Review Article

Combati response to COVID-19 pandemic in Odisha: future public health challenges and measures

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ABSTRACT

COVID-19 is considered as a public health emergency of International concern (PHEIC) and thus a pandemic with an explosive increase rate of infection worldwide. The mobilization of resources to prevent and treat COVID-19 infections is unparalleled in the history of public health. Different measures have been adopted by the different states to fight against COVID-19. The preparedness level to control this pandemic has been rapid and unprecedented and made possible by the coordination between center and state govt. To minimize the infectivity and controlling the COVID-19 disaster, Odisha was the first state to announce lockdown 2.0, following strict quarantine guidelines, community monitoring for home quarantine people, and extending care by establishing COVID hospital. This paper is based on a review of the preparedness strategy adopted in Odisha state govt. for controlling COVID-19. The major objective was to review the recent preparedness level in the state of Odisha for maintaining a very low mortality rate and could be used as a model to deal with future challenges for effectively handling COVID-19. We searched literature related to COVID-19 published between December 20, 2019, and August 31, 2020, in the website archive of the Ministry of health and family welfare Government of India and Odisha, journal repositories such as Google Scholar, Pub Med, Science Direct, etc. We identified 35 studies that met the search criteria for inclusion in the review. The review would be useful for adopting a community preparedness and complication readiness model for effective management of COVID-19 cases.

Keywords: COVID-19, Pandemic, Odisha, Combit response, Preparedness, Public health

INTRODUCTION

A cluster of idiopathic pneumonia with unknown etiology appeared in Wuhan City, Hubei Province of China on December 31, 2019.1 The Seafood Wholesale Market in Huanan was identified as the origin of the infection. Subsequent virus isolation from human patients and molecular analysis showed that the pathogen was a novel coronavirus labeled as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), later also called coronavirus disease 2019 (COVID-19).2,3 The World Health Organization (WHO) declared COVID-19 a public health emergency of International concern (PHEIC) and thus a pandemic on January 30, 2020, with the explosive increase of confirmed cases.4

As of August 31, India has reported 36,87,940 confirmed cases, 7,84,541 active Cases 28,37,377 recovered, and 65,433 deaths from COVID-19 in 28 states and eight union territories since its first case on January 30.5 Still, India’s population of 1.3 billion across diverse states, health inequalities, widening economic and social disparities, and distinct cultural values present unique challenges.

When the COVID-19 trajectory witnessed wide variations across states, Odisha, despite several health system challenges such as low public spending, inadequate health workforce, and difficulties in service delivery, showed extraordinary efforts in managing the crisis. A state with
a low resource base, a higher percentage of its population (one-third) staying below the official declared poverty line, and 23% of scheduled tribe population who face multiple deprivations introduced pre-emptive measures to control the infection.

Though the number of confirmed cases has been rising in recent days, Odisha’s case fatality rate is quite low compared with the national average, and the recovery rate is also higher than the national average. Odisha's success in containing the spread of infection to a reasonable level can be attributed to the implementation of an array of measures. The state draws its inferences from past experiences of successfully managing severe calamities, cyclones, and floods by minimizing human losses. Though managing COVID-19 is enormously different from cyclone and flood, earlier experiences facilitated the state machinery to combat the pandemic in a better way.

Here, we review the recent preparedness level in the state of Odisha for maintaining a very low mortality rate and could be used as a model to deal with future challenges for effectively handling COVID-19 as of very limited facts about the current epidemiology of COVID-19 is in the picture.

**METHODS**

Search strategy and selection criteria: We conducted a thorough search of works of literature published between Dec 20, 2019, and August 31, 2020, in website archives such as the Ministry of Health and Family Welfare Government of India, Department of health and family welfare Government of Odisha, journal repositories such as google scholar, PubMed, science direct and some from online and open access journals. Search strings and MESH word are used to identify the term "COVID-19", "Coronavirus", "SARS","epidemiology of COVID-19 in India","epidemiology of COVID-19 in Odisha", "readiness of COVID-19 in Odisha", "management of COVID-19 in Odisha".

