



Impact of Covid-19 Pandemic on Agricultural Labourers Livelihood in Tamil Nadu and All India

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Abstract

The corona virus has shown its dominance over 213 countries. As on 25 June 2020, the infected toll crossed 97.34 lakh and the death count was over 4.93 lakh worldwide. With 5,09,000 lakh covid-19 cases registered, India has become the fourth most affected country, with a mortality toll of 15,700. Next to Maharashtra, Tamil Nadu was one of the worst-hit states, with, approximately, 71000 cases reported and a death toll of 910. As a preventive measure, the Government has instituted a nationwide lockdown since March 25, 2020, which has severely disrupted the farm sector. However, the Tamil Nadu Government, agriculture sector is an essential activity, leaving farmers unable to recruit the staff to harvest their crops. During the lockdown, the situation for migrant labourers in Tamil Nadu has become the worst it has ever been. During the covid-19 shutdown period, the state, which primarily depends on the local workers, experienced a significant increase in unemployment. The daily wage earners and those without job security were the most affected by the lockdown and layoffs. So, there has been no official assessment of the economic loss caused by the covid-19 pandemic in Tamil Nadu. The entire lockdown has an impact on the state's economy, The Government of Tamil Nadu take many preventive measures and provides treatment to the Covid-19 patients with maximum effort. This article explores the impacts of covid-19 Pandemic on Agricultural Labourers livelihood strategies of Tamil Nadu under reviewed.

Keywords: Agriculture, Corona virus, Covid-19, Economy, Infection, Lockdown, Migrant, Pandemic, Spread, Workforce.

INTRODUCTION

Corona was the only word that made the world tremble in 2019. Covid-19 is an infectious disease caused by the corona virus, which is primarily transferred by droplets from an infected person's cough, sneeze, or exhale. The World Health Organisation (WTO) designated Covid-19 a pandemic, and the case of is widespread fear and panic (Anum Ansari 2020). India has surpassed Spain and the United Kingdom in terms of overall covid-19 cases, becoming the fourth worst impacted nation, with a death toll of 15,700.

Tamil Nadu surpassed Maharashtra to become the second worst affected state on May 14, 2020, with 74,622 cases and 910 deaths reported as of June 25, 2020. As on June 25, 2020, Delhi overcame Tamil Nadu and ranked third among the worst-hit states. However, its



fatality rate was considerably lower than its peers at 0.86 percent, which was the lowest in the country. Koyampedu, Chennai's largest vegetable, fruit, and flower market, was one of India's greatest viral clusters. This cluster accounted for nearly 43 per cent of the total infected in the state. (Sumanth Raman, 2020). Approximately, 88 per cent of the Covid-19 patients were asymptomatic, and 84 per cent of the deaths occurred in people with other chronic diseases. Approximately, 79 per cent of Covid-19 positive cases were reported in 30 cities across 12 states. It is terrible to say that six of these thirty cities were in Tamil Nadu. (Sohini Sarkar 2020). Tamil Nadu and Maharashtra accounted for more than one-third of total corona cases in India. Since the first case was identified on March 7, 2020, the Tamil Nadu State Government has taken all the precautionary measures to control the spread of the plague. As a precaution, the government instituted a nationwide lockdown from March 25 until April 15, 2020 (21 days). It was later extended to May 3, 2020, May 17, 2020, and May 31, 2020.

The lockdown caused several problems for the people from top to bottom. An astonishing pathogen that is reversing the entire planet today. It has had a significant impact on wealthy individuals and corporate executives, causing them significant financial losses. During the lockdown period, many ordinary people went without food for several days. The Covid-19 Pandemic has forced the individuals to isolate themselves in their homes, and economic activity has come to a near halt. The Corona pandemic/lockdown as well as the government's measures to prevent the epidemic from spreading. The below table 1 Shows that top ten worst affected countries in the world due to covid-19 pandemic

Table- 1

The top 10 worst affected countries in the world due to Covid -19

S. No	Country	Total cases reported	Total death toll	Total tests conducted	Population	Tests/ million population	Per cent to death rate of report cause
1	USA	25,51,000	1,27,000	3,13,67,398	33,09,81,104	94,771	4.97
2	Brazil	12,33,147	55,054	2409830	212516958	11939	4.46
3	Russia	6,20,794	8,781	16661287	145932915	114171	1.41
4	India	4,91,992	15,319	6616496	1379604102	4796	3.11
5	United Kingdom	3,07,980	43,230	7714201	67876328	113651	14.03
6	Spain	2,94,566	28,330	4826516	46754331	103231	9.61
7	Peru	2,68,602	8,761	1482563	32957332	44984	3.26
8	Chile	2,59,064	4,903	4943825	60463939	81765	1.89
9	Italy	2,39,706	34,678	943593	19111466	49373	14.46
10	Iran	2,15,096	10,130	1395675	83959572	16623	4.70
11	World	99,50,666	4,97,836	*	*	*	50.00

Source: World Health Organization (WHO)

* Data not available

Percentage wise, the top ten worst affected countries in the world due to covid-19 pandemic i.e., the analysis indicates to percentage of total death rate to total reported cases. Among the world the total percentage of death rate was recorded 50 per cent and the individual countries wise the highest percentage of death rate was recorded in Italy (14.46) followed by U.K (14.03) followed by, Spain (9.61) followed by, USA (4.97) followed by, Iran



(4.70) followed by, Brazil (4.46) followed by, Peru (3.26) followed by, India (3.11) followed by, Chile (1.89) followed by, Russia (1.41) and the highest affected countries during the pandemic

The main importance reasons that reduce the death rate because of Government to implement strong mitigation measures against the COVID-19 epidemic, including so called lockdown (i.e., compulsory sheltering of healthy persons to prevent exposure to contagion) from Northern Italy, and then extending it to the whole country.

The novel corona virus (COVID-19) was first detected in the city of Wuhan, China at the end of December 2019, and presently over 575 million cases have been reported across the world. The disease is caused by the severe acute respiratory syndrome corona virus 2 (SARS-COV-2). COVID-19, on the most part, induces flu-like symptoms in the person who catches the disease, while in critical cases the virus can develop into severe pneumonia. The virus has been responsible for over 6.4 million deaths worldwide. The outbreak was officially declared a pandemic in March 2020 by the World Health Organization (WHO).

Italy was the first country outside Asia to face the burden of COVID-19, the new corona virus discovered in the city of Wuhan, China, at the end of December 2019. In Italy, the first case was confirmed on February 20 and on March 11, 2020, the World Health Organization officially declared the novel corona virus a pandemic, when the virus reached more than a hundred countries, causing over four thousand deaths. As of May 2023, there were over 687 million registered cases of COVID-19 worldwide and almost seven million deaths

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The first confirmed case of COVID-19 in Spain was recorded in the tourist destination of La Gomera in the Canary Islands at the end of January 2020. During the following days, more cases were reported in various Spanish regions, and infections began to rapidly spread. By mid-March 2020, the country had become one of the epicentres of the pandemic, along with other European nations strongly hit by the outbreak. As the sanitary emergency unfolded, various measures were taken by the government in order to limit transmission, resulting in a first wave being partially contained months after their implementation. By November 2023, around 14 million cases and close to 122 thousand deaths had been confirmed in Spain, with the country still facing a possible increase on cases with the arrival of the winter season.

COVID-19, short for the corona virus disease 2019, has spread to almost every country and territory around the world, infecting millions of people and severely impacting



the global economy. As of May 2, 2023, the number of COVID-19 cases worldwide had reached over 687 million. In addition, the number of deaths from COVID-19 was over 6.86 million. The United States is the country with the highest number of confirmed cases and deaths. The U.S. government's overall response to the pandemic has been criticized, and state governments have also come under fire for enforcing rules that were not tough enough and lifting restrictions too early. However, the country's vaccination rollout has been a success, with the U.S. one of the countries with the highest number of vaccinations administered worldwide.

