

A REPORT
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A REPORT ON
“OVERVIEW OF COVID-19 PANDEMIC
IN
TAMIL NADU”



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ABBREVIATIONS

- SRS -Sample Registration system.
- MERS- Middle East Respiratory Syndrome.
- SARS -Severe Acute Respiratory Syndrome.
- GST- Goods and Services Tax (GST).
- COVID- Corona Virus Disease.
- E-PASS- Electronic Portal Access Service.
- AAI- Airport Authority of India.
- MMUs- Mobile Medical Units.
- RBSK- Rastriya Bal Swasthya Karyakaram.
- VTM- Viral Transport Medium.
- RT-PCR- Reverse Transcription Polymerase Chain Reaction.

BACKGROUND

The pandemic of (SARS-COVID) commonly known as novel coronavirus causes illness ranging from the common cold to severe disease. It was emerged on December 30, 2019, sparking an epidemic of the acute respiratory syndrome and quickly has been spread worldwide. The first train of transmission occurred in the city of Wuhan, China. In the beginning, i.e. January 7, 2020, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was identified, later the disease was named as COVID-19. On March 11th, 2020 WHO (world health organization) declared COVID 19 as a pandemic, affecting nearly every country in the world, with over 2.3 million confirmed cases and >160 000 deaths. Data suggested that nearly 80% of the cases showed mild symptoms, 20% required hospitalization approximately 5% required intensive care admission. Mortality rates are higher among individuals more than 60 years of age and with co-morbidities (diabetes, hypertension, immunocompromised). Three months after its emergence the virus has spread to almost 210 countries in the world. The first case of COVID-19 in the Indian state of Tamil Nadu was reported on March 7th, 2020. As of now, Tamil Nadu has the second-highest number of confirmed cases followed by Maharashtra. All the 37 districts of the state have been affected in the pandemic with the capital district Chennai being the worst affected. The case fatality rate in the state is among the lowest in the country.

METHODOLOGY

- Secondary data are collected periodically from newspapers.
 - The Hindu.
 - Deccan chronicle.
 - Times of India.
- Tamil Nadu family and health department welfare website.
- World health organisation (WHO) official website.
- National health portal of India.
- Review of articles from National Medical Journal of India.

HISTORY OF CORONA VIRUS

Coronavirus was considered as a relatively harmless pathogen until it caused three major outbreaks of severe respiratory disease in the last 20 years of the decade.

The pathogenicity of coronavirus was recognized way back in 1960, it was first identified as a cause of the common cold. Till the year 2002, it was considered as a nonfatal virus not severely pathogenic to humans [6]. The mutation rate of an RNA virus is very high, and they eventually evolved into novel viral strains and this led to the first coronavirus outbreak. In the year 2002, it started in the form of severe atypical pneumonia (SARS-CoV). Almost a decade later, in the year 2012[6], a new coronavirus emerged in the Middle East which caused an illness that was similar to SARS-COVID which occurred previously in the year 2002.

The first case of infection was reported on 13 June 2012 in Jeddah in Saudi Arabia. The disease was even more severe and had a fatal outcome in immunocompromised patients and a high mortality rate of 33% and was named as Middle East Respiratory Syndrome (MERS) [6].

A few years after the MERS outbreak, history repeated itself in a belligerent way in December 2019 in Wuhan, the largest metropolitan area in China's Hubei province. A cluster of patients was admitted to the hospital with a diagnosis of “pneumonia of uncertain aetiology.” By January 2nd 2020, 41 patients were identified as having the novel infection which was later identified and named as COVID-19.

EMERGENCE OF CASES IN TAMIL NADU

All the 37 districts in Tamil Nadu have been affected in this pandemic.

The first case of coronavirus was confirmed on March 7th, 2020 in a resident of Chennai. He had a travel history to Oman. He was isolated and was under treatment in Rajiv Gandhi Government General Hospital. Later, March 10th, 2020 he was recovered and tested negative. There were no new cases for a week. Then on March 18th, the second person who had travelled by train from Delhi to Chennai confirmed positive. He had no history of travel to foreign countries and was described as a domestic case by the state health minister. On 19th March, a 21-year-old student who returned from Ireland tested

positive. continuing its series of efforts to combat the COVID-19 Tamil Nadu government on. By the third week of

March, a further 3 cases were confirmed positive. More than 300[1] people who had come in contact with the three patients were quarantined. with this, the total number of positive cases in Tamil Nadu was 6. It was also said that all the six cases reported were “imported cases” from different regions with a travel history and not “community transmitted”.3 more new cases were reported on March 23rd. All the 3 cases had a travel history [1]. First death due to COVID-19 was reported on March 25th.To more new cases as confirmed on March 26th. two more new cases were reported on March 28th. With this, the total number of confirmed cases had reached 40 in the state. By the end of March, the state reported eight more cases, all of which were linked to the two Thai nationals and their group who had tested positive. The eight included a 10-month-old baby (first paediatric case) [1][2]. 17 new cases were reported, on 30th March. This was highest to date in the state.

