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COVID-19
GOVERNANCE IN INDIA

SERIES - 2

(A Special Issue under Disaster Governance in India Book Series)

Centre for Disaster Management
Lal Bahadur Shastri National Academy of Administration,
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COVID-19
Governance In India

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DIRECTOR'S MESSAGE

Sriram Taranikanti, IAS
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The unprecedented COVID-2019 crisis has underlined the criticality of effective response as never before. Responsiveness has emerged as a yardstick for measuring the success of Governments across the world in tackling this calamity. Adopting a multi-pronged cross-departmental approach, supported by the collective expertise and experience of specialists and frontline workers has become the need of the hour.

Needless to say, the crisis is far from over, and the road ahead is long and challenging. Although the strategic initiatives systematically taken in the past few years have placed us in an enviable position of being in significant control of the situation, massive challenges still remain and there is no room for complacency. Hence, to define the way forward more comprehensively, the importance of period feedback, analysis and interpretation of programmes, plans and policies to reassess their status from time to time, cannot be overstated.

As the world bravely battled against COVID-19, the gravest health crisis of times, we have seen a total paradigm shift in the way we live and work. The pandemic has led to the emergence of a new and radical construct of societal norms and governance. The country has adopted a cross-departmental approach in the formulation and implementation of the COVID-19 protocol geared towards engineering a sustainable ecosystem for co-existing alongside COVID-19. The country has set forth novel strategies curated to sensitize, motivate and inspire citizens to collaboratively combat the deadly virus, through virtual awareness platforms, digital campaigns and institutionalisation of health, educational, agriculture, industrial and employment operations both in the rural and urban areas.

The lockdown provided an opportunity to not only upgrade our level I, II and III COVID care facilities in the states and to stock up our supplies but also to forge new partnerships with the best health professionals from India and abroad to train our doctors on the latest protocols for COVID patient management. There have been a number of success stories, which all have contributed to our overall understanding of such kind of management, thus adding significantly to the learning process.

I would like to thank the Centre for Disaster Management, Lal Bahadur Shastri National Academy of Administration who have worked on those success stories and have been able to compile a special issue titled: COVID-19 Governance of India, Series-2. Hopefully, the document will be equally useful for both the trainees and the administrators in the field. I want to congratulate the CDM Team for this publication and also place on record my appreciation for the contribution made by the faculty & staff of CDM who contributed in various capacities for bringing out this book.

I would also urge all to go through this compilation carefully and add to the knowledge base.

(Sriram Taranikanti)

PREFACE

Abhiram G. Sankar, IAS
Director,
Centre for Disaster Management

The COVID Pandemic that gripped the entire world has underlined the criticality of effective response as never before and once again highlighted need of health facility preparedness. Responsiveness has emerged as a yardstick for measuring the success of Government across the world in tackling this calamity. Government of India's integrated, multi-pronged action plan of containment and development involving cross Departmental approach, supported by the collective expertise and experience of specialists as well as frontline workers, paid rich dividends.

As the world bravely battles against COVID, the gravest health crisis of times, we have seen a total paradigm shift in the way we live and work. This issue highlights emergence of a new and radial construct of societal norms and governance. The novel initiatives undertaken by various district administrations adopting a cross departmental approach in formulation and implementation of COVID-19 protocol geared towards engineering a sustainable ecosystem for co-existing with COVID. The articles also highlight, all-inclusive approach adopted by administration involving community has set forth novel strategies curated to sensitize, motivate and inspire citizens to collaboratively combat the deadly virus, through virtual awareness platforms, digital campaigns and institutionalisation of heath, educational, agriculture, industrial and employment operations both in the rural and urban area.

The COVID Pandemic provided an opportunity to not only upgrade our health care facilities in the states but also to forge new partnerships with the best health professionals from India and abroad, and to upgrade and modify our protocols for COVID like patient management.

Needless to say, similar crisis may recur in future also new variants have emerged challenging the medical and scientific fraternity, in more ways than one. The strategic initiatives we have systematically under taken in these past few years placed us in significant control of the situation.

I would like to thank the Centre for Disaster Management, Lal Bahadur Shastri National Academy of Administration who have been able to compile the best practices adopted by District Administrations, PSUs and Institutions in the form of a Special issue of COVID-19 Governance of in India, Series-2.

I would urge all of you to go through this compilation carefully and add to the knowledge base for disaster management in the country, and will be useful for both the trainees and the administrators in the field. I would like to congratulate CDM Team for publication at the opportunity time.

(Abhiram G. Sankar)

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Fighting the Pandemic: The Mysuru Story

Abhiram Giri Sankar, IAS

Abstract

In India, the first COVID-19 case was detected in the State of Kerala in January 2020[1]. As of 5th May 2023, the national count of confirmed cases stood at 44.96 million, with 531,642 recorded deaths ascribed to COVID-19[2]. Karnataka, a southern State with an estimated population of 66.84 million (Census of India projection for 2021[3]) recorded 4.08 million COVID-19 cases and 40,351 recorded deaths since the first case was recorded in Bengaluru city, the provincial capital on 10th March 2020[4]. Mysuru, Karnataka's third most-populous district (3 million population, Census 2011[5]), was affected by COVID-19 starting March 2020 and faced a cluster outbreak in the cities of Mysuru and Nanjangud between March and May 2020. Mysuru was declared a 'red zone' owing to Karnataka's first "COVID cluster" erupting at Nanjangud[6.] This sudden appearance of a COVID-19 cluster gained nationwide attention and endangered public health, forcing the Mysuru district administration to take measures in accordance with government directives. A slew of out-of-the-box ideas was executed in the district, proving that the administration and civic society can join hands together and work for a common good, trusting and leaning on each other. This collaborative effort helped bring down the positive case count to zero by 16th May 2020 from a high of 89, and earned itself the tag of 'Mysuru Model of COVID-19 containment'. This case shall dwell mostly on the first surge of COVID-19 in Mysuru district, between March 2020 and July 2020, amidst an unprecedented nationwide lockdown. It attempts to document the innovative strategies of the district administration and measures executed in collaboration with the political leadership, media, civil society, and technical experts in containing COVID-19 - then a very little-known disease among administrators, doctors, and the community.

Keywords: COVID-19, Mysuru Model, Lockdown, Leadership

1.0 COVID-19 - A Background

The World Health Organization (WHO) defines COVID-19[7] as "an infectious disease caused by the SARS-CoV-2 virus". The virus was identified as the cause of an outbreak of respiratory illness of unknown cause in Wuhan City, China, in December 2019[8]. Subsequently, the virus spread and was declared a pandemic in March 2020 by WHO[9]. The clinical presentation is that of a respiratory infection with a symptom severity ranging from a mild common cold-like illness to severe viral pneumonia leading to acute respiratory distress syndrome that is potentially fatal, especially so to the high-risk category population of old-aged and those with underlying co-morbidities like diabetes, cardiovascular conditions, and hypertension.

2.0 Mysuru - An Introduction

Mysuru is one of the southernmost districts in the State of Karnataka, spread over an area of 6307 sq. km (~2435 sq. miles). The district has an undulating terrain with an average elevation of 750 meters MSL and is a regional hub for commerce, education, industry, and tourism. The projected district population for 2022 is 3.48 million, of which over 983,000 inhabitants reside in the urban agglomeration around Mysuru city[10]. Today, various estimates place the urban population between 1.2 and 1.3 million. In fact, 42% of the population of the district lives in and around Mysuru city. Nanjangud has the second-largest share of 13% of the district's total population[11]. The average per capita income of the district stood at Rs.142,383/- in 2018-19[12], which was higher than the national figure of Rs. 125,397/-[13].

2.1 Administration at the District Level

The State of Karnataka comprises 31 districts, which form the largest administrative unit after the State. Districts are further divided into taluks (sub-districts) which are made up of gram panchayats (village self-governments) and urban local bodies. The urban & rural local self-governing institutions (LSGIs) function through democratically elected bodies, each having its own elected head, chief executive, and staff. Mysuru has 8 taluks and 256 gram panchayats, covering a total of 1336 villages. There are 14 urban local bodies, ranging from the million-plus Mysuru city to small towns like Saraguru.

The administration at the district level is headed by a Deputy Commissioner (also known as DC or District Collector), who is a mid-level officer belonging to the Indian Administrative Service. Originally created by Lord Warren Hastings in the year 1772[14], the institution of District Officer/ Collector has since undergone many changes and is the lynchpin of administration. The DC is widely considered to be the de-facto representative of the State at the district level and commands respect across departments irrespective of whether he/she has de jure authority. He/she is vested with powers and responsibilities in departments such as land revenue administration, urban development and planning, disaster management, public law and order, and other developmental roles.

Mysuru City is administered by the City Corporation Commissioner, under the overall supervision and guidance of the Mayor[15], and in practice, also by the Deputy Commissioner. The rural development department including the processes of planning, execution, and monitoring is done by the Chief executive Officer of the Zilla Panchayat (District Panchayat). In the Mysuru district, policing functions are divided between the Commissioner of Police (in Mysuru city limits) and the Superintendent of Police (for areas excluding Mysuru city).