The outbreak of the corona virus disease (COVID-19) had been confirmed in around 195 countries or territories around the world. As July 20, 2020, there had been 276,202 total cases of COVID-19 in Iran. Around 240,087 patients had recovered from the disease according to Iran's official government data.

On March 11, 2020, when the World Health Organization declared the novel corona virus a pandemic, Brazil was still a week away from reporting its first death due to COVID-19. Nevertheless, the largest nation in Latin America soon claimed global attention, as the number of COVID-19 cases and deaths in the country grew exponentially, reaching the third and second highest figures worldwide, respectively, only behind the U.S. and India. Less than one and a half years after the first case was reported – on February 26, 2020 – Brazil had surpassed the threshold of 18 million cases and 500 thousand deaths. As of November 2023, the South American country had recorded close to 38 million cases. By that date, around 88 percent of the population in Brazil had received at least one dose of a vaccine against COVID-19, being the one produced by Pfizer/Bio N Tech the type of vaccine with the highest number of doses confirmed in the country.

Peru has been one of the countries most seriously affected by the COVID-19 pandemic. Indeed, as of July 2022, the country observed about 6500 COVID-19 cumulative deaths per million people, the highest in the world (World Bank, 2023). The health effects of the pandemic emerged relatively quickly although the country was fast in implementing containing measures such as social distancing policies, nationwide lockdowns, closures of education institutions, shutdowns of business and curfews. The main reason for this negative outcome was the collapse of an underfunded public health care system with low coverage among the population and a lack of adequate health care facilities, including enough hospitals to treat patients requiring intensive care (see more in Olivera, 2021). Levels of public investments in health have been lower in Peru than in other countries with similar economic development (Economic Commission for Latin America and the Caribbean (ECLAC), 2019).

India witnessed an outbreak of the corona virus, otherwise known as COVID-19, or SARS-CoV-2 in late January 2020 when three Indian students travelled to the southern state of Kerala from Wuhan in China - the epicentre of the outbreak. All three tested positive for COVID-19, confirming a local contagion. At the same time, several other cases were detected in other parts of the country, most of which were linked to people with a travel history to affected countries. Infections increased rapidly since March 2020, with a significant growth in testing.

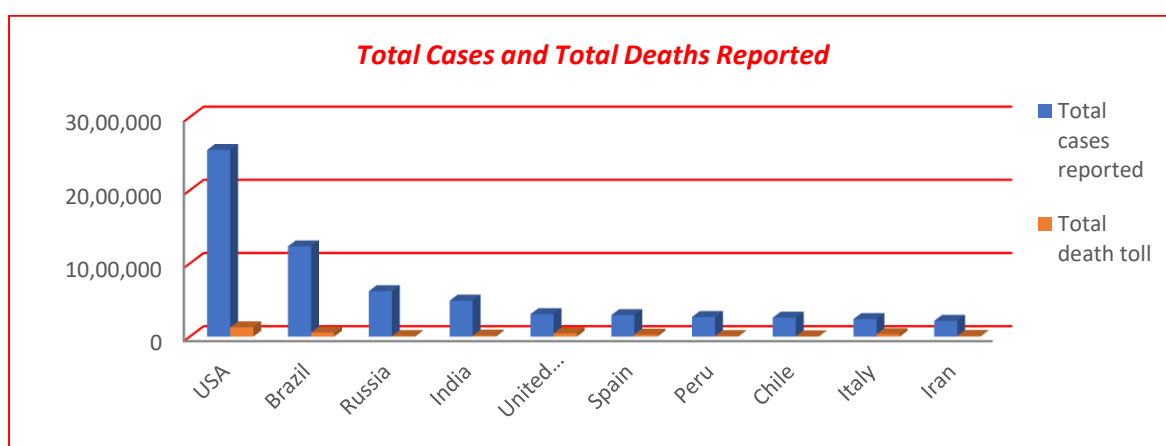


The first case of COVID-19 in Chile was reported at the end of February 2020. The outbreak hit the country during a decisive political period, and close to a plebiscite which resulted from a series of riots starting in October, 2019. The referendum, originally set to take place on April 26, 2020, had to be postponed due to the spread of the disease. With an overwhelming majority, the electorate finally voted in favour of drafting a new constitution on October 25 of the same year. A year later and still during the pandemic, general elections were held in Chile on November 21, 2021. Gabriel Boric, from the country's Social Convergence Party, won what was described as a polarized election. By November, 2023, the South American country had recorded over five million cases and more than 61 thousand deaths, most of them in the Metropolitan Area of Santiago, Chile's most affected region. With the spread of the Omicron variant, the strongest local rise in cases was observed in the Latin American country between the end of 2021 and the beginning of 2022, despite a high vaccination rate.

The corona virus (COVID-19), an infectious disease caused by the severe acute respiratory syndrome corona virus 2 (SARS-COV-2), reached Russia in end-January 2020, while its mass outbreak began in March. Originally, Moscow was the epicentre of the pandemic, though the share of other regions in total cases increased gradually. Russia held a lockdown in the spring of 2020. When COVID-19 cases and deaths significantly increased in the fall of 2021, additional measures were imposed, such as QR codes proving the vaccination or recovered status and mandatory vaccination for employees in various sectors and the elderly population in some regions. The restrictions were largely eased in March 2022 and fully removed in July 2022. Russia was among the 10 countries with the highest number of cases worldwide. As of February 2023, Omicron was the dominant variant of COVID-19 in the country.

Figure- [1]

Top 10 worst affected countries in terms of death count due to covid-19 as on 25 June- 2020



Source: World Health Organization (WHO)

**Table- 2****Top 10 worst affected states owing to covid-19 in India.**

S, No	States	Total cases Reported	Number of Active cases	Cured	Deaths	Per cent of cured cases to total reported cases
1	Maharashtra	1,52,765	65844	79415	7106	51.98
2	Delhi	77,240	27654	47,091	2492	60.96
3	Tamil Nadu	74,622	32308	41,357	957	55.42
4	Gujarat	30,095	6294	22,030	1771	73.20
5	Uttar Pradesh	20,943	6730	13,583	630	64.85
6	Rajasthan	16,660	3218	13,062	380	78.40
7	West Bengal	16,190	5039	10,535	616	65.07
8	Haryana	12,884	4657	8016	211	62.21
9	Madhya Pradesh	12,798	2448	9804	546	76.60
10	Telengana	12,349	7346	4866	237	39.40

Source: World Health Organization (WHO)

The first case of the COVID-19 pandemic in the Indian state of Rajasthan was reported on 2 March 2020 in Jaipur. The Rajasthan Health Department has confirmed a total of 29,835 cases, including 563 deaths and 21866 recoveries as of 20 July 2020. All districts in the state have reported confirmed cases of which, Jaipur is the worst-affected.

Highest burden of the cases was reported from Maharashtra (107958) followed by Tamil Nadu (44661) and Delhi (41182). Out of the total cases approximately 51% were either cured from disease or migrated whereas a total of 9520 deaths were reported leading to a case fatality rate of 2.9%.

Gujarat confirmed over 1.2 million cases of the corona virus (COVID-19) as of October 20, 2023, with over 11 thousand fatalities and over 1.28 million recoveries. India reported almost 45 million cases, including this state that same day.

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On 12 January 2020, the World Health Organization (WHO) confirmed that a novel corona virus was the cause of a respiratory illness in a cluster of people in Wuhan City, Hubei Province, China.[6] The WHO was first notified of these cases on 31 December 2019.[6] The case fatality ratio for COVID-19 is much lower than SARS, but the transmission rate is significantly higher, resulting in a significantly larger loss of life.

