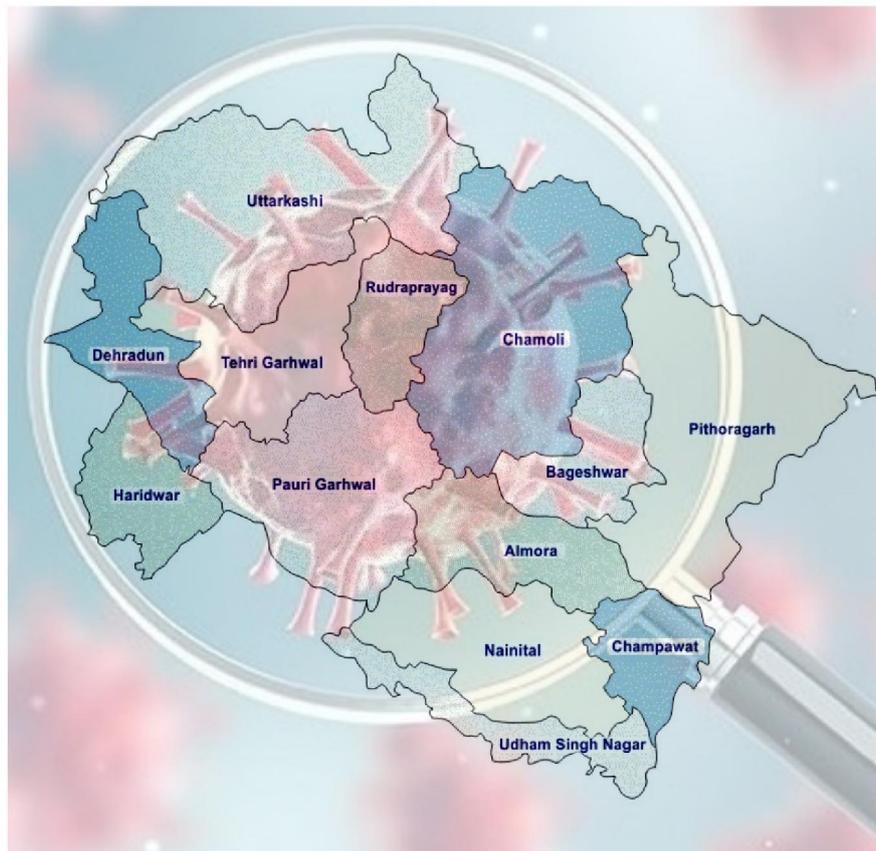


ONE MONTH OF COVID-19 IN UTTARAKHAND (15 March - 13 April 2020)



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Disclaimer: Information relating to COVID-19 is not static and is changing every hour. The Foundation will not be responsible for any errors arising due to it. The data used in this report is taken from Department of Medical, Health and Family Welfare, Government of Uttarakhand, as of 13th April, 2020.

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EXECUTIVE SUMMARY

Uttarakhand declared COVID-19 to be an epidemic on 14th March, 2020. On 15th March, the first positive case was reported in the state. A probationer from FRI, Dehradun, who had recently returned from Spain, tested positive. The number increased slowly and reached seven till 1st April. A sudden spike was witnessed on 2nd April, when the government began testing the people who had attended the Tablighi Jamaat (TJ) in Delhi. The total number of positive cases stood at 35 on 8th April, 2020 and this number has remained stagnant till 13th April. Out of these, seven have been treated and discharged and the current active cases are all linked to the TJ event in Delhi.

Dehradun is the worst affected district, with 18 cases, followed by Nainital with eight cases and Udham Singh Nagar with four cases. Uttarakhand is the 17th worst affected state in the country.

The state received an average of 101 test results each day and has sent an average of 122 samples daily for testing in the past week (7th April to 13th April). Home quarantine has been adopted for people with general suspicion of carrying the virus, while hospital isolation has been adopted for highly suspicious individuals. An average of 44,131 people have been home quarantined in the past week, while an average of 292 people have been in hospital isolation for the last week. The small fraction of people being tested is a concern in Uttarakhand, just like it is in other parts of the country, because cases of asymptomatic, but infectious individuals are being reported from other countries.

A helpline for calls related to COVID-19 was set up by the government. The daily calls increased exponentially in the beginning, but the count has reduced since 30th March.

The report is based on figures published by the Department of Medical, Health and Family Welfare, Government of Uttarakhand in the form of health bulletins [1]. It deals with the one-month period, from 15th March to 13th April (inclusive of both dates), since the first case was detected in Uttarakhand. The statistics dealt with in this report are of immense interest to various stakeholders such as policy-makers, various government agencies, district authorities, academicians and researchers, media as well as all others who need to evaluate, track and analyze the spread of COVID-19 in the state of Uttarakhand.

TOP TEN FINDINGS

(As of 13th April, 2020)

- 1) A total of thirty-five cases have been found positive in Uttarakhand. This count has not increased since 8th April, 2020. Out of them, seven have recovered.
- 2) A total of 1998 samples have been sent for testing, out of which the results for 1700 have come back. 35 have been found positive, while 1665 have been found negative. The percentage of infected people out of total samples tested is 2.06%.
- 3) The Government of Uttarakhand declared COVID-19 an epidemic on 14th March. The state reported its first case on 15th March. A probationer of FRI, Dehradun with foreign travel history was tested positive.
- 4) There were seven positive cases till 1st April. A sudden spike was witnessed on 2nd April when the testing of people who attended the Tablighi Jamaat in Delhi began.
- 5) There are twenty-eight active cases currently. All of these infections can be traced back to the Tablighi Jamaat in Delhi.
- 6) Dehradun is the worst affected district, with 18 positive test results till now, followed by Nainital, with eight positive results and Udham Singh Nagar with four.
- 7) There have been no positive cases in the following seven hill districts of Uttarakhand -Uttarkashi, Tehri-Garhwal, Rudraprayag, Chamoli, Bageshwar, Pithoragarh and Champawat.
- 8) Uttarakhand is the 17th worst affected state in the country.
- 9) In the last one week (7th April to 13th April), an average of 101 test results were received each day, while an average of 122 new samples have been sent daily for testing.
- 10) In order to contain the spread of the infection, an average of 44,131 people have been home quarantined by the Government in the last one week. The number of people in home quarantine shot up drastically after 7th April.

