid patients in the ambulance and didn't allow father to board the ambulance. So, father followed the ambulance in his bike to the hospital and requested Covid Care centre administration to admit him as caretaker to accompany his son. After some persuasion by father authorities agreed on the declaration that he will also stay in the Covid care centre until his son will be discharged. He was provided a separate room whereas the 11 year old boy and the tenant Surendran stayed on one room. Infact though eligible for discharge 5 days earlier, Surendran stayed on till the boy could also be discharged. Both of them reported enjoying their stay in the hospital (which is actually an engineering college hostel, now re-proposed as a dedicated covid care center) as they had provided good food, medicine, exercise and medical attention. Father tested negative and

"At the local public hospital they were turned away, since family planning services and indeed even emergency services had been suspended due to the pandemic. This was true of private sector also."

all three were discharged on the same day. Through out family was in touch with their son every day via video call in WhatsApp.

When they returned back home after discharge, all 3 of them came in the motorbike and took bath in a pumpset on the mainroad. They washed their clothes thoroughly. After reaching home, they went to the terrace and took another bath in a water filled with turmeric and neem leaves. Doctors advised to isolate at home after discharge from hospital for a week time.

When the policeman returned for duty, he self isolated in the camp as colleagues were not interacting with him due to fear. After few days, colleagues asked him whether he had any symptoms, when he said NO, slowly they started to mingle with him as usual.

Stigma was more of a problem in the neighbourhood. Several families in the neighbourhood isolated them and didn't interact with them at all. Immediate neighbour when they pass-by their house, they ran-away quickly due to fear of getting Covid. When they saw those behaviour among their neighbours it was a painful experience, but they tolerated and behaved as usual.

All 3 families blocked out shared a common toilet and since authorities have blocked common pathway to the toilet with iron sheets, the family was open-defecating on the railway line during night time. Similarly, going to shops to buy groceries were carried out in the night time when the neighbours have gone to sleep. Fortunately, on the day they went for Covid test, they bought already some groceries for few weeks which had lasted for some time during the isolation period.

At the end informant asked us whether Covid-19 is real? When we asked what do they think, informant told us that in this period of the year (rainy season) it is normal that people get fever and flu but people were saying Covid patient get headache after contracting virus fortunately my son didn't get headache. Before his son was admitted in Covid care centre they were afraid of the virus but once he came back from hospital, they realised authorities are taking care well all the patients and no need to panic about Covid anymore. There are suspicions that government was doing all these Covid activities with a profit motive, there are hearsay reports that government health workers get Rs. 50,000/- if they admit a patient in Covid care centre.

This sort of perception was common existing in this community. It is a mix of extreme fear of the disease and denial of its existence. Stigma, belief in magic remedies, and conspiracy theories all become one continuum.

Concluding observations:

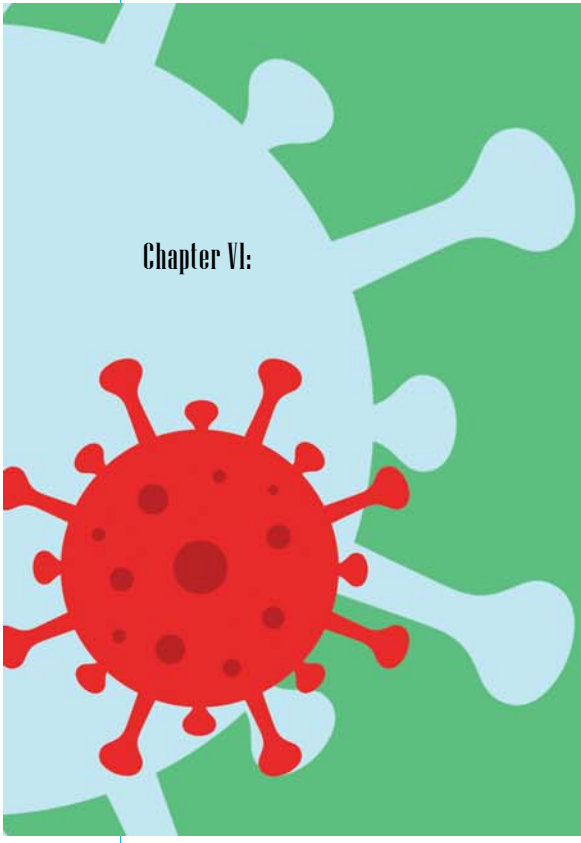
These are all families belonging to a scheduled caste community but with differing economic status. Two of the three families were living on the margins. Economic loss had hit all of them hard. We again find a good experience with covid care center.

“There are suspicions that government was doing all these Covid activities with a profit motive, there are hearsay reports that government health workers get Rs. 50,000/- if they admit a patient in Covid care centre. This sort of perception was common existing in this community. It is a mix of extreme fear of the disease and denial of its existence. Stigma, belief in magic remedies, and conspiracy theories all become one continuum.”

What is different is the absence of any notion of primary health care, and a mere law and order type isolation, taking the form of constructing iron shield around three households as substitute for everything else. Not only is this heartless, and stigma creating, it fails to reduce and indeed makes social interaction more risky. Even the 108 ambulance which is taken for granted in the rural areas, was not available for one of the households queried, though the vehicle is probably stationed here.

This family has great economic distress, but also had the least financial protection from the costs of care. This is much more so for non-covid essential health services, where there is denial plus a lack of financial protection plus inappropriate, even hazardous care.

The inability to deal with co-morbidities as well as covid 19, in both primary and hospital settings anywhere within the districts and the high costs of care even when availing public services characterizes this scene.



Chapter VI:

Illustrative Case Studies from Pudukottai, Palani and Puducherry Districts:

In a more extensive manner activists of the science movement were encouraged to do case studies in the districts of their residence. This was mainly to familiarize themselves with the ground situation. But it also helped us to understand whether similar patterns of findings were available in other districts as well.

Of these we present three case studies from two villages Pudukottai, two sanitation workers f rom Palani and four urban families from Pondicherry.

Pudukottai:

The case study in Pudukkottai district was limited to one family that ought care in a private hospital, another that sought care in a government hospital and a group interaction with the community I one village.

Pudukkottai District is a large district in central Tamil Nadu with 16.18 lakh population. Its demographic and health indicators are similar to state averages. In terms of health infrastructure there are 242 sub centers, 99 PHCs, (including 25 upgraded one and 3 urban). All these PHCs are 24x7 functional with a Medical Officer, one staff nurse and other technical staff ensuring the in-patients, outpatients and ante-natal mothers get necessary primary and obstetric care. There are 14 Govt. Hospitals, 17 dispensaries, one District Head Quarters hospital and one government medical college. There are also 10 private hospitals empanelled under CMCHIS.

COVID19 pandemic and district response:

The first case was noted on 20th April, and the immediate response was an isolation of the entire village enforced by the police with disinfectant drives all around and intensive surveillance in 48 neighbouring villages. The disease however continued to spread – and this is shown in the table below:

An RT-PCR lab was launched at Government Medical College Hospital, Pudukkottai on April 26th with 24*7 capacbility 5 microbiologists, 6 lab technicians.)

Month	Total Cases During the Month	Death Up to the Month	CFR During the Month	Upto the Month	upto %
March	0	0	0	0	0
April	1	1	0	0	0
May	25	26	0	0	0
June	148	174	0	3	1.72
July	1993	2167	22	25	1.15
August	3904	6071	72	97	1.6
September	3009	9080	42	139	1.53
October	1515	10595	10	149	1.42
November	528	11123	5	154	1.38
December	281	11404	1	155	1.36
January	157	11561	1	156	1.35

(computing data from covid19india.org and NHM data,)

For the first case the response was contact tracing, with 40 close contacts traced and 22 surrounding villages in 5 km radius marked for containment and another 22 villages in 3 km radium marked as buffer zone. Around 9522 houses in these areas were surveyed door to door for fever and other signs by specialized medical teams. But later as the number of cases increased, such contact tracing became less and less.

In all the 13 blocks, 600-member voluntary team were deployed for door-to-door fever surveillance, where they collected details of vulnerable. Their activities were supervised by a 70-member team comprising of nurses, health officer, Health inspectors, sanitary inspectors, Engineer. Front-line workers like doctors, nurses, police and sanitary workers in the district were each provided with Corona Prevention kit comprising of Multivitamin tablets (30), triple layered face mask (15), kabasura kudineer sachets (3), Soap (3) and Sanitiser (1). Mobile medical teams also conducted fever clinics for early identification of COVID and its management. The samples are collected in the vehicles and sent to the laboratory for testing. As on September 29th 2020, on an average, on a daily basis 1500-2000 samples are collected and sent to GMCH, Pudukkottai.

The guidelines were that if anyone was tested positive for the disease, within 3 hrs., the district had to take the patient to the hospital using the 108 ambulance services. Also grievance redressal mechanism and counselling services to the patients and their close contacts were given through 104 call center.

Hospitalization of patients was carried out based on severity of illness in COVID hospitals. The severe cases were admitted in Dedicated Covid hospitals (DCH) at GMCH, Pudukkottai, Raniyar Government hospital, Aranthangi GH and one private hospital named Sree Vijay Hospital. Moderately ill patients were admitted in Dedicated Covid Health Centres (DCHC) at Govt. Viralimalai taluk hospital, Muthu Meenakshi Hospitals and Sree Durga Surgical Clinic and Research Center.

By September- 2020, the district had 1739 COVID-19 beds created excusively for covid 19, minly in the government medical college, district and sub-divisional hospitals. Only about 300 of these were in the private sector. ICU care was available in the medical college hospital and in the DH- but more often cases requiring ventilation were referred to nearby districts

For Isolation of mild cases, patients were admitted in Dedicated Covid Care Centres (DCCC) at government

colleges, research institutes and hostels plus 121 marriage halls. A total bed strengthe of 6323 was thus created. Adequate facilities were ensured at these covid care centers and the catering services were contracted out to the hotels in that area. The patients were provided healthy food 5 times a day like, millet foods, soups, milk, dhal, pulses, chappathi, etc. They were also provided kabasura kudineer.

