

# Spread of COVID-19 in Andhra Pradesh during Lock-Down phase-1

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**Abstract:** Corona virus disease (COVID-19) is an infectious disease caused by newly discovered corona virus. Corona viruses belong to the genus corona virus in the corona viridae. All COVs are pleomorphic RNA viruses characteristically containing crown-shape peplomers with 80-160 nano meters in size and 27-32 kb positive polarity. Recombination rates of COVs are very high because of constantly developing transcription errors and RNA dependent RNA polymerase (RdRp) jumps. With its high mutation rate, corona viruses are zoonotic pathogens that are present in humans and various animals with a wide range of clinical features from asymptomatic course to requirement of hospitalization in the intensive care unit, causing infections in respiratory, gastro-intestinal, hepatic and neurologic systems. They were not considered as highly pathogenic for humans until they have been seen with the severe acute respiratory syndrome (SARS) in the Guangdong state of China for the first time in 2002 and 2003. Approximately ten years after SARS, another highly pathogenic COV, middle East Respiratory syndrome corona virus (MERS-COV) has emerged in the middle East countries. In December 2019, 2019 novel Corona virus (nCOV), which is another public health problem, has emerged in the Huanan seafood market, where livestock animals are also traded, in Wuhan state of Hubei province in China and has been the focus of global attention due to a pneumonia epidemic of unknown cause. At first, an unknown pneumonia case was detected on December 12, 2019. Since then it has been spreading throughout the world registering about 33,844,926 ( as on 30<sup>th</sup> sept, 2020) in 213 countries with 1,012,677 deaths and 21,149,241 recovered cases. Maximum number of cases is being registered in USA (7,406,729), India (6,225,763), Brazil (4,780,317), Russia (1,167,805) and so on. The first case in India has been registered on 30<sup>th</sup> January, 2020 in Thrissur of Kerala. And now (as on 30<sup>th</sup> sept, 2020) there are about 6,225,763 total cases with 97,529 total deaths in a span of 9 months. About 5,187,825 cases have been recovered so far and there are 940,409 active cases at present in the country. Among these, serious and critical cases have been identified as 8944. Total corona cases per 1 million population is reported as 4501 and deaths at 71 per 1 million population. So for 74,196,729 total tests have been completed of the total population of 1,383,345,173 in the country. On an average 53636 tests per 1 million population have been carried out. In this context, an attempt is made here to study the spread of COVID-19 in Andhra Pradesh state during lock-down phase-1.

**Key words :** COVID-19, Spread, Initial cases, Death Toll, Andhra Pradesh.

## Introduction :

A novel Corona virus (CoV) named as COVID-19 by the World Health Organization (WHO) is responsible for the current out break of Pneumonia. Most of the people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people and those with underlying medical problems like cardiovascular disease, Diabetes, chronic respiratory disease and cancer are more likely to develop serious illness. The COVID-19 virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes. So it is important to practice respiratory etiquette for example by coughing into a flexed elbow. The droplets are too heavy to hang in the air and quickly fall on floor or surface. One can also be infected by breathing in the virus, if you are within close proximity of someone who has COVID-19, or by touching a contaminated surface and then your eyes, nose or mouth. There are no specific vaccines or medicines for COVID-19 at this time. However, there are many ongoing clinical trials evaluating potential treatments. WHO will continue to provide updated information as soon as clinical finding become available. People who are hospitalized with severe COVID-19 symptoms are getting an antiviral medicine called Remdesivir. Research shows that some patients recover faster after taking it. Favipiravir is another drug used in COVID-19 treatment. Recognizing the wide spread of this viral disease and existing adverse situation an endeavour is made here to study the initial and the subsequent spread or increase of the COVID-19 cases in Andhra Pradesh during lockdown phase-1.

## Objectives:

- to study the initial cases, subsequent spread and mortality of COVID-19 in the Andhra Pradesh state during 21 days of lockdown phase-1 (25/03/2020 to 14/04/2020).

**Data & Methodology:**

The study is entirely based on secondary data obtained from News papers such as Eenadu Telugu, Sakshi, The Hindu etc and Google search engine. Data pertaining to COVID-19 positive cases and deaths occurred due it has been collected for Andhra Pradesh state during the lockdown phase-1 (consisting of 21 days) on daily basis. Simple statistical techniques like additions, averages, percentages are used to analyse the data. The tabulated data is represented with the help of simple graphs, such as bar diagrams using SPSS package.