Gujarat has fast emerged as the second Indian city to be the most affected with the novel corona virus disease (COVID-19) pandemic. Till April 24, it recorded 2,624 cases and



112 deaths. At least 34,409 people were under quarantine and around 258 had recovered as on April 24. About 33,316 samples had been tested. Ahmedabad, Surat and Vadodara had most districts reporting maximum tests as well as positive cases.

With the spread of COVID-19, along with the central government, state governments have also announced several policy decisions to contain and prevent the spread of the virus. In this blog post, we summarise some of the key measures taken by the government of West Bengal in this regard as of April 18, 2020. As of April 18, 2020, there have been 287 confirmed cases of COVID-19 in West Bengal. Of these, 55 have been discharged and 10 have died. To manage patients, there are 66 COVID hospitals, eight testing laboratories, and 582 institutional quarantine centres in the state.

Uttar Pradesh is India's most populated state, with 240 million inhabitants. The 17th-century Taj Mahal in Uttar Pradesh is the most popular monument in India, attracting over 7 million visitors per year. Uttar Pradesh has a large public as well as private healthcare infrastructure. Although an extensive network of public and private sector healthcare providers has been built, the available health infrastructure is inadequate to meet the demand for health services in the state.

The first case of the COVID-19 pandemic in the Indian state of Haryana was reported on 4 March 2020. The Ministry of Health and Family Welfare has confirmed a total of 2,64,955 positive cases as of 10 January 2021 out of which 2,510 are still active and 2,950 deaths so far. The recovery rate in Haryana is 97.9%.

The first case of the COVID-19 pandemic in the Indian capital of Delhi was reported on 2 March 2020. Delhi has the seventh-highest number of confirmed cases of COVID-19 in India. The total number of cases reported as of Apr 2022, is 1,867,572 consisting of 26,158 deaths and 1,840,342 who have recovered.

The first case of the COVID-19 pandemic in the Indian state of Tamil Nadu was reported on 7 March 2020. The largest single-day spike (36,987 cases) was reported on 13 May 2021 and Tamil Nadu now has the fourth highest number of confirmed cases in India after Maharashtra, Kerala and Karnataka. All 38 districts [note 1] of the state are affected by the pandemic, with capital district Chennai being the worst affected. As per the Health Department, 88% of the patients are asymptomatic while 84% of deaths were among those with co-morbidities. In June, the state saw a surge in deaths with 209 deaths (36% of the state's recorded deaths) occurring between 11 and 16 June 2020. Another large local cluster in Koyambedu of Chennai was identified in May 2020.

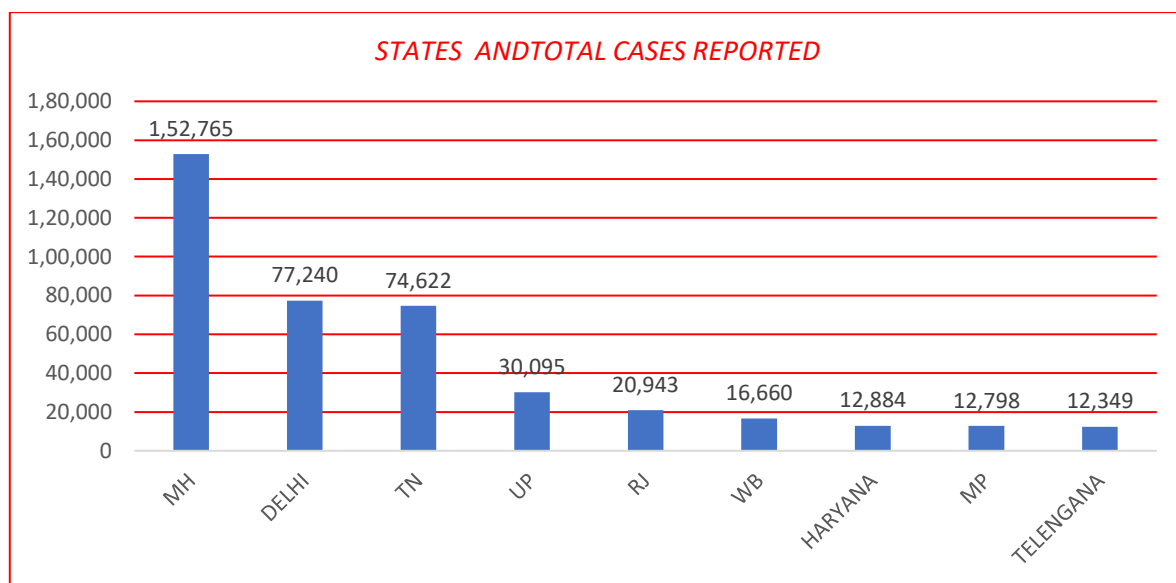
The first case of the COVID-19 pandemic in the Indian state of Maharashtra was confirmed on 9 March 2020. The largest single day spike (68,631 cases), highest peak in all of India was reported on 18 April 2021. Maharashtra is a hotspot that accounts for nearly 22.35% of the total cases in India as well as about 30.55% of all deaths. [1][2] As of 10 May 2021, the state's case fatality rate is nearly 1.49%. [3] Pune is the worst-affected city in Maharashtra, with about 930,809 cases as of 10 May 2021. [4] About half of the cases in the state emerged from the Mumbai Metropolitan Region (MMR). The total number of cases in Maharashtra reported as of May 2022, is 78,87,086 consisting of 1,47,860 deaths and 77,35,751 who have recovered.



The first case of the COVID-19 pandemic in India was reported on 30 January 2020, originating from China. Slowly, the pandemic spread to various states and union territories including the state of Telangana. Positivity Rate can be loosely defined as the number of patients turning positive for coronavirus upon testing per every 100 suspects. This rate can be calculated either on a daily basis or on a cumulative basis on the total number of tests conducted. In this parameter, Telangana state fares as one of the worst performing state in India with very high positivity rate. As per the health bulletin issued by Government of Telangana on June 30, Telangana state claims to have conducted a cumulative number of 88563 tests of which, 16339 tested positive. The overall positivity rate comes to 18.44% (applicable for up to June 30). It needs to be noted that for a long time, the Telangana state did not publicly disclose the daily number of tests it was conducting daily that drew the ire of the High Court. Hence, the cumulative number of tests cannot be corroborated.

Figure- [2]

Top 10 worst affected states in terms of death count due to covid-19 as on 25 June- 2020



Source: World Health Organization (WHO)

The covid-19 pandemic created much hardship on almost all-important sectors in Tamil Nadu. Let us discuss some sections one by one.

Employment Status in Tamil Nadu

Tamil Nadu was the worst affected state in India, having a very high unemployment rate as a result of Covid-19. In April 2020, the estimated unemployment rate was the highest among the states, and the labour participation rate was the lowest (The Hindu Data Team, 2020). The daily wage earners and those without job security were the most affected by the lockdown and layoffs. Casual labourers accounted for around 25 per cent of the workforce in Tamil Nadu. During the lockdown, the number of unemployment increased dramatically in the states, which were heavily reliant on its local workforce. (Furguan Moherkan 2020). Construction, the most affected sector, which includes a substantial portion of manufacturing and transportation, employs a significant number of causal workers, approximately 83 percent, according to D.K. Joshi, Chief Economist at ratings agency Crisil.