Initially, stickers announcing that "COVID-19/Do not Visit/Home under quarantine," were pasted on the doors of houses of COVID patients but soon this system was dismantled.Strict enforcement measures ensured that only vehicles with e-pass could move during the lock-down. There was also monitoring to ensure that medical shops sold medicines for fever, cold, cough only with a doctor's prescription thereby hoping to ensure that more covid 19 cases would be identified. There were fines for not wearing of masks, and spitting and smoking in public places. Free rations were supplied for the month of April, May, June through mobile ration shops, part time ration shops. Free face masks were also supplied through co-operative societies, ration shops, etc. .

Case Study 1: Journey of COVID 19 affected family who preferred treatment at Private Health Facility

This study was done in a village in Kunnandar Koil Block of Pudukkottai district, Tamil Nadu with total 700 families residing. It is a backward block in Pudukkottai, rural area The village has population of 2904 of which 1464 are males while 1440 are females. There is one taluk Hospital and one PHC in the nearby area. In this village, and in the next, this disease is not seen as having been a major problem.

Vetriselvan, a 65 year old auto rickshaw driver lives in in the village with his family who belong to the a BC community. His wife was a political party functionary. His son worked as an auto rickshaw driver and his daughter-in-law as a private school teacher each earning around Rs. 10,000 per month. The family had to face and survive severe economic shocks during the COVID lockdowns.

Vetriselvan explained that, his wife Kannambal, a chronic asthmatic patient with hypertension and diabetes suddenly developed breathlessness and was admitted in SRM Medical college hospital, near Samayapuram on 31st August. They chose that center as she was already on regular treatment for her chronic illness there. Further as her native place was near, they preferred getting treatment here. She was started on Oxygen therapy even while waiting for the test report. She tested positive for covid-19 after which was shifted to the COVID ICU. He added saying that, they were allowed to attend the patient in the COVID ward with a simple face mask. The daughter-in –law said that, "The nurses wore PPE but the doctors examined only with ordinary face masks"

She continued with the treatment for nearly ten days and on 6th Sep 2020, she died in the hospital itself. As the hospital allowed to take her body home, this information reached the PHC at Uppliakudy which asked Vetriselvan to bring the body. But as they feared that the funeral and the last rites will be denied they took the body to Tiruchirapally in a private Ambulance, paying Rs.3500, and cremated the body at Oyamari electric crematorium at Trichy. Vetriselvan still denies the death of his wife due to COVID, considering the circumstances that prevailed in the hospital.

On enquiring about the expenses he said that, though they had the Chief Minister's Comprehensive Health Insurance card the hospital refused to accept the card and made them pay nearly 4 lakh rupees. They also

bought injections from outside medical shops worth Rs.10,000, as it was not available in the hospital. They managed the expenses by borrowing from the close relatives and also by pawning their jewels. As Kannambal was the important functionary of the AIADMK, a state cabinet minister visited their house and promised financial help. But Vetriselvan says that, "We have not received any aid of any form till date."

His daughter-in-law said that, they experienced a lot of humiliation after Kannambal's death. Nobody, be it their close relatives or the party members, visited their house and give their condolence.. Many even avoided walking in the direction of their house.

They also report that there was no contact tracing done. Other family members were not tested- and some could have had symptoms that subsided on its ow

Case Study 2: Journey of COVID 19 affected family who preferred treatment at Government Health Facility

Arokiasamy, a rice merchant owns a shop near the bus stand in the same village and lives there with his wife, son, daughter-in-law and a grandson. He earns about fifty thousand rupees per month. In the month of July 2020, he consulted his family physician, as all family members except the grandson developed cough and fever one after the other, who after examination referred them to the Government Medical college hospital, Pudukkottai. The town panchayat arranged an ambulance to the GH where all the four family members tested positive for Corona virus. They were admitted in the hospital and provided food and all necessary facilities. He said that, the facilities arranged by the Government was excellent. They were discharged after 5 days of hospitalization and advised home isolation for 10 days. No testing was done before discharge. As ambulances were all busy, they came home in a taxi.. " But" to quote the respondent, "the real ordeal started only now. Our street was sealed. Nobody visited and enquired about us. This hurt me very much as people were treating us like a repatriate".

On enquiring about the expenses, he said that, all treatment cost, food and essential commodity cost was completely borne by the Government. Regarding the question of lockdown, the informants state that the sudden lockdown was not needed. Instead, the people should have been apprised of the gravity of the pandemic and made aware of the preventive measures. like wearing masks, maintaining social distancing, hand wash. He opines that people should have been given confidence building exercises to face the Corona with courage.

He further opined that the relief measures by the government were not enough. The lockdown took the jobs of many people. Their livelihood was very much affected. He was subjected to mental agony on seeing the plight of the migrants. He opined that the TASMAC liquor outlets should not have been opened.

> Though they had the Chief Minister's Comprehensive Health Insurance card the hospital refused to accept the card and made them pay nearly 4 lakh rupees.

The main short-coming he finds is that they were not tested on their discharge and were not given the certificate that they are Corona negative. He had to be in fear of corona even after discharge as he had some cough and phlegm for some days. His isolation and being ostracized by the people during the Pandemic still linger on in his memory. They also report that there was no contact tracing attempted, either forward linkages or backward. No post discharge health education or counseling were provided to family or neighbors.

Case Study 3:

Soori in the next village suffered from Chronic kidney disease and was on regular dialysis. In the month of August 2020, as his condition became critical he was taken to the G.H. Pudukkottai in an ambulance where he was tested positive for SARS COV2. The hospital immediately put him on isolation and treated for both COVID 19 and Kidney disease. Soori's brother Dhandabani was allowed to attend the patient in the ward. His brother and wife were tested but the results were not given. Despite intensive treatment he died after two days. The hospital treatment was free of charges. His wife was informed and while she was about to start, she was prevented by local panchayat from going to see the body of her husband . This was condemned by some in the group as a human rights violation. Our informant, who was the wife, also related that people treated them as outcasts.. As they were involved in dairy business and distributed milk to the villagers, after COVID death in their family, the villagers refused to buy the milk from them because of which they had to pour the milk in the waste yard. This act has very much offended them.

In all about 10 persons were infected with the virus and three had died. Panchayats had been active in disinfectant drives, and ensuring supply of essential commodities and free masks and health education pamphlets. Many of those working in agriculture and stone quarries continued to work in tis period.

Discussion

The first of the two cases above shows the plight of general public who seek treatment at private hospital. Standard operating protocols on preventive measures are poorly followed as with the PPE, contact tracing, isolation etc. Secondly, the private hospital failed to accept the Government health insurance card , resulting in huge OOPE. This is a catastrophic expenditure which the family struggles to survive with.

In the second and third case, which is public sector care, we find, testing, treatment and isolation facilities arranged by the Government is well organized. Irrespective of the economic status of the person seeking treatment, all cost for treatment, food and other facilities have been completely borne by the government thereby ensuring patient satisfaction.

Though there is strong in-hospital management in the district, community understanding is quite poor. Both

They also report that there was no contact tracing attempted, either forward linkages or backward. No post discharge health education or counseling were provided to family or neighbors.

patients and their families faced intense stigma. There is also a stubborn irrational denial of a serious disease in their midst, even when there is a death due to this disease. There is also a rumor that private hospitals falsely document COVID deaths to get compensation from the Government- which is part of this denial. We also see poor linkage between Government and private in handling the COVID deaths.

We also see that there was no contact tracing, special focus on vulnerable population, IEC on COVID signs and symptom, management and prevention etc. The lock-down becomes a substitute for all these actions. Measures to mitigate social and economic impact of COVID-19 needs serious consideration at all levels.

Case studies of santiation workers from Palani, Dindigul District.

Dindugal is a central district in tamil nadu. This set of three case studies were done not as a district case study- but of an occupational category- sanitation workers.

Case 1:

Kandasamy, a 44 yr old sanitary worker, is a daily wager and works with a self help group in Palani. On interviewing him, he explained his plight saying, *"As I went to clean garbage from a covid affected house, I some how contracted the disease. Then slowly my wife, my 20yr old son and 22 yr old daughter developed the disease".*

His initial symptoms included body pain, cough, weakness and fatigue for which he consulted a nearby fever camp where they tested him for SARS COV2 and adviced a 2 days quarantine until the test results were announced. Meanwhile his house was barricaded and labelled which attracted more fear in his neighbourhood. He explains that they were awaiting the test results as a student who waits the exam results. Two days later the government authorities had informed him that he was COVID 19 positive and admitted him in Government Palani Hospital. Soon his family members were also tested and as they were also positive they were also admitted in the same GH.

In the GH, he explained that there were separate wards for male and female COVID patients which was periodically visited by nurses and doctors draped in PPE. They enquired of our health status while maintaining an arms length distance from the patients. Timely medications and food was provided for all the patients. After 10 days all 4 family members were discharged and were adviced a 10 days home isolation.

Kandasamy said that the post hospitalisation period was the most tough part in their entire COVID journey. His neighbours, shop keepers and everyone near to them isolated them from the society. They refused to even talk and provide necessary help. His brother's family from the town had to come and help them at this time of crisis. They purchased grocery, vegetables and essential provisions from Palani market as they were denied

> The Government had announced the sanitary workers as front line workers but has not been of any support in the COVID period.

from the neighborhood shops.

He shared his Post-COVID experience as not feeling normal anymore as he continued to have body weakness & fatigue. As his daily pay is only Rs.320 per day/- he managed the expenses by applying a loan of Rs.30000 for 6% interest. He said that, *"Even to apply this loan amount, it was very difficult during those corona days"*. The Government had announced the sanitary workers as front line workers but has not been of any support in the COVID period. They are constantly worrying about how they will repay the loan. The entire family has been suffering a huge lot of psychosocial issues due to poor physical health, social isolation and financial crisis.

Case study 2:

Kathiresan, a 60 yr old male, worked as a waterman in Kalyamuthur water reservoir, since 35 yrs and earned around Rs. 4500 per month. On Oct 1, 2020 he lost his life due to COVID 19 and is survived by his wife and 2 daughters who are married and settled in a nearby area. On enquiring his youngest daughter Prema, said that her father was fine until he developed sudden body weakness and fever for which he was treated with traditional *Kai vaithiyam* in the local area. As it did not serve the purpose, upon his colleagues advice he went to a local private clinic where the doctor advised him to go to Palani Government Hospital. At the GH they immediately tested him for SARS COV2 and as he devloped high grade fever in the night he was shifted to Madurai Government Medical college Hospital in 108 ambulance. At that point of time no family member had accompanied him but from Madurai when they recieved the information that their father was affected by COVID19, then family members leaving all their jobs, packed necessary things and rushed to Madurai. None of the family members were allowed inside the COVID ward. Soon, he developed breathlessness and was shifted to the ICU and was given special treatment. After 9 days, he expired in the same hospital.

