Dobe M, Sahu M. How the Kurnool district in Andhra Pradesh, India, fought Corona (Case study). SEEJPH 2020, posted: 18 November 2020. DOI: 10.4119/seejph-3963

CASE STUDY

How the Kurnool district in Andhra Pradesh, India, fought Corona

Madhumita Dobe[1], Monalisha Sahu[1]

[1] Department of Health Promotion and Education, All India Institute of Hygiene and Public Health, West Bengal, India.

Corresponding author: Madhumita Dobe;
Address: 110, Chittaranjan Avenue, Kolkata - 700073, West Bengal, India;
Telephone: +9830123754; Email:madhumitadobe@gmail.com

Abstract

Background: Kurnool, one of the four districts in the Rayalaseema region of the Indian state of Andhra Pradesh, emerged as a COVID-19 hotspot by mid-April 2020.
Method: The authors compiled the publicly available information on different public health measures in Kurnool district and related them to the progression of COVID-19 from March to May 2020.

Results: Two surges in pandemic progression of COVID-19 were recorded in Kurnool. The initial upsurge in cases was attributed to return of people from other Indian states, along with return of participants of a religious congregation in Delhi, followed by in-migration of workers and truckers from other states and other districts of Andhra Pradesh, particularly from the state of Maharashtra (one of the worst affected states in India) and Chennai (the Koyambedu wholesale market - epicenter of the largest cluster of COVID-19 in Tamil Nadu). In a quick response to surging infections the state government launched operation 'Kurnool Fights Corona' to contain the outbreak. Kurnool had taken a targeted approach to testing, scaled up testing in areas with high case load, and conducted contact tracing for each positive case, along with requisitioning oxygenated beds in the district hospitals to meet the anticipated spurt in the number of positive cases. This combined approach paid rich dividends and from 26th April to May 9th, the growth curve flattened.

Conclusion: Although the in migration of laborers and return of residents from other Indian states and abroad during the COVID-19 pandemic was a complex challenge, the timely actions of testing, tracing and isolation conducted by the district authorities in Kurnool greatly reduced transmission. Although this response assessment is based on a single district, the perspectives have revealed some important lessons regarding risk communication, preparedness and response for pandemics which will facilitate consolidation of the policy and program response to pandemics in future.

Keywords: contact tracing, COVID-19, isolation, Kurnool, preparedness, testing.

Acknowledgement: Dr Sanjoy Sadhukhan (Professor, AIIH&PH) and District Authorities of Kurnool for their support.

Conflicts of interest: None.

Background

Kurnool District is one of the four districts in the Rayalaseema region of the Indian state of Andhra Pradesh (1).

The district is located in the west-central part of the state and is bounded by Mahbubnagar district of Telangana in the north, Raichur district of Karnataka in the northwest, Bellary district of Karnataka in the west, Anantapur district in the south, YSR Kadapa district in the South East and Prakasham district in the east. The district is the second largest by area and seventh largest by population in the state with a total population of 4.53 million as per 2011 census, 72% of which reside in rural areas. The main occupation and source of livelihood for this district is agriculture. More than 70% of the population in the Kurnool district engages in farming. However, as Kurnool is a drought prone area, many of the villagers are forced to migrate not only to other states but also to other districts within the state in search of livelihood. The district has three Revenue divisions viz., Kurnool, Nandyal, Adoni divisions with 54 mandalas and 53 Panchayat Samitis (Blocks) under these revenue divisions (1,2).

Methods

The authors compiled and reviewed all publicly available information (Government database, newspaper articles, reports) and interviewed government officials during field visits on different public health measures taken in Kurnool district to contain the ongoing COVID-19 pandemic in progression from the month of March to May 2020.

Results

Everything seemed in line with the overall progress of the pandemic in India when the nation-wide lockdown was first announced on March 24 to contain COVID-19 outbreak. Over 300 foreign returnees from Italy, UK/Scotland, Saudi Arabia (Mecca) were under surveillance and the district administration collected samples for tests. On March 28 the first case in the district was reported, as a 23-year-old male with a travel history to Rajasthan tested positive for the virus (3). The number of positive cases remained low for the next two weeks. Spikes of cases were reported on April 5 and April 6 with 49 and 18 cases emerging respectively in those two weeks till April 13 (4). But things changed from April 14 when the numbers kept shooting up.