On 31st March, 57 new cases were reported, all with a travel history to Delhi (Tablighi Jamaat congregation in Nizamuddin Markaz mosque). It was the highest rise in the single day to date. This brings the total number of confirmed cases to 124 in the state. Officials had discovered that at least 80 out of 124 confirmed cases (79 percent) [2] in Tamil Nadu were from one cluster as they would have had direct or indirect contact with the two Thai nationals who had been tested positive previously on 21 March. The first case was identified from the Tablighi Jamaat congregation. An estimation was made by the government that more than 1,500 people from the state had participated in this event. 1,130 Of 1,500 people who were in the gathering, returned to the state. The government identified and isolated 515 of the 1,130 people who attended the event. It was a great difficulty while trying to map the rest. people who attended the gathering were urged to step forward and get tested. Following this, the Nizamuddin Markaz emerged as a replacement virus hotspot. on April 1st there were 110 confirmed cases in the state. Most of the cases were from the Tablighi Jamaat congregation. with this, the total became 234. 1500 out of which 1301 attendees of the event had been traced and isolated. 658 of their samples were tested of which,190 was positive. Family members and close contacts of these cases were either taken to the quarantine facilities or was home quarantined. The number of cases reported from April 2nd to April 10th was 511. With this the total number of positive cases in the state was 911. Around 1246 contacts of Tablighi Jamaat

were traced and isolated by the health department of the state. On 14th April, 31 new cases were reported bringing the total to 1204. It was the lowest daily rise in the number of cases since 31st March. On the 16th of April, the total number of cases in the state was 1267. On 16th April, the total number of deaths so far in the state was 16. On 19th April, 105 new cases were reported, it was third highest in the daily increase to date. By the second week of April, the infection rate in the state had dropped from 13% to 3.6%. On 28th April, with 121 new reported cases, the total number of cases was 2058. Chennai continued to be the worst-hit district in Tamil Nadu. Chennai alone had 673 cases, which was 33% of all the cases in Tamil Nadu.

The cases reported from april1st was traced from a source (Tablighi Jamaat congregation, Delhi)

Date (dd/mm/yy)	Number of cases reported	Cases reported from the same source (Tablighi jamaat congregation)
1.04.2020	110	109
2.04.2020	75	74
3.04.2020	102	100
4.04.2020	74	69
5.04.2020	86	85
6.04.2020	50	48
7.04.2020	69	63
8.04.2020	48	42
9.04.2020	96	-
10.04.2020	77	70

Table 1.0: cases reported from Tablighi Jamaat congregation, Delhi

These are the epidemiological figures in Tamil Nadu. During the first lockdown period, this Tablighi event was the cause of the initial spread of COVID in the state. As of April,

end around 92% of total cases reported in Tamil Nadu was linked to Tablighi Jamaat congregation, Delhi making it one of the worst-hit by the fallout of the event which took place in mid of march. The event had seen the participation of over 3,000 people including foreigners. In this, around 1500 attendees were traced and isolated.

The state recorded the highest spike of cases on 1st May. 203 cases were reported. Chennai alone recorded 138[1] new cases reflecting a clear rising in the trend. with this, the state total count of COVID-19 was 2323. state had a high recovery rate and low mortality rate. In May koyambedu market in Chennai emerged as a new hotspot. Vegetable and fruit vendors in koyambedu market across Chennai became the feeding clusters. On May 2nd lockdown was extended till May 17th. Chennai remains a hotspot with 176 new cases. It was said that only 90% of cases reporting in Tamil Nadu were asymptomatic and only 10% were symptomatic. Tamil Nadu had the highest recovery rate of 57% in the country. In Tamil Nadu northern part of Chennai has the highest number of cases due to intense population density in the area. By May 3rd 113 infections were traced from koyambedu market. There were 266 new cases reported. The infection rapidly spread to nearby districts such as Tiruvallur, Kancheepuram, Cuddalore, and Chengalpattu through the loaders from the market who had travelled out of Chennai during the lockdown. on May 4th, the total number of cases in the state was 3,550 as of 5th may around 600 cases were reported. Most of them are linked to koyambedu market. It is considered as one of the biggest clusters of COVID-19 infection in Tamil Nadu. Most of the patients were vendors, laborers, and their contacts. Again, on 6th May 771 new cases were confirmed in the state. Tamil Nadu for the second consecutive day was confirmed with more than 500 cases of COVID-19. This took the state's total to 4,058. By 8th May the Koyambedu cluster accounted for about 1589 cases in the state. On May 9th 750 asymptomatic patients were shifted from hospitals to COVID care centres. 80 uniformed personnel from the police department and fire rescue services have been confirmed positive. On 10th May infant mortality rate drops from 16-15 per 1000 live birth in 2018 as per the SRS bulletin. By the second week of May (11th), the total number of confirmed cases surpassed 8000 to become 8002 in the Tamil Nadu was one among the top 7 states which counted more than 80% of cases in the country. Chennai continued to be the worst-hit district in the state. In Chennai Royapuram, Thiru Vi Ka Nagar, Kodambakkam, and Teynampet are the four highly affected zones. Another spike of 798 cases from 17 districts along with 6 deaths was reported on May 12th. It was to be noted

that the death rate in the state was been consistently rising over the past few weeks. In the mid of May, there was a consistent increase in the number of positive cases as a consequence of interstate and international returnees to the state.

Date (dd/mm/yy)	Confirmed cases per day	Cases reported from the same source (interstate and international returnees)
14.05.2020	447	24
15.05.2020	434	49
16.05.2020	477	93
17.05.2020	639	101

Table no.1.1: Cases on interstate and international returnees.

The above-mentioned figures are the exemplification of positive cases of interstate and international returnees.

On 14th May there was marginally a dip in several positive cases in Chennai whereas its total count climbed to 5,262. Though there were a greater number of cases in Tamil Nadu, the number of deaths was comparatively low in the country. Across the state around 320 police officials were tested positive. During the second week of May, Chennai city had over 700 containment zones. On 20th may Chennai witnessed a sharp increase in the cases. This took Tamil Nadu total to 12448[3]. In the 3rd week of May the state recovery rate was at 44%. Tamil Nadu's total cases on 23rd may climb up to 14,753.