2.2 Public Health Profile of Mysuru

Mysuru[16] is perceived to be an above-average performer. Statistics indicate that Mysuru has 100% institutional deliveries; 97% vaccination coverage among children aged 12-23 months; and a low prevalence of vector-borne diseases. However, as per the Non-Communicable Diseases in Urban Mysuru, Karnataka: Situational Assessment Report 2018[17] by Karnataka Health Promotion Trust (KHPT), a total of 6.6 percent of the people were reported diabetic, and 6.8 percent reported hypertensive among the population above 18 years of age. District-level public health interventions are led by the District Health & Family Welfare Department[18] which is headed by a District Health Officer. The department deals with an array of subjects like maternal & child health, eradication of tuberculosis & leprosy, control of vector-borne diseases, family planning, mental health, etc. The services are delivered through a network of subcenters, primary health centers, and community health centers, operating from the village level to the taluk level. At the tertiary level, apart from the District Hospital, there are several private and public sector healthcare institutions. In fact, Mysuru is considered a regional center for tertiary healthcare.

2.3 District Economy

Agriculture is the backbone of the local economy. The rivers Kaveri and Kabini drain the district. 72% of the net land area is cultivated and 17% is irrigated by canals. With an annual average rainfall of 782 mm, relatively fertile soils, and a temperate climate, agriculture flourishes. The important crops cultivated are paddy, ragi, pulses, cotton, sugarcane, tobacco, and others. Horticulture and sericulture are prominent sectors employing a large number of people. Proximity to Bengaluru, good connectivity, and availability of planned industrial estates (spread over 4700 acres) have contributed to a robust manufacturing and services sector[19]. Infosys Global Education Center, established in a sprawling 337-acre campus with a capacity to train over 14,000 people at the same time, is one of the world's largest corporate training centers. The industry scene is straddled by giants such as Nestle India, Larsen & Toubro Ltd., Jubilant Generics Ltd., TVS Ltd., and Asian Paints on one side and hundreds of small and medium industries on the other. 53,000 people are employed in the 600-plus industries of the district[20].

3.0 Preparation & Planning for COVID-19
3.1 The backdrop

For an administrator to be successful, it is pivotal that he/she understands the emotions of the district and the pulse of its people. In February-March 2020, among the locals, there was a strong conviction based on prior instances that any public health emergency in North Kerala was a cause of concern to Mysuru as well given the close people-to-people ties.

A few factors fueled this widespread emotion. Thousands of vehicles ferry on a daily basis between Kerala and Karnataka through the border checkposts in Mysuru and via the neighboring districts of Kodagu and Chamarajanagar. A considerable portion of the millions of domestic tourists and students who throng Mysuru hail from Kerala. Being an agricultural commodity trading hub, Mysuru attracts hundreds of traders who arrive to procure milk, vegetables, and fruits that most of North Kerala depend upon.

In May-June 2018, Kozhikode and Malappuram districts in North Kerala were hit by a Nipah virus outbreak (NiV)[21] leading to the deaths of 17 out of 18 confirmed cases. The fear that spread in Mysuru was effectively countered by strict screening at inter-State border checkposts[22] and public awareness creation. Similarly, the H5N1 (avian flu) flare-up in Mysuru city[23] in March 2020 was preceded by a H5N1 flu breakout in Kozhikode. Thousands of birds were culled and containment measures were imposed, which hit the local poultry sector.

Therefore, there was no surprise when the first case of COVID-19 in India[24] was detected in Kerala, it soon spun a web of panic among Mysureans, which was amplified by the media. The response of the district administration was mature and focused on screening border traffic; preparing a contingency plan; capacity building of human resources; creating resource inventories; preventing and reining in fake news and most importantly, keeping in touch with the administration in Kerala. This ensured that the situation did not escalate uncontrollably.

3.2 Containment plan

The Ministry of Health & Family Welfare, Government of India released a model Containment Plan for COVID-19 in March 2020 (updated in May 2020)[25]. The Mysuru district containment plan was prepared in advance as per this broad framework laid down by the State and Central Governments. The containment strategy aimed to anticipate the fallout from travel-related cases, local transmission of COVID-19, large outbreaks, widespread community transmission, and a case where COVID-19 attains endemic status. The plan suggested the following steps be taken for each such scenario, such as,

1) Surveillance and contact tracing of travellers who have returned from affected countries.
2) Early diagnosis through testing samples of suspect cases.
3) Appropriate management of suspected/confirmed cases.
4) Quarantining close contacts.
5) Implementing social distancing measures.
6) Risk communication for creating awareness among the public.
7) Defining the area of operation and applying strict perimeter control
8) Active search for suspected cases, early isolation, testing, quarantining & contact listing

9) Testing all symptomatic contacts, and asymptomatic high-risk contacts.

10) Defining a core containment zone and buffer zones surrounding it.

These plans derived their legitimacy from the powers enshrined in the Disaster Management Act, 2005 and the Epidemic Act, 1897 as India had declared the pandemic as a "notified disaster" on 14th March 2020[26].

3.3 Contingency Plan

A contingency plan was drawn up in order to respond optimally in a hypothetical worst-case pandemic scenario. Using statistical models, the Health Department projected that Mysuru would see 4,000 positive cases out of which 15% cases may require hospitalization with oxygen and 5% may require intensive care with ventilator support.

3.4 Prevention and Mitigation Measures

A series of measures were put in place by March 2020 to comprehensively respond to the pandemic. These were, chiefly:

1. Access control at points of entry/exit into the district - rail, road, and air.
2. Resource Mobilization
3. Cleaning and disinfection of public places, quarantine facilities, containment zones, etc.
4. Planning for handling other disasters that may coincide with COVID-19:
    a) Pre-monsoon thunderstorms & hail in April & May
    b) Floods in July, August & September
    c) Drought in April & May

3.5 Risk Assessment

As all categories of people were not prone to COVID-19 in the same manner, a risk assessment survey was conducted to identify the most vulnerable persons. With 'zero-loss-to-life' as the guiding philosophy, 457,418 people were identified to enable a targeted approach and follow-up. Junior Health Assistants and Accredited Social Health Activists (ASHAs) were deployed to visit their homes; educate them; conduct surveys to detect influenza-like illness (ILI) among vulnerable groups; perform preliminary health check-ups etc. The people were segregated as

1. Primary high-risk contact (as defined by the COVID-19 protocol)
2. Secondary low-risk contact (as defined by the COVID-19 protocol)
3. People with foreign travel history - all the 1400 foreign returnees were asked to undergo strict home quarantine for 28 days.
4. People over 60 years of age.
5. People with comorbidities (hypertension, diabetes, asthma, HIV, tuberculosis, etc.)
6. Other vulnerable groups such as pregnant women, infants, residents of senior citizens' homes, sanitation workers, etc.

3.6 Health Infrastructure Assessment and State of Readiness

As suggested by the containment and contingency plans, the district administration earmarked facilities to be put to use as fever clinics, COVID Care Centers (CCC), Dedicated COVID Health Centers (DCHC), and the Dedicated COVID Hospital (DCH). Each had a specific role:

- Fever clinic - to screen and identify influenza-like illness (ILI) cases for swab testing.
- Quarantine centers - to isolate close contacts.
- COVID Care Centers (CCC) - for mild or COVID suspect cases.
- Dedicated COVID Health Center (DCHC) - for those needing assured oxygen support. Patients are assured of transport to a DCH if the symptoms worsen.
- Dedicated COVID Hospital (DCH) - for those needing intensive care or ventilator support.

The only non-negotiable aspect was that all facilities should have a watertight separation between the holding areas of the suspect and confirmed cases so that the two do not mix. All the active healthcare institutions and healthcare providers of Mysuru were exhaustively documented, to simplify and rationalize their deployment. This was done to prevent patients from traveling unnecessarily to Mysuru city for treatment, and thereby avoid clogging scarce resources. Decentralized treatment would flatten the patient load distribution and permit optimal resource consumption. A regularly updated database of medical college hospitals, nursing homes, clinics, primary & community health centers, ICU beds, trained health personnel, drug stocks, testing facilities, and isolation and quarantine centers was maintained. Resources in the neighboring districts were identified as a backup, in case Mysuru's capacity got overwhelmed.

On 12th March 2020, the state-of-the-art Viral Research and Diagnostic Laboratory (VRDL), Department of Microbiology, Mysore Medical College got authorization to test COVID-19 samples[27]. Simultaneously, the Defence Food Research Laboratory (DFRL) shared its mobile testing lab-'PARAKH'[28], whereas the CSIR-Central Food Technological Research Institute (CFTRI) volunteered to establish a new lab for testing COVID-19[29]. This tremendously augmented the free-of-cost, daily testing capacity. The stock of essential drugs in the district was monitored on a daily basis. Data was collected from the State-run drug warehouse as well as from private druggists. Resource mobilization was an uphill task in the initial months as there was a severe shortage of PPEs, N95, and surgical masks and gloves due to an unprecedented rise in international and national demand not commensurate with supplies. Local procurement was undertaken to replenish inventories at minimal cost & time[30].