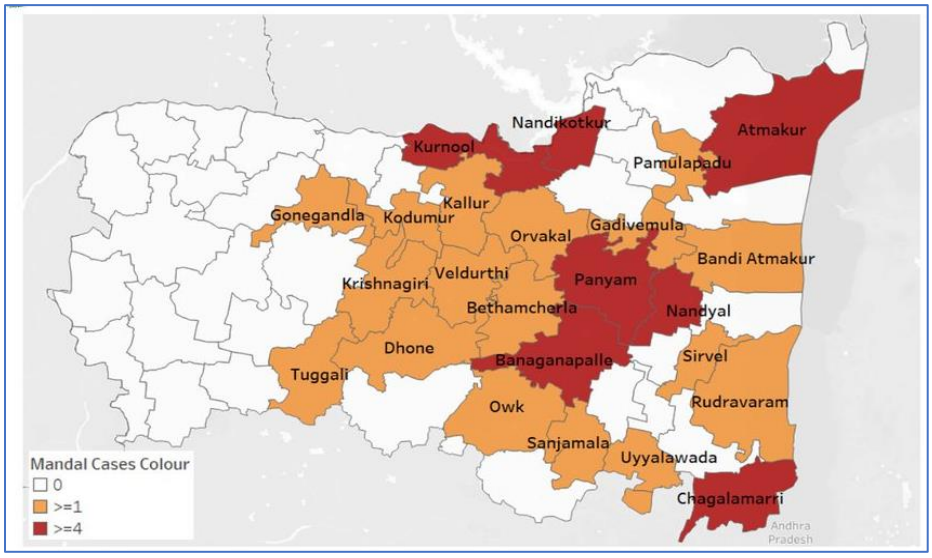
The first Surge of cases: During Mid-March, Tablighi Jamaat (religious congregation) was held at Nizamuddin Markaz in New Delhi. Many people from Kurnool had attended the congregation. The first alarm went off when three persons from Kurnool district, who attended the Tablighi Jamaat at Nizamuddin, tested positive for COVID-19 (5). The number of positive cases in the district went up from one to four with these three persons hailing from Kurnool city, Owk and Banaganapalli. District officials felt that the influx of 357 Tablighi Jamaat (TJ) congregation returnees from New Delhi triggered the sudden spurt. The returnees and their primary and secondary contacts accounted for majority of the cases in the district which had the highest number of Delhi returnees in the state. The challenge was formidable since on one hand, authorities were unable to precisely locate all TJ meeting returnees and on the other, those traced by them did not come forward voluntarily for diagnostic tests and were unwilling to be taken

to isolation or quarantine wards. Since there was no single source which had details of all participants and
their addresses, there was difficulty in identifying those who attended the meet in Delhi.

Due to these issues, there was a delay of 10 days initially in identifying the Tablighi Jamaat returnees and their contacts which led to a spike in the number of cases in the district. Also, problem lay in lack of VRDL (Virus Research and Diagnostic Laboratory) in Kurnool and dependence on laboratories far away from the district headquarters. Sample results were delayed thereby hindering initial contact tracing.

One hundred and ninety-five cases emerged in 13 days, making Kurnool one among the few districts in South India to see a dramatic surge (6). By April 25, the district administration had declared 40 red zones in 20 of a total 54 mandalas and urban areas including Kurnool city with 239 active cases, 9 deaths, and 31 recoveries (4,6). The worst-affected areas were Kurnool city and Nandyal town (Figure 1).

Figure 1. Administrative map of Kurnool District and the COVID-19 affected Mandalas. Data as on 25th April 2020 (2,6)



The district, now accounted for over a quarter of the cases in Andhra Pradesh and figured high on the list of districts with the highest number of COVID cases in South India after Chennai in Tamil Nadu, Hyderabad in Telangana and Kasaragod in Kerala (4). To battle against this, operation "Kurnool Fights Corona (KFC)' was launched (7).