On 25th of May Tamil Nadu had an increase in the number of containment zones, with Chennai topping the list. many front-line workers, especially healthcare providers were tested positive in Chennai. On 27th May there was a decrease in the number of containment zones. It was reduced to 420 from 700.

Below mentioned are the top 10 districts in Tamil Nadu which had most cases as of May.

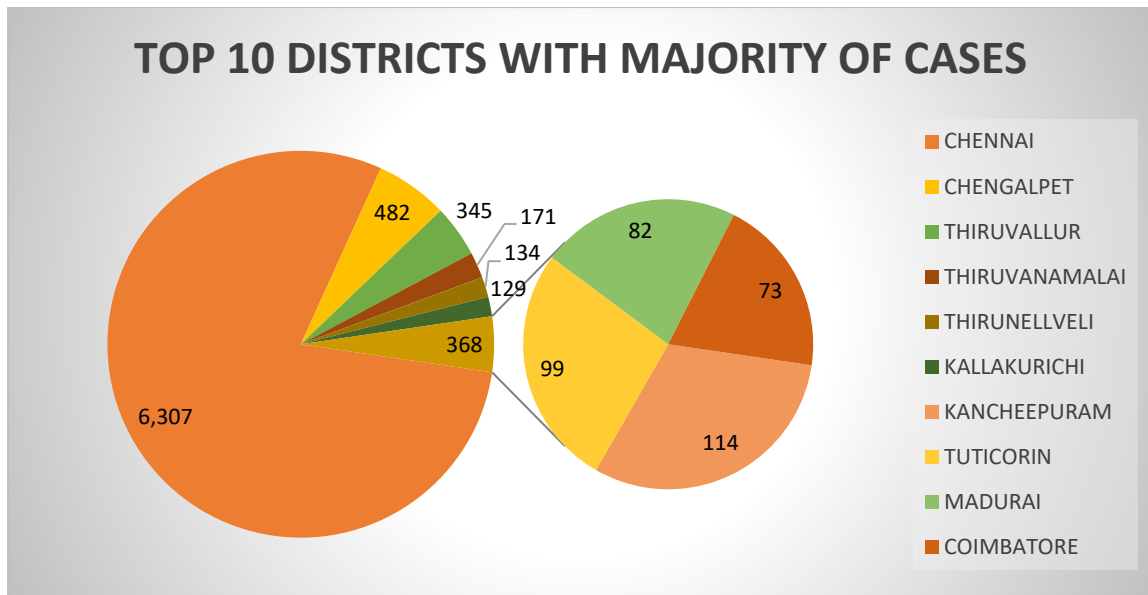


Diagram 2.0: Top 10 districts with majority of cases

On the 30th of May, 938 new cases were reported in the state out of which 616 cases were from Chennai. While comparing with the initial phase the recovery rate has improved to around 56%, with a total of 12,000 recoveries across the state. At the beginning of June, the state's daily case count breached the 1,000 marks for the first time. Cases reported on a single day was 1,149. For the second consecutive day, Tamil Nadu reported more than 1000 cases.

In the first week of June, the state recorded 1458 new cases which took the total number of cases to 30,152. It had recorded over 1000 cases consecutively in the last seven days. Chennai with 20,993 total cases had about 70% of state cases. 16,395 patients have been recovered so far across the state.

As of June 8th, 5,27,212 samples were tested, out of which 1,21,950 were from Chennai. The recovery rate increased marginally to 48.43%.

In the second week of June (13th), the state crossed 46,000 cases mark to reach 46,504 after recording 1843 new cases on a single day. Owing to the rise, the state government announced a 12-day lockdown in four districts including Chennai, between 19 -30 June. In the mid of June, the state recorded another new high of 1,989 fresh cases of COVID-19, and the state's death toll raised to 397.

REPRESENTATION OF INCREASE IN NUMBER OF CASES DAY WISE (MARCH 7TH TO JUNE 15th)

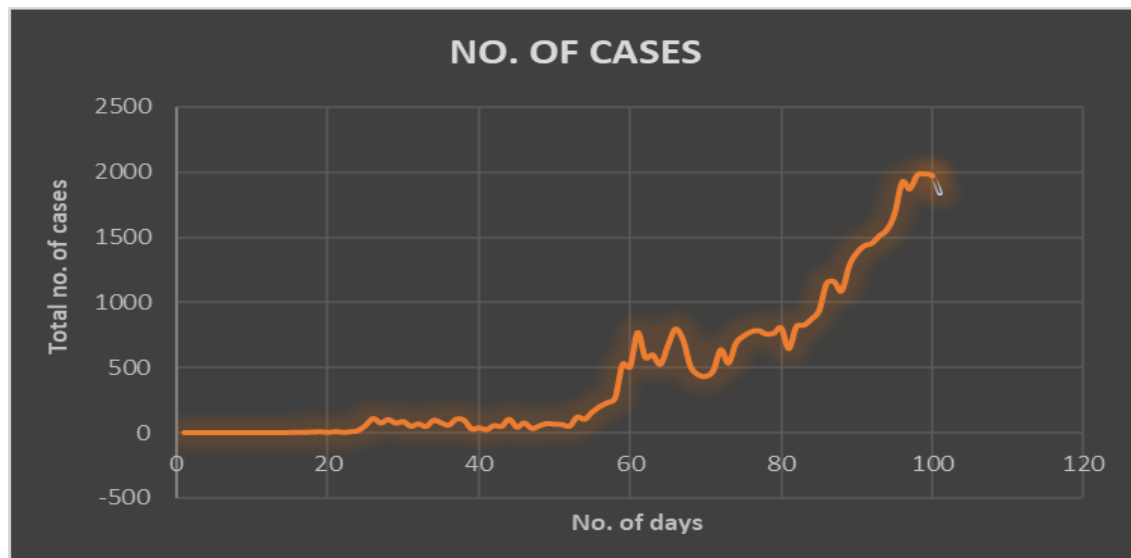


Diagram no.2.1: Graph representing increasing in number of cases.