3.7 Capacity Building of Human Resources

COVID-19 gave rise to an atypical situation as there was relatively little literature available on the disease other than what was being generated in real-time worldwide. The lack of clarity on matters such as the possible duration of the infection, nature of infectivity, etc. led to rumors and pseudo-scientific content dominating the social media space. This affected the morale of public servants, politicians, civil society, media, and the community.

A series of training programs were structured from early March 2020 onwards. Senior functionaries of the Health & Family Welfare department including the District Health Officer, District Surveillance Officer, Chief Epidemiologist, etc. underwent training at the State level, and in turn, became master trainers at the district level. Specific guidelines were published and staff were trained on SOPs on quarantine, isolation, surveillance, lab testing, containment, in-patient care, infection prevention & control, disinfection, and dead body disposal.

The training was customized to the respective target cohort. Blue-collar and white-collar professionals, the unorganized sector, ambulance drivers & technicians, bankers, and NGOs were trained with a focus on hand hygiene awareness, the use of masks & social distancing. Hospital staff training emphasized in-patient care protocol and infection prevention & control measures. Capacity building for field functionaries centred around geographical containment measures, supervision of quarantine & sample collection.

3.8 Establishing SOPs

Infection prevention & control (IPC) is considered to be an important strategy in controlling COVID-19 spread. The training task force, in consultation with the District Technical Advisory Group, prepared a booklet of standard operating procedures (SOPs) as part of the response. All the healthcare workers were trained on these SOPs, which covered aspects such as hospital floor plan preparation, patient & staff movement plan, hand hygiene, use and disposal of PPE, rational use of gloves and masks, laundry, biomedical waste disposal, dead body disposal, etc.

4.0 How Mysuru became 'Red'

Mysuru, as of early March 2020, did not have even a single positive COVID-19 case. However, by the third week of March, two foreign returnees tested positive. This was not alarming as every foreign returnee was kept under close watch right from the airport to his/her home and till the end of the 28-day quarantine. As they were most likely infected in another country indicated an absence of person-to-person transmission in Mysuru. Two incidents broke this pattern and soon morphed into major challenges for the district and the State - the detection of P52 in Nanjangud and the Tablighi Jamaat gathering in New Delhi.

4.1 P52 - The spark that lit Nanjangud

Patient number 52 (P52 in short) tested positive for COVID-19 on 26th March 2020, which became the turning point in the epidemiology of the disease in Mysuru. P52 was an employee at the Jubilant Generics plant in Nanjangud - a multinational pharmaceutical giant - along with 1400 others. Nanjangud is an industrial hub (population ~51,000) strategically located on the busy Mysuru-Ooty national highway 20 km away from Mysuru, and is an important station for trade with the neighboring States of Kerala & Tamil Nadu.

Even though P52 tested positive, the District Surveillance Unit was unable to trace any other patient with whom he was in contact. This baffled the district administration and induced alarm in the State government as it indicated human-to-human transmission, which in turn would make the possibility of a community-level spread very real. Arduous cycles of contact tracing, quarantining, and testing of contacts followed. 10 more cases were thus identified by the end of March 2020 and Nanjangud was declared the first cluster outbreak in Karnataka[31]. By mid-May 2020, when the number of cases had dropped to zero from 89 in Mysuru, 82% of the detected positive cases were related to P52.

Without delay, Nanjangud town, the industrial area, and peri-urban areas over an extent of around 20 sq. km. (7.7 sq miles) were declared containment zones. Severe restrictions were placed on access to these areas from outside and on the internal movement of residents[32]. Time slots were announced for people to venture out and procure daily essentials from the market. Each zone was headed by an Incident Commander, who was tasked with supervising the welfare of quarantined residents and monitoring containment in their respective jurisdictions.

The source of P52's infection remained a mystery and attempts were made to resolve it[33]. A package of Chinese-origin raw materials and a visit by foreign nationals to Jubilant Generics were widely suspected to be the source of the virus. These leads were probed into, scientifically. Samples were collected from the shipment and sent to the National Institute of Virology, Pune - India's premier lab - for analysis. The respective national missions were contacted through the Ministry of External Affairs to find out if any of the foreign nationals were COVID-19 infected. However, neither effort helped demystify the source of the virus[34].

The government machinery worked overtime to avert a looming public health emergency as well as a rising wave of trepidation among the locals. Taluk Health Officers at Mysuru & Nanjangud led the public health response. All the employees of Jubilant Generics Ltd & their household contacts were put under home quarantine. There was considerable opposition from the suspects' families towards these measures but were tactfully and empathetically addressed by the administration. For instance, the Nanjangud City Municipal Council ensured that all daily necessities reached the houses of the quarantined

regularly and no family was unduly harassed or ostracized by their neighbors. The success of the entire operation rested on the trust that the community would place in the administration.

4.2 Tablighi Jamaat

In March 2020, another major incident captured the attention of the country. The Tablighi Jamaat (TJ), an Islamic organization, conducted a religious event at Nizamuddin Markaz, New Delhi from March 8th to 20th, 2020[35]. This congregation saw participation by religious leaders, scholars, and pupils from many countries. As soon as the pilgrims returned home after the event, multiple clusters sprung up all across India. Managing the TJ-linked COVID-19 outbreak was complicated as the administration had to simultaneously prevent a communal flare-up too.

In the Mysuru district, 75 TJ returnees were identified, who were staying at a mosque in nearby Bannur[36]. They were subsequently quarantined and tested for COVID-19, of whom 10 people were found to be infected. Authorities of the neighboring districts were immediately alerted regarding their travel history. This alerting mechanism averted a large outbreak in the region. The combined effect of the Nanjangud & TJ clusters made Mysuru one of the worst-hit places in India by mid-April 2020.

5.0 'Break the Chain' - Lockdown
5.1 Ominous Signs

After Kerala, Bengaluru, and Madikeri recorded their first COVID-19 cases in March 2020. Mysuru city is famed for its yoga schools where hundreds of foreigners come to reside in & master the art. Their presence was an added worry as many had traveled from countries affected by COVID-19. Advisories were issued and awareness initiatives were taken up to urge people to wear masks and maintain social distance. They were, however, not very effective in bringing about the intended behavioral change.

A momentous decision was taken on 19th March 2020 under the Disaster Management Act to prohibit the provision of *non-emergency, non-essential* services such as the issue of land record copies, driving licenses, and distribution of building licenses. Other districts initiated similar moves to prevent crowding at government offices. After 4 days, a stricter nationwide lockdown came into effect, as if in apparent vindication of the administration's order.

5.2 Implementation of Nationwide Lockdown

The government imposed a total lockdown to put a break on the spread of COVID-19, on the 24th of March 2020[37] and it stayed in vogue till the 8th of June 2020. People were prevented from moving outside their houses except for emergencies; non-essential shops were closed; public transport, fairs & festivals were prohibited; swimming pools and

gymnasiums were ordered shut; rail & bus services were stopped; all with immediate effect. The lockdown was not applicable to essential services such as pharmacies, petrol bunks, police, fire & emergency services, government offices, postal & banking services, etc.

There was a total shutdown of several manufacturing entities. Those factories and industries falling in the 'restricted' category were asked to operate at 50% workforce, though. In order to prevent job losses, factories were urged to not remove their staff from payrolls. Many sectors adopted a Work from Home (WFH) policy to tide over the lockdown.

5.3 Nanjangud 'Triple lockdown'

Nanjangud went through what was locally known as the 'triple lockdown', denoting the three layers of restriction and containment protocols that were put in place. Mysuru district was under a general lockdown from 24th March 2020. The second level of lockdown cut off all access to Nanjangud city and diverted incoming traffic via by-passes. Only daily essentials were permitted to enter and exit the city. Third, the containment zones around the residence of each positive patient functioned as the innermost cordon where no entry was permitted, except for health workers & other staff on duty[38]. These measures were severe, but in hindsight, one can claim that they broke the chain of transmission. The fact that no human-to-human spread was recorded after the containment protocols were put in place, was a testament to its efficacy[39].

5.4 Managing the lockdown period

The nationwide lockdown had no precedent and none knew how long it would be in operation. The district machinery swung into action anticipating the worst-case scenario. Stock positions of essentials held in public and private warehouses, such as grains, drugs, petroleum products, and dairy products were monitored on a daily basis. The information, thus gathered, reassured the administration that it would be possible to tide over a long-drawn complete lockdown, even if no fresh supplies were available for a few weeks. But no such situation materialized and the lockdown permitted inter-state and intra-state movement of indispensable goods.