COVID-19 – AN INTRODUCTION

COVID-19 is a respiratory illness that can spread from person to person. It is part of a family of viruses called coronaviruses that infect both animals and people. COVID-19 originated in China at the end of 2019, in the city of Wuhan. There are many types of human coronaviruses, including some that commonly cause mild upper-respiratory tract illnesses. COVID-19 is a new disease, caused by a novel (or new) coronavirus that has not previously been seen in humans. It has led to a serious global infectious disease outbreak, leading the WHO [6] to label it a pandemic and a “public health emergency of international concern.”

COVID-19 can cause symptoms very similar to common cold– fever and a dry cough (the two most common symptoms), fatigue, aches and pains, nasal congestion and in more severe cases, difficulty breathing. As the pandemic spread around the world, other symptoms such as a loss of sense of smell or taste have emerged.

COVID-19 is more contagious than other viruses of the corona family, like SARS or MERS-CoV. More crucially, it can be spread undetected. This is because many people with COVID-19 are either asymptomatic or have very mild symptoms, so they may not be adequately isolating themselves, and spreading the infection.

Those most at risk are the elderly, or people with underlying medical issues, such as heart problems or diabetes. Most people who have passed away due to COVID-19 had a history of other illnesses. However, even younger people can develop severe symptoms that require hospitalization.

The virus has spread across the globe. According to the John Hopkins real-time tracker, as of 11 pm, 13th April, there are 1,850,966 confirmed cases worldwide and 114,269 people have succumbed to the illness [7]. The maximum number of cases have been detected in US, where 557,590 people have been infected; followed by Spain (166,831 infected), Italy (156,363) and France (133,670). The total cases in India are 9,240 and the number of deaths amount to 331. Most countries around the world are now on lockdown to avoid spreading the virus any further.

COVID-19 IN UTTARAKHAND

The Uttarakhand government declared COVID-19 an epidemic on 14th March, 2020 [2]. No cases had been detected in the state till then. The decision was taken at a meeting of the state council of ministers late at night. The government declared that all multiplexes, cinema halls, degree colleges and technical institutes would remain shut down till 31st March, 2020. However, medical colleges were exempted from the order. The government also decided to allocate 50 crores for the creation of intensive care units and isolation wards to battle the epidemic.

This decision derived its authority from the Epidemic Diseases Act 1897, which was invoked by the Central Government on 11th March, 2020. This act vests the state governments with the authority to take special measures and prescribe regulations in the face of a dangerous epidemic.

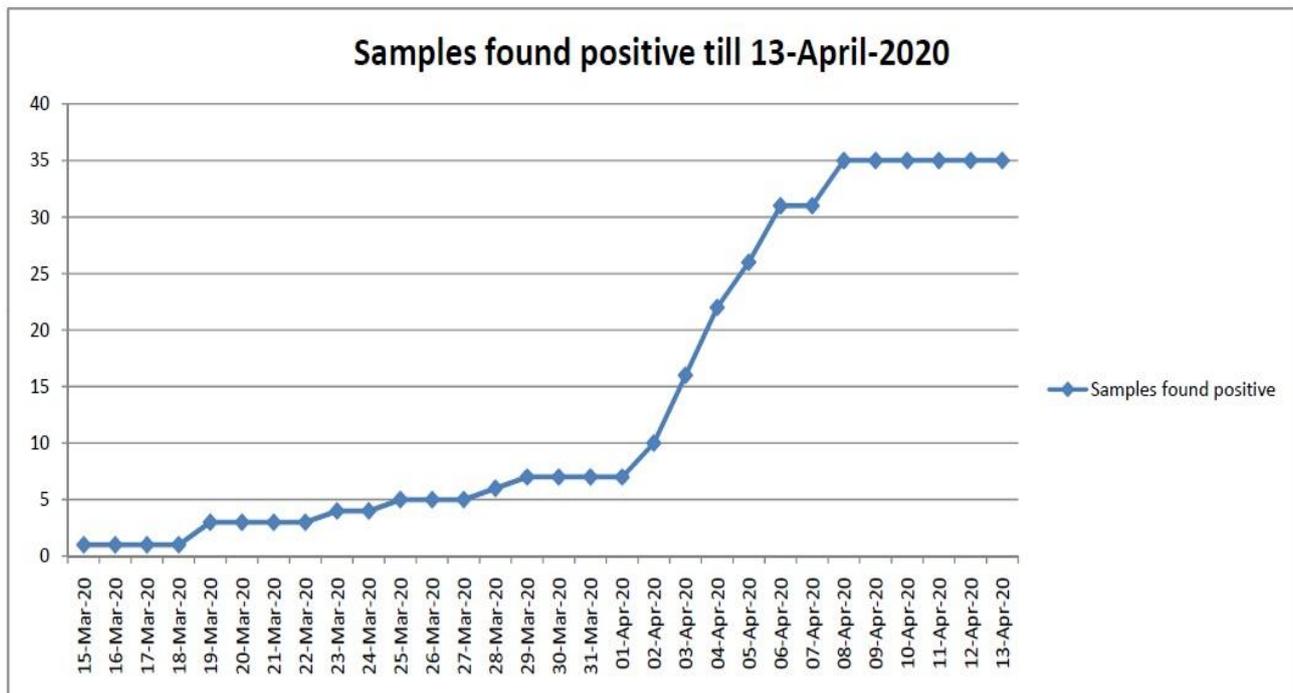
The very next day, on 15th March, Uttarakhand reported its first positive case [3]. A probationer at the Forest Research Institute (FRI), Dehradun, who had returned from Spain on 11th March was diagnosed with COVID-19. He was admitted to the isolation ward of Doon Medical College and Hospital. He was part of a 62-member batch of trainees and probationers from FRI who had returned to India recently from various countries. Consequently, parts of the FRI new hostel where the trainees stayed, was divided into quarantine and isolation zones.