We selected relevant descriptive or analytical studies reflecting current information regarding novel coronavirus or COVID-19 were initially added for the selection. After the identification of potentially relevant studies, each of these studies was reviewed in detail by all relevant authors. Studies providing complete or partial information on the epidemiology characteristics, disease severity, testing rate, preparedness level, patients access to health care, vaccine trial for COVID-19 patients access to health care and treatment, or its consequences were included. Studies were excluded if they reported only the outcome without any presenting sociodemographic characteristics or information about access to emergency health care. We also reviewed the references of included articles to guarantee the comprehensiveness and accuracy of our research.

**Study selection and quality assessment**

Based on the previous search strategy, 432 studies were searched from the online database. After deleting duplicate records, a total of 386 records were retained. Then, 288 articles were excluded by the titles and abstracts, and of the 98 remaining, 68 articles were deleted for various reasons. The last 20 articles and 10 web articles were included in the review. All studies were considered to have a low risk of bias for selection.

**Epidemiology of the COVID-19 pandemic in Odisha**

Odisha also has not escaped from this COVID-19 disaster at present and as of August 31, Odisha has reported 1,03,536 confirmed cases, 25,705 active cases, 545 deaths from COVID-19, and 77,286 recovered among all districts, (Figure 2) Ganjam is having the highest confirm cases. Interestingly less death reported compared to other state morality as per the affected cases, Odisha has maintained a low mortality rate as compared to other states (Figure 3).6

![Figure 1: COVID-19 case fatality rate of Indian states.](image)

**ODISHA COMBIT RESPONSE**

**Emergency COVID-19 response: Odisha accepted and planned the Implementation component to slow and limit as much as possible the spread of COVID-19 in Odisha**

Odisha was one of the first states to go into “combat mode” against the disease, before reporting any case of COVID-19 in the state, this was around the time when...
India had recorded just 80 positive cases—most of them in Kerala. On March 13, chief minister Mr. Patnaik declared it a 'disaster' and ordered the immediate closure of educational institutions, cinema halls, public swimming pools, and gyms, even though the state had not reported a single case of infection then. Government officials were sufficiently empowered to enforce the restrictions by invoking the provisions of the epidemic diseases Act, 1897, and sections of the code of criminal procedure (CrPC).10

It is the first state that blended global thinking with local innovative approaches in addressing the pandemic. The state became one of the first in the country to design an 'action plan' for dealing with the ongoing COVID-19 pandemic since early March. A dedicated COVID-19 helpline number was set up well before the nationwide lockdown was announced. It is noteworthy that more than 70,000 calls had been received on the COVID-19 helpline number 104 by March 22, a day before the nationwide lockdown was announced. Besides, Odisha launched a dedicated website, covid19.odisha.gov.in, on March 3 well before the national portal. It was made mandatory for all visitors of the state to register on the portal. An incentive of rs. 15,000 and rs. 2000/- each was also declared for all those adhering to the government's appeal of mandatory 14-day quarantine upon return from abroad and returning Odisha migrants from other states of India, whereas failing to comply with the order will be considered a crime.11,12

Strengthen state public health systems and multi-sector collaboration platforms for one health

When the COVID-19 trajectory witnessed wide variations across states, Odisha, despite several health system challenges—low public spending, inadequate health workforce, and difficulties in service delivery—showed extraordinary efforts in managing the crisis. A state with a low resource base, a higher percentage of its population (one-third) staying below the official declared poverty line, and 23% of Scheduled Tribe population who face multiple deprivations introduced pre-emptive measures to control the infection.13

Prior to this first case, the government has already started taking necessary measures to control the pandemic and creation of treatment facilities in the state. Odisha government signed tripartite to set up two large COVID Hospitals in the country with 1000 beds with PPP operation mode, 10 further, in partnership with public sector undertakings and private organizations currently to 145789 beds as of 10th August 2020. Odisha has enhanced the disease detection capacities in the state from having one testing Institute and performing 58 test per week (16th March to 22nd March) to 3,94,203 test per week (19th August to 25th August), further increased to 31 testing Institute (RT-PCR- 17 Nos. of testing institute, true NAT testing -13 Nos. of testing Institute, CB NAAT- 01 Nos. of testing Institute).14 Govt. has also taken a move by issuing guidelines for all private hospitals, nursing homes, and laboratories, intending them to start testing using the rapid antigen and RT PCR method, which is likely to ease the burden on present testing facilities.