This is a graphical representation of cases from March 7th till June 15th. initially, on day 1 the number of confirmed cases in the state was 1 and on the 105th day (June 15th) it was 43,358. This depicts a drastic change in 105 days. The number of positive cases was slowly increasing day by day. For the first time there were 1000 confirmed cases on 86th day (May 31st). Till June 15th more than 1000 cases were reported every day.

PROGRESSION OF DISEASE MONTH WISE (March7th -june15th)

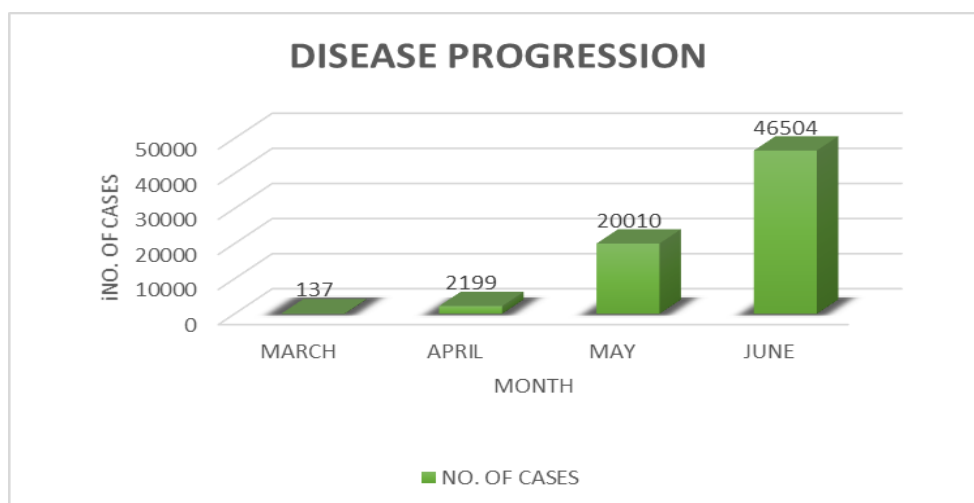


Diagram no.2.2: progression of disease.

This bar graph represents progression of disease from March 7th to June 5th. In the month of march, it was 137 as of June 15th it increased to 46504.

Major events that occurred during covid-19 in Tamil Nadu	
First case	7 th March
Closure of commercial establishments	15 th March
First domestic case	18 th March
Section 144 imposed	24 th March
State borders closed	20 th March
First death	25 th March
First paediatric case	29 th March
First Cluster of outbreaks	1st April
1000 confirmed cases	12 th April
Reported recoveries surpassed active cases	25 th April
2000 confirmed cases	28 th April

Table no.1.2: Major events in Tamil Nadu during the pandemic.

TOTAL NUMBER OF POSITIVE CASES AS OF JUNE 15TH (DISTRICT WISE)

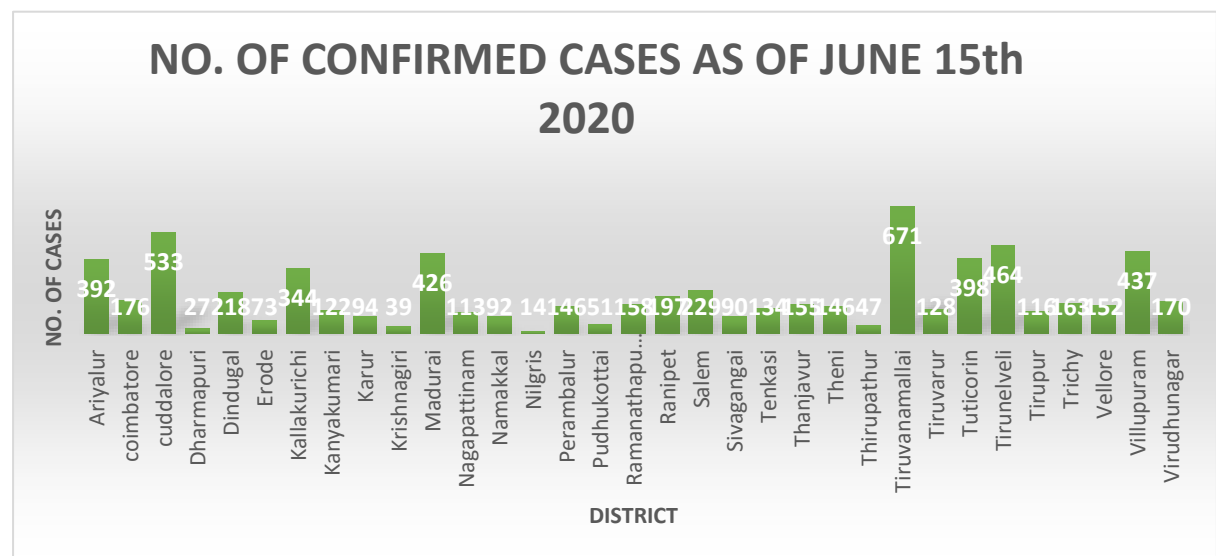


Diagram no.2.3: Total no. of cases district wise.