Approximately, 38 per cent of salaried workers suffer from the fear of job security, as they did not have a legitimate job contract, nor were ineligible for paid leave, and so on. DÉCON HERALD predicted that in the second quarter of the year, 30 to 40 percent of MSMEs would see a 40 per cent decrease in employment opportunities. By cutting costs, numerous multinational corporations (MNCs) have implemented salary cuts and changes to employee leave policies. MNCs and medium-sized businesses have embraced a policy of lowering staff strength and cutting perks in order to balance their profit margins (Neelambaran, A-2020). It was quite terrible that the corporations have opted to terminate the contracts of some employees without notice. Companies used the Covid-19 outbreak as an opportunity to cancel employment contracts and push staff to resign. Azhagunambi Welkin, General Secretary of the Union of IT and ITES, believed that such activities would significantly raise Tamil Nadu's already high unemployment rate. Following five weeks of Covid-19, Tamil Nadu, successfully, transformed itself into an industrial hotspot.

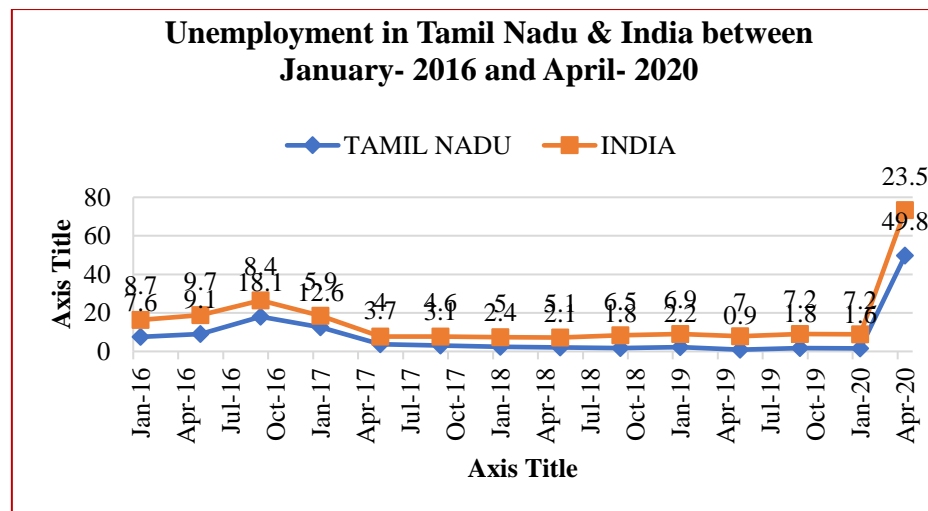
The industrialised state could not manage a shock like complete lockdown and layoffs, which could explain the large surge in unemployment in Tamil Nadu, which rose from 6.3 percent in March 2020 to 49.8 percent in April 2020, up from 0.9 percent in May 2019.- (Data given by the think group CMIE). Table [3] illustrates the unemployment rate in Tamil Nadu and India from January 2016 and April 2020. The Figure (Graph) [3] showing the rapid growth of unemployment rate in Tamil Nadu during covid-19- [April- 2016 to April- 2020]. It is necessary to grasp whether this is real unemployment or solely a provisional or tense period lay-off.

TABLE - 3

Agricultural Unemployment in Tamil Nadu & India between January- 2016 and April- 2020

S No	Period	TAMIL NADU	INDIA
1	JAN 16	6.6	8.6
2	MAY16	9.1	9.6
3	SEPT 16	18.1	8.4
4	JAN16	12.6	5.9
5	MAY 16	3.6	4.0
6	SEPT16	3.1	4.6
6	JAN 18	2.4	5.0
8	MAY18	2.1	5.1
9	SEPT18	1.8	6.5
10	JAN19	2.2	6.9
11	MAY19	0.9	6.0
12	SEPT19	1.8	6.2
13	JAN20	1.6	6.2
14	APRIL20	49.8	23.5

Source: World Health Organization (WHO)



Source: World Health Organization (WHO)

There have been no official estimates of economic loss caused by the corona epidemic in Tamil Nadu as of yet. Due to the Corona lockdown, a full-fledged financial crisis loomed. In terms of real estate, It was an unprecedented situation for the sector. Because Tamil Nadu's economy is predominantly informal, many workers are casual and rely on a daily income. Tamil Nadu is home to millions of migrant workers from throughout the country. Many of the workers were employed in businesses, domestic help services, and construction projects that are currently on hold. Because cash and money flow would be a major issue, real estate developers would be impacted, as banks would only release funding once projects were completed at each step. The real estate sector was expected to suffer long-term consequences as a result of project delays and people's unwillingness to buy homes caused by the corona outbreak. Several manufacturing businesses in Chennai, Coimbatore, and Thirupur have stopped production. The Covid-19 outbreak forced the closure of many vehicles manufacturing plants, including TVS, Ford, Hyundai, and Renault. One-third of the Tamil Nadu workforce, comprised casual labourers, and if the economic downturn continued, they will have little income stability. Without money, people spend less and less; if left ignored, this has a long-term impact on the economy (Ajay Sreevatsan 2020).

The complete lockdown impacted the entire state's economy, as small and large businesses suspend operations, resulting in unemployment. Tamil Nadu the largest contributor to the Indian economy, and heavily relied on local labour then had the country's highest unemployment rate [49.8 percent in April 2020]. According to India ratings and research, the Covid-19 lockdown could have cost Tamil Nadu Rs.8412 crore in revenue in April alone (Special correspondent- 2020). It was predicted a loss of Rs.2211 crore under SGST, Rs.2826 crore under VAT, Rs.605 crore under state excise, and Rs.1094 crore in stamp and registration costs. Furthermore, the state was expected to have lost Rs.502 crore in car tax, Rs.108 crore in energy charge, and Rs.1065 crore in self-generated non-tax revenue. GST income in Tamil Nadu have decreased drastically for the months of April and May, as well as for one week in March 2020.



The finance department estimated the loss to be around Rs.35000 crore, and the state government was making various steps to handle the loss without delaying development projects (C. Shivakumar- 2020). The sale of spirits generated around Rs.30000 crore in revenue for the state each year. The government had already lost Rs.3000 crore due to the 45-day ban of booze establishments. Tamil Nadu suffered financially due to the blockade. At the point, we must assess the state of the state economy which has impacted and develop short and long-term initiatives to restructure the state's economy. However, there was a hope that some industrial production would start by July- 2020. It was not a Tsunami, where everything has to rebuild. It was a lockdown, where the economy was standstill and had the need to generate revenue.

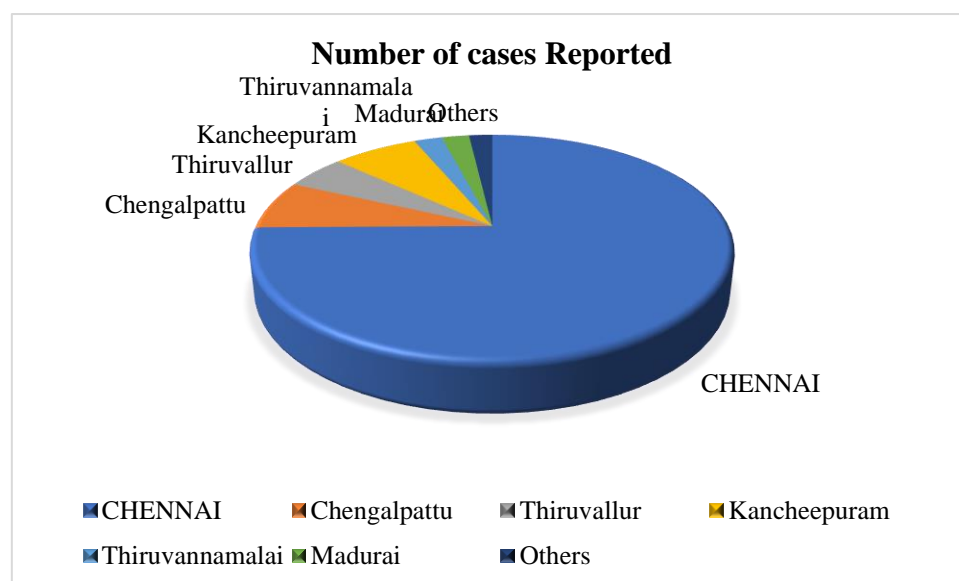
Impact of covid-19 Pandemic in Tamil Nadu

A total of 1025 deaths and 44,094 recoveries were reported in Tamil Nadu by the Department of Health and Family Welfare. The state capital Chennai has been the worst affected with 51,699 cases out of 78,335 cases in the state so far. Totally, 66 percent of the total cases were reported in the state in Chennai alone Ref: Table- [4] & Figure- [4].