**Study Area:**

Andhra Pradesh is a state in the south eastern coastal region of India. It is the seventh largest state covering an area of about 162,975Km<sup>2</sup> with a population of 49,386,799 inhabitants. The state of Andhra Pradesh is divided into 13 districts spread across coastal Andhra and Rayalaseema. It is lying between 12<sup>o</sup>41<sup>l</sup> – 19.07<sup>o</sup> North latitude and 77<sup>o</sup> - 84<sup>o</sup>40<sup>l</sup> East longitude and is bordered by Telangana, Chhattisgarh and Orissa in the north, the Bay of Bengal in the East, Tamil Nadu to the south and Karnataka to the west. It has the longest coastline with 975km next to Gujarat.

**Results and Discussions:****Initial 10 cases of COVID-19:**

Before the first lockdown period or during the lockdown period COVID-19 cases are hardly found in Andhra Pradesh state. The very first case of COVID-19 pandemic in Andhra Pradesh was reported in Nellore district on 12<sup>th</sup> March, 2020. A 24 year old student, who is pursuing his post-graduation in Italy returned to his home town Nellore and confirmed positive for COVID-19. The patient was admitted to the Isolation ward of the government general hospital late on March 9<sup>th</sup> night with corona symptoms. Initially, the mouth swabs were sent to the SVIMS, Tirupati for testing and later to the National Institute of Virology, Pune for conformation. The health officials sanitized the Chinna Bazar area of Nellore city from where the youth hailed. He was discharged on 23<sup>rd</sup> March, 2020 after 14 days stay in the hospital.

The second COVID-19 case in Andhra Pradesh was reported on 19<sup>th</sup> March, 2020 in Prakasam district. A 23 year old youngster who was returned from London to Delhi on 10<sup>th</sup> March, 2020, and reached Hyderabad on 11<sup>th</sup> March. He travelled to Ongole, his home town on march 14<sup>th</sup> night in APSRTC bus and reached the destination on March 15<sup>th</sup>. He was tested positive for corona virus on 19<sup>th</sup> March and he had been kept in the isolation ward at RIMS hospital in Ongole town for further treatment and recovered later.

The third COVID-19 patient was a 65 year old person from Visakapatnam and tested positive for COVID-19 on 20<sup>th</sup> March. He had travel history of Mecca trip, from where he got affected to the virus. The fourth case has been reported in Vijayawada. A post-graduate student from Paris reached Delhi on 15<sup>th</sup> March, 2020 and on 17<sup>th</sup> he travelled to Hyderabad and from there he went to his home town Vijayawada by car. He was joined in hospital on 20<sup>th</sup> March, 2020, and tested positive for the corona virus on 21 March.

The fifth COVID-19 patient is also a post-graduate student studying in London, who reached Hyderabad on 18<sup>th</sup> March, 2020 and from there went to his home town Rajamundry. He was admitted in the hospital on 20<sup>th</sup> March due to fever and tested positive on 21<sup>st</sup> March. The sixth COVID-19 patient from Visakapatnam contaminated by the virus through her father, a 65 year old patient ( reported as 3<sup>rd</sup> patient in Andhra Pradesh) who came from Mecca. The affected patient is a 49 years old lady in the same family who moved with her father intimately. She joined in the hospital on 20<sup>th</sup> march and tested positive for corona virus on 22<sup>nd</sup> March, 2020.

The seventh case, again a post-graduate student of Vizag who is studying in England came from Burmingham to Delhi on 17<sup>th</sup> March, 2020 and reached Visakapatnam on the same day at 5:00 pm. After thermal scanning at airport he was advised to confine himself in home quarantine. On 19<sup>th</sup> March, he was detected with CIVID-19 symptoms and joined in a private hospital at Vizag on 21<sup>st</sup> and then to Government hospital on 23<sup>rd</sup> March. He was tested positive for the corona virus and reported as 7<sup>th</sup> patient in Andhra Pradesh.