The above-mentioned data are graphical representation of districts in Tamil Nadu with the total number of covid-19 cases from March 7, 2020 to June 15th 2020.[4]

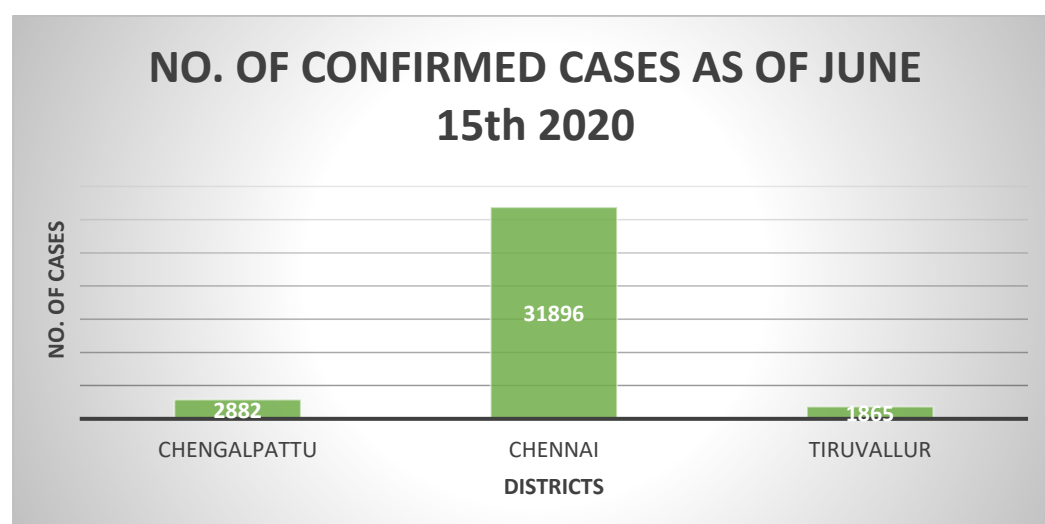


Diagram no.2.4: Top 3 districts with major number of cases.

Out of 37 districts these are the top 3 districts which had more than 1000 cases. With Chennai being the worst hit district.[4]

Districts	No. Of cases
Chennai	31896
Chengalpattu	2882
Tiruvallur	1865

Table no. 1.3: Top districts with major

SOCIAL IMPACTS DURING COVID-19 PANDEMIC

- For the first time the demand for hospital beds in the city went up, orders were issued to shift asymptomatic patients to quarantine centres.[1]
- At the end of May Tamil Nadu suffered a revenue loss of rs.35000 crore against the backdrop of the lockdown. This was according to the estimate prepared by the finance department.
- Due to lockdown Tamil Nadu loses 85% of GST revenue in the month of April.
- Tamil Nadu power demand crashed 28.6% In April 2020[1].
- In the first week of June government hospitals faced a shortage of medical and paramedical staff as there was an increase in the number of cases.
- 5.6lakh violations were reported across the state during the COVID-19 lockdown which began on March 24th.[2]
- The nationwide lockdown had a great impact on farmers and floriculturists in the state.

GOVERNMENT RESPONSE

Tamil Nadu state government was one of the few states to launch measures in the very beginning in order to combat the spread of COVID-19. Initially, as a precautionary measure, the state government ordered the closure of commercial establishments, schools, and colleges up to March 31st. It also announced an extensive period of 3 months for loans and tax payments for all the citizens. On 20th march, announcement was made for the closure of state borders from 21st march till 31st march to restrict interstate transportation. The government started Screening passengers at the airport. In a bid to curtail the spread of coronavirus the government announced “junta curfew” on March 22nd. As circumspection, the Tamil Nadu government has formed 15 committees comprising of a senior civil servant, IPS officer, and other experts to handle the multiple issues arising out of the pandemic. On 24th March, the government announced Rs.3,280crores as a relief package. It included financial support to all the ration cards, rice, and other essential commodities. As a disaster relief fund to deal with the crisis government allocated a sum of rs.60crore. To slow down the spread of coronavirus the government announced a slew of measures including the suspension of all domestic flight operations until the end of March. section 144 was also imposed. Helplines were established for the public. On 13th April, an amendment was passed that usage of face mask was made compulsory for all. On 16th April Nationwide lockdown was extended till May 3. As of May 1st Tamil, Nadu alone has tested 1,19,748 samples. As the number of positive cases was increasing day by day a state health experts committee on COVID-19 advised the continuation of measures such as surveillance, contact tracing, isolation of detected cases, and quarantine. At the beginning of May (2nd), the state government notified 711 locations across 36 districts of Tamil Nadu as COVID-19 containment zones. Tamil Nadu’s strategy was different from other states. It was at the forefront of testing, treatment protocol, and recovery. Testing of 165 samples per lakh population was done. The government also issued new guidelines for providing e-passes. orders were issued to convert schools and colleges into COVID care centres. since the Koyambedu market was considered as a hotspot in Chennai, areas around it were sealed and the infected vendors were being traced. state cabinet announced a raft of relaxations in the non-containment zones. In May 5thTamil Nadu state government issued guidelines for a partial relaxation