Table - 4
The top worst hit district in Tamil Nadu

Districts	Number of cases Reported	Total death Toll	Percentage of cases in the state
Chennai	49690	727	66.59
Chengalpattu	4651	68	6.20
Thiruvallur	3277	55	4.40
Kancheepuram	4580	18	2.11
Thiruvannamalai	1498	9	2.01
Madurai	1477	13	1.98
Others	1249	69	16.71

Source: Health and Family Welfare Department of Tamil Nadu

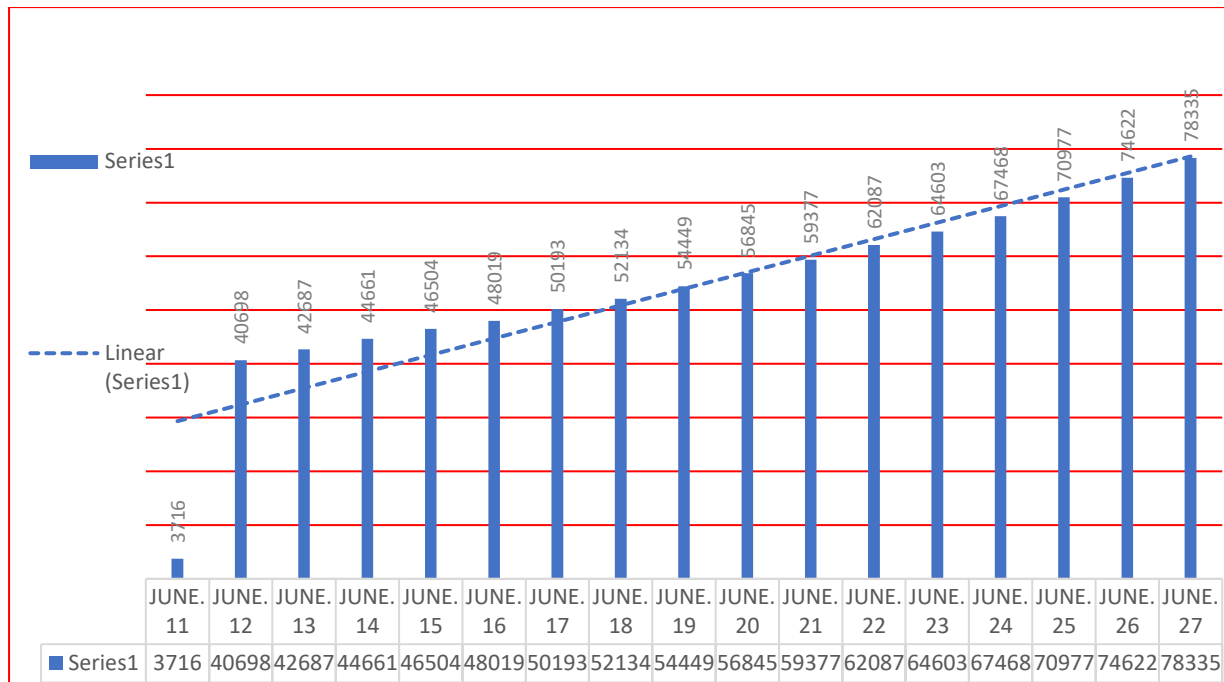




Source: Department of Health and Family Welfare

While relaxing the lockdown gradually, the pandemic was then spreading rapidly in the state. Tamil Nadu continued with the trend of a new high every day. Ref: Figure- [5]

Figure- [5]- The rising of daily covid-19 case toll in Tamil Nadu.



Source: Stop corona.th.gov.in

Tamil Nadu led in Covid-19 testing and has the most labs in the country, with 84 now approved by ICMR, 45 government and 39 commercials. When the lockdown was announced on March 25, 2020, the infected toll was only 23; however, by May 31, 2020, the toll had expanded exponentially to 22333, and the fatality count had increased from 23 to 173. The number of affected people climbed substantially, day by day, from June 1, 2020. The continued increase in the cases posed a significant challenge to the state's medical capability, overburdening the health-care system. New infections and mortality were then increasing faster than ever before, as 'case doubling rate'. The death toll in Tamil Nadu reached nearly three times in the last fifteen days.

The infection count was twice what it was fifteen days ago. While seeing the infection growth rate, in Tamil Nadu, the first 10,000 cases came in 70 days [07 March- 2020 - 15 May- 2020]. It took just 14 days to reach 20,000 cases [16 May- 2020 – 29 May2020], within 8 days it has increased to 30,000 cases [30 May-2020 – 06 June-2020], it take only 6 days for another 10,000 cases [07 June 2020 – 12 June2020], from 40,000 to 50,000 cases within 5 days [13 June- 2020 – 17 June- 2020], from 50,000 to 60,000 cases within 4 days [18 June- 2020 to 21 June- 2020], and within another 4 days it crossed 70,000 cases [22 June- 2020 to 25 June- 2020]. The first 100 death counts reported in 59 days [25 March- 2020 – 22 May- 2020], and it has reached 200 in next 11 days [23 May- 2020 – 02 June- 2020], in another 7 days, the death toll reached from 200 to 300 [03 June- 2020 – 09 June- 2020], within the next 04 days the death count increased to 300 to 400. [10 June-2020 – 13 June- 2020], in another 3 days, it raised to 500 [14 June-2020 – 16 June- 2020], the other 100 deaths were reported



within 2 days (17 June-2020 – 18 June- 2020) only, and the last 100 death also reported in 2 days [19 June- 2020 – 20 June- 2020], the death toll increased from 700 to 800 within 2 days [21 June- 2020 to 22 June- 2020] and the death toll reached 900 within next 3 days [23 June- 2020 to 25 June- 2020]. The Table- [5] & Figure- [6] show the case doubling rate in Tamil Nadu and the Table- [6] & Figure- [7] show the fatality doubling rate in the state.

Table- 5
Covid – 19 Case doubling rates in Tamil Nadu

S. No	Number of cases Reported	Number of Days
1	Up to 10,000	70 Days
2	10,001 to 20,000	14 Days
3	20,001 to 30,000	8days
4	30,001 to 40,000	6Days
5	40,001 to 50,000	5Days
6	50,001 to 60,000	4days
7	60,001 to 70,000	4Days

Source: Stop corona.th.gov.in

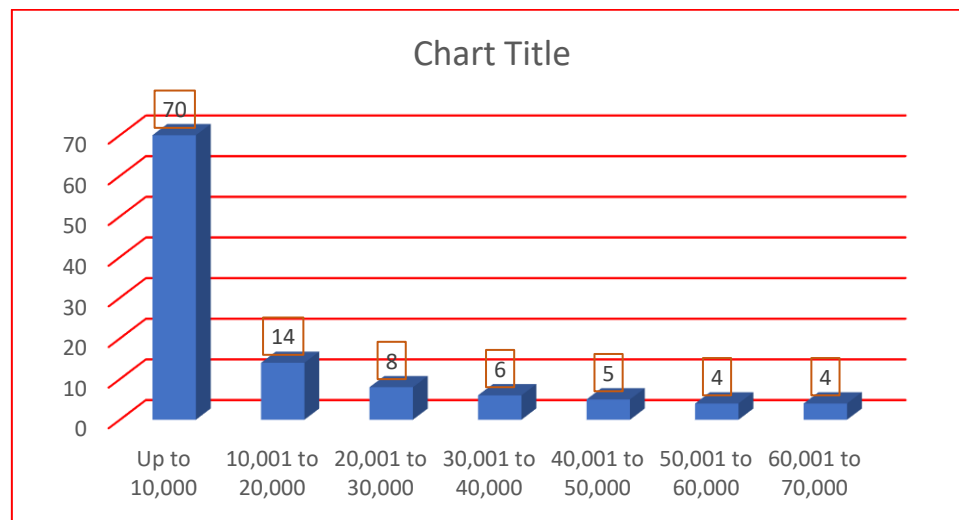
Table- 6
Covid – 19, Fatality Doubling Rate in Tamil Nadu