The term 'lockdown' evoked uncertainty and a sense of disquiet among the public. The district administration along with the police, city corporation, and health department was committed to making the entire episode as humane as possible, and also sustaining the morale of people staying indoors for weeks. Technology was leveraged, and bridges were built with new partners for the delivery of services, complemented by innovative thought processes and an empathetic decision-making approach. Notable key endeavors were:

1. **Guaranteed supply of daily essentials -** A two-pronged approach was resorted to, to ensure a steady supply source of daily needs including milk, vegetables, fruits, groceries, and drugs and to prevent inconvenience to consumers –
   a) **An online, free-of-cost, contactless e-pass system** was put in place, whereby traders and home-delivery agents could register themselves for a movement pass. As it was a single-window, multi-department effort, all agencies in the district accepted it as a universal document. The online system prevented people from gathering at offices to apply for passes[40].
   b) **Private vendors, the druggists' association & the state-backed horticulture cooperative**[41] were encouraged to commence door-to-door supplies in every ward of the city. New home delivery start-ups sprang up, giving an employment opportunity to city youth in a time of crisis. Drug delivery over WhatsApp was a boon, as several doctors had already taken up telemedicine practice. Though this was not an ideal solution, it was optimal, ensured seamless delivery of goods & suited the prevailing unorthodox situation.
   c) **Temporary vegetable markets** which stayed open only during pre-specified time slots, were set up on public grounds which reduced the distance that people had to travel from home to get fresh vegetables & fruits.
   d) **The low-income groups and sections of society** surviving on a hand-to-mouth existence were enumerated ward-wise. CSOs, religious charities, and political parties joined hands with the administration in handing out ration kits as well as hot-cooked meals in community kitchens[42, 43].
2. **Taking care of the destitute and homeless -** Due to the sudden restriction imposed on inter-district movement, the most affected people were the most vulnerable too. Makeshift shelters were arranged in public community halls across the city. The administration with the support of CSOs provided hygienic boarding and lodging and trained them in new skills - upcycling of paper waste, stitching, and other such creative trades[44]. Sessions on yoga, drama, and dance were curated with the help of non-profit movements[45].
3. **Migrant laborers & Shramik (labor) trains**
   a) With the Government permitting the return of stranded migrant workers to their native districts within Karnataka, the administration facilitated their return through the extensive use of state-run public transport. Prior to their departure, each passenger was medically examined by a health team, and medical certificates were issued.
   b) The Ministry of Home Affairs (MHA) permitted the movement of stranded citizens, migrant laborers, students, and tourists to their hometowns in the 2nd week of May. The Railway department had arranged for Shramik Special (labor special) trains which operated as city-to-city non-stop shuttles. Most migrants were from the poorer States of Uttar Pradesh, Bihar, Rajasthan,

and West Bengal. In 2 weeks, more than 14,000 migrant workers benefited from this transport facility[46].

   c) The Mysuru Rotary Heritage Club and Jain Samaj (CSOs) pitched in to provide sanitizers, masks, packed food, and water to all the passengers.

4. **Mental and physical well-being of the community**

   a) Online live interactive sessions by experts on subjects like care of children with special needs[47] and care of specially-abled; motivational talks by professionals; online painting, dance, and quiz competitions for children, etc.; and free sessions on yoga and indoor physical fitness[48] by professionals were scheduled over social media platforms 'and city cable channels.

   b) Institutions such as the All India Institute of Speech & Hearing, leading private gyms, yoga schools (SPYSS, GSS Yoga, etc.), and other CSOs contributed towards this pro bono effort to creatively engage all age groups as well as keep citizens undergoing lockdown happy and upbeat[49].

5. **Information dissemination to fight fake news & maintain communal harmony**

   a) The Deputy Commissioner, City Police Commissioner, elected representatives and other senior officials regularly interacted with people through live streams on the Department of Public Relations Facebook page[50]. The strategy aided in the dissemination of authentic information with relevant statistics; increased transparency and accountability; cleared the air of ambiguity; curtailed the impact of rumor mills and improved the faith of people in the administration.

   b) Volunteer teams were tasked with identifying, tracking, and fighting fake news. Attempts to sow communal discord, mischief-mongering through doctored videos, and the spreading of incendiary lies were nipped in the bud[51].

   c) Community leaders from all the major faiths, elected representatives, CSOs, and industry representatives were involved at every level and kept abreast of all the developments to remove any information asymmetry or feelings of insecurity[52].

6. **Harnessing volunteers**

   a) An Online Volunteer registration portal was launched. Over 2000 volunteers registered and they were categorized based on their skill sets as digital content creators, motivators, counselors, logistic specialists, etc. who assisted with the response as and when their services were called for[53].

6.0 Epidemiological Response to COVID-19

6.1 Active Surveillance

The district administration launched a massive door-to-door survey to gather data on people with Influenza-Like Illnesses (ILI) and Severe Acute Respiratory Illnesses (SARI). The health status of people suffering from non-communicable diseases, tuberculosis, and AIDS as well as people in need of special care like pregnant women and infants was also monitored through this survey, as they were relatively more vulnerable to COVID-19. Further, press and electronic media personnel, police, drivers, and health workers who were more exposed to the infection due to their nature of profession than others, were routinely tested for COVID-19

6.2 Fever clinics operationalization

10 Urban health centers in Mysuru city were designated as fever clinics to screen and identify ILI cases for swab testing[54]. Each such clinic was staffed by a COVID-19 Rapid Response (CRR) team. As per the protocol, when any person visited a fever clinic, he/she was categorized as either 'suspected' or 'safe' based on symptoms and body temperature. Suspected cases were then tested and shifted to a quarantine facility if found to be positive.

6.3 Kiosk for screening and sample collection

Evidence indicated that the SARS-CoV-2 virus was transmitted between people through close contact and droplets[55]. Therefore, proper use & disposal of personal protective equipment (PPE) by healthcare workers was pivotal in preventing them from getting infected. The global shortage of PPE in April-May 2020 forced the district administration to optimize the consumption pattern of PPEs through rational and appropriate use, without compromising the safety of frontline health workers[56].

One such unique initiative was to use simple physical barriers to reduce exposure to suspected people through the use of glass partitions. Staff only had to cover their faces with an N95 mask instead of donning a full PPE suit, as the glass barrier protected them from any droplets. The kiosks[57] were modeled on ticket booths in cinema halls, were constructed using aluminum & glass, and came with a built-in microphone, speakers, and fixed rubber gloves into which the staff could insert their hands. They were installed at the registration, triage & screening areas in health centers and were also used for throat swab collection.

6.4 Mobile fever clinic – 'Clinic on Wheels'

The district administration innovated the concept of 'Mobile Fever Clinic'[58] by modifying a bus into a clinic furnished with a hand wash, triage area, and an examination table. The mobile fever clinic reached rural and far-flung areas to screen and test suspected people.

7.0 Administrative response to COVID-19

7.1 District Health Emergency Operations Centre (DHEOC Helpline)

The 24x7 toll-free DHEOC helpline was activated in March 2020. Its responsibilities were two-fold. The staff rang up quarantine people, twice daily for a period of 14 days, to track the onset of any ILI symptoms. They also counseled infected & quarantined people as well as healthcare workers who were serving under tremendous mental stress in COVID-19 wards. The helpline staff were drawn from trained community medicine professionals of the Mysore Medical College & experienced staff from other departments and performed their tasks flawlessly[59].

7.2 Formation of Task Forces

The COVID-19 preparedness and related activities were categorized into verticals for administrative ease, each led by a District Task Force. They functioned at multiple levels - district, city & taluk - with a crisply laid-down, exhaustive list of responsibilities. Some of the main task forces were:

- Technical Advisory Group of subject experts and doctors to help prepare SOPs.
- Quarantine Watch Team to remotely keep track of people undergoing home quarantine.
- Surveillance & Contact Tracing Team to identify primary and secondary contacts of detected COVID-19 patients.
- Transportation & Logistics Team to meet the demand for ambulances, medical equipment, PPE, masks, etc.
- Separate teams for overall health center management; hygiene and biomedical waste management; food supply for patients and health workers; and dead body disposal.
- Human Resource Management Team for optimal & dynamic allocation of the limited pool of healthcare providers.
- Capacity Building, Media Outreach, and Information Dissemination Teams to train health workers, volunteers, NGOs, officials, district judiciary, industrial labor, etc. Risk communication called attention to the symptoms of COVID-19, its manner of spread, hand washing & cough etiquette, etc.
- Private Hospital Coordination Team to liaise with private healthcare providers for emergency beds, ICUs, oxygen support, and for shifting of patients.
- Migrant Welfare Cell
- Staff Welfare Cell
- CSO, Volunteers & Stakeholders Coordination Cell identified NGOs & volunteers, identified their area of expertise & capacity to deliver, demarcated their area of operation, and also satisfied their training needs.

7.3 The Containment Zone Strategy

The Containment zone involved geographic quarantining, strict social distancing, enhanced active surveillance, testing of suspected cases, isolation of positive cases, quarantine of close contacts, and focussed risk communication to create awareness of preventive public health measures[60].

Each containment zone was barricaded and had only one point of entry and exit. The supervisory team for each zone comprised officials from the Mysuru City Corporation, City Police, and Health Department, led by an Incident commander (IC). Incident Commanders were hand-picked experienced civil servants. ICs were appointed for every single ward in the city, slums, villages, and suburbs. They ensured a seamless supply of essential services for households within the containment zone, for instance, drinking water, medicines, grocery supplies, daily waste disposal, etc. in containment zones.

The physical fencing-off prevented an intermixing of the residents of one zone with others outside it. Only vehicles carrying essential commodities or on-duty government personnel, and residents on grounds of medical emergencies were permitted to enter or exit the containment zones. The area continued to remain as a containment zone until no new COVID-19 cases were reported for the next 28 days[61].