On 19th March, two more FRI trainees who were part of the same batch and had recently returned from Spain were tested positive.

SPREAD OF THE INFECTION

On 23rd March, an American tourist was confirmed to be the fourth Covid-19 case in Uttarakhand [3]. On 25th March, a 25-year-old youth from Kotdwar in Pauri Garhwal district with recent travel history to Spain became the fifth Covid-19 patient. The sixth case was reported on 28th March, when a 21-year-old youth, who had come back from Dubai, tested positive in Dehradun. The next day, a 47-year-old military official posted in the Chakrata area of Dehradun tested positive.

On 1st April, the number of total positive cases was seven. Till then there had been a minimal daily increase in the number of cases. However, from 2nd April to 6th April, the daily increase was consistently between four to six cases. This is clearly seen in the jump on the graph below, on 2nd April and then an almost straight line till 6th April. The number stabilized on 7th April, but on 8th April, there was an increase by four cases again. The count has remained 35 till 13th April.

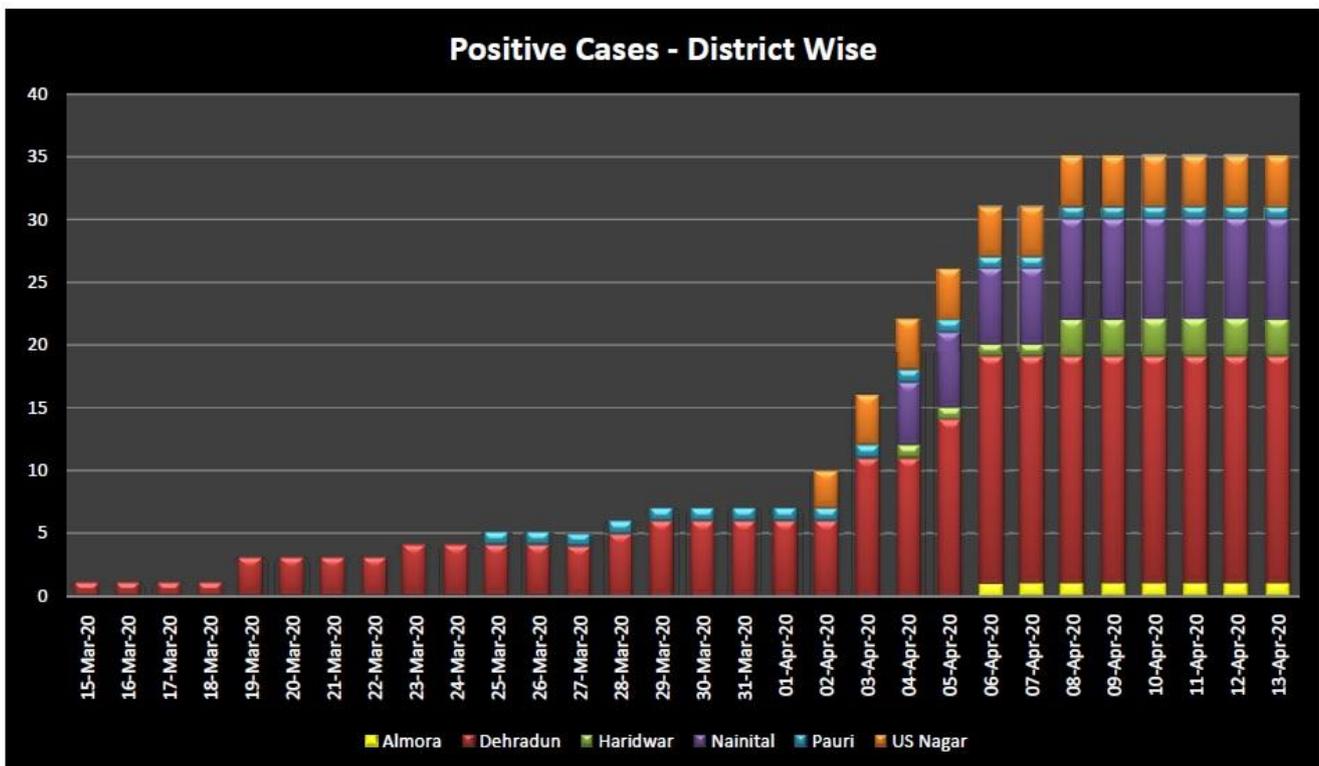


The jump on 2nd April occurred as the state officials began tracing the whereabouts of people who had attended the Tablighi Jamaat event at the Nizamuddin Markaz in Delhi [3]. 80% of people tested positive till date have contracted the infection at the Jamaat in Delhi.

DISTRICT-WISE BREAKDOWN

District-wise, Dehradun has reported the maximum number of positive cases (eighteen cases), followed by Nainital (eight cases), Udham Singh Nagar (four cases), Haridwar (three cases), and Almora and Pauri have one case each. At a total of 35 cases, Uttarakhand is the 17th worst affected among all states and union territories in India.