His daughter emphasised in grief saying, *"As soon as we got the information, we all left to Madurai leaving our daily wage works. We had to stay in a room nearby the hospital. All through our stay we were not allowed to meet my father or speak to him. He died as an orphan"*. She continued saying, *"After all this just getting the information that he was dead, was very shocking for us. His body was directly taken to the crematorium where they opened his face and his completely wrapped body and allowed us to see him from a distance for few minutes. We could not digest the fact that my father was no more"*.

Till now, she said that the family has spent more than Rs.20,000 rupees for their father and she pointed out that, the Chief Minister of Tamil Nadu Government had announced 50 lakh solatium for frontline COVID workers but till now they have not received any help. On enquiring the authorities have said they will give 3

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lakhs only. Financial and psychosocial support remains bleak, as the sudden loss of a breadwinner in this family has left behind an aged widow, a home maker with a confused uncertain future.

Case study 3:

Marimuthu a resident of Palani taluk, Dindigul district, is a representative of the Sanitary workers association and was diagnosed with COVID 19 six months back.

On interviewing him, he said that in September 2020, after 2 days of severe body pain and malaise he approached a private clinic in the local area where the doctor advised him to be tested for covid treatment from An. Hospital, free of cost. Two days later he recieved a SMS followed by a phone call from the Palani local police that he was COVID positive and that he needs to immediately visit the Government hospital for further treatment. As no one came from the GH, he said that, he took his two wheeler and got admitted in the GH.

Marimuthu lives in a joint family of 12 members which includes his wife, 3 sons their wives and 4 grand children, so he immediately adviced all of them to get tested for COVID and all of them were tested negative.

Meanwhile in the GH, Marimuthu developed high grade fever with chills in the night. As he is a known case of diabetes, without taking risk the hospital authorities in the morning shifted him along with 2 other COVID patients to Madurai Government Medical College Hospital in 108 ambulance. One among the 2 COVID patients in the ambulance was his colleague Perumalsamy, a sanitary worker who had breathlessness. At Madurai Medical College, all three patients were admitted to different COVID wards based on severity.

In the ward Marimuthu was admitted , he was visited by doctors and nurses who were fully draped in PPE at his bed side and was periodically enquired of his health status. They checked his temperature, administered insulin injection and provided timely food.

Soon, he informed his son over phone that he was in Madurai Medical College and asked him to bring his wife to the hospital. The hospital allowed his wife to stay with him by his bed side itself and provided her timely food. After 10 days of monitoring and treatment he was discharged and adviced 10 days home isolation.

From Madurai they returned home by taking a government bus to Palani which was overcrowded. At home as he felt normal, after 5 days of home isolation he started going for work. There was no stigma or isolation from his neighborhood. His overall expense was about Rs.4000/- and was completely satisfied with the treatment at the hospital.

Observation:

Once again we have a picture of fairly good quality care at the government hospital- but a weak primary health system that is able to pick up the patient late, and do little in the way of contact tracing, and quarantine. Isolation is however followed. The really big failure in two of these three cases is that frontline workers who contract the disease in the line of duty have no social security whatsoever and are ruined by this disease episode. In contrast, someone who has an organizational status and position and therefore a higher social capital, has a relatively better experience, though from the same occupational category.

Puducherry Case Study:

The enclave of Puducherry is surrounded by the Cuddalore and in Villupuram districts of Tamil Nadu. It is part of the union territory of Puducherry, of which Karikal, Mahe and Yanam are the other three districts. It is not part of Tamil Nadu state, though culturally and socially and linguistically it is very similar. The reasons for this are historical- these were part of French colonial rule- and not under the British, unlike the rest of India. Being the beneficiary of central funds and an administration that has a much smaller population (about one million) to govern, it has seen greater economic development and in terms of human development indicators- notably in education and health care.

In healthcare, there has been an abnormal expansion of the tertiary health care sector in the form of multiple private medical colleges and two major government medical college hospitals. Of the latter JIPMER is one of India's leading medical college hospitals. Both JIPMER and the state government run Indira Gandhi Medical College (IGMC) Hospital of Kathirkamam were converted into exclusive designated covid 19 hospitals during the pandemic. The private hospitals were persuaded to ear-mark some beds for covid 19 care and admission to these beds were made from the centralized nodal center of IGMC hospital. All positive patients would be sent to IGMC, and if IGMC ran out of beds or patients expressed a choice they would be shifted by government ambulance to one or other of the private medical college hospitals. One result of this expansion of tertiary care medical faciltiies is that patients from neighbouring Tamil Nadu also seek care here.

Puducherry also has relatively a larger network of primary health care centers providing relatively more comprehensive care. Despite this or perhaps because of this, Puducherry reports one of the largest number of cases and deaths per million in the country.

From the set of eleven detailed case studies that Pondicherry Science Forum activist-researchers put together we present two illustrative case studies below:

Case Study: 1 Rural Puducherry:

Laxmi (Female, 56 yrs old) residing in rural Puducherry is working as an Anganwadi worker for the past 30 years. Her mother and sister were also in the house. In Laxmi''s family, they have a son, daughter in law, and a grand-daughter. Son (Male, 32 yrs old) is working as a government servant. Daughter got married and settled elsewhere. She was saying that all family members were affected by Covid-19. Son is currently living with his in-laws.

Her son, was the first victim of Covid-19. She thought she got the fever from him. The son attended a death ceremony (in August) at a relative's place and Covid-19 affected all his family members. Many relatives

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from different parts of Tamil Nadu and Pondy came to attend the event. At the in-laws place, several members got better from Covid-19 but her son's condition deteriorated. Her son first developed severe fever and body ache, for which he bought and took medicine from a pharmacy shop for about a week. They had also given him lot of herbal medicines and kasayam but his health didn't improve. He lost taste and didn't have an appetite. The family then decided to give a Covid test at a private clinic in Villianur. Test results came as positive for Covid-19 and the hospital informed that they'll send the ambulance to his residence. But his family refused to take ambulance and took the son to IGMC hospital in their own car driven by his wife's brother. He got admitted in the hospital. They were aware of the seriousness because of an earlier covid 19 death in the relatives. The whole family was taken for Covid-19 tests in IGMC Hospital and tested positive. They were also admitted in the hospital but got discharged after a week. Her son didn't have any co-morbidities but needed oxygen during the hospitalization.

When son was discharged from the hospital, they brought him home by a car. The house was barricaded and a few policemen were placed in front of their house to monitor their movement. Whole family got self-isolated for about 15 days.

Meanwhile, Laxmi, the mother started to feel feverishness and she recounted that by that time there were lot of cases in Bahour. She bought "fever" tablet from a local grocery shop and both she & her mother took it for 3 days for fever and flu-like symptoms and was in quite some panic. When the symptoms didn't reduce, she decided to take all family (mother, sister, brother, brother's wife and their children,) members to IGMC Hospital in Kathirkamam. Laxmi told us that few families in Kuruvinatham had relatives working in JIPMER hospital. Many households in the village got Covid-19 positive results. So her son (who had recovered from Covid) insisted to take all of them to IGMC. They all went and gave the test and after four days they got confirmation for test positive or 6 members , all except brother's wife.

Laxmi's situation worsened and she couldn't speak at all. IGMC Hospital referred her to AV Medical college hospital (AVMC), but she insisted to get admitted in IGMC. But her brother and his children were sent to AVMC. The next day, her mother whose results came late, also got admitted . Shanta couldn't eat for about a week and she was drinking only hot water. Her son spoke with doctors in the hospital recommending to take care of her mother as her situation was getting worse. Only then, according to her, did health care staff put glucose drip and injections and tablet and she slowly started to recover. When hospital decided to discharge her, she told staff she wanted to get discharged with her mother who got admitted 2 days later. They agreed and discharged them together. When they came home, her brother had thrown away all old clothes and put smoke with neem leaves to disinfect the house and mother and daughter self-isolated for 15 days as per the advice of the doctor. They threw all clothes and materials they had used in the hospital itself and the remaining clothes were burnt at home. Her brother's wife prepared separate plate and tumbler for both for those days of isolation. Laxmi was also a diabetic and taking medication for the past 3 years from the local PHC.

Before joining the duty, her colleagues asked to produce medical fitness certificate but local PHC doctor asked to take one more Covid-19 before issuing the certificate.

In October, health authorities did a mass screening in whole of Kuruvinatham. village Local ASHA worker told us that many people in Kuruvinatham didn't go to hospital to give Covid test rather took kasayam and used medication from local pharmacies as treatment.

Laxmi, told us a story that in Kuruvinatham, a guy named Kathir (Male, aged 35 yrs), who was working in a government office as driver and who contracted Covid-19 from the government officer. He was asked o self-isolate and stay at home for 15 days, but he didn't stay at home and bought lots of medicine from local pharmacy and consumed it. Meanwhile he held a family function too, coming of age ceremony for his daughter, and invited whole village to the function. After a few weeks his health deteriorated and he was admitted to IGMC hospital when he had difficulty in breathlessness. In the hospital, he resisted being put on oxygen/ ventilator and ran-away from his bed saying that he will die if they put oxygen concentrator. He then got are-dmitted on Monday and passed away on Thursday in the Indira Gandhi hospital.

Laxmi explained that when she came back from the hospital, neighbours started to run after seeing them on the streets.