In and around the containment zones, grassroots-level health workers formed active surveillance teams and visited all homes in a 3 km radius of such zones. They scrutinized the residents for signs of any influenza-like illnesses and referred suspected people to nearby health centers. Their relentless efforts in fighting COVID-19 garnered the respect and affection of people who coined the term 'corona warriors' for these frontline personnel.

7.4 DSU - The Nerve Center

The District Surveillance Unit was the brain that powered the entire response effort as it delivered the critical function of tracing contacts of COVID-19 patients[62]. Early identification, isolation, monitoring, and testing of primary and secondary contacts was key to keeping the spread of COVID-19 under check. Under the supervision of the District Surveillance Officer, the unit fulfilled onerous tasks such as;

- Contact identification, listing, and generation of contacts' movement history.
- Coordination with field teams for the collection of swabs from suspected people.
- ILI/SARI surveillance in Containment zones, among high-risk/vulnerable groups, and compiling of ILI/SARI data from hundreds of registered private practitioners.
- Home quarantine tracking & reporting.
- Coordination with testing labs.
- Coordination with & information dissemination to the media and the State Surveillance Unit through daily media bulletins.

7.5 Role of Police

The police barricaded roads at strategic locations and deployed drones to warn violators through recorded audio messages. The Mobile Command Centre[63] captured photographs of vehicles violating lockdown guidelines. The police also acted as gatekeepers of containment zones, fought fake news[64], ensured social distancing at vegetable markets, monitored check-posts and provided security cover to COVID care facilities[65].

7.6 Role of Mysuru City Corporation & Other Urban Local Bodies

COVID-19 outbreaks tended to cluster in urban or densely populated rural areas. The Mysuru City Corporation, other urban local bodies, and rural self-governing institutions (panchayats) worked hand-in-hand with the district administration towards containment of COVID-19 and managing the lockdown in their respective jurisdictions. The list of activities that the local bodies undertook during the pandemic includes:

- Ensuring home quarantine & conducting daily visits to homes of international returnees.
- Disinfecting public places through sanitisation and fumigation drives[66, 67].
- Collection, transport & disposal of biomedical waste from houses of quarantined people.
- Setting up temporary decentralized vegetable markets to reduce crowding as well as home delivery of vegetables and fruits[68].
- Operation of shelter camps for the well-being of over 7300 migrant laborers, tourists, destitute, and the homeless[69, 70].
- Coordination with CSOs and NGOs who were reaching out to needy people with food, grocery kits, and clothes[71]. Some NGOs took care of stray animals too.

8.0 Infrastructure revamps and upgradation to match demand

The district administration was forced to either create de-novo healthcare facilities or retrofit existing facilities for the purposes of use as COVID-19 centers. This demanded innovative thinking and engineering skills in order to refurbish structures meant for other purposes as COVID-19 health centers.

8.1 Operationalization of Dedicated COVID Hospital (District Hospital)

The newly constructed District Hospital was designated as the Dedicated COVID Hospital (DCH). What was an empty shell of a building in January 2020[72] was transformed into a fully operational tertiary hospital with human resource support and other basic facilities by early April 2020. A task force of civil servants and medical professionals was created under the Deputy Commissioner's supervision in order to make this transition quick and efficient[73].

Emergency measures were taken and support systems put into place including the establishment of a liquid oxygen tank; cylinder-based piped oxygen supply network; mobile X-ray facility; tie-ups with other hospitals and laboratories for laboratory support, ultrasound & CT scan services; and most importantly, deployment of a sufficient number of doctors, staff nurses & support staff.

8.2 Exclusive COVID-19 Maternity Hospital

The decision to have an exclusive hospital for COVID positive women was prompted by the arrival of a pregnant lady from Ireland in March 2020. She was denied admission by city-based private hospitals till she tested negative for COVID-19. The incident was an eye-opener and the public health system had to plan with foresight to avoid such inconveniences for pregnant women in the future.

Subsequently, the State-run Lakshmi Devamma Shankarashetty Hospital was converted into an exclusive COVID maternity hospital. Mysuru was one of the first districts in Karnataka to have such a dedicated facility, which proved to be a boon in the months to come[74]. Statistics showed that, as of February 2021, 278 healthy babies were delivered at the hospital[75].

8.3 Model CCC at KSOU

The newly-constructed academic block of the Karnataka State Open University (KSOU) was a massive 4-storied structure, in a location far away from human habitation. The building was structurally modified and upgraded to function as a model COVID-19 care center with a capacity to hold 600 patients[76]. With over 50 spacious rooms and two large, covered atria, it was well suited to extend the best possible care that a public COVID-19 care facility could. The amenities included accommodation for health workers, free WiFi, a television zone, indoor games for recreation, secured premises with CCTV monitoring, a laundry facility, running hot water and a 24x7 electricity supply with generator back-up.

8.4 Dedicated Frontline Workers' Hospital

The Vikram Jeshta Hospital in Mysuru city was defunct for a few years due to certain legal issues. As the pandemic progressed, the administration felt the need to have a separate facility for frontline workers to be treated and therefore, took over the hospital[77]. The administration, through the Mysuru Urban Development Authority, undertook the repair of oxygen pipelines, washrooms, electric connections, and sewerage system, etc[78]. In a unique show of working together in times of distress, MAHAN (Mysuru Association of Hospitals, Nursing Homes, Clinics and Diagnostic Centres) - a private organization - agreed to support the center with doctors, paramedics, and nursing staff and also pay their salaries[79]. It was a rare instance of a public-private partnership for running a hospital, free-of-cost, for people at the forefront of containing COVID-19[80].

Conclusion

The series of events that unfolded from March 2020 onwards in Mysuru incontrovertibly demonstrated that exemplary outcomes ensue when a large number of people pool their hearts and minds together for a common cause. In Mysuru, starting from the highest ranking political executive i.e., the in-charge Minister of the district, down to the last grassroots-level health worker - every individual delivered to the best of their ability. Doctors, staff nurses & paramedical staff toiled tirelessly inside highly infectious spaces, with the least concern for their own health. The police and officials of urban & rural local bodies, media, civil society, industry heads, and religious leaders - all played a stellar role to fight a common enemy. The COVID-19 tally dropped down to zero from a high of 89, by the 16th of May 2020[81].

It will not be an exaggeration to claim that the combat against the COVID-19 pandemic in Mysuru was collaborative in letter and spirit, - one that involved the government, civil society, political leadership, and the private sector. Each of these entities and individual volunteers played a vital role in responding to the crisis, from implementing public health measures and providing healthcare to supporting vulnerable populations and coordinating communication efforts. Their cooperation and commitment to the common goal of protecting the life of others allowed the district to overcome the challenges presented by the pandemic and emerge stronger and more resilient. Mysuru was a story of human goodwill triumphing and holding up the torch of empathy when dark clouds of a crisis shadowed the region. As the world continued to battle this unprecedented global health crisis, the example set by Mysuru came to be seen as a beacon of hope and as a testament to the power of unity and teamwork in overcoming adversity. Truly, the spirit and soul of the 'Mysuru Model'[82].

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Innovative Governance practices, proactive measure & strategies to contain COVID 19 in Nagpur City, Maharashtra, India

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Abstract

This case study describes how a Municipal Corporation's preparedness and leadership initiatives strategically responded COVID-19 pandemic. The author underscores the need of priority setting, appreciating local needs of the population, revitalize health systems and governance therein. The author also links why special emphasis on micro-planning for cities/districts in case of such national emergency/disaster situations is an important building block. Case study we believe can be a roadmap for authorities, governing structures who will in turn manage future public health emergencies. Nagpur Municipal Corporation's model highlights how local governance, and decentralized policy making are the key to India's health agendas – COVID response being the example for and drawing lessons towards achieving universal health coverage!

Keywords: COVID-19, Pandemic, Public Health, NMC

1.0 Introduction

Initially described as 'just like Flu', the Corona disease is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)[1]. The outbreak was identified in Wuhan, China, in December 2019, declared to be a Public Health Emergency of International Concern on 30th January 2020, and recognized as a pandemic on 11th March 2020[1]. The spread of COVID-19 has prompted proactive responses from governments, state health departments and health facilities globally. Response strategies are being adjusted to their high social and economic cost[2] and sustainable & effective are sought for scale-up, particularly in lower-middle-income and low-income countries.

An ill-timed and poorly managed response strategy may threaten the gains for COVID-19 control and instead pose a high social and economic cost to any government (at national or state level)[3]. For instance, during the 1918 influenza pandemic there was a second wave of infection that led to lockdowns[4]. However, lessons from the Ebola outbreak in West Africa (between the years 2014-16) demonstrates how a top-down quarantine was ineffective till community leaders i.e. village chiefs, women and youth leaders - were involved[5]. Thus, response strategies need continuous adjustment, along with the dilemmas and debates in the political and public spheres related to the appropriateness of the implemented measures. The government at national or state level may apply lessons learnt from experiences and analyze the current situation to anticipate potentially unwanted scenarios and plan mitigation measures (depending on context of various scenarios)[2]. In the COVID-19 pandemic, there have been ample number of lessons from

across the world teaching about appropriate and inappropriate response strategies. For instance, in Italy, the rapid spread of COVID-19 from one province to another was related to decentralization of health, police and emergency services to local governments, which resulted in fragmented responses[5]. At the same time, local leadership in other places such as New York (United States of America), Rio de Janeiro and Sao Paulo (Brazil), and Kerala (India) have been praised for their pro-activeness[5].