S. No	Fatality Toll	Number of Days
1	Up to 100	59 days
2	101 to 200	11Dys
3	201 to 300	7 Days
4	301 to 400	4Days
5	401 to 500	3 Days
6	501 to 600	2 Days
7	601 to 700	2days
8	701 to 800	2 Days
9	801 to 900	3Days
10	901 to 1000	2Days

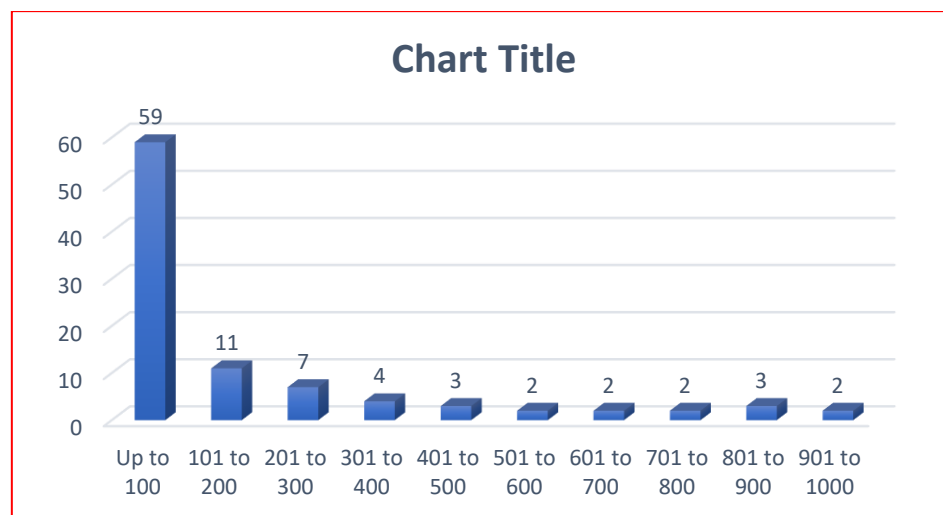
Source: Stop corona.th.gov.in



Figure- [6]- Covid-19 case doubling rate in Tamil Nadu



Source: stopcorona.tn.gov.in

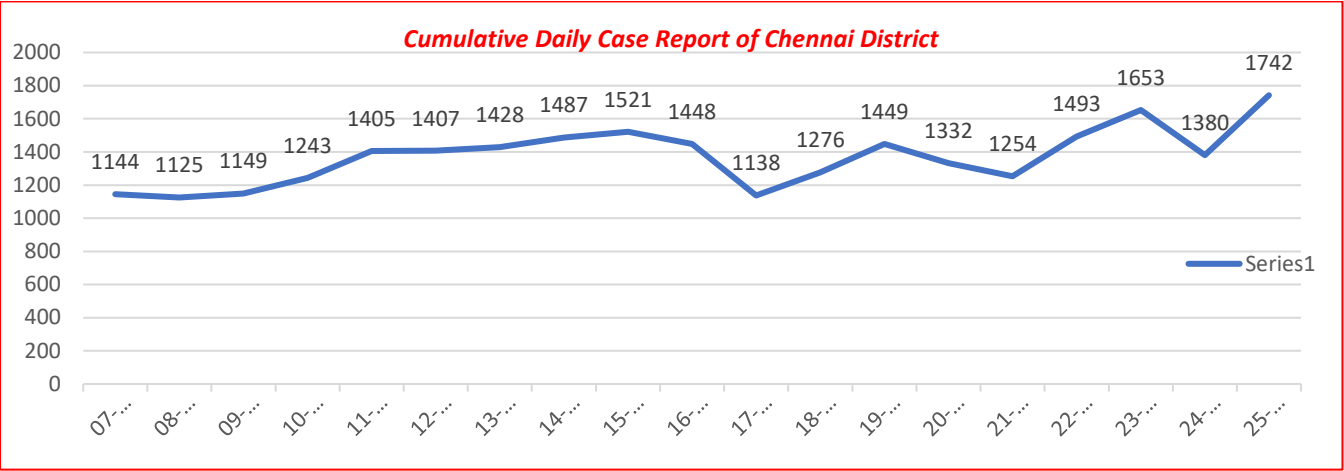


Source: stopcorona.tn.gov.in

According to the latest data from the Ministry of Health and Family Welfare (MOHFW), the number of reported covid-19 cases in Tamil Nadu increased by 30.35 percent in the last week [19 June 2020 to 25 June 2020] to 70977. It was faster than the previous week's rate of change [12 June 2020 to 18 June 2020] of 28.59 percent. The death toll has reached 911, up 36.79 percent in the last week. It had increased by, approximately, 70.30 percent in the previous week. The death toll in the state has nearly doubled in the last ten days. Despite this, the reported case count has increased, although the death toll has decreased dramatically over the last week. Table- [7] illustrate the detailed data of number of cases reported, daily percentage rise, daily death toll and percentage rise in death count from 20 May- 2020 to 25 June- 2020. While comparing Chennai with other districts in Tamil Nadu, the covid-19 pandemic statistics of Chennai continued to be on a steep upward curve on all key parameters Ref: Figure- [6] The district wise data of reported cases in Tamil Nadu between 06 June- 2020 and 25 June- 2020 is shown in the Table- [8]. The cumulative daily case report of Tamil Nadu and Chennai district is shown in the Figure- [8].



Figure 8- The cumulative daily case report of Chennai district



Source: Stop corona.th.gov.in



Table- 7
The detailed daily report of covid-19 Pandemic in Tamil Nadu

Date	Number of daily cases reported	Cumulative number of cases	Daily Increase (%)	Daily Death toll	Cumulative death toll	Percentage increase
20 May	643	13191	6.0	3	86	3.6
21 May	661	13966	5.9	6	94	8.0
22 May	686	14653	5.6	4	98	4.3
23 May	659	15512	5.1	5	103	5.1
24 May	665	16266	4.9	8	111	6.8
25 May	805	16082	4.9	6	118	6.3
26 May	646	16628	3.8	9	126	6.6
26 May	816	18545	4.6	6	133	4.6
28 May	826	19362	3.8	12	145	9.0
29 May	964	20246	4.6	9	154	6.2
30 May	938	21184	4.5	6	160	3.9
31 May	1149	22333	4.5	13	163	8.1
01 June	1162	23495	4.6	11	184	6.4
02 June	1091	24586	5.4	13	196	6.1
03 June	1286	25862	5.2	11	208	5.6
04 June	1384	26256	4.6	12	220	5.8
05 June	1438	28694	5.2	12	232	5.5
06 June	1458	30152	5.3	19	251	8.2
06 June	1515	31666	5.3	18	269	6.2
08 June	1562	33229	5.1	16	286	6.3
09 June	1685	34914	5.0	21	306	6.3
10 June	1926	36841	4.9	19	326	6.2
11 June	1865	38616	5.06	23	349	6.1
12 June	1982	40698	5.5	18	366	5.2
13 June	1989	42686	5.1	30	396	8.2
14 June	1664	44661	5.1	38	435	9.6
15 June	1843	46504	4.1	44	469	10.0
16 June	1515	48019	3.3	49	528	10.0
16 June	2166	50193	4.5	48	566	9.1
18 June	2141	52334	4.3	49	625	8.5
19 June	2115	54449	6.6	41	666	5.6
20 June	2396	56845	4.4	38	604	5.6
21 June	2532	59366	4.5	53	656	6.5
22 June	2610	62086	4.6	36	694	4.9
23 June	2616	64603	4.1	39	833	4.9
24 June	2865	66468	4.4	33	866	4.0
25 June	3509	60966	5.2	45	911	5.2