of lockdown restrictions for various sectors. Amid the lockdown, to aid citizens who need to travel in case of an emergency or urgent situation, the government provided e-pass. Any individual can apply for an e-Pass which will allow them to aid their movement under certain conditions. Individuals can apply only for marriage, emergency medicine, or near-death (& In case of Return of Stranded People). As the no of cases was increasing day by day and due to shortage of beds in the government hospitals patients were shifted to COVID care centres .3 of the most important hospitals in Chennai namely Rajiv Gandhi general hospital, Stanley medical college, and Kilpauk medical college shifted 254 asymptomatic patients to the COVID care centres. on May 6th due to the rapid spread of infection from the market area government decided to shift the market from koyambedu to Thirumazhisai. The government distributed medical kit containing medicines (zinc supplements, vitamin tablets, diet chart, Indian medicine packets) as per treatment protocol to patients with chronic conditions. Tele counselling was provided to 42000 elderly persons living in Chennai through greater Chennai corporation. On May 9th as a part of a preventive measure in controlling the spread of COVID-19, greater Chennai corporation launched a drive to install hand-free disinfection equipment with support from NGOs in various parts of the Chennai city. Tamil Nadu government on May 10th announced a further relaxation of lockdown regulation from May 12th onwards only in the areas which are not under containment zones in the state. In addition to the committee formed on March 24th, another panel consisting of 24 members was formed to assess the immediate impact of COVID-19 pandemic on various sectors of the state's economy. The committee was headed by Governor of Reserve bank of India. This was the 16th committee formed by the Tamil Nadu government to combat the issues arising out of the COVID-19 pandemic. In addition to this special camp was held to lodge the foreign Tablighi delegates. Around 11th may a proclamation was made by the state government wherein the guidelines for public establishments were released. Some of the specifications were:

- Establishments are not to be operated with air conditions.
- Assurance should be made that employees and customers should maintain physical distancing.
- Shop owners must regularly disinfect their premises.
- Saloons, beauty parlours and spas were not allowed to function.

One of the approaches initiated by the state government was a randomized controlled trial technique. Tamil Nadu was co-opted into a multicentric, randomized, emergency solidarity trial in order to establish a treatment option for COVID-19. 2 centres in Chennai were allocated for the trial technique namely Omandurar government multispeciality hospital and Rajiv Gandhi government general hospital. In the initial phase of the pandemic, Tamil Nadu abstained from testing aggressively with only 100 persons being tested every day until mid-April, whereas the state has intensified testing by 3455.5 per million due to increased number of cases day by day. The average test per day conducted was 11,658 from May 3rd to May 11th. On May 12th state government-endorsed private hospitals for treating COVID-19 cases. Tamil Nadu government issued guidelines for restarting manufacturing industries after the lockdown. As a new attempt convalescent plasma therapy was commenced at Madras medical college, Chennai. Indian council of medical research granted approved for the multicentre clinical trial in Madurai medical college, Tirunelveli medical college, and Christian medical college. On May 14th guidelines were issued for screening the lorry drivers and cleaners who were transporting the essential supplies from other states to Tamil Nadu. In the mid of May, the number of testing per day was increased. The ramped-up testing provided a big advantage in mapping the spread of cases. The state government revised testing and quarantine norms.

- If a person is tested negative, they were instructed to be in institutional quarantine for about 7 days.
- After 7 days the second test will be repeated once again.

The greater Chennai corporation launched a scheme of distribution of masks which was free of costs to residents in various parts of the city. On 16th may officials announced that all the government offices would function with 50% of staff strength. Meanwhile, the state government formed a team to attract investments from countries that were willing to shift their business to India. In addition to the preventive measures, the greater Chennai corporation adopted a new strategy. It includes roping in residents through NGOs for active participation in promoting the habit of wearing masks, handwashing, social distancing, disinfection of homes, and offices. Airport Authority of India (AAI) made arrangements to ensure that most of the procedures in the terminals were to be touch-free. Towards the end of the second week of May government relaxes rules for industries in urban areas. Initially, only 33% of workers were allowed to work in the units, later it was

50% of workers to work on a shift basis. As one of the preventive measures Chennai corporation started the distribution of a special herbal concoction to residents of hotspots. On 18th May lockdown was relaxed in 25 districts in Tamil Nadu. The government launched a transparent mask to help persons with hearing and speech impairments. Another committee was formed with 12-panel members to manage the treatment process of persons with co-morbidities during COVID-19. As there was a continuous increase in the number of positive cases, the government sharpens focus on Chennai and nearby districts. Tamil Nadu government reconstituted field support teams to facilitate effective management of containment zones, contact tracing, testing and quarantine facilities in the containment zones. On 22nd May the state government appointed 675 doctors to strengthen the front-line workforce in government hospitals. Besides, 500 health inspectors and other paramedical staffs were also appointed. The number of testing labs was also increased to 56 in the state. At the end of May, one of the largest stadiums in Chennai namely Jawaharlal Nehru indoor stadium was to be turned into a quarantine centre. An 8-page advisory brochure with instructions on self-management for COVID-19 was distributed to the households. At the end of May greater Chennai corporation 1,979 high-risk areas, where people are vulnerable to COVID-19. By May 30, the state government attributes the ramped-up testing, of up to 12,000 every day, as a key reason for the spike in cases in the state.

At the beginning of June, state government extended lockdown till June 30. In containment zones, the guidelines remained the same Whereas in non-containment zones outside Chennai industries, IT firms could be operated with 100% of staff. On June 2nd Chennai corporation adapted a strategy of large-scale cluster containment in zones that reported a major number of cases. As there was a consistent increase in cases day by day the state advocated a specific intervention strategy so far which was based on micro plan and focused mainly on testing, efficient contact tracing, and quarantine management.