For engaging grassroots organizations to fight the pandemic, another path-breaking decision was to delegate the power of district collectors to the sarpanchas (village heads) under the disaster management act, 2005, and the epidemic diseases act 1897. This is pertinent for effective management of COVID cases by the local authority when thousands of migrant’s laborers, stranded in different parts of the country, have arrived and are more are expected to arrive shortly.

As per the state government data, 14,795 medical centers have been set up in 6,798 gram panchayats with a total 6, 28,686 beds. The state government bears expenses for their stay during the quarantine period in these centers. Additionally, a financial incentive of Rs. 2,000 for returning through government procedures and completing the quarantine period is assured. Any person violating the above will face stringent action under the Disaster Management Act 2005. The decision by the Odisha government to involve the community is praiseworthy for the effective management of COVID-19.

Current efforts to combat COVID-19 can be explicated in view of Odisha's blueprint for achieving universal health coverage (UHC), which was laid down by announcing biju swasthya kalayan yojana (BSKY) in 2018. The scheme aims at providing free healthcare to all citizens of Odisha, irrespective of income, caste, and social status at the public health institutions.

Additionally, 71 lakh economically vulnerable households can avail of healthcare services from the impaneled private hospitals with financial coverage up to Rs 5 lakh per family and Rs 10 lakh to women members. This intends to reduce out of pocket expenditure (OOP), which constitutes 72% of total health expenditure in Odisha. As a significant proportion of OOP occurs due to medicine and diagnostic services, the state government has also introduced NIRMAYA—distribution of free medicine- and NIDAN- free diagnostic services.

Moreover, the state has been taking prompt action to enhance the healthcare workforce which stands at 9.6 per 10,000 populations against the World Health Organisation's prescribed norm of 23. These efforts are significant and will complement other efforts introduced, to improve the performance of the health system in the state.

Though Odisha's strategies to fight COVID-19 are well designed drawing inferences from the philosophy of UHC, there are several implementation challenges that the health system is facing and need to be set right. There
are short- and medium-term measures that need to be in place.

Currently, the problem has compounded in four to five districts due to the exodus of migrant workers. This challenge was well managed by a multi-sectoral approach and better coordination among the line departments at the district and below. The government of Odisha panchayati raj and drinking water department has geared up in arranging temporary medical camps/centres to receive migrants for quarantine, as per the currently available data COVID-19 bed status in Odisha (Table 1).15,16

Table 1: Number and capacity of COVID 19 beds in Odisha as on 30 October 2020.

<table>
<thead>
<tr>
<th>Type of institutions</th>
<th>Number of institutions</th>
<th>Total bed</th>
<th>Oxygen supported beds</th>
<th>ICU bed</th>
<th>Number of ventilators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedicated COVID hospitals</td>
<td>26</td>
<td>4470</td>
<td>2786</td>
<td>332</td>
<td>221</td>
</tr>
<tr>
<td>Dedicated COVID health centre</td>
<td>7</td>
<td>926</td>
<td>422</td>
<td></td>
<td></td>
</tr>
<tr>
<td>COVID care homes in gram panchayats</td>
<td>6798</td>
<td>67,888</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary medical camps</td>
<td>1502</td>
<td>72,505</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Government of Odisha under the edges of Government of India have issued a handful of COVID-19 preventative important guidelines and advisory for their fellow citizens along with updating health care institution with master circulars.15

Community strengthening includes comprehensive communication strategies for COVID-19

Soon after declaring the pandemic a state disaster, a pandemic plan was placed in line with the state disaster management plan. Odisha state disaster management authority (OSDMA) was appointed as the nodal officer for COVID-19 and ensured exclusive COVID-19 hospital in each district was set up.