In India, the first case of COVID-19 was reported in January 2020[6]. In the month of March 2020 the first case of COVID-19 was detected in Maharashtra[7]. Nagpur reported its first COVID-19 case in the month of March 2020[8]. The district of Nagpur has a population of 4.6 million spread across 14 Tahsils, seven Sub-Division & Blocks over an area of 9,892 sq kms [9]. To control the spread of the pandemic within the Nagpur district, the Nagpur Municipal Corporation (NMC) used a multi-pronged strategy. The strategies focused on ensuring quick detection and diagnosis of important cases of COVID-19 rapidly and their reporting. Other focus areas for the strategies were to reduce the local human-to-human transmission; to enhance the safety protection of high risk/special need population group; to enhance the ability of health facilities in responding to outbreak; to lower the risk of exposure in containment zone and to improve the social distancing protocol.

The author documents the response strategy adopted by the Nagpur Municipal Corporation for containing the spread of COVID-19. NMC's success story lies in effective leadership, proactive approach, innovative and resilient strategies along with a three-layered strategy of early detection, isolation, testing and treatment. The proactive approach is reflected in the city's preparation for managing the spread of COVID-19 even before the first patient was detected in the city. NMC's strategy has been working proactively rather than reactively. This article shares experiences and showcases lessons learnt during pandemic control.

2.0 Description of the Initiatives and their outcomes

Measures undertaken include - creation of a war room, setting-up COVID- 19 Control Room, Rapid Response Teams, launching COVID-19 web portal and mobile application, training of medical, paramedical staff & front-line health workers, comprehensive survey for identification of high-risk people, arranging shelter homes and spreading awareness. NMC adopted a three-pillar strategy for containing the spread of COVID-19 in Nagpur city, these pillars were: governance, focusing on health and strengthening the health care system for COVID-19 management. The innovative measures undertaken under each pillar have been mentioned below in Table 1.

Table 1. NMC's three-pillar strategy for containing the spread of COVID-19 in Nagpur city

Strategy area	Interventions
Governance	COVID 19 War room
	Control Room
Health	D 3: Define, Design, Drive containment approach
	3T: Tracing, Testing & Treatment
	Contact tracing
	Rapid response team
	Screening of travelers on airport & railway stations
	Strategic approach for containment
	Containment Survey
	Mass Quarantine of high-risk contacts
	Testing of high-risk patients from private hospitals
	Comprehensive COVID 19 survey (SARI / ILI / Pneumonia & high-risk population survey)
	Fever clinic
	Special care of high-risk population during COVID 19 epidemic • ANC care during COVID 19 epidemic • Care for cancer patients • Care for TB & Leprosy patients
Health care system	COVID Care Centre (CCC)
	Dedicated COVID Health Centre (DCHC)
	Dedicated COVID Hospital (DCH)
	COVID Bed management & centralized admission system in COVID hospital
	Restriction on excess billing in private hospital
	Ambulance management
	Special care for hospitalized patients
	Deputation of IAS officer in different zones
	Dead Body Management
	Strategies to avert COVID 19 deaths

3. Description of the interventions

3.1 Governance

3.1.1 COVID-19 War room

A COVID-19 war room was set up under leadership of NMC commissioner to monitor the COVID-19 situation round the clock. Municipal Commissioner served as the head of incident response team. Response to incidents was categorized in two groups: (a) health – for health-related incidents, Joint Head – Medical Officer Health (MOH) and (b) supplies – for

supplies, relief measures and other incidents, Joint Head - Additional Municipal Commissioner.

3.1.2 Control Room

NMC had set-up Corona Control Room for effective management of queries raised by citizens, to keep a check on spread of the disease and monitor preparedness level of the city. Training was arranged for all front-line warriors including Doctors, Nurses, and other medical staff at the Control Room. All the aspects starting from broad understanding of the situation to nuances while handling a suspects or patient, were discussed in detail during the training. A dedicated call center was also setup to address the queries of citizens. Executives were also trained to address queries of callers (in different scenarios). Priority was assigned to different types of calls and standard operating procedures (SOPs) were also defined. NMC ensured that all the steps were explained in detail in order to prepare the executives for any situation. This turned out to be a game changer, because of dedicated call center NMC was able to respond to approximately 18900 calls.

3.2 Health

3.2.1 D (Define, Design, Drive containment) approach

As a key strategy '3D' was used by NMC to control the outburst of COVID-19 cases. These strategies resulted into strict control on community spread of disease and disrupting chain of virus transmission in containment zones.

a) **Defined** area of containment, mapped & controlled its perimeter,
b) **Designed** containment zones with 3T strategy.
c) Realization of pre-requisite need and implementation of social welfare activity for needy section of society.
d) **Drive** under NMC Commissioner's leadership, governing boundaries of 10 administrative zones, ensured law & policy enforcement of social distancing, timely releasing official communique' for containment strategies.

3.2.2 Tracing, Testing & Treatment (3T)

NMC complied with guidelines and implemented strategic approach for containment by converting red zone into orange and orange into green zone.

a) Triple T - Efficient tracing, Intensive testing and Effective treatment.
b) Isolation of high risks through quarantine
c) Broad Surveillance through Fever clinics, comprehensive COVID survey and SARI testing.

Aggressive contact tracing system was undertaken under the leadership of Assistant Medical Officer of Health (MoH). System was activated within 10 minutes of the positive results of swab and initiation of contact tracing process. Within two to four hours' contacts were traced & counselled for testing.

3.2.3 Contact tracing

Contact tracing helped in early identification and isolation of suspects, and initiation of their treatment. Nagpur Municipal Corporation (NMC) started contact tracing in Nagpur city under the leadership of Commissioner, Nagpur Municipal Corporation from 11th March 2020, when the first case of COVID-19 is detected in the city.

Contact tracing process

- Every time a person tested positive for coronavirus disease (COVID-19), a process for tracing his/her contacts was activated
- Exclusive teams at NMC level re-winded the movement of each patient -- places visited, mode of transport used and tracking of persons with whom he/she came in contact with before testing positive
- NMC team asked the patient or his/her close family member for details on travel history -- whether he/she travelled by flight or train or city bus, their recent places of visits including clinics and hospitals. If required, the appropriate authorities -- airports, railways or app-based ride-hailing services were contacted directly for information

Table No. 2: Challenges faced during contact tracing process & strategies implemented to overcome the challenges

Sr. No.	Challenges faced during contact tracing process	Strategies implemented to overcome the challenges & achieve the target
1	Few patients have provided false or incomplete history of his/her movements of last 14 days.	Involvement of front line health worker, school teachers in RRT.
2	Refusal from sharing information about history of travel or his/her movements in last week	Awareness generation about importance of contact tracing through mass media. Involvement of community leaders, NGO representative in contact tracing process. Contact tracing improved from 1: 5 to 1:13.4
3	Overburden on existing RRT considering sudden increase of	Deployment of two dedicated RRTs Prabhag wise exclusively for contact

	COVID positive cases i.e. only one RRT per Prabhag wise doing contact tracing, follow up with COVID positive cases those are in home isolation, mobilization of identified high & low risk contact for testing	tracking. **Total 144 RRTs are functional, these includes total 434 ASHAs, 112 ANM, 175 school's teachers.**
		Use of technology: System generated SMS to COVID patients for encouraging them to share information related to history of travel or his/her movements.
		Decentralized Corona War room at zone level for effective execution of strategies at ground level.
		Setting up zone wise call center: From this call center a dedicated team will make calls to traced high & low risk contact for encouraging them to do testing

3.2.4 Rapid Response Team

Rapid response team(s) were formed by NMC Health Department. The teams were headed by Health Officer, whereas all Zonal medical officers, medical officers & all front line health workers were members of this team. It reported data for all presumptive & confirmed cases of COVID-19 and regularly followed up with such cases. The team was trained for screening all high-risk cases. The rapid response team coordinated with different department like Airport Authority, Civil Surgeon Office, Public Health Department for effective implementation epidemic surveillance activities.