A 25 year old student of Srikalahasti of Chittoor district studying MCA in London reached Chennai on 19<sup>th</sup> March and travelled to his home town by car. With cough, cold and fever he was admitted in Ruia hospital, Tirupathi on 23<sup>rd</sup> and tested positive for COVID-19 on 24<sup>th</sup> March. It is the 8<sup>th</sup> corona case in Andhra Pradesh state. The ninth case has been reported in Vijayawada on 25<sup>th</sup> March, 2020. A student from Washington, USA reached Delhi on 20<sup>th</sup> and after screening he was admitted to a hospital in New Delhi. He was discharged a day later and took Air India flight (AI459) on 21<sup>st</sup> to Visakapatnam and reached home in his friend's car. He was admitted in the GG hospital on 23<sup>rd</sup> due to mild symptoms and later tested positive for the virus.

The 10<sup>th</sup> case of corona virus registered in Guntur. A 52 year old man from Guntur attended Tablighi Jamaat religious meeting at Nizamuddin Markaz, Delhi. He spent two and half days with about 20 persons there from March 14. He later travelled to Vijayawada by Duroto express in coach 58 and then reached home in Guntur by a cab. The patient visited a private hospital two days later after developing symptoms and then went to Vijayawada along with his son on a motorcycle and got admitted to the fever hospital on March 23<sup>rd</sup> and tested positive on 25<sup>th</sup> March. He is the first person in the state to have contacted the virus through community transfer without a history of the travel abroad and close contact with a positive case person.

Among the initial ten cases of Andhra Pradesh, 8 cases have the travel history of foreign countries, one case has close contact with a positive case person within their own family and the another case contacted the virus through community transfer by attending a religious meeting in Delhi. If we look in to the gender of the initial Corona positive cases of Andhra Pradesh, except the sixth positive case, all the other nine cases are males only. Fortunately there is no mortality in all these cases of the state. About 70 percent of these cases are below the age of 25 years, 2 persons between 25-60 years and only one positive person was above 60 years (Table -1).

**Table-1**  
**Initial Ten cases of COVID-19 in Andhra Pradesh**

S.No	Place (where case reported)	Age of the patient	Gender	Any travel history	Secondary contact	Date of detection
1	Nellore	24 years	Male	Returned from Italy	-	12 <sup>th</sup> March, 2020
2	Ongole	23 years	Male	Returned from London	-	19 <sup>th</sup> March, 2020
3	Visakapatnam	65 years	Male	Returned from Mecca	-	20 <sup>th</sup> March, 2020
4	Vijayawada	24 years	Male	Returned from Paris	-	21 <sup>st</sup> March, 2020
5	Rajamundry	23 years	Male	Returned from London	-	21 <sup>st</sup> March 2020
6	Visakapatnam	49 years	Female	-	Contaminated through her father who returned from Mecca	22 <sup>nd</sup> March, 2020
7	Visakapatnam	24 years	Male	Retuned from England	-	23 <sup>rd</sup> March, 2020
8	Tirupati	25 years	Male	Returned from London	-	24 <sup>th</sup> March, 2020
9	Vijayawada	22 years	Male	Returned from USA	-	25 <sup>th</sup> March, 2020
10	Guntur	52 years	Male	Attended Tablighi Jamaat religious congregation, Nizamuddin Markaz Mosque, Delhi	-	25 <sup>th</sup> March, 2020

Source: Internet & Eenadu Telugu Daily.

**Spread of COVID-19 during Lock-down phase-1:**

On 24<sup>th</sup> march, 2020 the government of India ordered a national wide lock down for 21 days, limiting movement of the entire population, as a preventive measure against the COVID-19 pandemic in the country. The lockdown was announced when the number of conformed positive corona virus cases was approximately 500. Observers stated that the lockdown had slowed the growth rate of the pandemic.

The total number of cases reported in Andhra Pradesh during lockdown phase-1 i.e from 25/03/2020 to 14/04/2020 are 478. With the inclusion of earlier cases the total number of Corona virus cases reached to 486 by 14<sup>th</sup> April 2020. The state occupied 7<sup>th</sup> place in the incidence of COVID-19 cases of the country after Maharashtra (2337), Delhi (1510), Tamil Nadu (1204), Rajasthan (879), Madhya Pradesh (730) and Telangana( 644), at the end of the lockdown phase-1. In the percentage, the state has 4.49% of cases to the total cases of India (10815) by the end of lockdown phase-1.