By the second week of June (10th) the greater Chennai corporation increased the number of fever camps from 140 to 300. 4 government medical college in the city allotted around 10,252 beds for COVID cases. Several cases were continuously increasing day by day, contact tracing became a massive task. The corporation instructed all the approved labs in Chennai city to get a self-declaration form from the patients who are coming to get tested. The form contains complete details about family members, age, gender, and relationship along with the contact details. The form contains complete details about family members,

age, gender, and relationship along with the contact details. On June 12th, the new quarantine rule was initiated. It was said that patients who undergo tests in the private labs would be quarantined for 14 days along with the family members until the results were known. Another approach was a 24hours tele counselling centres were set up in all zones in the city. In the mid of June, the state government appointed 2,000 nurses on a temporary basis in Chennai, Tiruvallur, Kancheepuram, and Chengalpattu. Mobile medical units (MMUs) and Rastriya Bal swasthya karyakram (RBSK) units of directorate public health and preventive medicine were diverted to Chennai from various districts. In addition to this 254 mobile medical teams consisting of doctors, nurses, and paramedical staff was fomented to control the spread of COVID cases. The chore of these medical teams was to conduct fever camps in containment zones and monitor patients in home quarantines and to shift patients to hospitals. Separate helpline centres were also established in many parts of the city. Around 5000 volunteers were deployed to help and monitor quarantine residents who have tested positive for covid-19. They were known as “FOCUS VOLUNTEERS” (friends of covid-19 citizens under surveillance). As per the greater Chennai corporation, there are 360 containment areas in the city as of June 12th. cameras have been installed in these areas to monitor the people under quarantine. Initially, if a person is infected from covid-19 his/her house along with the street where he/she resides in was isolated and sealed, but then an amendment was done in the guidelines and this allows the isolation of that particular home rather than the street entirely. In addition to this, the state government has reiterated its instruction to private hospitals to report COVID-19 deaths within an hour of occurrence. The hospitals were also asked to upload the case sheet along with the relevant details on the COVID-19 portal and fill a form provided by the department. A team of three members entailing the joint directors of medical services, non-communicable disease, and clinical establishment act was involved in the process. The greater Chennai corporation has intensified screening of residents in 15 zones of the city by conducting fever camps. The fever camps are likely to be protracted in 680 locations, including all the 140 urban primary health centres.

SANITATION MEASURES

It is one of the important measures that are essential in preventing the transmission of the disease. The sanitation campaign included 300 drones and 500 drone pilots to sanitize the roads, metros, and hospitals across the state. Drones were used to spray disinfectant mainly on the crowded streets in the state. Similarly Mist cannons (trucks carrying huge blowers), Butterfly sprinklers were also used. In narrow lanes jet spray mounted on vehicles were used to spray disinfectant.

CONTAINMENT MEASURES

Several containment measures have been implemented in the state to halt the spread of covid-19 and limit the number of fatalities. If a street records more than 5 covid cases it is notified as containment zone and the entire street would be sealed completely. It will be denotified only when there are no positive cases for at least 14 days. Houses under containment zone are disinfected every day. Fever camps and door-to-door screening was also carried out by the government. As Chennai was the worst district in the state it had around 369 containment zones, followed by Tiruvannamalai having 29 zones and Cuddalore with 26 zones each. Stickers announcing “do not visit / covid-19 positive/ home quarantine was pasted on the doors of the houses of people tested positive and those of people who had recently returned from foreign countries. A mobile application was also launched by the government for the people under quarantine to interact with the health professionals to get medical advice.

GREATER CHENNAI CORPORATION
பெருநகர சென்னை மாநகராட்சி

**WE ARE IN HOME QUARANTINE
TO SAFEGUARD OURSELVES
AND CHENNAI FROM CORONA**
கொரோனாவிலிருந்து எங்களையும்
சென்னையையும் காக்க நாங்கள் வீட்டிற்குள்
தனிமைப்படுத்திக் கொண்டுள்ளோம்

FROM TO

NAME

ADDRESS

NUMBER OF PERSONS

104
HEALTH HELPLINE

For more information:
Greater Chennai Corporation Control Room
Phone: 044 - 2538 4520
Call our 24x7 Helpline
Phone: 044-29510400 / 044-29510500
Mobile: 94443 40496 / 87544 48477
#Covid19Chennai #StayHomeStaySafe

This picture portrays the notice that was pasted at the doors of people who have tested positive and those of people who had recently returned from foreign countries. It also describes the name, address, and number of persons in quarantine. The helpline number is also been provided to contact in case of emergency.

Source: covid-19.org.in

DIAGNOSIS

The diagnostic test reports are the first and most critical step in effective management of the pandemic. Delivering quality test reports plays a major role. Oropharyngeal swab samples are collected and are placed in a viral transport medium (VTM). The VTM is placed in an icebox and is sent for testing to the laboratories. Around 56 labs in the state were authorised by the national institute of virology to conduct the diagnostic test for covid-19. Testing is done through one-step- real-time Reverse Transcription Polymerase chain reaction (RT-PCR) kits. Covid-19 patients in the state are grouped under 4 categories and are treated accordingly: -

Asymptomatic cases-are remained at-home quarantine.

Mild cases – are accommodated in care centres.

Moderate cases- admitted in health centres.

Severe cases – are admitted to hospitals.