Case Study 2; Urban Puducherry: (case no. 5)

All four members of Vasuki's household got affected by Covid-19.- she herself, her mother (60 years) , her son . They stayed close to her sister (45 years) and her brother in law (49yrs) working as a welder and her sisters son all of whom also got affected

It was the brother inn law who got affected by Covid-19 first in their household. They were thinking it was a normal fever and therefore, assisted him with *kasayam* to get healed and did some limited hme isolation. But soon the y found out that they got Covid-19 with the symptoms of loss of smell and taste and knew its implications. The brother in law went and gave Covid-19 test in JIPMER and got the confirmation of positive for the virus. Health staff asked him to get ready for an ambulance to fetch them to the hospital, but family asked ambulance to stop near the periphery of their residential area, where there is a graveyard instead of coming home. Later he changed his mind and went to JIPMER on his own with his bike and avoided taking the ambulance altogether. In the hospital, they gave them only paracetamol tablet and vitamin (B) tablet, nothing else was given to them. After 2 days, his son also got Covid-19 positive . He was kept in the hospital for 11 days, followed by his son (Prithiviraj, M, 13 yrs). Both were discharged together

Meanwhile, after a week and about three days of visiting her brother in law Vasuki started to show symptoms of fever. To quote: "two days after fever, I got body pain and head-ache, so I slept. Before going to sleep I applied vicks thailam, I couldn't breath at all, I couldn't inhale at all. So I started gargling with salt water, took kasayam for 3 days still it didn't improve. Every day, my situation got worse with breathing problem, but my mother was shouting at me saying 'show your courage and stand-up it will be alright, otherwise, they will admit you in the hospital'. My father was also telling me to get up and be normal. But it got worse, I went below the table and laid down completely. My family members were saying that I was pretending and

> My mother was insisting not to go to the hospital and telling to get treated at home because in hospital they will manipulate you and give some medicines to let you die there. But I decided to go to the hospital without further delay because I started to panic and was conscious not to spread further to children".

asked to get back to normal. I couldn't do it. For four more days it was like this. When I tried to eat Indian mint leave, I couldn't smell it, and then only it struck me that it could be Covid-19 as they told it in television. My mother was insisting not to go to the hospital and telling to get treated at home because in hospital they will manipulate you and give some medicines to let you die there. But I decided to go to the hospital without further delay because I started to panic and was conscious not to spread further to children". Finally her husband took Vasuki to JIPMER to give test and returned home. Within 24 hours (early morning 5am) health staff called her over phone to inform about her positive test result and asked to pack clothes and other essentials for 10 days. Ambulance was on its way to pickup her to JIPMER. Before ambulance arrived she left home before sunrise with her husband to JIPMER (she left the house before any of her neighbour could see her!).

In couple of days, Vasuki's others were also developing symptoms.

"After 3 days of my admission, my husband started to have fever. my children, son and daughter, also started to show symptoms. My husband was going to work as usual , but then he realized that probably he would have got it from me! So my husband, my son and daughter went to give test at the JIPMER hospital and all turnd positive. My son got admitted in Mahatma Gandhi Medical College Hospital (MGMC hospital,), a private medical college hospital, transferred out from JIPMER. They didn't ask us whether to put my son in MGMC- a private medical college hospital, but they took him in an ambulance saying that there is no bed in JIPMER". But Vasuki's husband, daughter and herself were admitted in JIPMER. Vasuki was telling us that she had insisted her son to get tested instead of being alone at home. Since she is not at home, she was afraid that nobody would take care of her kids, and she preferred that they get tested and admitted in hospital to be safe. But her mother was shouting at her saying that she is taking everybody to hospital instead of being at home etc.

It was worth noting that all in the family were not affected. Her mother who was taking care of sick brother-in-law, her 66 year old father, and her sister, Jayanthi (39 years) who works as a nurse in JIPMER, were all spared.

Vasuki has rented out her first floor and tenant's movements were also restricted. The tenants were complaining to Vasuki that their relatives were also hesitant to come & visit them due to Covid-19 stigma, but upset with that argument, she shouted at the tenant to vacate if they want to leave. Tenant were also forced self-isolated at home as they had to use common way to go out of the house.

The street where they live, got highest Covid-19 positive cases in their residential area, probably due to high density of houses. Since then they think that it started to spread in every household in their street by air !!! Immediate neighbours also got tested for Covid-19, so health workers did a screening around those households and found 2 more families who tested positive for Covid-19. Later on, there was high stigmatization of that family who got first Covid-19 in the area, and harassed by neighbours were forced them to vacate the house and transferred to some other places overnight without informing anybody in the neighbourhood.

Group of women in our discussion told us that neighbouring households of the Covid-19 positive cases completely stopped conversation/interaction with them and treated them as "untouchables" (*Theendathakâthavar*) even after recovery. "Initially we were refusing to go to the hospital, but staff from Lawspet PHC called us telling that the ambulance is coming to pick-up them to the hospital. People assumed Covid-19 as a very infectious disease, thinking that even somebody crosses that houses would contract the virus from the surrounding

air. It was really a painful period for all of us when we saw attitudes of our neighbours who didn't come forward to speak, help or support for our daily needs. "

Vasuki was saying many people who were ill had remained at home and took medicines bought from the pharmacy and never got tested.

"After getting discharged from my Covid-19 hospital, doctors asked us to self-isolate for one week. So we restricted our movement and stayed at home, but no relatives or neighbours came to ask us about our well-being. After a week, we resumed our normal chores as usual going out for market and work".

Observation:

In Puducherry we see an optimal organization of treatment facilities and a fairly good access to testing. In the first three months there had been informal forms of denial of testing, perhaps at a mistaken attempt at underplaying the seriousness and extent of the pandemic. But this was no longer true from July. The IGMC Hospital and JIPMER hospital acting as nodal faciltieis for hospitalization with linkages to private sector hospital beds where patients could be transferred and get free care was another major milestone.

The extent of stigma is however overwhelming and deaths are often related to denial of the existence or seriousness of the problem and the failure to take timely care.

One interesting pattern we see is that most often, the majority of the family is affected at about the same time, with one or two persons, some of whom are more vulnerable by age or occupation being spared. This is not surprising knowledge for an epidemiologist or clinician, but very confusing to common sense, and needs much more public education.

We however note that even here there is a complete absence of contact tracing and quarantine- almost as if it does not matter. This could be due to lack of primary health care staff and facilities , inability to mobilize volunteers and engage with community, a weak public outreach programme. There is also an element of not knowing how it is done and even a lack of belief in the usefulness of contact tracing…

Chapter VII:

Learning from the study of Tamil Nadu's Covid 19 Journey

Introduction:

This case study of pandemic response in Tamil Nadu had two components. The first, presented in chapter 3, was a policy review based on secondary data, media reports and select interviews, to understand the roll out of policies and the challenges that were faced. The second part, presented in chapter 4 to 6 were case studies of the four districts of Chennai, Cuddalore, Pudukottai and Pondicherry. These case studies used a qualitative methodology built around group discussions with the local community and interviews of over 30 households and a few providers and local leaders.

In this chapter we bring together findings from both components and present our main learning for health systems preparedness and health equity. The government's own perception is of having done the best possible under the circumstances, but these policies and strategies played out differently in different sections of the population. Understanding how communities with differing social status and privilege experienced this pandemic and the state response to it, is important not only for immediate response but also in planning for universal health care and realization of the right to health.

In Tamil Nadu the pandemic began in March 2020, peaked in August and subsided by year-end. In March 2021 it shows signs of rising again. The government response can broadly be divided into three phases. The first was the phase of intense lock-downs, which lasted from March 20th to June. The second was the period of relaxation of the lock-down, but a huge increase in case incidence. A third was from late November to February, when cases were contained and the curve was finally flattened. It is possible that since March we are seeing a phase of increasing incidence- and a second wave as large or larger than the first is very likely.

The state response in each of these three phases can be considered across six components of response- the first is the lock-down, the second are behavioural changes induced by state action, media and community perceptions, the third is access to testing, the fourth is at contact tracing, quarantine and isolation, the fifth is with respect to hospitalization and the last but not the least is the continued access to other essential health services.

The Lock-Down: Was it necessary? Was it effective? Was its consequences equitable?

Justifications and outcomes : Tamil Nadu has a very strict lock-down, especially in the first four months. There were three justifications given for the lock-down. The first was "containment'. The pandemic would be contained, and the state of *community transmission* avoided. By this was meant, that spread would be limited to a few identified chains of transmission, which began with international travellers or someone who violated the lock-down rules. These violators could be identified and punished. In retrospect, we know that lock-down failed to achieve containment, but instead led to both a very high and unnecessary use of force, a stigmatization of those with disease, with victims of disease being dealt with more as vectors of disease than as rights-bearing individuals, and a stubborn denial of the existence of community transmission, all of which had serious adverse consequences to limiting the disease. Containment was possibly an impossible goal considering that testing capacity was limited and because for much of the population, social distancing was difficult to observe.

The second rationale given for the lock-down was mitigation- that it would flatten the curve. New cases would happen, but it would be at a lower rate so that hospitals are not overwhelmed. The huge human costs were considered a necessary price society had to pay to save lives. It was argued that if not for lock-down measures it would have been worse. But the state response is not consistent with this. In a mitigation approach, there is little point in lock-down when cases are low and community transmission is not established. Individual contact tracing is effective and sufficient. But when transmission peaks, in addition to contact tracing and testing, well though out movement restrictions could slow the spread. However, we saw tight restrictions at a time of very low cases and little community transmission. But when the disease spiked in July August, it there were partial lifting of restrictions, and it would have been a higher spike without the lock-down measures. From October onwards the disease incidence dropped sharply though restrictions were even further relaxed

The third rationale is that the lock-down gave the government time to prepare. In some aspects this did work out. There was an immense increase in testing capacity, and to get more PPE kit, and ICU equipment and oxygen in place and to designate more beds for treatment. But this also indicates a serious lack of preparedness before the pandemic began. Public hospitals and centers and laboratories were under-staffed. There was no plans for building up surge capacity which is a required part of health systems preparedness. And there was (and is) no system of bringing under-utilized capacity from private hospitals under public authority for better management. Also much of the preparations began in earnest only in July after the pandemic was in an accelerating phase.

Was it informed by evidence and public health science? Our other major observations, is that Public health science did not inform the movement restrictions imposed by the lock-down. There was no logic for a circular geographic containment zone and buffer zone around an infected case. Such circular zones would be more appropriate if there is a chemical gas leak or say if the spread is through rats or mosquitoes. This virus does not travel more than 6 feet in the air. A lot of persons with little or no risk get locked down, when most of those with contact history are likely to be outside such a containment and buffer zone. Another instance, is how sudden announcements of lock-downs or later permitting shops selling essential commodities to open for small intervals of time, led to greater crowding at the markets than would have happened in normal functioning. Night curfews too have little logic and enforcing it is a burden on the security apparatus. Most of these restrictions are typical of a law and order bureaucratic approach to restricting movement, which was little informed by public health understanding of how the virus spreads. Some of it are just prejudices of upper caste and class

bureaucrats playing out. There are no reasons to believe that shops selling meat or fish are more likely to spread infection than those selling vegetable, and closing down access to public toilets makes little public health sense. Casting iron and steel frames across doors to seal houses and barricade streets are similar idiocies. People just found ways of getting to essential services and commodities overcoming these barriers, and so it made little difference to the spread, but it imposed great indignities on the poor. Even as of today, and despite the potential data availability from sources such as Aarogya Sethu, there is no systematic collection of evidence that could inform decision makers as to which forms of social interaction are contributing most to spread and should therefore be restricted.