The second surge: With the lockdown imposed, the migrant workers from the district started to return without effective controls. In consequence a fresh upsurge of cases was noted with average daily increase to seven new cases (from 6th to 21st May 2020). Most cases were seen among migrant workers and lorry drivers returning from Maharashtra (one of the worst affected states in

India) and from Koyambedu (Chennai's popular wholesale market, and the epicenter of the largest cluster of COVID-19 in the neighbouring state of Tamil Nadu), along with their primary and secondary contacts. Out of 8,069 workers who returned from other states, 236 were tested positive to Covid-19. Similarly, of another 3,337 workers who returned from Mumbai, 314 tested positive to the virus (3). However, probably only those who had reported or were intercepted during their journey back were tested.

In-migration from other districts: By 4th May another 40,000 migrant workers returned to Kurnool district from other districts in the same state of Andhra Pradesh. Almost all of them were working in chili fields at Guntur and Prakasam districts. Most of these migrant laborers had left for work in January and February.

Containment Measures: The District put well streamlined contact tracing and quarantine measures in place. The state formulated an action plan to bring back about 200,000 of its migrants held up in 13 states with well-planned quarantine measures.

A. Quarantine Facilities for in migrants and returnees: Responding to the upsurge, the existing number of 244 Quarantine Centers were increased to 1 in each village secretariat (one Village Secretariat has been set up for every population of 2,000), readying over 100,000 beds at village secretariats, with nutritious food, hygienic toilets for the returnees (10). Each village secretariat was made suitable to accommodate 10-15 people during quarantine.

Arrangements for Quarantine were as follows:

- Home Quarantine for asymptomatic migrants from within state;
- Community Quarantine for symptomatic migrants from within state at village secretariat level / school buildings;
- Institutional Quarantine at block level-School buildings for migrants from other Low risk states;
- Institutional Quarantine at district level (housing flats) for Migrants from other High risk states e.g. Maharashtra and Chennai (Koyembadu);
- Hotels & Lodges for paid Quarantine facilities for affordable rich persons/ Foreign returnees.

The Health, Medical and Family Welfare department of Andhra Pradesh directed all District collectors to establish quarantine centers at district level with 200 beds and constituency level with 100 beds each. By March 25, all district hospitals in the state were instructed by the Health department of Andhra Pradesh, to setup isolation wards. The state, on 31 March, identified dedicated COVID-19 hospitals- 4 at state and 13 at district level. On 31 March 2020, all district administration in Andhra Pradesh was directed by the state government to prepare shelter with lodging and boarding services for migrant labourers. These shelters were managed by individual 'Nodal Officer', appointed by the District Collector or Municipal Commissioner.
Immediately after their entry into Kurnool, the returnees coming from various high-risk states like Maharashtra-the worst-hit State, were taken in specially-arranged buses to the institutional quarantine centers set up by the administration in Kurnool and Adoni before returning to their respective homes. COVID-

19 tests were done for all the migrants and they were allowed to go home only after 14 days of quarantine as per the protocol. Counselling and other support systems were also being arranged by district authorities in the quarantine centers to help people cope up the stress and anxiety.

Limitations: On the flip side, mandatory quarantine was accompanied by fear, alarm, and panic. This, augmented by media, spread farther and aggravated the risk of being stigmatized. Field workers reported that those returning from quarantine were discriminated in the form of:

- Other people avoiding or rejecting them;
- Verbal abuse; or
- Physical violence.

This led to isolation, depression, anxiety, or public embarrassment for these individuals sometimes leading to challenges in contact tracing as reported by community health workers participating in active surveillance in the communities. Even healthcare workers, sanitary workers and police, who were in the frontline for management of the outbreak, were facing discrimination on account of heightened fear and misinformation about infection. District authorities addressed these issues through busting the myths and sharing accurate information about how the virus spreads and does not spread. They used news media and social media, to speak out against stereotyping groups of people who experience stigma because of COVID-19 and spoke out against negative behaviours and statements.

B. Contact Tracing Activities: Contact tracing teams were put in action, manned by medical doctors and health workers. The data base and line listing was maintained rigorously by the contact tracing team (11). The Line listing of the cases is presented in Table 1.