A district-wise count of the number of positive cases over time is summarized in the graph below-

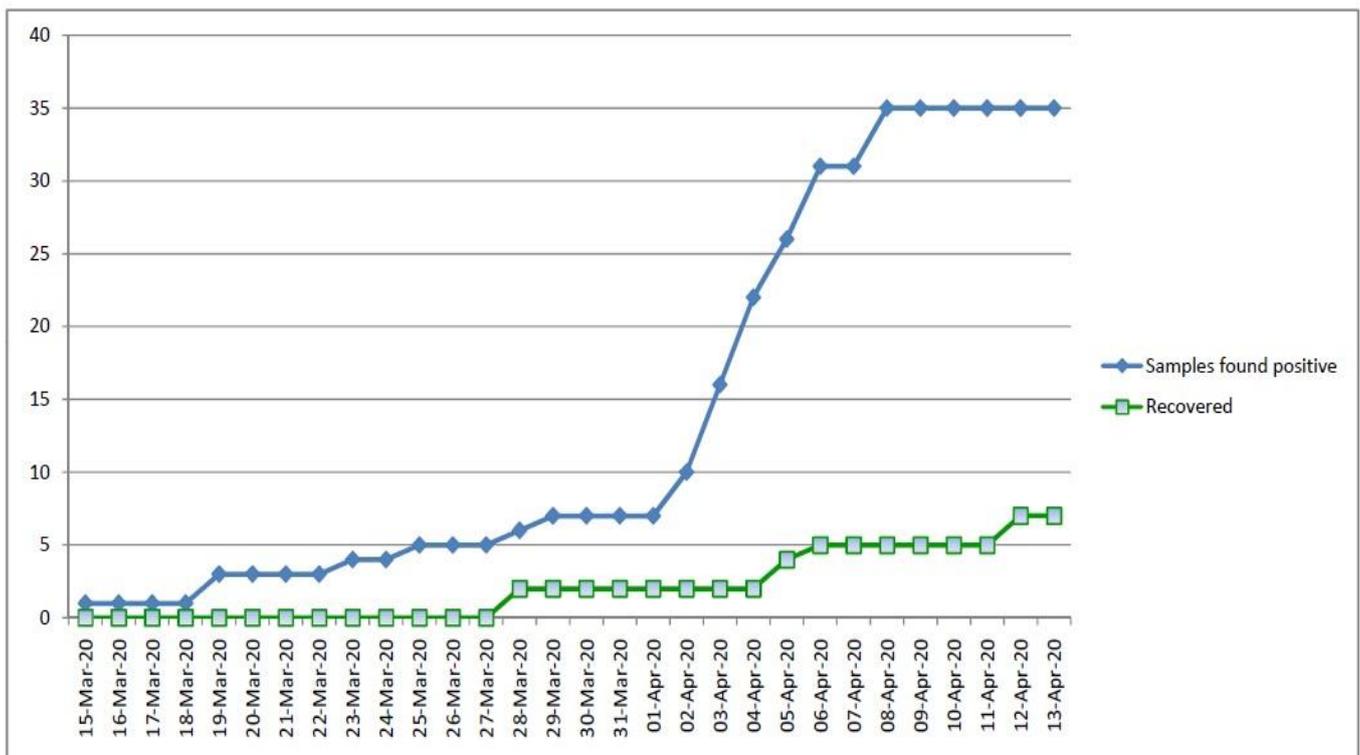


As seen in the graph, the first positive case was discovered in Pauri on 25th March, in Udham Singh Nagar on 2nd April, and in Haridwar and in Nainital on 4th April. Almora reported its only case quite recently, on 6th April.

RECOVERY

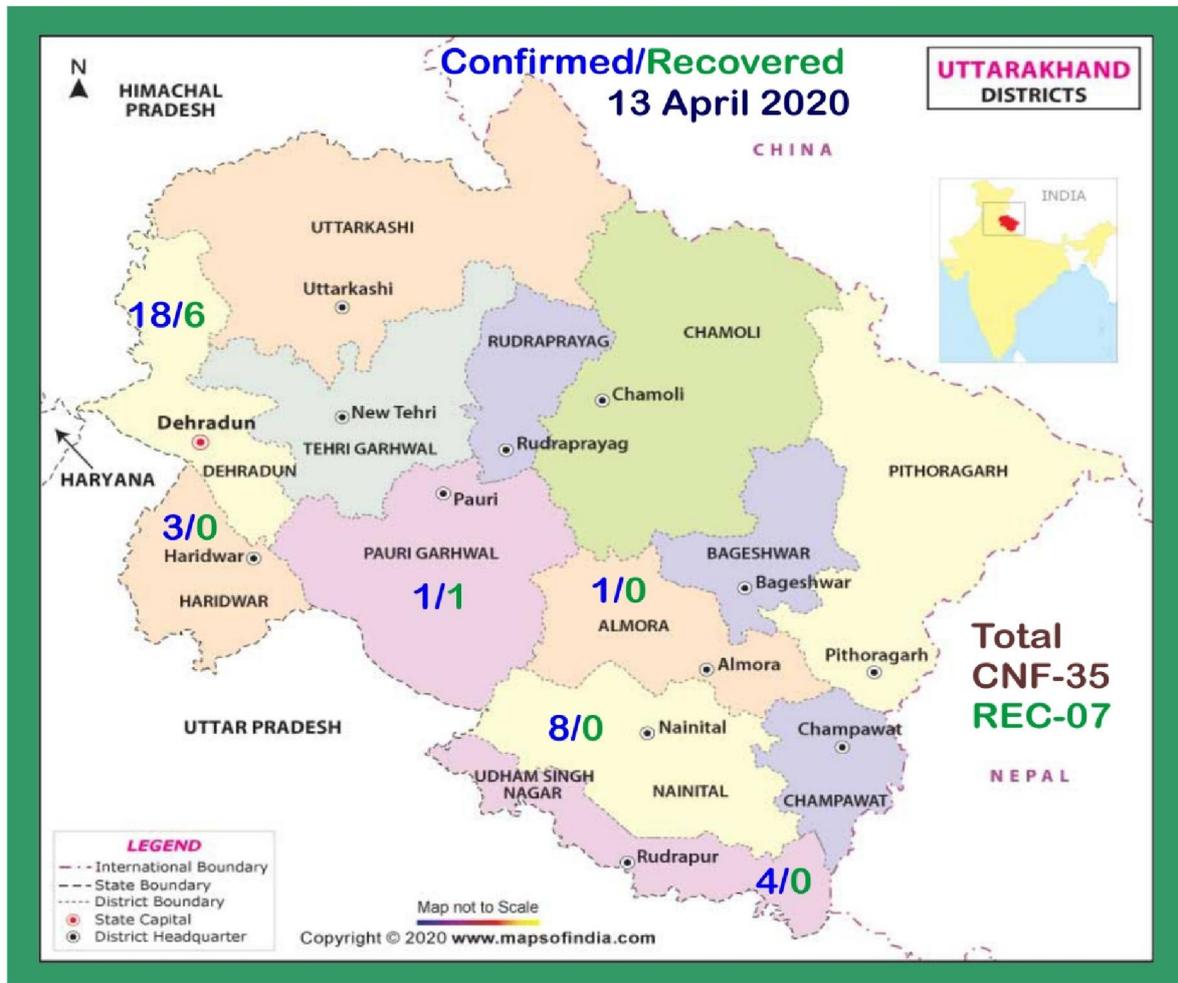
On 28th March, the Government reported that two people have recovered from the virus and have been discharged from the hospital. This included the second case in Uttarakhand, namely a trainee at FRI. It is concluded that the second case took around nine days to recover since he was tested positive.