In delegating collectors’ power (within their jurisdiction under the provision of Disaster Management Act 2005, the epidemic disaster act 1897, and Odisha COVID-19 Regulation) to Sarapanches for containing the virus spread in their gram panchayats.10

Amidst hate-mongering against health professionals and certain communities; the state ensured communal harmony through widespread education on facts about virus transmission and containment strategies through social media. To disseminate appropriate health advisory and verified information among the public, WhatsApp Chabot was launched; department of health and family welfare in collaboration with the telecom service providers channelized S.M.S (short message service) once daily devoid of any charge to all the beneficiary in native language and location information of mobile users relating to the confirmed or suspected cases of COVID-19 were sought. Stringent rules were enforced viz. spitting in public places as an offense, harassment on COVID warriors as an act against the state, social distancing in public premises. In one of its kind; testing kits and necessary supplies were airlifted from Mumbai, fever clinics were earmarked, special cell for women experiencing harassment during the lockdown, reaching out to the elderly, doorstep delivery of school textbook, deployed drones to sanitize roads, blood donation on wheels.11

On March 6, State made it mandatory to wear a mask for all those venturing out of the house, and the mask was made available in every nook and corner through empowering women self-help groups “ORMAS”.17 Keeping in mind of the large influx of intra and interstate migrant workers (approx 1.5 million) and indigents; helpline and Whatsapp numbers were earmarked, installed roadside Jalachhatra and mobile health care units, food and shelter facilities were reinforced, installed hand washing facility at dismemberment or entry point and an immediate relief measure for them for 15 days were enforced. In response to the surge in cases; 40 percent of the state was locked down starting March 22 which had the most reported cases and 3 municipal areas were shut down from 3/4/20 8 pm to 5/4/20 8 pm to speedup contact tracing, isolation, and quarantine measures.

Under the pradhan mantri garib kalyan package, an insurance scheme of 50 lakhs for health workers combating COVID-19 was enforced. In addition, any health worker succumbing to illness would be declared a martyr, with a state funeral and their salary would be provided to their kin till superannuation.

It was the first state to announce Lockdown 2.0, telemedicine helpline, legal action against those violating quarantine guidelines, community monitoring of people in home quarantine, and penal action against miscreants spreading rumors through social media. Temporary medical camps are being constituted to accommodate and mandatorily quarantine influx of people coming from outside of the state for a fortnight and would remunerate Rs. 2000 on their successful quarantine Rs. 129,02,63,000/- has been paid so far.18,19

Odisha Government has launched a portal https://covid19.odisha.gov.in for registration of migrants returning to Odisha. gram panchayat nodal officers of
6798 gram panchayats (GPs) in the State and all BDOs have been trained to facilitate the registration procedure. So far 4.86 lakh persons have registered on this Portal.

Odisha rural development and marketing society (ORMAS), under panchayati raj and drinking water Department, are engaged in the preparation of masks through self-help groups (SHGs) and its distribution. One Sale Counter has been opened near SIRD, Bhubaneswar. One mobile van and 20 medicine stores are also facilitating the sale. 208 SHGs/PGs in the State have prepared more than 19.52 lakh masks and made it available for use of the people.

PUBLIC HEALTH CHALLENGES

Rates of testing have been increased satisfyingly on the initial 1st week (16th March to 24th March) it was only 58 per week it is as on increased to 3,94,203 tests per week on 25th August but still is low when compared to a total population of the states. Capacity issues, the absence of a political will, and operational feasibility have been to blame. However, efforts to reverse the situation are underway as hundreds of thousands of testing kits have become available, and more testing companies and laboratories have been approved in India. Testing needs to be expanded exponentially as well as strategically as a tool to provide epidemiological evidence. Odisha's response has also been constrained by a shortage of personal protective equipment (PPE) supply and skilled and trained health workers for caring for COVID patients, but this should be remedied by supplying sufficient protective measures to health workers and would train existing healthcare workers.