Table 1. Line listing of the cases among returnees in Kurnool by 19th May 2020

Category	Total No. Of persons	Total positives	Primary contacts traced	Primary contacts positive	Secondary contacts traced	Secondary contacts positive
Foreign Returnees	840	1	2	0	12	0
Delhi Returnees	361	114	1048	35	2786	44
Delhi Returnees-Contacts	3834	79	718	0	1756	1
Koyembedu returnees	473	12	69	0	324	0
Total	5508	206	1837	35	4878	45

After receiving line list of positive cases, the positive cases were contacted through phone calls. They were extended support and were inquired about their contacts. The contacts were listed, identified and classified into primary, secondary and tertiary contacts. The information of the contacts was shared with the Sample Testing Team, Home Isolation Department, Integrated Disease Surveillance Program and Municipal Health Office to eensure they have access to medical care and social services. They are

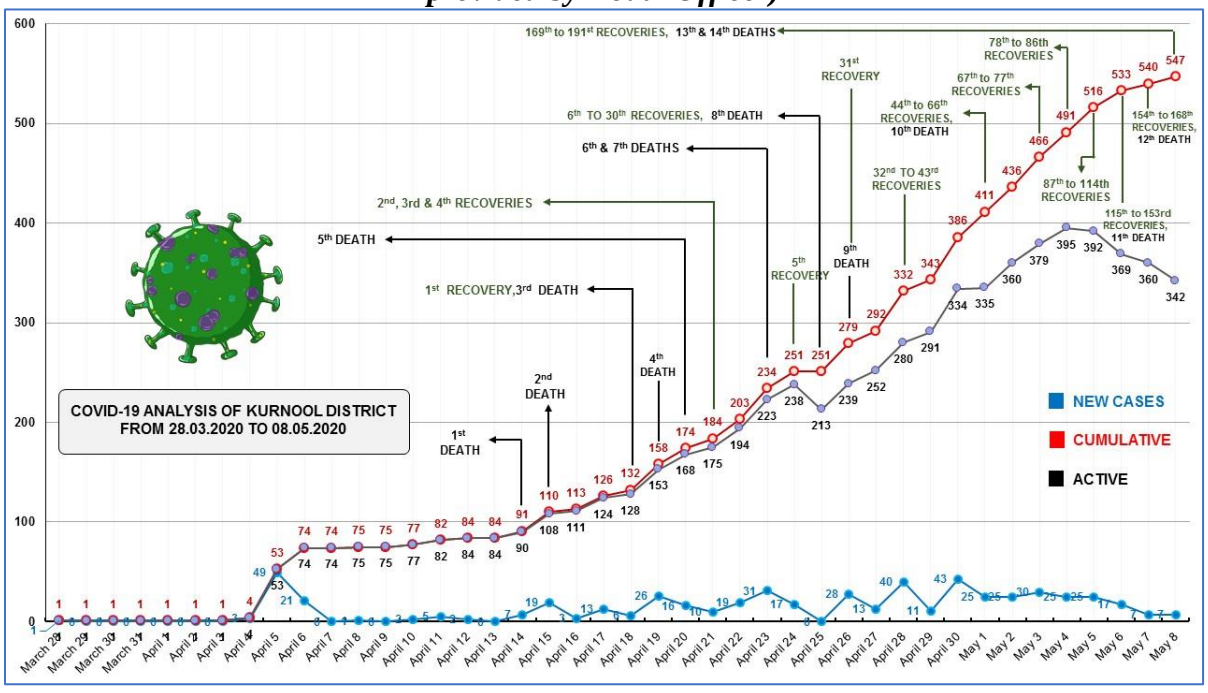
notified about their exposure, offered treatment if required and instructed to limit their contact with other people. Medical officers and Auxiliary Nurse Midwives (ANMs) were informed to acquire further information on the contacts including associated comorbidities. Follow up of the contacts for testing, quarantine and isolation was done by the local teams. Monitoring of actions in collaboration and coordination with Municipal Health Officers, Medical Officers, Auxiliary Nurse Midwives and Ward Volunteers was done on regular basis.

Special Challenge of contact tracing of Koyembadu market returnees:

Koyambadu market complex is one of Asia's largest hubs for perishable goods. Retail vendors come from a minimum radius of 100 km. Kurnool is one of the main sources of Onion for Tamil Nadu, and many sellers had travelled to the market even during lockdown period for business purposes and as vendors and market laborers including load men returning from Koyembadu began to test positive, tracing and testing all index cases was aggressively undertaken, what marked the beginning of a challenging process was contact tracing. The cluster was different owing to the massive crowds involved (8,9). In a normal situation, a person who tests positive for COVID-19 will have 20 to 30 contacts but this was not the case with the Koyambedu cluster where some who tested positive had roughly 200 to 250 contacts.