On 5th April, two more patients were discharged and on 6th April, another one was reported to have recovered. On 12th April, two more patients recovered. Hence a total of seven patients have recovered till now. The graph below shows the timeline of recovered patients and the total positive cases.



The Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19) states that a majority of infected people will recover [8]. The median time from onset to clinical recovery for mild cases is approximately two weeks and is three to six weeks for patients with severe or critical disease.

The seven people who have recovered are the first seven people who contracted the infection. A district-wise summary of active and recovered cases is as follows-

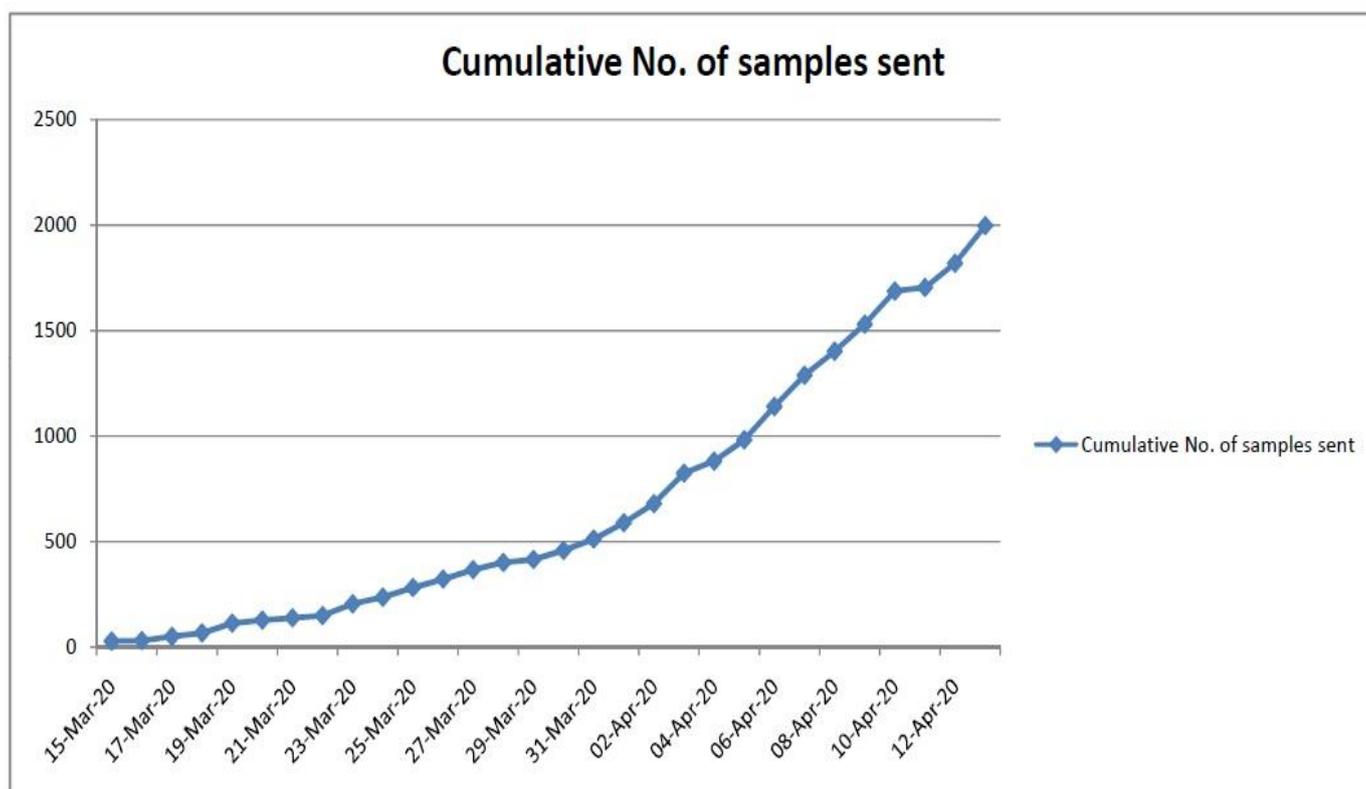


The current 28 active cases in Uttarakhand are all those people whose infection can be traced back to Tablighi Jamaat in Delhi [4]. On 22nd March, authorities shut the doors of the headquarters of Muslim missionary movement, the Tablighi Jamaat, in the narrow lanes of capital New Delhi's Nizamuddin area, after individuals who had attended religious gatherings tested positive for COVID-19. Extensive testing that was done subsequently, revealed many more infected individuals. This caused a sudden spike in the total cases in the country. As of 7th April, around a third of the total cases in India were linked to the Jamaat [5].