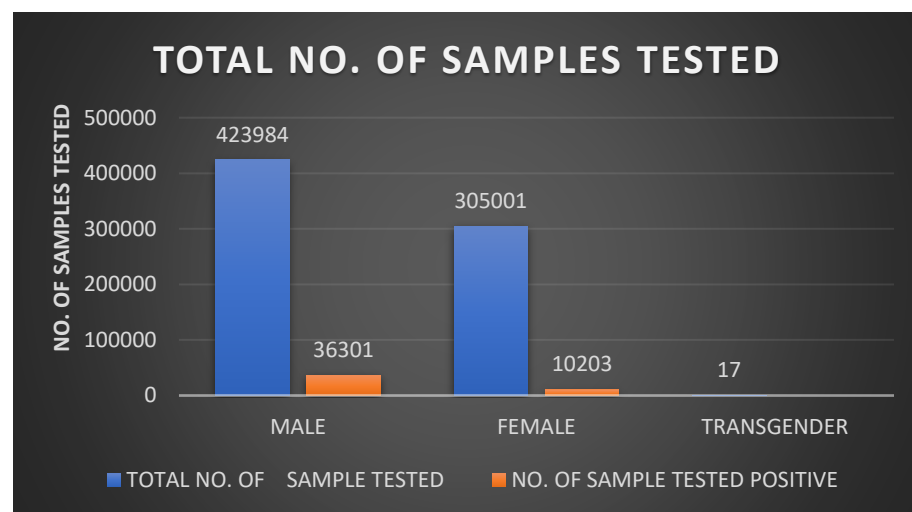


Diagram no 2.5: Total no. of samples tested.

The above graph represents the total number of samples that has been tested for COVID-19. As of June 14th a total of 7,29,002 samples were tested, out of which 46,504 was positive. 36301 samples were of males, 10203 were of females and 17 were of transgenders. For every 1 million people in Tamil Nadu 20,201 people were tested.

Tamil Nadu was the first state in India to do maximum number of testing so far. This is one of the reasons for surge in coronavirus infections seen in the state.

TREATMENT

As per treatment protocol drugs were issued only after the confirmation of lab test reports. Drugs used in the treatment of covid-19 are

In mild cases: -

- Paracetamol
- Oseltamivir 150mg.
- Antibiotics (only if required) are used.

In moderate to severe cases: -

- Azithromycin 500mg.
- Hydroxychloroquine 400mg.
- Omeprazole 40mg.
- Ondansetron 4mg.
- Zinc and vitamin c supplements.
- Augmentin.
- Methyl prednisone.

- Plasma therapy were used.

Patients were also given a nutritious diet and mental health counselling. A patient is discharged only when they are clinically stable and being tested negative.

CONCLUSION

While describing and exploring the historic events it is important in identifying patterns and drawing lessons from historic pandemics. It plays a major role in planning for and response to future pandemics. Over the last decade, epidemiologists, demographers, medical historians, and virologists have spent considerable efforts studying the 1918 “Spanish” influenza pandemic, the most devastating pandemic in modern history followed by the current covid-19. The current pandemic has compelled us to scrutinize the breakouts that have occurred in the past and imposed global threat time and again.

Three major epidemics in the last two decades have left many questions unanswered. Apart from the research questions regarding the pathogenesis and spread of disease, we really need to introspect whether urbanization and globalization are disturbing nature's balance? In this era, any infectious disease can spread on an immense scale within days to cause global threats. One of the few things that we may be able to take with us from this covid-19 pandemic, and will undoubtedly be studied by future researchers, is the quick implementation of lockdowns and social distancing. Hundred million people worldwide have been confined to their homes and avoided contact with one another to combat the spread of the virus. Without these measures, the rise in a number of cases would likely have been much steeper, and perhaps still rising COVID-19 is an unfortunate event that has enlightened us and steered us towards the contributions of the private health sector in public health, as well as the awful necessity to save the ‘drowning’ public health system. Since day one of the lockdown in March, it clearly witnessed how the entire public healthcare system has remarkably risen to the occasion in Tamil Nadu. From doctors to sanitary workers, frontline workers involved in handling the crisis have been working around the clock, often compromising their own health and safety. The Tamil Nadu public health system, with nearly 18,000 doctors (about 12,000 workings in rural areas) and lakhs of nurses and paramedics are providing their bests. Tamil Nadu has a rising incidence of COVID-19 due to multifactorial reasons whereas the case fatality rate (ratio of hospitalized patients to deaths due to COVID-19) is low when compared to all other states and this is only due to the service provided by doctors. Many of the implications outlined in this study may also be relevant to future pandemics and public health crises. Nevertheless, we believe that these containment measures are essential to enhance the quality of care provided to COVID-19 patients and to reduce the risk of viral transmission to other patients or healthcare workers. It might not be a matter of “whether” but “when”

the next pandemic would arise. Therefore, the global community must be aware of the economic, security, and health threats posed by the next pandemic and invest accordingly. Health authorities and researchers should also verify their preparedness according to the lessons learned from the covid-19 pandemic.

REFERENCES

- 1) The following newspapers were followed on a regular basis: -
 - The Hindu.
 - Times of India.
 - Deccan chronicle.
- 2) <https://onlinelibrary.wiley.com/doi/10.1111/dth.13343>.
- 3) https://rucforsk.ruc.dk/ws/portalfiles/portal/63350582/A_Review_of_Herald_Pandemic_Waves_in_1918.pdf
- 4) <http://archive.nmji.in/archives/Volume-22/Issue-5/PDF-volume-22-issue-5/Volume-22-issue-5-Review-Article.pdf>.
- 5) https://www.researchgate.net/publication/43341902_Historical_Review_of_Pandemic_Influenza_A_in_Taiwan_2009.

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