Was there a structural flaw in the governance? This failure to use public health science systematically could have much to do with the governance of a pandemic. The National Disaster Management Agency comes under the home ministry and it had a direct line of communication to the district collectors and police officers for lock-down management. Perhaps that could explain a large number of downright foolishness that characterized restrictions of this period. There is little understanding of the difference between clinical medicine and public health science by senior clinical specialists, that too those working in the private sector, are not the best source of expertise on epidemic management or on health systems approach.

Did governance address or exacerbate inequity? Another, even more visible governance failure was the highly iniquitous consequences of the lock-down. Our case studies shows that upper middle class wage earners and workers in regular employment who were also unionised and had social security benefits did not suffer much. Most were able to get paid leave with social security benefits. They had a comfortable home to stay in, could spend more time with family and distance themselves from risky contacts. Many of them could even earn or learn from home. A lot of positive encouraging messaging on physical distancing was directed at such middle class families. At the other end, were the poorest, who had no regular employment and no social security. Many of them, had outstanding loans. The pandemic added an immense source of pain, suffering and deaths. In all such families visited, incomes had declined drastically. While all poor families met were grateful for some food grains received as a relief measure, this was far less than what was announced, and even what was announced was far less than what was required. Intake of food, and consumption of essentials declined in all houses of the poor and in much of the middle class. Even consumption of essential health services decreased. The most visible and the most heart-wrenching adverse consequences were the impact of the suddenness of the lock-down on migrants. In Tamil Nadu the arrangement for stay and boarding during the first three months and the arrangement of special trains to return them in June-July was better done. But had they been allowed to go in March, disease spread due to their return would have been minimal (all of India had only about 600 cases then) . But confined to shelter homes and hostels and released after three months, the return of the migrants from Tamil Nadu and to Tamil Nadu became one of the major sources of the July acceleration of cases.

Was it violative of civil liberties and human resources? It was not only these adverse socio-economic inequities. Much of the police action for enforcing lock-downs happened only with reference to poorer populations. Measures such as the criminalization of disease victims for spread of disease (eg the tablighis), regular announcement in media of increasing number of cases registered against transgressors as if this was an important achievement , using incarceration of the families in their own houses by imposing a metal frame across their doors, and posting yellow tapes and stickers on the house and the criminalization of lock-down violations were all insensitive to civil liberties, and . Almost all the arrests and filing of cases and the public

shaming of lock-down rule violations fell on the poorer and more marginalized sections of the population.

Was the lock-down inevitable? unavoidable? A necessary sacrifice that people had to make? There is no reason for such a conclusion. For one, there are many nations that managed containment without it? Secondly, even if an initial lock-down was necessary for giving time for health systems to get ready or mitigation, then this level of rigor was uncalled for. Some of the strictest measures were irrelevant from a public health viewpoint of how disease spreads. And sudden, surprise lock-downs, with no time for people to get home were totally uncalled for and counter productive. They could have been justified if containment was the goal- but that was unrealistic, and in a context where social security is non-existent for the majority, uncalled for. The scope for greater use of persuasion and health education and greater community participation in deciding and follow up on social restrictions such as at the markets and on some recreational sites like beaches and parks and public transport was completely unexplored. In future of this pandemic and in similar pandemics it may be adequate to limit gatherings in enclosed spaces and monitor and persuade the practice of physical distancing in other contexts.

The pandemic is a context for pushing through social security measures, which ensures a universal basic income for households in the unorganized sector. Clearly lock-downs should not be considered as a feasible or desirable option in a context where such social security measures are not in place. Further given the much higher burden of suffering that the working people and poor have to bear, there has to be a clear prioritization of vaccinations for such sections.

Behaviour Change: The complex of stigma and denial:

The single most unexpected yet widespread new finding of this study is the huge levels of stigma co-existing with denial. We find this at all three levels- the household, the community (village or town) and at the decision making level.

Stigma and denial and the household level: At the individual levels, we documented many accounts of the patient and all family members being shunned, with women being more affected. Much of this was because of a fear of catching the disease. But some of it is unrelated to fear, and relates to victim-blaming. Verbally they could be abused or spoken to in undignified ways. Old people who had to seek shelter with other relatives because they needed physical distancing from a case in their family could be turned away. Essential services could be blockaded. Those who had the disease would hesitate to talk about it or even admit that they had it. There was a sense of shame.

This stigma could co-exist with high levels of denial. The family could allege that there is no such disease, but because he (referring to another family member) went and got tested, they got the disease and this brought shame to the family. Or a woman who told us that the hospital had diagnosed the death in her husband as due to covid, but that was only because it was a government hospital, which was obsessed with managing covid. If they had gone to a private hospital they would have looked for a correct diagnosis and her husband's life could have been saved. These forms of denial could lead to close contacts not getting tested. Denial is also driven by the fear that if they tested positive, they would be forcibly isolated and that they would face high levels of stigma. Further for most of the poor admitting the disease would mean loss of employment- and that too is a good reason for denial.

Stigma and Denial at the community level: At the village and slum level, stigma takes many forms other than lack of treatment and support to the affected. One example, reported from most habitations visited, is that the ambulances coming to take them to hospitals for testing or for hospitalization, have to park outside the village- and the patient and relatives have to walk/be carried to it. Another is the huge and unscientific fear related to death and burial or cremation. The other was fear with respect to healthcare providers.

There would be a strong denial of any outbreak in the village and of the seriousness of the disease. When confronted with contrary information, they responded with an accusation that "healthcare providers have targets of testing to be done and cases to be admitted, and therefore they forcibly test and take away some" . Others would accuse health workers of getting paid on a per case basis to find more cases. These are wild untrue allegations, but are firmly believed by substantial sections of the community. This form of collective denial is not a feature of more middle class and affluent sections, through stigma is equally prevalent there.

Consequences of co-existing stigma and denial: This combination of stigma and denial at individual household and at community level, taken together is toxic to the purpose of public health controls. These could be listed as follows:

1. It leads to a serious under-estimation of morbidity and mortality. There were many instances where deaths, which informally were likely to be covid, were reported as due to other causes. This was easier to do with the aged.
2. It is an immense barrier to any form of contact tracing.
3. It makes community managed quarantine – at home or institutional, impossible to organize. This is necessary in a context where the system is overwhelmed with the task of isolation and cannot seriously consider any form of quarantine.
4. It leads to undetected sources of spread and the rise of new clusters, which could have been prevented if the first case had been informed.
5. Even for those who test positive home isolation is done in an unsupervised ineffective manner and without a lot of needless suffering.
6. And finally, to some extent, denial rationalizes and justifies the individual and the collective failure to follow the triad of masks, physical distancing and hand hygiene.

The absence of community participation: As the disease peaked the observance of contact tracing and quarantines declined. One immediate reason for the inability of the government to combat this problem, was because of an almost complete absence of community involvement. The situation was better where community volunteers were hired for this purpose- but even these acted more as arms of the government, than mobilizers of community support and information. There was also no mass media messaging that addressed this problem.

Addressing non-observance of physical distancing, masking and hand hygiene: Authorities and media and medical experts in the media have deplored this lack of public cooperation with reference to physical distancing and wearing of masks. This is the most frequent reason given for the rise of cases. While in a limited literal sense this is true, its not an adequate understanding for public health action. Our study notes the following:

- It is difficult to maintain physical distancing and masks indefinitely. Fatigue sets in. The strategy should shift to insist on such measures with high-risk activity and monitoring these. When masking and physical distancing is enforced without clarity on why and how these work, the system ends up emphasizing distancing on many low-risk activities and failing to enforce it where required most. For example driving a two- wheeler or car on a street without a mask poses no risk of spread. Or taking a walk alone or with member of a family in a park or on the street, without stopping for a close-up conversation has no risk. Many nations explicitly allow this. But these were intensely monitored and penalized because police find these easier to enforce. If the person stops the two wheeler to enter a shop, or a meeting in the hall, or even to pay the fine to the policeman, the mask would be most essential.
- For the poor, every single day is a struggle for minimum income and access to essential services, and under such circumstances physical distancing is difficult to follow- since their life requirements demand more social interaction.
- For many sections of the population, restriction at home could even decrease physical distancing and increase risk. Migrant workers staying in cramped hostel like accommodation, and in all overcrowded slums, or single room habitations are examples.
- Many vendors in the market place, cannot impose conditions on their consumers and clients. But it helps if there is a collective mechanisms set up by that community to monitor and support adherence to these rules. In work-sites the discussions have to be with employers. Consulting communities may also help come up with more creative ways of achieving physical distancing.
- Collective denial of the presence of the pandemic in that community also encourages non-observance of these rules.

Stigma and Denial at Higher levels: Stigma and denial is not only a feature of the community. It is also very prevalent at administrative and policy making levels. Bad policies and inappropriate messaging have contributed in a big way to the problem of stigma and denial.

Stigma- in the text and sub-text of government messaging: In Tamil Nadu the prime example of stigma and denial- is how the Tablighi Jammat community was stigmatized as a sole source of spread of the disease- and this went along with a strenuous and stubborn and totally unnecessary denial of community transmission till it was far too late. Here stigmatization is in the text of the message. But it was not only this. The inappropriate messaging in the sub-text could also be a problem. When the lock-down was announced by the PM and the disease explained, it was projected as something that only individual action can prevent, the Laxman Rekha analogy implicitly attributes disease to disobedience- a sub-text of sin and punishment. Whereas there is call given to lighting lamps and making sounds, to ward off the disease and protect the warriors. This notion of disease as divinely ordained punishment for transgressions of faith is very inherent in Indian tradition and gets triggered off and amplified by such messaging. Contrast this with announcement in the secular democracies of industrialised nations, where the prime minister or president introduces the topic, and provides reassurance and then stands aside to allow a leading scientist to explain the pandemic, its causes and consequences without any melodrama- with a professional non-emotive demeanour.