QUARANTINE AND TESTING MEASURES

The government has been sending samples for testing daily. The cumulative number of samples being sent has increased almost linearly. In the last week (6th April to 13th April), an average of 122 new samples have been sent every day for testing. This is a large and necessary increase from the first week (15th March to 21st March), when an average of 12 samples were sent daily. While there are numerous hospitals where these samples are being collected, there are only two testing facilities in the state, namely, AIIMS, Rishikesh and Susheela Tiwari Medical College, Haldwani.

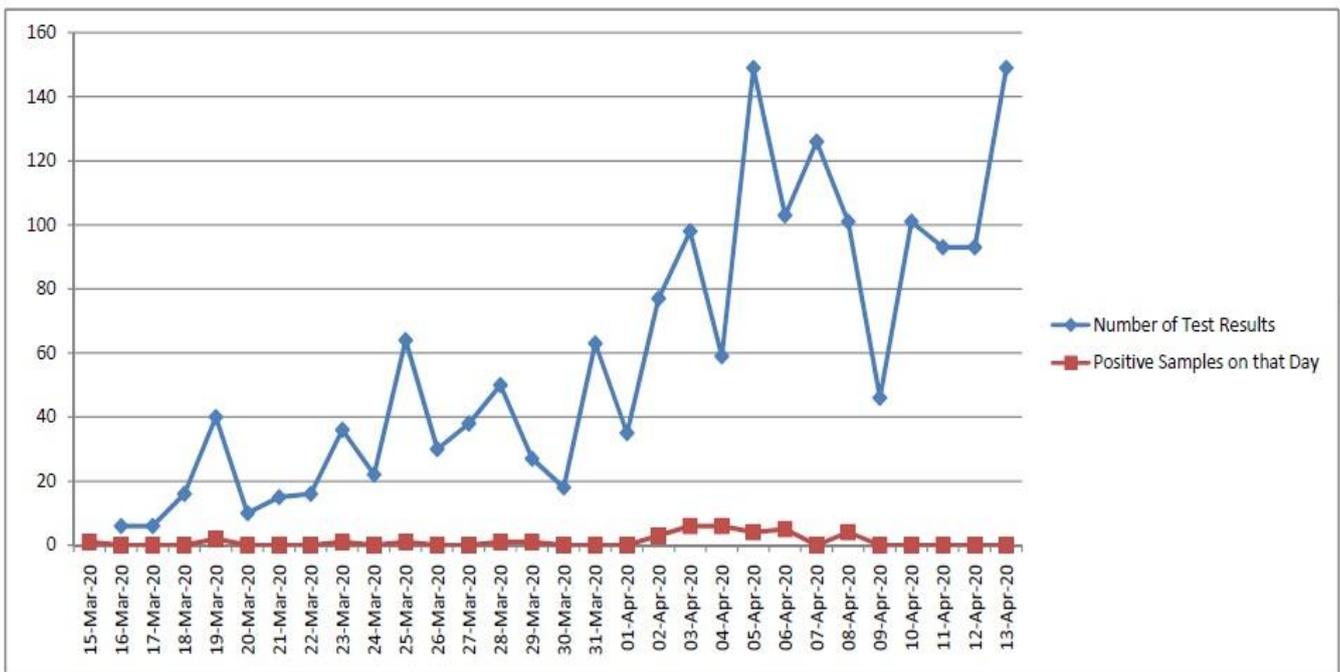
The graph below shows the cumulative number of samples sent over time. The difference in values for consecutive days gives the number of new samples sent on a given day.



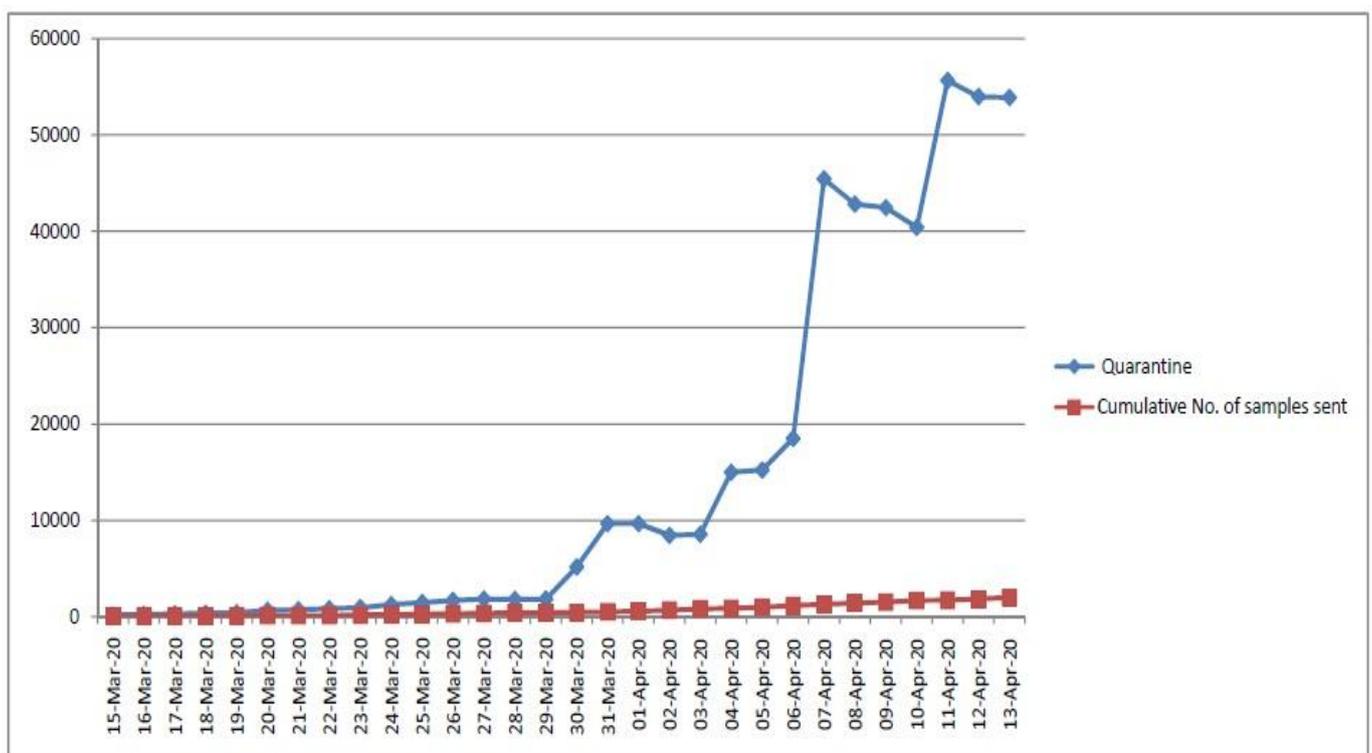
Once samples have been sent for testing, it takes a few days for the results to be declared. Moreover, all samples sent on a particular day may be received in a staggered form, spread over a period of few days. Hence we can study the number of test results received daily as an indicator for testing samples of COVID-19.