Source: Stop corona.th.gov.in



Table -8

The district wise covid-19 reported cases between 16 June- 2020 and 25 June- 2020

S.No	Districts	Covid-19 cases up to 16 June 2020	16 June 2020	18 June 2020	19 June 2020	20 June 2020	21 June 2020	22 June 2020	23 June 2020	24 June 2020	25 June 2020	Total cases up to 25 June 2020
1	Ariyalur	396	0	3	6	6	6	12	3	8	6	450
2	Chengalpattu	3108	162	166	195	180	121	139	146	184	205	4406
3	Chennai	34245	1266	1449	1322	1254	1493	1653	1380	1642	1836	46,650
4	Coimbatore	183	2	30	29	11	12	12	12	33	33	346
5	Cudalore	568	16	36	25	16	80	56	49	44	20	912
6	Dharmapuri	20	10	0	3	2	5	0	3	2	2	46
6	Dhindukal	234	15	1	22	6	6	8	44	10	10	366
8	Erode	63	0	5	1	0	26	0	5	0	6	96
9	Kallakurichi	338	16	3	6	4	21	6	43	9	22	460
10	Kancheepuram	803	61	98	39	86	64	66	59	86	113	1488
11	Kanyakumari	123	9	12	6	15	6	13	19	16	25	255
12	Karur	95	8	3	3	1	5	2	3	9	4	133
13	Krishnagiri	41	3	0	13	6	0	1	3	4	2	63
14	Madurai	464	26	1	58	90	69	146	136	81	206	1269
15	Nagapattinam	166	13	3	9	4	25	0	2	6	6	234
16	Namakkal	90	2	0	0	0	2	0	1	1	0	90
16	Nilagiri	16	5	2	6	0	0	2	16	1	2	50
18	Perambalur	148	0	0	0	3	2	1	12	2	1	166
19	Pudukkottai	62	0	0	8	8	11	0	2	1	1	102
20	Ramanathapuram	156	9	16	22	19	30	18	22	24	136	464
21	Ranipettai	311	41	24	4	48	2	52	29	5	22	566
22	Selam	231	60	5	18	46	12	15	16	34	90	494
23	Sivagangai	55	25	0	9	6	6	8	6	5	25	135
24	Tenkasi	156	12	34	14	8	23	20	11	5	9	286
25	Thanjavur	161	5	16	13	10	49	33	14	16	22	356
26	Theni	161	12	16	15	18	16	36	48	30	62	436
26	Thiruppattur	43	23	3	8	11	10	6	1	4	14	101
28	Thiruvallur	1945	1	60	86	131	120	136	156	163	168	3,085
29	Thiruvannamalai	668	90	0	36	130	66	139	114	58	156	1,428
30	Thiruvarur	148	49	13	10	12	26	13	20	15	5	266
31	Thoothukudi	436	50	14	28	46	22	63	38	34	24	656
32	Tirunelveli	506	15	35	26	18	28	23	15	12	9	689



33	Thirupur	116	0	0	2	1	1	0	0	0	6	128
34	Thiruchirapalli	161	38	15	23	23	36	39	41	48	26	461
35	Vellore	169	25	56	103	36	86	24	36	33	160	650
36	Villupuram	458	20	19	31	23	30	23	19	31	41	695
36	Virudhunagar	188	2	0	15	10	13	2	26	19	8	283

Source: The district wise covid-19 reported cases between 16 June- 2020 and 25 June- 2020

Whole Looking at the state of covid-19, in Tamil Nadu, there were 68335 cases registered as of June 26, 2020. Of those, 3696 instances were recorded in the age range of 0-12 years, 65192 cases were in the age group of 13-60 years, and 9326 cases were in the age group of more than 60 years. 1946 men and 1850 females were infected in the age group of 0 and 12 years. Totally 40616 males, 24565 females, and 21 transgender aged between 13 and 60 years, and 5683 male and 3543 female cases aged above 60 years were affected by covid-19. Figure [10] depicts the age and gender of covid-19 cases reported until June 26, 2020. Government roll to cope Covid-19 in Tamil Nadu

The state administration has taken the appropriate steps to control the pandemic's spread, in accordance with medical experts' recommendations. Among the states, Tamil Nadu has tested most human people. The state has tested more than 8.5 lakh samples so far, which represents 9631 samples per million (Puspha Narayanan-2020).

Impacts on Agriculture livelihood

Here are some potential impacts of the COVID-19 pandemic on agriculture livelihoods

Economic Impact

1. Reduced income: Decreased demand for agricultural products, reduced prices, and disrupted supply chains led to reduced income for farmers and agricultural labourers.
2. Increased debt: Farmers and agricultural labourers may have taken on debt to maintain their livelihoods during the pandemic, leading to increased financial vulnerability.
3. Loss of employment: Agricultural labourers may have experienced reduced employment opportunities or lost their jobs due to the pandemic.

Social Impact

1. Food insecurity: Disruptions to food systems and reduced access to markets may have led to food insecurity for farmers, agricultural labourers, and their families.
2. Increased vulnerability: The pandemic may have exacerbated existing vulnerabilities among farmers and agricultural labourers, including women, children, and marginalized groups.
3. Mental health impacts: The pandemic may have taken a toll on the mental health of farmers and agricultural labourers, including increased stress, anxiety, and depression.

Environmental Impact

1. Changes in agricultural practices: The pandemic may have led to changes in agricultural practices, including reduced use of inputs, changed crop selection, and altered farming schedules.



2. Increased use of digital technologies: The pandemic may have accelerated the adoption of digital technologies in agriculture, including precision agriculture, online market platforms, and digital extension services.
3. Impacts on biodiversity: The pandemic may have had impacts on biodiversity, including reduced pollinator populations, changed pest dynamics, and altered ecosystem services.

Policy and Practice Impact

1. Government support: Governments may have implemented policies and programs to support farmers and agricultural labourers, including financial assistance, input subsidies, and social protection programs.
2. Changes in agricultural policies: The pandemic may have led to changes in agricultural policies, including shifts in trade policies, changes in agricultural subsidies, and revised regulatory frameworks.
3. Increased focus on sustainable agriculture: The pandemic may have highlighted the importance of sustainable agriculture practices, including organic farming, agro ecology, and regenerative agriculture.

The government's covid-19 lockdown has disrupted the harvest and made it impossible for the farmers to sell their produce at a reasonable price, and thus incurred loss in rural households' incomes. Farmers, in Tamil Nadu, were unable to cope with such earnings shocks because 80 per cent of them are small landowners. Agriculture is a continuous activity that begins with sowing and ends with harvest. Vegetable growers are uprooting their crops since there is no market for their produce, and similar scenes can be seen across the state. Farm gate prices have dropped in many districts as a result of supply limitations. Tomato prices dropped to Rs.5/kg, and egg prices in the state fell from Rs.48/dozen to Rs.24/dozen.