This combined approach paid rich dividends and from 26th April to May 9th, the number of new cases gradually declined with a Doubling Rate of 25 (Figure 2).

Figure 2. Graph representing temporal variation of new cases, cumulative cases and active cases from Kurnool District till May 5th 2020 *(Source: District data provided by Nodal Officer)*



Conclusion

Although the in-migration of laborers during the COVID-19 pandemic was a complex challenge, the timely actions conducted by the district authorities in Kurnool greatly reduced transmission. Hundreds of migrants and those who had close contact with the positives among them, were placed in quarantine centers run by the government. Hot spots with high case load were locked down immediately, and the government communicated frequently with citizens to keep them informed and involved in the public health response.

Also, in a quick response to surging infections the state government launched operation 'Kurnool Fights Corona' to contain the outbreak. In summary Kurnool had taken a targeted approach to testing, scaled up testing in areas with high case load, and conducted contact tracing for each positive case, along with requisitioning oxygenated beds in the district hospitals to meet the anticipated spurt in the number of positive cases. This combined approach paid rich dividends and from 26th April to May 9th, the growth curve flattened.

Although this response assessment is based on a single district, the problems faced by Kurnool have revealed some important lessons regarding risk communication, preparedness and response for pandemics which will facilitate consolidation of the policy and program response to pandemics in future.

References

1. Government of Andhra Pradesh. Kurnool District. Available from: https://kurnool.ap.gov.in/ (accessed: July 17, 2020).
2. Government of Andhra Pradesh. Andhra Pradesh Space Applications Centre. Available from: https://apsac.ap.gov.in/ (accessed: July 17, 2020).
3. The Times of India. Kurnool reports first corona positive case. Available from: https://timesofindia.indiatimes.com/city/vijayawada/kurnool-reports-first-corona-positive-case/articleshow/74867409.cms (accessed: July 17, 2020).
4. The New Indian Express. Battle of Kurnool: With over 279 coronavirus cases in one month govt steps up fight to stop spread. Available from: https://www.newindianexpress.com/states/andhra-pradesh/2020/apr/27/battle-kurnool-with-over-279-coronavirus-cases-in-one-month-govt-steps-up-fight-to-stop-spread-2135834.html (accessed: July 17, 2020).
5. The Hindu.70 Nizamuddin's Tablighi Jamaat returnees identified in Kurnool district. Available from: https://www.thehindu.com/news/national/andhra-pradesh/70-nizamuddin-returnees-sent-to-quarantine/article31215260.ece (accessed: July 17, 2020).
6. Arogya Andhra on Twitter: "Kurnool district has the highest number of #COVID19 positive cases in the state." Available from: https://twitter.com/ArogyaAndhra/status/1254039414956625920 (accessed: July 17, 2020).
7. The Times of India. Operation 'Kurnool Fights Corona' launched; 14 new cases in district, 24 patients 24 patients discharged. Available from: http://timesofindia.indi-

atimes.com/articleshow/75383053.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst (accessed: July 17, 2020).

8. The Hindu. What turned Koyambedu, Chennai's popular wholesale complex market, into a COVID-19 hotspot? Available from: https://www.thehindu.com/news/national/tamil-nadu/coronavirus-what-turned-koyambedu-chennais-popular-wholesale-complex-market-into-a-covid-19-hotspot/article31546292.ece (accessed: July 17, 2020).
9. The Hindu. Koyambedu market impacts four districts in Andhra Pradesh. Available from: https://www.thehindu.com/news/national/andhra-pradesh/koyambedu-market-impacts-four-districts-in-andhra-pradesh/article31569117.ece (accessed: July 17, 2020).
10. Deccan Hearald. Andhra uses village secretariat buildings to ready 1 lakh quarantine beds for people returning to state. Available from: https://www.deccanherald.com/national/andhra-uses-village-secretariat-buildings-to-ready-1-lakh-quarantine-beds-for-people-returning-to-state-833076.html (accessed: July 17, 2020).
11. Government of Andhra Pradesh. Department of Health & Family Welfare. Available from: ArogyaAndhra (@ArogyaAndhra) | Twitter; twitter.com › arogyaandhra.