Initially, the number of test results received per day was quite low. The average number of test results per day from 16th March till 31st March it was around 28 results. In April this was accelerated. The average significantly improved up to 95 test results per day for the month of April (1st April to 13th April). In the last week (7th April to 13th April) this average increased to 101 test results each day.

In the graph below, the blue line represents the number of test results received each day, while the red line represents the number of positive samples found. The maximum number of positive results for a day was six, which was attained on 3rd and 4th April.



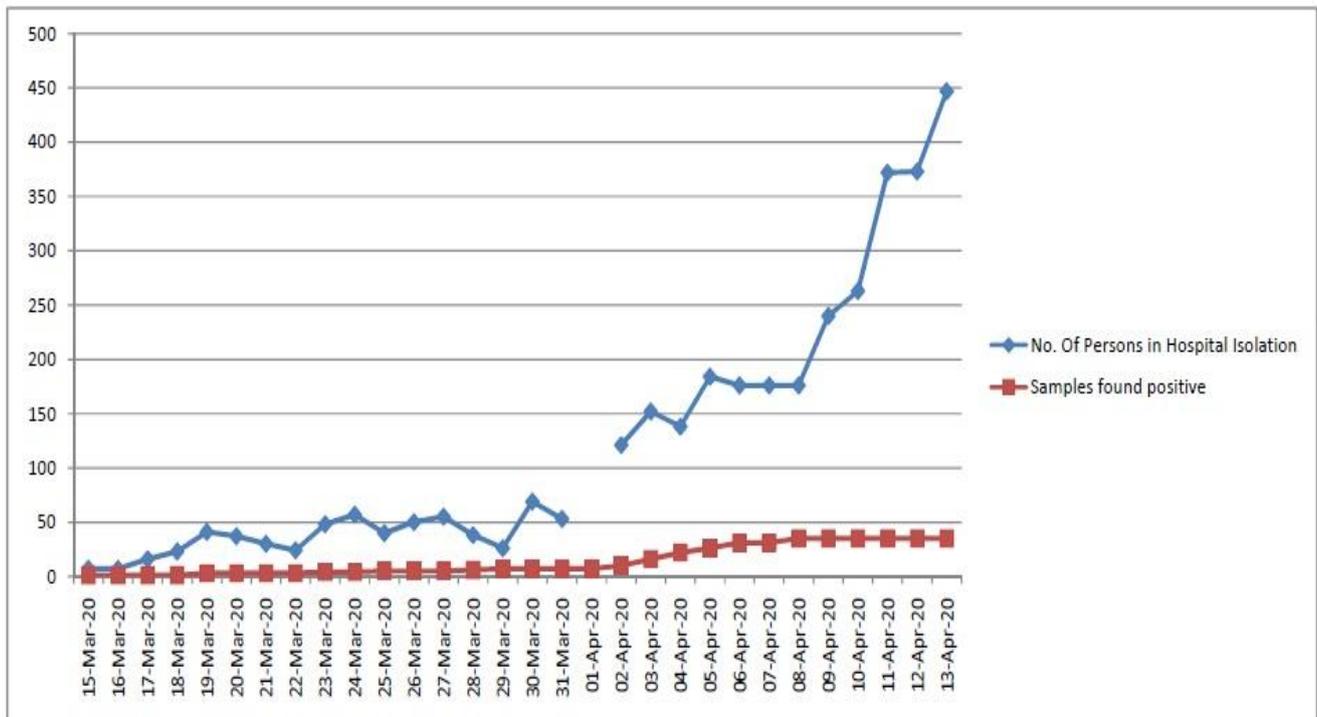
The government has adopted quarantine measures to curb the spread of the infection. This includes home quarantine for people who have had recent travel history to countries affected by COVID-19, people who have come in contact, through social networks, with positive cases or suspected individuals. Ideally, all the people who are quarantined should be tested too to ascertain whether they have been contaminated or not. As of now, this is not generally possible due to limited testing facilities. This discrepancy is evident from the graph below where the blue line represents the number of home-quarantined people and red represents the samples sent for testing.



A recent study of Japanese citizens evacuated from Wuhan estimates the asymptomatic ratio to be 41.6% and 33.3% in the rare case that patients show symptoms after fourteen days [9]. This number is quite alarming. If only symptomatic people are tested, we might miss out on a huge chunk of asymptomatic individuals that are as infectious. Hence it is necessary to increase the number of samples sent for testing and select a random sample of the quarantined population, and not just the symptomatic individuals.