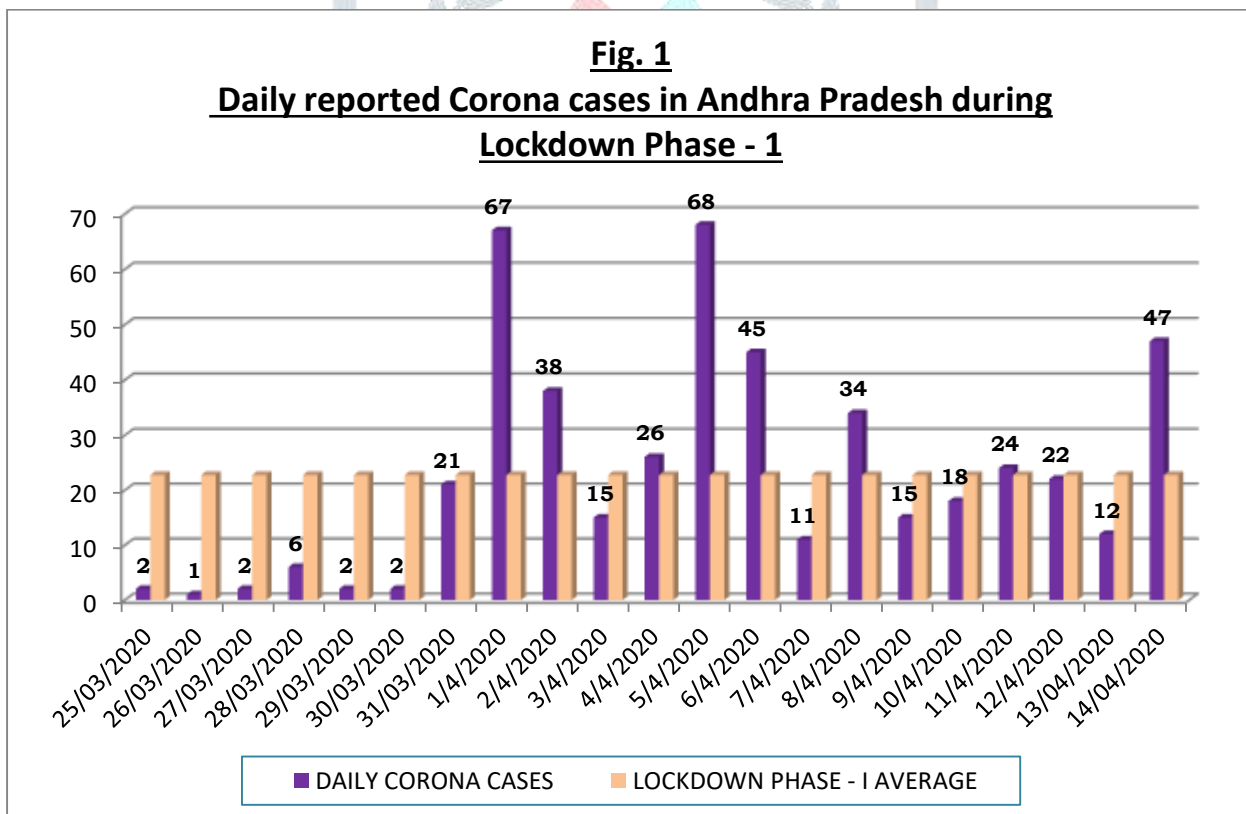
In Andhra Pradesh, the highest number of cases by the end of the lockdown phase-1 have been reported in Guntur (114) followed by Kurnool (93) and Nellore (55) districts (Table -2). The least number of cases are found in Visakapatnam district with 17 cases. More significantly, Srikakulam and Vizianagaram districts have been remained as COVID-19 free districts with 'zero' cases till the end of the lockdown phase-1. The day wise incidence of corona cases during the lockdown phase-1 shows that, maximum number of cases have been noticed on 5<sup>th</sup> April, 2020 with 68 cases followed by 67 cases on 1<sup>st</sup> April and 45 cases on 6<sup>th</sup> April (Table-2). The growth is highly fluctuating with significant ups and downs (Fig.1). The average number of COVID-19 cases registered during the lockdown phase-1, are estimated as 23 per day in the state against 490 cases of the country's average.