Denial at the policy level: The lock-down was justified as a bold act to prevent community transmission. Any new infection or cluster of cases which could not be traced back to an international traveller brought along

with it the sub-text, that this can happen only if there is a transgressor, who must be identified and on whom a police case has to be registered. When after the Tablighi related cluster of cases, a second cluster of cases broke out linked to Koyambedu market, the explanation was that the chief minister had asked the market to be closed and shops to be shifted outside to a neighbouring area, but the vendors had disobeyed. Such a shift would have made no difference to the spread- but there had to be a transgression and a transgressor. For some time after that all vegetable vendors were transgressors. But even as he spoke many new clusters were breaking out. This stubborn refusal to acknowledge community transmission was also the reason to deny testing to anyone with typical symptoms but no history of contact- and because of this new clusters continue to emerge unnoticed till well into July.

Subsequently this denial at the highest level was given up- but such denials could continue at district level and even a local level. It is a common refrain, from many villages and PHC areas that the pandemic has passed them by, but on closer enquiry there would be barriers to testing and denial. But there are also many areas where case detection was active and such denial was low.

Testing:

The state has done a remarkable job in increasing testing capacity. However the level of capacity built up in most districts is still short of what is required- and there is considerable intra-district inequity. This is reflected in the fact that the number of reported cases in many districts is far less than the numbers who are sero-positive. Though some of these could be due to asymptomatic cases, this would not explain why there is so much difference between districts- why one in 9 cases is reported in Chennai versus 1 in 88 in Ramanathapuram. We also know from other studies that only about one third of cases are asymptomatic.

The need for further expansion of testing capacity is also reflected in the delay to get test results The time of collection of sample to getting the result is often 48 hours. More testing sites nearer collection sites or increased use of better quality point of care tests are urgently required. The choice of technology- in terms of RT-PCR was welcome because it had fewer false negatives, but it made access and delay in processing more frequent. False negatives were not completely absent, and we have at least one clear case of this, even in such a small sample. Makes it essential to also make clinical and public health decisions based on clinical assessment alone.

The costs of testing in the private sector are unnecessarily high. If like for vaccines, the test kits could be bulk procured through TNMSC and supplied to the private hospitals, these costs could drop from the current 2500 to about 500 or even less, without laboratories making a loss. Bulk procurement costs for the kit with reagents is currently less than Rs 200.

The main barrier to testing is reluctance in the population to get tested. This resistance is least among organized workers where the community leaders (trade union workers and employers) was encouraging early diagnosis and they were assured of good quality care if they tested positive. For such workers, leave of absence was required, pay was protected for the regular employees and for the salaried contractual staff. As the degree of organized support decreased and stigmatization increased the reluctance to get tested increased. Denial of the existence of the problem was also a barrier. In both urban and rural poor, as a general rule people opted for tesing only when cases were severe, or because of contact history they could be persuaded. Opting to get tested was seen as socially inappropriate behaviour, that exposed others as individuals, and the family

and the community to stigma.

Decreased testing rates due to supply side failures or stigma is often denied by administration based on number of cases tested and low test positivity rates. But one must be careful with these indicators since they have an unreliable or wrong denominator. If a large number of asymptomatic cases with no contact history are tested merely because they live in a hot-spot or in the neighbourhood of a positive case, then we are going to increase testing rates and decrease test positivity rates in a misleading manner. Unless a proportion of all cases with typical symptoms, fitting into a clinical case defnition, are tested irrespective of hot-spot status it would be difficult to comment on the reliability of low test positivity rates.

Testing protocols for early identification of new clusters as part of a disease surveillance mechanism are also seemed inadequate.

Public Health Control Measures: Contact Tracing and Quarantine:

This is one of the big weaknesses or failures of the program. We find no evidence of serious contact tracing, and none of quarantine in any of our study districts. Quarantine is for those who have a history of contact but are presently asymptomatic and test is not done, or reports not received. Isolation term is to be reserved for those who have tested positive, or have suggestive clinical symptoms in whom testing and test reports are awaited. There are no centers for quarantine.

None of our cases interviewed reported any serious effort at contact tracing- either prospective (who they could have given it to) or retrospective (whom they got it from). There was neither any person(s) assigned for this role, nor supervision mechanisms, and the district coordinator for this was also removed. A very mistaken impression that contact tracing has no role once community transmission has set in could be the cause. Another reason for the de-emphasis on contact tracing, that the lock-down of the entire hot-spot area is more effective and makes contact tracing less required. Or is could be because of the emphasis on fever surveys. While fever surveys in hot-spots or in the neighbourhood of a positive case are welcome this does not substitute for contact tracing. However the system today is very focussed on a combination of local lock-downs plus fever surveys and random local testing and all three together are not as useful as good contact tracing. (for example in a housing complex of 100 apartments a husband and wife tested positive in one apartment ,say no. 35. Their close contacts was limited to say house no. 36 and house no 47. Other than this they have made close contact in the last 72 hours with a) the maid servant, b) the vegetable vendor, and c) 10 persons at their work place and d) three persons in one relatives house. Within the housing complex it is enough to look for fever and test in two houses. If all 100 houses are surveyed for fever and tested- testing rates would go up and test positive rates go down- which would be entirely misleading and distract the public health team from its main task- which is quarantining first and then testing the 15 close contacts identified above plus the inmates of house no. 36 and 47.)

A huge effort has gone into fever surveys, even hiring and deploying volunteers for this purpose. No doubt this is useful especially when the epidemic is peaking within a cluster. But their time would have been better spent if it were combined with well supervised and documented contact tracing. Analysis of data from good contact tracing records could provide much needed evidence to guide decisions on lock-down restrictions. Applications like Arogya Sethu are non-functional. Perhaps if these were deployed differently, in the least we would have good data on patterns on spread.

The requirement for home quarantine is rarely communicated but even when done, there are no efforts at monitoring or support. We believe that a serious effort at quarantine of asymptomatic contacts would have helped push the message of social distancing and masking as well as more directly limiting community transmission- but this is a lost opportunity. On public health measures, the geographic isolation at home of a single case, by use of postrs stickers, cordon-tapes etc, usually without a sense of when the patient is infective, does more harm than good. Promotes stigma and not better health practices.

Many individuals cannot do home quarantine, because of lack of space in their residence. The government is already over-stretched with managing isolation. Community managed institutional quarantine is an option- which was proposed at one point of time but never followed up. Good contact tracing and quarantine should be a central strategy in preventing second and subsequent waves.

One report from Chennai city was that volunteers in contact tracing hesitated and their respondents got reluctant to cooperate if police got to know the contact chain and started intervening. Contact tracing done as if tracing down criminals, and in an atmosphere of repression and with no involvement of the community was bound to fail.

Following fever surveys with vists by a medical team, and needless tests and a package of placebo medication, local area disinfection with bleaching powder or other disinfectants- were all popular in some areas but interventions of no public health value which took time and energy away from contact tracing, public education and other necessary measures.

Public Health Measures : Isolation:

In the study we are able to appreciate the efforts of the government to triage the COVID 19 patients to the various treatment centers based on the severity of the illness. Those with mild symptoms or whose symptoms had subsided were offered a choice of home or institutional isolation.

Many in the higher socioeconomic status were on home isolation. It was important to carefully check the guidelines like availability of a separate room for isolation with toilet. As patients especially those with co-morbidities or even others can have a drop in their SPO2 and develop complications which may not be perceived by them, it was important to have medical supervision of home stay and/or nearby facility for regular monitoring of oxygen saturation. These were not done in most cases and many case-fatalities took place, because patient worsened under home isolation, oxygen support and hospitalization started late. Clearly there is a case to avoid home isolation even now and resort to home isolation only in very select patients, and even that under careful counselling and supervision.

On the other hand, in most of our field areas, institution isolation patients were given better care, good food and thier health was monitored regularly. These sites of institutional isolation were termed Designated Covid Care Centres (DCCC). There were gaps and quality of care varied- but on the whole the comments about DCCCs and their function were very positive. Not enough of the community knew about them and their role. They were quite confused and worried that for such a dread disease they were being hospitalized in a college hostel or community hall, rather than in a regular hospital. Information about DCCCs and their role was extremely low.

There was some informal segregation by socio-economic category in Chennai, but in the districts this was

less, and some of the poor were very impressed by both the quality of care and sharing rooms with friendly fellow-patients from a higher status. Almost all-institutional isolation was in non-health facility premises like hostels, hotels, community halls, etc. – and therefore the large number of beds created here did not eat into the availability of beds for hospital care.

Hospitalization:

The main strategy for hospitalization was designating a number of hospitals as designated covid hospitals (DCH) and equip these with adequate oxygen supplies and ventilation equipment and ICU management. There was another level of hospitals for moderate severing where hospitalization was possible but ICU was not available. And then there were the DCCCs which we have already discussed.

Are DCHCs relevant? The relevance of DCHCs is not clear. Many of them get severe cases and then transfer them to DCH- which is an avoidable delay. It may be a good idea to only allow DCH and DCCCs.

Barriers to access of free care in government hospitals: Free care in government hospitals is largely a reality. However there are reports of being turned away from government hospitals because the beds are full or for other reasons- with govt not taking the responsibility for shifting to another hospital. There are also widespread reports of patients and families having to search for an available bed by themselves and with little access to public or private transport with time delays and denials leading to fatalities. But much of this was in the three months of July and August and September when existing capacity was overwhelmed. October active cases decreased and enough bed had created capacity and systems and the crisis passed.

Quality of care, and ICU performance in Government DH and SDH: The impression we get on quality of care in the govt sub-divisional hospitals and even district hospitals made into DCH is that quality of care was poor and they struggled with ICU care. The number of cases on ventilators and length of time on ventilation is relatively low, and this is not a good sign.. We are cautious about generalization, since we are purposively interviewing deaths too. However the repeated reports of transfers out of the SDH when the cases become severe, the reports of some diagnostics having to be done outside, the referral away for co-morbidities, even If covid 19 positive are all indicative of significant gaps.

The problems of care in the private sector hospital: The story with private hospitals is different. We find denial of care, over-charging, cherry-picking of cases, over-charging, inappropriate care and inappropriate referrals. Though much is made of their role they provided care for less than 20% of cases and that too only after July. In the first three months they were largely shut or refusing to handle covid cases.