3.2.5 Screening of travellers on airport & railway stations

The NMC responded to the COVID-19 pandemic, at its earliest by implementing a few unique steps such as screening at airport and railway stations with steps/process flows in place. This exercise collated information on country of travel, dates and any associated symptomatology. Travelers who travelled from corona affected countries were also tracked. Apart from screening, those who had travelled earlier were also screened by the NMC. The steps followed have been provided below:

- NMC administration was requested for sharing the list of people who travelled - from the Airport & Railway Authorities, Nagpur
- Details such as name, address & mobile numbers of passengers (travelled to corona affected regions) were also procured
- Further names were shortlisted

- Zone wise 'address and date of travel' was mapped
- Zonal medical officers were trained on 'follow up procedure'
- Regular follow up of all these travellers for monitoring the symptoms related to COVID-19 was undertaken

3.2.6 Strategic approach for containment

NMC identified large outbreak areas and cluster areas. The red zones were mapped in respective areas. As part of the strategic approach in large outbreak & cluster areas following activities were implemented:

- Area of operation was defined, and perimeter control was applied
- Active search of cases, early isolation, contact listing and tracking, quarantine and follow-up of contacts was undertaken
- Testing of all suspect cases, symptomatic contacts, asymptomatic direct and high-risk contacts of a confirmed case and SARI cases was conducted
- Clinical management was based on risk profile
- Social distancing measures were implemented
- Hydroxychloroquine (HCQ) was administered in healthcare workers and contacts
- Awareness creation on hand hygiene, respiratory etiquettes, and sanitation

Experience from the field: We realised that for effective containment strategy, convergence with multiple departments is required. So we coordinated with Police, District Collector and different local NGOs and involved them in containment planning & implementation. In the containment area ensured the availability of all basic needs like ration, milk, ATM.

3.2.7 Containment Survey

Door to Door Containment survey was conducted by NMC Health Department. Based on the available information, a home with a suspected case was identified and suspect(s) were checked for symptoms. Additionally, the area was demarcated. In case of any symptoms, suspect was shifted to COVID-19 facility. This survey was done for a period of 14 days and symptoms were checked. The medical staffs were trained specially for conducting this survey.

Experience from field: The containment survey turned out an effective tool for early identification of suspected COVID cases, high risk persons, and vulnerable groups. On the basis of findings from survey, concerned team isolated suspected & high-risk cases of COVID & this activity supported in restricting the spread of the disease.

3.2.8 Mass Quarantine of high-risk contacts

NMC attempted 'mass quarantine' of people who were found exposed in the containment zone without obvious signs. Total seven quarantine centers were made available by NMC

which benefitted more than 3,000 people. NMC administration provided all essential items including food and daily medical check-up to the quarantined people. Special care was provided to children and elderly population.

Experience from field: In the containment area it was found that a few people who came positive for COVID provided false or incomplete histories about his/her movements and even their close relatives and family members did not disclose any details & even they were hiding their relatives in their homes. In few cases close relatives have sent family members to other areas for hiding them from providing contact history. So to restrict the spread of disease, such people who are found exposed to positive cases are shifted into public quarantine. This came out to be an effective step in controlling the community-based transmission of disease.

3.2.9 Testing of high-risk patients from private hospitals
Additionally, as per the notification received from Ministry of Health & Family Welfare (MoHFW), NMC issued a letter to all private hospitals for mandatory reporting/notification of all confirmed COVID-19 cases or high-risk COVID-19 cases to the NMC health department. The high-risk patients from private hospitals included:

- Symptomatic patients getting admitted in any private hospital in administrative bound of NMC
- If symptoms are indicative of Acute Respiratory Distress Syndrome (ARDS), Severe Acute Respiratory Infection (SARI), Pneumonia, or require ventilator support

Hospitals were instructed to immediately notify the NMC Corona Control room on admission details. Also, special teams were deployed for hospital visit so that sample collection of reported high-risk case and standard follow-up could be completed.

3.2.10 Comprehensive COVID 19 survey (SARI / ILI / Pneumonia & High-risk population survey)
NMC health department trained health staff including front-line health workers (Accredited Social Health Activist (ASHA), Anganwadi Worker (AWW), Auxiliary Nurse Midwife (ANM)) and continued to attend with queries and refresher training. Additionally, algorithm, micro plan, training, and deployment of team were components for the survey. The comprehensive survey of total population started on 27 March 2020 to identify and track high risk and co-morbid population. The strategy was developed with the dual purpose of raising awareness about COVID 19 and health information in the city as well as early identification of symptomatic people. Door-to-door survey under NMC limit was conducted and collected information about number of members living in the house, travel and medical history. High-risk people with ILI, Pneumonia, senior citizens with and without comorbidities like TB, COPD, DM, Cancer, HT, etc. and ANC population were identified and

are constantly followed up with the help of this survey. More than 25 lakh people have been surveyed.

3.2.11 Fever clinics

Fever clinics are specialist clinics for people who may be infected with COVID-19. Fever clinics were segregated facilities to assess, test and reassure people, and where necessary, to triage them through the healthcare system. Fever clinics served as a first triaging point for COVID-19 testing, to reduce the burden on the overall healthcare system and to limit the risk of contamination. These clinics helped to keep people who may be contagious away from other areas of hospitals and health centers. This helped to reduce the potential spread of the virus and provided opportunity for health workers for triaging of presumptive cases.

Fever clinics were set up in key areas of Nagpur. In each zone one urban Primary Health Centers (PHCs) was converted into fever clinic as part of crisis management in the city. NMC identified ten urban primary health centers (UPHCs) in Nagpur city to function as "fever clinics".

3.2.12 Special care of High-risk population during COVID-19 epidemic

Due to COVID-19 there was a delay in regular follow up of Ante Natal Care (ANC) cases, cancer cases, tuberculosis (TB) and leprosy cases. Thus, dedicated activities were operationalized for special care of high-risk population during COVID-19 epidemic. All these activities were monitored from the Corona Control room.

- **ANC care during COVID-19 epidemic**
  For providing timely services to high-risk group of population, NMC health department started dedicated Ante Natal Care in urban primary health centers by following necessary precautions to avoid spread of COVID-19 infection.
- **Care for cancer patients**
  NMC health department has set up mechanism for providing care to cancer patients. Dedicated teams were given responsibility ensuring palliative care and medicine for cancer patients.
- **Care for TB and Leprosy patients**
  Dedicated teams from NMC health department have undertaken home visits to TB and Leprosy patients as part of follow up activities. Medicines were also provided to known TB and Leprosy patients for ensuring compliance for consumption of timely course of medicines.

4.0 Strengthening health care system for COVID-19 management

As per Government of India (GoI) guidelines three-tier COVID-19 facilities were set up/upgraded to treat COVID-19 cases based on severity of symptoms. These three-tier facilities include COVID Care Centre (CCC) to treat mild cases, Dedicated COVID health

Centre (DCHC) to treat moderate cases & Dedicated COVID Hospital (DCH) to treat severe cases in Nagpur city. With reference to these guidelines NMC has been continuously striving for increasing beds in both government and private hospitals.

4.1 COVID Care Centre (CCC)

NMC had set up a dedicated Quarantine facility/ CCC facility with more than 8,000 beds' capacity to treat and manage, suspected & positive COVID-19 cases. This facility is mapped with one or more COVID Health Centre or Dedicated COVID Hospital for referral.

4.2 Dedicated COVID Health Centre (DCHC)

For management of Category C and Category D patients, NMC has up-graded four existing indoor hospitals as Dedicated COVID Health Centre which are equipped with centralized suction and oxygen system.

4.3 Dedicated COVID Hospital (DCH)

In private hospitals for increasing beds, acquisition of private hospital as DCH or DCHC facility was done. For this process, NMC has formed a team of experts, who visited a particular hospital and checked the readiness of hospital as per stated guidelines of GoI for starting a COVID facility.

4.4 COVID Bed management & centralized admission system in COVID hospital

For streamlining bed allotment for admission of patients in COVID-19 hospitals, NMC had set up a dedicated control room which is functional 24x7 for centralized bed allotment in COVID-19 hospital. Bed allotment was done with the help of an online dashboard which showed availability status of beds in respective COVID-19 hospital on real time basis. NMC requested, all COVID-19 hospitals to update their beds' availability status on real real-time basis.

4.5 Restriction on excess billing in private hospital

The Government of Maharashtra and NMC through notifications has provided detailed instructions on billing in COVID and Non-COVID hospitals.

4.6 Ambulance management

NMC upgraded the ambulance capacity from 28 to 65 ambulances and for effective communication created a decentralized ambulance dispatch system which was operated at zone level. The list of contact numbers for each zone was also available. Five dedicated ambulances were deployed in every zone for shifting the patients from home to hospital or hospital to hospital.

4.7 Special care for hospitalized patients

For ensuring appropriate services given to patients admitted in COVID hospitals in government medical colleges, NMC has deputed one IAS officer in both GMC & IGMC.

- COVID war room was made functional in both government medical colleges
- CCTV cameras were installed in the wards and centralized surveillance system was made operational
- Help desk was created in both medical colleges for resolving queries of patients' relatives and for providing updates about patient health condition to the relatives.
- Ward wise death review on daily basis was conducted to avert deaths caused by COVID-19
- Regular visits were undertaken by the Task Force in these government hospitals for ensuring compliance to the clinical protocol. Task Force has been named for private hospitals also.
- Step down approach was started i.e., shifting of stable COVID patients from GMC & IGMC to NMC Indoor hospitals.

4.8 Deputation of IAS officers

IAS officers were deputed by NMC Commissioner in different zones for effective implementation of COVID management activities in the zones. This resulted in setting up decentralized control room at the zone level, preparation of red list, ambulance dispatch system, and deployment of hearse vans at zone level.