HOSPITAL ISOLATION MEASURES

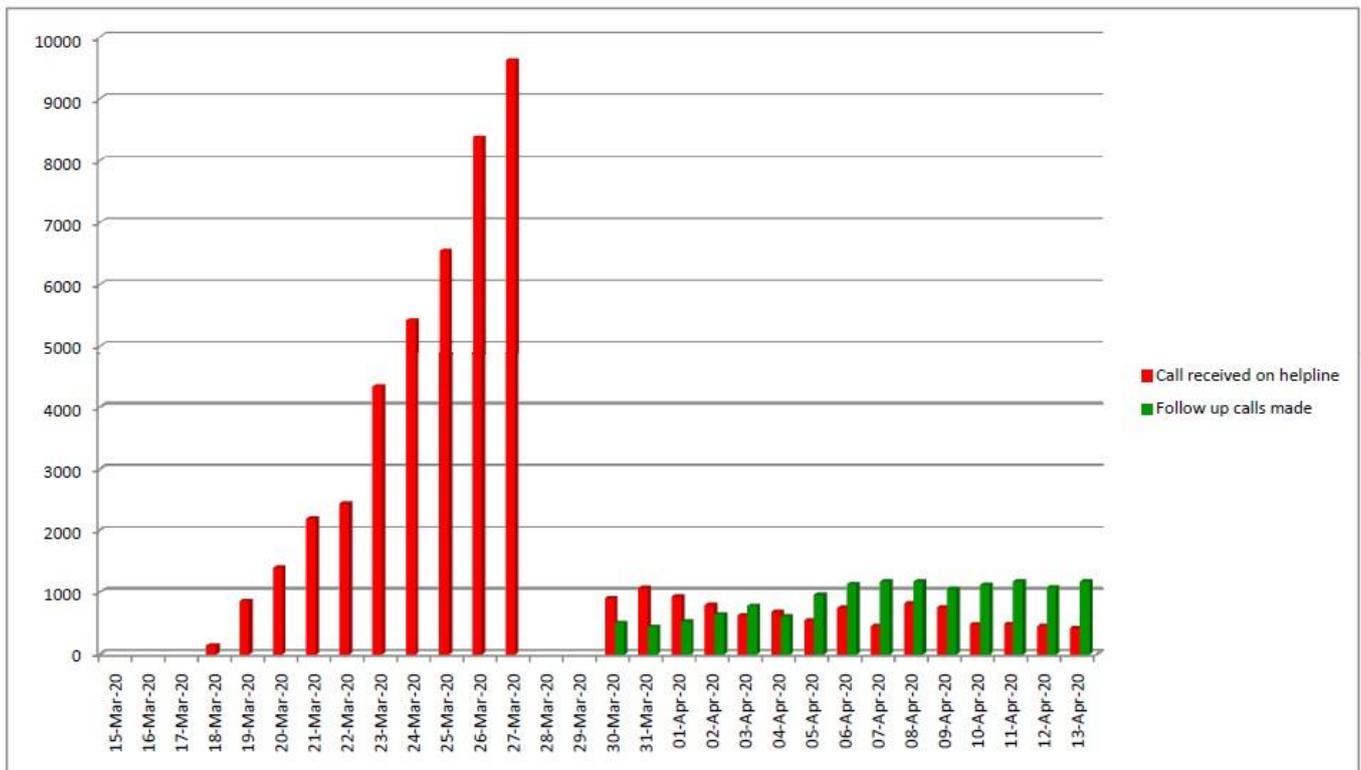
Isolation wards at hospitals are occupied by people confirmed or strongly suspected of COVID-19. The state has increased the number of people under hospital isolation as more and more positive cases have been identified. Especially after 8th April, a sharp spike is noticed in the number of people in Hospital Isolation. This can be seen in the graph below. Blue stands for people in hospital isolation, while red indicates the positive samples. Data for hospital isolation was not released on 1st April. In the last one week, an average of 292 people have been in hospital isolation.



HELPLINE CALLS

The government also set up a helpline for calls related to COVID-19. On 18th March, 140 calls were received, but this number became almost six times the very next day, when 856 calls were received. After that the graph shows a more or less exponential increase in number of calls, attributable to growing media coverage and increased knowledge as well as panic about the disease among the general population. The data was not released on 28th and 29th March. On 30th March, data about the follow-up calls made by the state was also released. As seen in the graph, a majority of the calls and queries were met with follow-up calls by the state. Since 6th April, around 1000 follow-up calls are made daily.

The daily number of calls received can be seen below. Red indicates the calls received on the helpline and green indicates the follow-up calls made by the state.



REFERENCES

1. Department of Medical, Health and Family Welfare, Government of Uttarakhand official website :
<http://health.uk.gov.in/pages/display/140-novel-corona-virus-guidelines-and-advisory->
2. Uttarakhand Government declares COVID-19 to be an epidemic:
<https://economictimes.indiatimes.com/news/politics-and-nation/uttarakhand-govt-declares-coronavirus-an-epidemic-shuts-schools-colleges-and-cinema-halls/articleshow/74635891.cms?from=mdr>
3. First 10 cases in Uttarakhand:
<https://www.hindustantimes.com/india-news/3-tablighi-jamaat-attendees-test-positive-for-covid-19-in-uttarakhand/story-f64u5iG9dmCLn6QZrNJ3xO.html>
4. News reports on the cases in Uttarakhand linked to the Tablighi Jamaat in Delhi:
 - i) <https://www.amarujala.com/dehradun/coronavirus-in-uttarakhand-five-more-jamaati-found-corona-positive-in-dehradun-and-almora-today>
 - ii) <https://www.amarujala.com/dehradun/uttarakhand-coronavirus-latest-news-new-positive-found-in-roorkee-total-32-positive-case-in-state>
5. How the religious gathering at Nizamuddin Markaz area in Delhi affected India:
<https://www.aljazeera.com/news/2020/04/tablighi-jamaat-event-india-worst-coronavirus-vector-200407052957511.html>
6. WHO webpage dedicated to COVID-19:
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
7. The John Hopkins University COVID-19 tracker :
<https://coronavirus.jhu.edu/map.html>
8. The report of the WHO-China Joint Mission:
<https://www.who.int/docs/default-source/coronaviruse/who-china-joint-mission-on-covid-19-final-report.pdf>
9. Study of Japanese citizens evacuated from Wuhan by Nishiura, Kobayashi, Miyama, et al:
<https://www.medrxiv.org/content/10.1101/2020.02.03.20020248v2>