Regulation of rates and reimbursement through PM_JAY/CMCHIS was introduced early- but seems to have made little difference to considerable levels of over-charging. Some patients in our study on approaching a private setting, were immediately admitted in ICU even though mild illness and heavy charges were levied making them spend minimum of 2-3 lakhs, mainly on needless “immune boosters”. In moderate and severe patients in Chennai city charges varied, between 8-10 lakhs. The pandemic was an opportunity for many smaller clinics and nursing homes to earn money by cheating people in the name of immune boosters, vaccine etc. Media reports also show clear cherry picking of cases- with cases of lessor risk and more ability to pay being selected. And severe cases often being referred away. This was also happening from the tertiary hospital under Neyveli Lignite Corporation owned hospital. The ICU capacity was higher in the private sector, but it

was the public sector that had to be built up rapidly to take the increased case-load.

Treatment for Non-COVID conditions

There are also serious concerns about prime public hospitals which are the only source of hospitalization, secondary and tertiary care being re-purposed as dedicated covid hospitals where treatment for other illnesses is cut-back or altogether stopped. Therefore for non-covid health conditions, there is a huge increase of burden of costs for the poor, problems of access to care and as we see from one of our individual case studies, also a source of spread because they are positive and left to their own for finding a care provider. Such re-purposing is also to be seen as a denial of health care rights- since there are no alternatives provided to the poor. The government primary health care system provides care for only about 15 per-cent of ailments. For the poorer 50% of the population the government district hospital and medical college hospitals is the only source of primary health care for the majority of ailments, which are NCDs, and for all of hospitalization needs. In some case studies the reports was that during lockdown even in dialysis units of major public hospitals dedicated to super-speciality care were not functioning as all spaces were converted to treat COVID patients. Even seriously ill poor patients could not access emergency care. The belief that a hospital cannot safely manage both is clearly mis-placed and without any support in evidence and probably reflects a failure of systems thinking.

One of the key definitions of resilient health care systems is the ability to continue all essential health services when responding to a heath crisis/epidemic. During the pandemic it was clearly observed that the entire energy and focus of the Government was towards containing this virus and its spread. The other diseases were even with respect to national disease control programs and primary health care. There was failure to follow up or ensure continuation of medication in patients with non-communicable diseases. Studies are now beginning to show that there would have been a significant increase in child mortality and deaths due to major communicable disease program during the covid 19 response. This sharp decrease in access to services was due to five reasons:

1. Cessation of services by administrative decision- in both public and private sector in the early stages and later in the designated covid 19 hospitals.
2. Cessation of services due to fear among providers- more a problem of the private sector and due to providers getting infected.
3. Re-purposing of public health staff from other essential health services to COVID 19 duty.
4. Lack of public transport for public to access health care.
5. Lack of information to public on the availability of services and guidance on how to access it.

In conclusion:

Despite a huge covid 19 response of the government, the state could not avert a major epidemic. The poorer sections were the major sufferers, not only due to the pandemic itself, but also due to the nature of the government response. The health systems were not prepared for such a challenge, and though it eventually did develop the capacity, it was a late start and an inadequate build up. In some components of the program like contact tracing, quarantine, preservation of essential non-covid hospital services in government hospitals, the government capacity is still minimal. The overall picture at community level is dominated by the curious combination of a high level of stigma against the disease with the denial of the very existence of

such a pandemic. However if the government learns the right lessons, it can greatly improve its ability to face the second wave and future pandemics. But the heart of the strategy would have to remain a high reliance on public service delivery outside the influence of market forces, and the recognition of all public health services as a public good.

Chapter VIII:

Recommendation and Implications for the way forward

Tamil Nadu like the rest of the country has seen two waves of the pandemic and continues to have a relatively high incidence of new cases and deaths. Further waves of this pandemic remain likely. Such pandemics are likely to recur with increasing frequency. The lessons from our study reiterate that it is only a health system that is designed to deliver health care as a public good which would have the capacity and resilience to withstand and perform through any health crisis. Our recommendations are therefore not only a guide to pandemic response but a path of building equitable health systems and progressive realization of right to health.

We organize the recommendations under 10 headings:

1. Behaviour Change
2. The lock-down and partial restrictions on public activities
3. Enhancing Testing
4. Contact Tracing and Quarantine
5. Isolation- Home and Institutional
6. Hospitalization
7. Role for Private Sector
8. Scaling up Vaccination
9. Governance
10. Political Will

Behaviour Change:

1. Acknowledge the co-existing stigma and denial of the pandemic as one of the major public health challenges faced.

2. *Measures to reduce stigma and denial:*,

    a. ensure that messages about the disease that explain the mode of transmission,

    b. ensure that messages explain the importance of contact tracing and quarantine

    c. explain what DCCCs are- and why isolation for positive cases in DCCCs are desirable- even though they are not hospitals.

    d. Explain what it means when we say on one hand that "there is no treatment for the disease" and on the other we insist "early hospitalization for those with moderate or severe symptoms" and " medical monitoring of all those who test positive" so as to prevent deaths.

    e. Clarify that free testing and treatment for the disease is a right, and government is making efforts to ensure this.

    f. Ensure messages about the disease are devoid of sub-texts that blame people for catching or spreading the disease. A much more effective health communication that understands how Covid appropriate behavior change is secured in rural context. Such evidence based context specific health communication measures should replace the current victim-blaming, law and order approach to behavior change.

    g. Similarly ensure that government actions to prevent the disease do not become reasons for stigma and denial- and to the extent this in unavoidable ensure mitigation by improved messaging

    h. There should be no public shaming or criminalization of infected persons and their contacts.

    i. Security and health personnel should be sensitised towards the requirements of poor persons having to breach or ignore restrictions in search of essential services, or income or personal emergencies, or even frustration from lock-down conditions. Criminalization should be completely avoided, and enforcement has to be based on persuasion and social support- with minimal use of coercion.

    j. Remove all stigma and unnecessary restraints made on disposal of bodies of fatal cases. Ensure burial when done by the state is done with due dignity and family involvement.

3. *Engage with communities*, and with workers and trade associations, and community based organizations to combat stigma and denial. Highlight instances of community cooperation in contact tracing and testing and community supported quarantine.

4. *The preventive triad* of use of masks, physical distancing and hand hygiene should continue to be emphasized. But include messages on which situations this is most urgently required. Limit strict enforcement only in settings of high risk- like closed spaces with less circulation, and close contact situations- and not for traffic on the road or pedestrians etc.

Lock-downs & Partial Restrictions on Public Activity:

No Total Lockdowns: A total lockdown has *not* been effective in reducing transmission. Moreover, this adversely and in a discriminatory manner affects the poor more. Government is unable to take care of the tremendous

suffering caused to the majority, especially the poor due to lack of social security, reduced access to essential services including health services, and the loss of incomes and the violations or rights and dignities in the enforcing process. Total lock-downs should not be resorted to.

Evidence Based Partial Restrictions: Partial restrictions on some activities can be resorted to when based on sound epidemiological evidence. The most at risk are large gatherings in an enclosed space for a length of time. The smaller the gathering, the more ventilated or open the space, and the shorter the duration, the less the spread. Evidence gathering for such decision making should be undertaken immediately.

With Community Consultation and Participation: When implementing social restrictions, discuss with community and community representatives of weakest sections in each area, about which activities must be allowed and how restrictions can be implemented. This requires a considerable degree of organization and a better approach to local governance.

Support markets and other work places to practice social distancing : When implementing in markets and shops work out support mechanisms to help maintain social distancing and hand hygeines and masks. Similarly other work-sites like construction sites, sanitation work sites, offices etc should also be "inspected" and "adviced" on improving social distancing.

Increase relief measures and improve its delivery. If despite this lock-downs are resorted to, one has to ease the burden of the poorer sections of the community during lockdown in containment zones by increasing quantum and variety of relief and by door-to-door provisioning of regular supplies of milk, vegetables, grocery, and other essentials.

Testing:

1. *Testing is an entitlement :* Government testing facility should not fail to test the patient who is having or has recently had symptoms that could be due to COVID 19 or contacts, on their request. No proof of symptoms or of contacts should be required. No specific identity card like Aadhar could be insisted on. Mobile phone numbers are adequate for follow up.

2. *Testing should be free*- For frequent testing- over once a month, or testing in a private sector, a rate should be capped on a "cost-price plus a mark-up" basis. Government could procure at these rates and supply private sector at costs to enable them. Costs of RT-PCR testing could thus come down to Rs 200 to 400 even in private sector.

3. *Testing should be timely*: Ensure RT-CR results are out within 12 hrs.

4. *Introduce Better rapid Antigen tests:* Innovate and standardize further to increase reliability of rapid antigen tests and then introduce these in point of care mode.

5. *More testing sites: nearer to home and work place*: Ensure a much greater access to Covid 19 testing in rural areas. Expand sites of sample collection to at least one easy to access within an hour journey time. Most government facilities would have to become sample collection sites. Mobile testing units doing testing at home, or arrangements for picking up symptomatic from home by ambulance for testing would also help improve testing, Ensure that testing is also available at some public places where people congregate – like transport stations, market areas.

6. *Immunity to disease of testing personnel:* Ensure that all healthcare providers who do sample collection or any work related to testing are immune to the disease, either from earlier incidence or from full vaccinations.

7. *No targets* : Do not give targets for number of tests done to any healthcare provider or facility.

8. *Test Positivity rates*: These should be presented separately for each indicator of testing- for those who are symptomatic, for asymptomatic contacts, etc.

9. *Testing in disease surveillance*- in districts with no or low incidence of covid, ensure that at least 10% (or more) of all those presenting with acute onset fever or cough are tested for COVID 19. This would help pick up unexpected clusters early.

10. Low access to testing is determined by how actively people with symptoms and close contacts come forward for testing, how actively public health staff seek them out, how close testing protocols are to an ideal of walk in testing and quick results, the number of tests a district can process in a day.

11. What set of indicators would assess low access to testing: could it be reflected in a comparing figures for tests done per 100,000 population in a given month, the test positivity rate and the gap between reported positive and positive by sero-prevalence.

12. When disease incidence is low, should the system go into surveillance mode protocols: where testing is offered to all (or a fair proportion of all) those who are symptomatic and the numbers of fever reported, tests done and positive tests are displayed by each PHC, block and ward. Both reported fever cases and positive tests would require to be reported.