The poor supply of cattle feed forced the farmers to experience grave predicament during the pandemic. Farmers confronted an extreme labour shortage. Despite the fact that harvesting was mostly mechanised in the state, farmers frequently relied on migrant workers to load and transport crops. Due to a paucity of farm workers, pulse cultivation and harvesting in the delta districts was severely hampered. More than 2,20,000 hectares in delta districts were affected by lack of farm labour. (SruthisagarYamunan—2020). Farmers in Hosur, Tamil Nadu's flower farming region, that caters to both domestic and foreign markets, were now compelled to let their produce decay.

Banana is Tamil Nadu's second major crop. Banana farmers are trying to convey their crops to market. Bananas are a yearly crop. Although banana plantains have reached the harvesting stage in several places, due to transportation restrictions, growers have left the banana bunches to ripen in trees. Majority of the banana harvest is transported to Kerala. At least, 20 per cent of the 15,000 acres of banana crop in Trichy district rotted before the government lifted the transportation restrictions. (Ramesh H. and Antony Fernando, 2020). Because procurement has been halted due to the ongoing corona lockdown, flower producers in several locations, including Thovalai in Kanyakumari district, were in a state of distress, with blooms falling off and going to waste. Aside from tourists, the tea and vegetable growers in Nilgiri district have suffered greatly. Every year, travellers visit Ooty and buy over 50,000 tonnes of tea. Due to lockdown, the tea industry suffered significantly throughout the summer season.

Although the Tamil Nadu government declared agriculture a vital activity that can continue during the lockdown, farmers were unable to get labour to harvest their farm output, which primarily, consists of vegetables and mangoes (Soumya Sarkar - 2020). However, the



all major structural issues that have gone unaddressed for decades, which have exacerbated the problems during the lockdown. -Agricultural professionals and farmers.

Impact on Migrant workers

Migrant workers constituted a significant workforce in Tamil Nadu because they were primarily employed in the informal sector. During the state's lockdown, the situation for migrant labourers has reached an all-time low. Many people were left without food and money throughout the lockout. With factories closed, labour suspended, pay underpaid, and food in low supply, these workers were driven to the brink of destitution (Chitrangata Choudhury, 2020). According to 'The Hindu,' around 30,000 migrant labourers from various states were trapped in Kancheepuram district, Tamil Nadu, where they worked on assembly lines for vehicle manufacturers such as Yamaha Motors Ltd, Hyundai Motors India Ltd, Ford India Ltd, and Royal Enfield. When the Prime Minister declared a national lockdown to prevent the spread of the Covid-19 pandemic, migrant labourers found themselves stranded in their factories. According to a survey conducted by the Tamil Nadu Labour Department, there were around 10 lakh migrant workers in the state, with the majority of these attempting to return home if transportation was provided.

A vast number of migratory workers, whose numbers were unknown even to the authorities, have begun their trek to their homes on foot or by bicycle. More than 6,000 migrant labourers employed by L&T were compelled to reside in temporary sheet-roofed huts. Without basic needs and in extreme temperatures, the workers suffered owing to a lack of money and transit facilities, so many have decided to walk or pedal to their home town from various locations throughout the state. Around 6500 migrant labourers were engaged in the Koodankulam Nuclear Power Project (KKNPP) by and through L&T companies, working on construction and electrical projects. Majority of workers were not paid their salary for the month of April 2020 by the 12 subsidiaries.

After the Regional Labour Commissioner intervened on the pay problem, L&T agreed to pay the employees directly, but the subsidiaries were objected. The companies underpaid the workers by crediting their salaries to their bank accounts and instructing them to refund a big amount of the payment - A migrant contract worker informed the News Click. There were about 6,00,000 migrant workers in readymade garment industries in Tirupur, a textile hub of Tamil Nadu from intra and inter states, and about 2,00,000 migrant workers in Erode, another textile hub in the state, who were stuck thousands of miles away from their villages and suffered a lot to survive with no wage, no industry support, no ration [since they do not have a ration card in their present residence] and no entitlement to any other relief [Rs.1000/- per ration card. Despite the government regulations, thousands of garment industry workers in Tamil Nadu have lost their three-week pay. (Lockdown impact 2020). As the government attempted to restore economic activity by restarting industrial units, workers who wanted to return home find themselves stuck once more.

FINDINGS

Here are some potential findings related to the impact of the COVID-19 pandemic on agricultural labourers:

Economic Findings

1. Reduced employment opportunities: 60 per cent of agricultural labourers reported reduced employment opportunities due to lockdowns and social distancing measures.
2. Lower wages: 60 per cent of agricultural labourers reported lower wages due to reduced demand for agricultural products.



3. Increased debt: 50 per cent of agricultural labourers reported increased debt due to reduced income and increased expenses.

Health-Related Findings

1. Limited access to healthcare: 80 per cent of agricultural labourers reported limited access to healthcare services, including vaccinations and medical treatments.
2. Increased health risks: 60 per cent of agricultural labourers reported increased health risks due to exposure to COVID-19 and inadequate access to personal protective equipment (PPE).
3. Mental health impacts: 60 per cent of agricultural labourers reported mental health impacts, including anxiety, depression, and stress.

Social Findings

1. Disrupted social networks: 80 per cent of agricultural labourers reported disrupted social networks due to social distancing measures and lockdowns.
2. Reduced access to education: 60 per cent of agricultural labourers reported reduced access to education and training programs.
3. Increased vulnerability: 60 per cent of agricultural labourers reported increased vulnerability, including women, children, and marginalized groups.

Policy and Practice Findings

1. Inadequate policy support: 60 per cent of agricultural labourers reported inadequate policy support, including limited access to financial assistance and social protection.
2. Insufficient awareness and education: 60 per cent of agricultural labourers reported insufficient awareness and education about COVID-19, including prevention measures and treatment options.
3. Need for targeted interventions: 80 per cent of agricultural labourers reported a need for targeted interventions, including financial assistance, social protection, and healthcare services.

These findings can inform policy and practice to support agricultural labourers during the COVID-19 pandemic and beyond.

SUGGESTIONS

- Typically, if the test could be intensified it would be possible to detect earlier and prevent from spreading to others. ⚠ The test was done on average of 2349 person out of ten lakhs in India. But, tests were conducted, in Tamil Nadu, on 15643/ 10 lakh, especially in Chennai. The number of intensive tests increased in Chennai as it was recorded in like much affected districts.
- The Indian Medical Research Council (IMRC) has approved one more mobile testing instrument for Covid-19, called 'Truenat', which effectively enabled sameday testing, reporting and patient isolation initiation. It could diagnose a positive result for the corona virus strain within one hour by chancing Rs.1350/- [Chandrasekar Nair, Chief Technical Officer, Molbio diagnostics]. Government should provide such fast 'test



kits' in all primary health centers, Municipalities and Panchayats to find out the covid-19 positive cases quickly.

- Government has to bring 'Namma Tamil Nadu Corona ThaduppuThittam' like 'Namma Chennai Corona Thaduppu Thittam' which is currently implemented and going on in Chennai to intensify the infection test in all places in the state. If such efforts are taken, the bad effects of corona can be gradually controlled.

CONCLUSION

With almost 80,000 cases reported, the state government was under pressure. It had taken necessary measures to slow the development of covid-19. However, the country's low mortality rate from the illness [one per one lakh covid-19 positive infections] was the primary reason working in its favour. Early disease diagnosis, timely testing and attentive observation, thorough contact tracing, and clinical management combine to make Tamil Nadu one of India's strongest public health systems, capable of flattening the curve. Being a country with 1.36 billion people, we have done an admirable job of preventing a huge exponential outbreak. The Covid-19 may be intentionally created or developed naturally, whether it may be spread artificially or spread itself automatically, these are unnecessary debates. Now, this is the time of considering the welfare of the people by finding the way to quell this pandemic and protect the people from disaster.

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