**Table -2****Daily reported Corona cases in Andhra Pradesh during Lockdown phase-1**

Date	Anantapur	Chittoor	East Godavari	Guntur	Kadapa	Krishna	Kurnool	Nellore	Prakasham	Srikakulam	Vizianagaram	Visakapatnam	West Godavari	TOTAL cases in Andhra Pradesh
25/03/2020	-	-	-	1	-	1	-	-	-	-	-	-	-	2
26/03/2020	-	-	-	-	-	1	-	-	-	-	-	-	-	1
27/03/2020	-	-	-	1	-	-	-	-	-	-	-	1	-	2
28/03/2020	-	-	-	2	-	1	1	-	2	-	-	-	-	6
29/03/2020	-	-	-	-	-	-	-	-	-	-	-	2-	-	2
30/03/2020	-	-	2-	-	-	-	-	-	-	-	-	-	-	2
31/03/2020	2	1	1	5	-	-	-	-	8	-	-	4	-	21
01/4/2020	-	4	5	11	15	11	-	2	4	-	-	1	14	67
2/4/2020	-	3	-	-	3	8	-	21	2	-	-	-	1	38
3/4/2020	-	-	2	-	1	-	-	8	-	-	-	4	-	15
4/4/2020	1	1	-	10	4	5	3	-	2	-	-	-	-	26
5/4/2020	3	7	-	-	-	-	52	2	4	-	-	-	-	68

20														
6/4/20 20	-	-	-	2	4	1	18	8	1	-	-	5	6	45
7/4/20 20	-	-	-	9	1	-	-	1	-	-	-	-	-	11
8/4/20 20	7	3	-	8	-	6	1	5	3	-	-	0	1	34
9/4/20 20	-	-	1	2	1	-	-	-	11	-	-	-	-	15
10/4/2 020	2	-	5	7	-	-	2	-	2	-	-	-	-	18
11/4/2 020	-	-	-	17	1	-	5	-	1	-	-	-	-	24
12/4/2 020	-	1	-	14	1	-	2	4	-	-	-	-	-	22
13/4/2 020	-	2	-	4	-	1	-	4	-	-	-	-	1	12
14/4/2 020	6	-	-	21	2	8	9	-	1	-	-	-	-	47
<b>TOTAL</b>	<b>21</b>	<b>22</b>	<b>16</b>	<b>114</b>	<b>33</b>	<b>43</b>	<b>93</b>	<b>55</b>	<b>41</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>23</b>	<b>478</b>

Source: Eenadu Telugu Daily & Sakshi Daily News papers.



The death toll due to the corona virus in Andhra Pradesh during lockdown phase-1 has been noticed as 9 in total. These deaths have been occurred in only five districts of the state (Table-3). The first COVID-19 death has been occurred in Vijayawada on 2<sup>nd</sup> April, the second death reported in Anantapur on 4<sup>th</sup> April and the third death again in Vijayawada on 4<sup>th</sup> April night. Among the total 9 deaths took place during the lockdown phase-1, three deaths occur in Krishna district, two deaths each in Guntur and Anantapur districts and one each in Nellore and Kurnool districts. Except one death all the fatality cases are males only with above 50 years of age. Compared to the total deaths of the country (353), the state has only 2.55% of mortality after lockdown phase-1.

Table-3

## Corona deaths in Andhra Pradesh during Lockdown phase-1

S.No	District	Gender	Age	Date of death
1	Krishna	Male	70	2/4/2020
2	Anantapur	Male	64	4/4/2020
3	Krishna	Male	55	4/4/2020
4	Anantapur	Male	70	7/4/2020
5	Guntur	Male	45	7/4/2020
6	Guntur	Male	NA	10/4/2020
7	Krishna	Male	55	12/4/2020
8	Nellore	Male	50	13/4/2020
9	Kurnool	Male	45	13/4/2020

Source: Eenadu Telugu Daily.

### Conclusions:

Before and during the first lockdown period, the cases of COVID-19 are hardly reported in Andhra Pradesh state. Among the initial ten cases reported in the state, except one, all the other 9 cases have the travel history of foreign countries or to other states of India. The other case has been contaminated through their family member who again has the history of foreign visit to Mecca. About 70% of the initial ten cases are the students who are pursuing their higher education in Europe and USA and 20% of them have the religious trips to Mecca and Markaz Mosque, Delhi. The total corona cases noticed in the state during the lockdown phase-1 are 478, of which more number of cases have been found in Guntur district followed by Kurnool district. Srikakulam and Vijayanagaram districts have been remained as COVID free zones till the end of the lockdown phase-1. The average number of COVID-19 cases in Andhra Pradesh during the lockdown phase-1 are estimated as 23 per day. The total deaths occurred due to COVID-19 in the state have been registered as Nine during the study period.

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