13. The proportion of positives in symptomatic contacts, the symptomatic without contact and asymptomatic with contact, and those tested for any other reasons- should be reported separately.

14. A robust disease surveillance program that can spot and respond to small cluster outbreaks, thereby preventing new waves of pandemics from sweeping through.

Contact Tracing and Quarantine:

1. *Sensitise all stakeholders* to the importance of contact tracing- even where disease is widespread. This is a disease which spreads from cluster to cluster in an unpredictable manner. Contact tracing limits the rise of new clusters and prevents the number of cases within existing cluster. Fever surveys helps identify cases within existing clusters but without contact tracing has little role in stopping spread.

2. Ensure an adequate follow up wherein everyone who is positive is isolated and everyone in close contact is quarantined. This would require adequate well trained primary care staff supported by an army of volunteers. A good community health worker program like the ASHA program is much needed.

3. *Engage with community* and local organizations to remove fear and enable good contact tracing.

4. *Use for evidence on transmission:* Gather contact tracing forms for each case and analyse these to understand and respond to chains of transmission. Both prospective and retrospective contact tracing is important.

5. *Quarantine those who need it – and only those who need it:* Limit quarantine to only close contacts of

the infective period. The definition of close contacts and of infective period must be clearly understood. (72 hours before fever and 7 days after that, or till symptoms have subsided). Do not try to quarantine all contacts. Those asymptomatic close contacts who are waiting for test results should also be in quarantine.

6. *Community management of quarantine- home and institutional:* if government ability to manage quarantine centers is limited, take help of community volunteers (paid) to manage these centers. At any rate insist on presence of community representatives at every quarantine institution. Given higher reluctance to quarantine (since by definition they are without any symptoms), community and front-line worker-supervised home quarantine should be permissible.

7. There should be *clear operational protocols* for whom to quarantine and how to do so.

8. *Vaccination*: All those on contact-tracing work and in management of institutional quarantine should be immune (either from past disease or from vaccine). Once safe and effective vaccines are developed, government should plan and implement a mass vaccination programme.

Isolation

(For all those who test positive but have mild, moderate or no symptoms and for those who are symptomatic and are waiting for test results)

1. Proper protocol should be followed for the triaging to isolation centers; ensure no one is denied care or provided lesser quality of care. All should be treated fairly.

2. Home isolation should not be encouraged. But if resorted to must have good quality of medical visits, supportive care and supervision.

3. Institution isolation is currently well managed in Tamil Nadu through its network of DCCCs. This has to be as per the protocols and sustained. Ensure availability of doctors and nurses in such DCCCs with good quality referral transport and prompt care when referred from Isolation centers to a hospital.

4. All staff working in DCCCs and community representatives must have been immunized against the disease.

Hospitalization:

1. Massive public education is required on the reasons for early hospitalization- even though there is no cure.

2. Massive public education and advocacy is required to ensure that such hospitalization and free quality care in a government hospital is a right. Once a patient with the disease reaches a government hospital, even if there are no beds there, it becomes the duty of the government to transfer the patient at government cost to the nearest place where there is appropriate free care and ensure that patient is admitted there.

3. When government designates any hospital as a covid 19 hospital- other health services should not be shut down unless there is another public facility in the vicinity that can take over these services. Re-purposing major public hospitals to do only covid 19 care without alternative is completely unacceptable

and unnecessary. There are many ways and examples of such re-purposing being done without shutting down existing services

4. When a government designates any hospital as a covid 19 hospital organizing ICU services becomes a challenge. Infrastructure, equipment and HR is one part of the challenge, but hands on supervision and training so as to learn the difficult skills of ventilation is also required. Monitoring and support for ICU care needs to be strengthened.

5. The number of beds providing ICU care has one up appreciably, and this is most welcome. But the increase is not uniform, and in many districts the number of ICU beds and required skills is much below requirements. This leads to delayed referrals between different DCH and contributes to mortality. Such inequity needs to be re-dresssed.

6. The increase in hospital capacity has gone one without increase of staff or regular and fair terms of employment. This is undesirable and not sustaninable. We not only need infrastructure and human resources of the level specified by Indian Public Health Services. We also need at least a 30 per cent surge capacity.

7. A similar increase in staff and facilities and services is also required at the primary health care level. Tamil Nadu has fallen below norms in this area- largely because the growing urban areas do not yet apply the norms that exist for rural healthcare. Even in rural areas, the number of ANMs and village health workers is well below requirements. This is one reason why non-covid essential health services were seriously compromised and even covid related activities like contact tracing could not be sustained.

Role for Private Sector:

1. Envisioned role in vaccination: Private sector participation in vaccination brings additional service delivery capacity. However the services provided must be free, with government procuring the vaccine for them and reimbursing the provider at a fair fixed rate. Further the availability there must be well-publicised and monitored and standard protocols for vaccine delivery, reporting on service delivery and adverse events must be followed. The experience has been that only about 10% of people choose the private provider , and there should be no administrative insistence on a greater proportion of vaccines being allocated to them. Currently private hospitals are allowed to procure vaccines from manufacturers on their own and charge for vaccine delivery, but this has not been successful in contributing to desired levels of coverage.

2. Modest contribution to testing: In testing there has been rate fixation, but prices are much higher than the costs, procurement is by each hospital and the monitoring is weaker. For most sections a rate of Rs 2500 to Rs 3000 per test is prohibitively high and given the cost price (about Rs 200), quite unnecessary. The private sector thus delivers only a small proportion of all tests done. Private sector hospitals empanelled under the CMCHIS (insurance scheme) are to provide testing services for free, and get reimbursed but many fail to do so.

3. Huge complaints and problems with hospitalization care: The situation is much worse with private sector designated covid hospitals. Here too charges are fixed, but much higher than the costs of care. Further monitoring is poor and over-charging is the norm. Cherry picking of cases, denial of care, and

inappropriate irrelevant costly care are very frequently reported. This calls for clear contracts, better regulation and prompt de-empanelling of private hospitals who violate contractual terms.

4. Bring some private hospitals under public authority. There is a case for government taking over (bringing under public authority) private hospitals with unused capacity or designated covid hospitals which refuse to undertake covid care or persist with the problems listed earlier despite warnings. When the number of active cases peaks, taking over private hospitals with under-utilized capacity is far better than re-purposing public hospitals, for the latter are the only source of a wide variety of essential health care for close to half the population. But the financial, management and staffing arrangements would have to be negotiated.

Scaling up Vaccination:

1. The state of Tamil Nadu should commit to universal vaccination. By which we should mean that everyone in Tamil Nadu has an equal right to get vaccinated. But this should not mean making it compulsory for the general population.

2. Those at higher risk should be prioritized for the vaccine. This is not only by age, and co-morbidities but also by occupational and socio-economic vulnerability.

3. Expanding public health capacity to deliver the vaccine by recruiting rate fixed private hospitals is fine, but as can be seen, it is only the richer and more privileged sections that make use of this. For reaching poorer sections, the government services will still have to play a lead role. Government should create many more vaccination sties, near where people reside so that vaccinations are easily accessible. Improving public health logistics- so that there is always enough vaccines in the facilities, and there no interruptions in supply or wastage.

4. There are many occupations with high risk for getting infected and for acting as super-spreaders- like vegetable vendors, street hawkers, bus or train conductors, shop floor assistants etc. Similarly there are many very vulnerable sections like migrants, prisoners (living in enclosed spaces), many types of factory workers etc. These sections have a high need but it is a latent need. There is poor perception and demand for vaccines in the most vulnerable. The government must have a plan to reach out to these sections as a priority. This will need a high level of public education and community participation and outreach services. This would also help in a major way to limit the second and subsequent waves of epidemics. Equally important it will help in opening up the economy. The strategic plan to achieve 100 % vaccination, which expresses this should be a consultatively prepared public document.

5. The levels of vaccine production can be enhanced by approving more vaccines whose phase 3 results are positive, published and approved. It can also be enhanced by transfer of technology to more public sector vaccine plants like in Chingleput and Coonor which are otherwise being rendered sick and sold off. Such scaling up of production will require government facilitation for transfer of technology and patents. Adequate vaccine production is necessary to cover the entire eligible population.

6. Quality control mechanisms for the vaccines to test each batch of vaccines are important and must be immediately put in place.

7. Post introduction of vaccination, studies need to continue to understand safety, efficacy, duration of

protection, and its action to limit spread better.

8. Continued surveillance for adverse effects following Immunization (AEFI) with compensation for serious side effects requiring hospitalization or deaths is another urgent requirement.

Governance:

1. Re-think the governance of pandemics. The current arrangement of centralized decision making by bureaucrats of the NDMA, Home Ministry, department of health research, and Niti Aayog undermines the role of a public health leadership with training and past experience in epidemiology and epidemic management. Given their complete lack of orientation and undue reliance is made on leading clinicians who can be equally clueless. Most of them have learnt in the course of the pandemic- but it was learning on the job- and not much of health systems preparedness

2. There is a need to build up a technical leadership at state and central level that not only knows the issues related to epidemiology, but also understands health communication, public health informatics, sociology of health, and public health management. A professional leadership will hopefully be more distanced from letting political priorities of the moment overwhelm decision-making.

3. There has to be a much higher level of consultation at state and district levels for implementation of different measures and to secure public understanding of the pandemic and its management. Civil society organizations working in the health sector could have made a major difference.

4. The involvement of local governments for local planning, analysis and action was almost missing and is one of the weakest links in the Tamil Nadu covid 19 management. It was purely administration driven

5. All forms of community engagement or community participation were weak or missing. This is one reason why there is such widespread stigma and denial and even frank mistrust at the local level with regards to the very existence of the pandemic and the intentions of the government. Though almost all of these are unfounded fears- their root lies in the lack of community engagement. This has been a big barrier to pandemic management.

Political Will

Eventually the government of the day needs to have the political will to make three important commitments.

i. An increase in public health expenditure to over 70% of total health expenditure, and also to at least 3 to 5 % of GDP.

ii. A clear commitment to strengthening public health services, and readiness in investing to build up the necessary infrastructure and human resources. Also, to ensure that a surge capacity is built in and is kept ready to use in an emergency.

iii. Ensuring health systems guarantee and protect health rights and to ensure that nobody is denied access to necessary health care irrespective of their ability to pay.