In Odisha's favor majority (71.19%) are males and are young population (50.85% <40 years), low mortality rate, and, to date, a less severe pandemic than was feared. Odisha was among the first states to shut down, but returning migrants and poor health infrastructure have left a COVID spurt. Another key challenge was the pandemic's spread in many tribal-dominated districts where the health infrastructure and the communication network were poor. Large scale vacancies and the reluctance of doctors to work in underdeveloped districts and rural areas was the main drawback to handle the crisis situation. The state government had addressed these challenges in due time and implemented an urgent action plan for managing the crisis. Govt. had mobilized more health workers into the service during the pandemic and adopted an immediate action plan by strengthening state public health systems and multi-sector collaboration platform to handle those crises.

The immediate challenge is to keep infections at manageable levels and maintain a low mortality rate to ensure the ability to test, trace contacts, isolate patients, implement COVID care plans, and disseminate timely information. India’s public health-care system is chronically underfunded (at just 1.28% of GDP), leaving primary care weak. Now it is the need of time the central government should loosen its control and give states more autonomy over their funding and decision making. Odisha government must choose its model for managing the confirmed cases and controlling or breaking the chain of transmission of COVID-19 for emerging new cases. Also, state govt must pay much greater attention to strengthening the public health sector capacity, especially in primary care and at the district level. This pandemic could be the much-needed wake-up call to the necessity of long-term changes to India's health system if each state will not adopt the community preparedness and complication readiness model of effective management of COVID-19 cases.

With the rising number of coronavirus cases in the State, the government set up of COVID care homes (CCHs) in all the 6,798-gram panchayats of the State to fight the pandemic in the coming days. The bio-medical waste generated from COVID hospitals has also increased exponentially, which is going to be a burden on the health care management system and may trigger new challenges for its safe management. The rural health management sectors will face a lot of challenges to follow the central pollution control board (CPCB) guidelines and implement the safe COVID waste management protocol in rural, tribal, and slums of urban areas in an immediate effect. In addition, occupational safety is also a big challenge in low recourse settings due to the problem of the feasibility of management by the waste management firm, appointing separate sanitation workers, and preparedness of staff by proper training for proper segregation, packaging, transportation, and storage of COVID biomedical waste. Also, as per the MHFW new guidelines, related to dead body management in COVID-19 had added another challenge for the rural health system.
FUTURE PUBLIC HEALTH MEASURES

In the medium term, the health system has to prepare adequately to meet the post-COVID hospital rush due to the surge of both outpatient and inpatient cases. Several instances of mistreatment of non-COVID patients were noticed during the lockdown period and cautious steps should be undertaken for managing the surge of cases.

Besides attending to the immediate clinical and public health activities in the short run, steps should be taken to restructure the district and block-level health systems by an acceptable level of the health workforce, diagnostic services, and improving supply chain management systems. Therefore, district health planning is key and should consider disease burden, system preparedness, and public health activities in order to provide tractions to district trajectories.

The crisis has further accentuated the need for comprehensive primary care. Expansion of comprehensive primary care with enough emphasis on primary prevention can reduce infection and hospitalization. This creates tremendous economic gain and a low resource setting- Odisha should promptly adopt this strategy.

Moreover, this crisis has spurred the need to invest more in public health. The benefits of a developed public health system are well acknowledged during this pandemic. Therefore, public health spending should be substantially enhanced from the current level of around 1.3% of state gross domestic product or to 2.5% and at least two-third of resources should be diverted to primary care, as envisioned in the National Health Policy 2017. Given the slower revenue projections due to the economic downturn, resources from the district mineral fund and other potential sources may be explored for health in the state. More efforts may be to create more COVID beds equipped with ICU beds and ventilators, strengthen the health infrastructure at the rural level, and increase the daily screening capacity.

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