4.9 Dead Body Management

Considering the severity of transmission of disease, NMC set up dedicated Dead Body management team and this team was undertaking management of all COVID dead bodies irrespective of their residence status i.e., whether residents of Nagpur city area or from other parts of country.

4.10 Strategies to avert COVID-19 deaths

A set of activities were detailed out to avert COVID-19 deaths. Some of the activities have been provided below:
- Daily detailed death analysis & accordingly course correction was made in existing strategies
- More focus on aggressive tracking & testing of high-risk cases & those with co morbid
- Co-morbidity survey: Dedicated team was deployed for regular follow-up of such people for early detection of any alarming sign of COVID.
- Active surveillance in the community via trained police personnel, revenue staff & front-line health workers: In this surveillance door to door visit was undertaken by the team. They checked the temperature of all household's members and oxygen saturation of members aged above 30 years & also find out ILI/SARI with or without comorbid cases
- Mandatory reporting & testing of ILI & SARI cases from private hospitals & clinics

- Centralized bed allotment system to avoid delay in admission of patients in COVID hospital
- Awareness generation for timely testing and reporting of alarming signs and symptoms through social or print media
- Use of zone-wise call centre: A dedicated team made telephone calls to trace high & low risk contact to encourage them to do testing
- Bed capacity was increased by creating an additional 1000 beds available
- Oxygen availability was increased to cater to increasing number of caseload
- The death audit was done in two parts. Task force did regular detailed death audit in COVID hospitals where death count was high.

Apart from the interventions undertaken in these areas, certain relief measures and lockdown and social distancing was also implemented by the NMC.

A. Relief Measures

A special control room for elderly and differently abled citizens was made operational under the supervision of NMC Deputy Commissioner, Social Welfare Department to extend help at the earliest.

1. Control room for Elderly care population: Algorithm & operational guidelines for setting up control room for elderly people was established. NMC high school teachers were deployed in control room as primary call responders.
2. Shelter homes and supplies of homeless & needy people: NMC shifted homeless people to shelter homes after performing medical checks.
3. COVID 19 mobile based app: COVID-19 App was developed with the support of Hindustan Latex Ltd (HLL). Based on the symptoms entered by users, a dedicated team stationed at Corona Control Room categorized cases as Severe Suspect, Moderate Suspect and Mild Suspect. This helped NMC to proactively shift 'at moderate / severe risk' cases for better management such as shifting to the COVID Care Center.

B. Lockdown and social distancing

As per the directives of Government of India, NMC has undertaken following measures to ensure social distancing:

1. Implementation of Government of India and Public Health Department directives: Amidst all the activities, NMC also ensured that directives of GoI in all work plans were implemented.
2. Awareness generation: NMC health department did awareness generation using social media, mass media, distribution of handbills, display of banners, posters at public places - to generate awareness regarding COVID 19

3. Public Interaction: The Municipal Commissioner, NMC, regularly interacted with citizens to make them aware of the situation and necessary arrangements undertaken by NMC.

The experiences from the field and outcomes from these activities have been mentioned in this section.

- **COVID 19 War room:** COVID 19 war room played a vital role in coordination and implementation of key strategies. On daily basis, review meeting was organized by NMC commissioner to discuss the progress of activities and for resolving issues faced at the field level. Considering the challenges and the bottlenecks faced in the field, resolution strategies were getting discussed and accordingly course correction was made in ongoing activities.
- **Control Room:** More than 22,000 calls were successfully answered from the Control room which was managed by NMC school teachers along with staff from AIIMS Nagpur.
- **Contact tracing:** Contact tracing supported NMC to control epidemic of COVID 19 cases. A total of 613648 contact were traced of COVID positive cases in Nagpur city with a population of 25 Lakh citizens (As per census 2011).
- **Rapid response team:** For each ward one RRT team was allocated, thus 38 wards and 44 RRTs were set up. This resulted into quick reporting and effective monitoring of COVID-19 related activities.
- **Screening of travellers at airport & railway stations:** A minimum of 1600 travellers were screened by the NMC team.
- **Containment Survey:** NMC health officials met with religious and community leaders of certain areas and requested for support, to encourage local people to allow the team to conduct door-to-door survey. These efforts turned out fruitful & survey team succeeded in completing the survey in targeted households.
- **Mass Quarantine of high-risk contacts:** Mass quarantine in containment areas came out to be an effective step in controlling the community-based transmission of disease.
- **Comprehensive COVID 19 survey (SARI / ILI / Pneumonia & High risk population survey):** NMC Health department trained a total of 664 health staff including front line health workers (like ASHA, AWW, ANM).
- **Fever clinic:** Ten urban primary health centres (UPHCs) were identified as "fever clinics" in Nagpur city.
- **COVID Care Centre (CCC):** NMC had set up dedicated Quarantine facility/ CCC facility with more than 8000 beds capacity to treat and manage, suspect & positive COVID cases as per the protocol.
- **Dedicated COVID Health Centre (DCHC):** DCHCs had total bed capacity of 324 beds.

- **Dedicated COVID Hospital (DCH):** NMC issued an order to 116 private hospitals for starting the service for treatment of COVID 19 cases and 66 private hospitals were made functional for providing service to COVID patients with bed-capacity of more than 3,000 beds.
- **COVID Bed management & centralized admission system in COVID hospital:** Total 73 different COVID facilities updated their bed status on an online dashboard. NMC COVID Control room was equipped with ten dedicated lines with a single control room number for facilitating admission of patients in COVID hospital. Total 3284 calls were received at centralized call center for bed allotment and 1279 patients were allotted beds.
- **Restriction on excess billing in private hospital:** Eighty-eight people as part of pre-audit team verified more than 5000 bills in all private COVID hospitals.
- **Ambulance management:** Eleven ambulances were equipped with basic life support and five ambulances were equipped with advance cardiac life support system. In addition to 108 Ambulances, NMC has deployed 50 more ambulances into different zones. More than 3200 patients were shifted by these ambulances.
- **Deputation of IAS officers:** A new SOP was developed for contact tracing and surveillance as a result contact tracing was increased from 1:8 to 1:15
- **Dead Body Management:** The team has performed the last rites of more than 3500 dead bodies as per religion of the patients.
- **Strategies to avert COVID-19 deaths:** Due to mandatory reporting & testing of ILI & SARI cases from private hospital & clinics, total 289 SARI cases were reported from private clinic & hospital.
- **Control room for Elderly care population:** Calls were related to inquiry for status of food distribution from NMC. Additionally, NMC has done a tie-up with 44 NGOs and other organizations to provide food & grocery to homeless, elderly and differently-abled citizens.
- **Shelter homes and supplies of homeless & needy people:** So far more than 15000 people have been given shelter homes and food was arranged for 40,000 people. Also, awareness campaigns were launched on social media to help homeless people.

5. Discussion

In case of a national emergency/disaster situation, the central government leads the overall coordination and communication efforts. The central governments should plan and build on existing public health emergency/disaster preparedness and response plans for managing pandemic situations at micro-level including for pandemic influenza[10]. Such efforts have been supported by the World Health Organization (WHO) and other United Nations (UN) organizations under International Health Regulations (IHR) (2005), and through the Cluster-coordination approach where relevant[10.] However, there is a clearly

recognized need to plan and implement actions/strategies needed at state and district levels.

6. Formulating a strategic plan

At the local level, outbreak response is guided by 1) the extent of the outbreak within the district and its most likely trajectory, and 2) the risk and trajectory within the rest of the state and nation. Precise epidemiological analysis and forecasting guide local authorities and policy makers for answering these two questions. An appropriate plan to handle the situation may comprise of three parts – structure (components of strategic plan and how they all will fit together), frameworks (methodologies that are applied to help authorities to come up with desired goals) and governance (path to be taken for tracking and reporting on the goal elements of the strategy)[11]. NMC's three-pillar strategy for containing the spread of COVID-19 - comprised of these three parts structure i.e. 'health care system', frameworks i.e. 'health' and governance as per 'NMC local governance'.

Understanding priorities at the local level Formulation of health policies and strategies at national level may lead to formulation of priority programs for detailed health planning at regional, municipal and local community level. However, health strategies at local level may be identified as specific aims and steps towards implementation. These strategies include alignment and linkages with other strategies and plans (to suit the local needs) in addition to the national action plan[12]. NMC identified local priorities for the city of Nagpur and formulated strategies in addition to the national action plan. Some of the identified local priorities included taking support from religious and community leaders for conducting door-to-door containment survey, deploying dedicated teams for conducting home visits for TB and leprosy patients as part of follow-up activities and providing medicines, and screening travellers within Nagpur from relevant ports of entry.

7. Micro-level strategic planning

A micro-level strategic planning has been defined as anticipating the future, assessing present conditions, and making decisions concerning organizational direction, programs, and resource deployment. The process of planning includes assessment of available information; making assumptions about the future; evaluating present objectives or developing new ones; and formulating strategies and operational programs for local needs which if implemented could accomplish goals and objectives[13]. The NMC formulated the micro-level strategic plan which comprised 24 broad interventions apart from several relief measures, lockdown and social distancing. These strategies resulted into quick reporting and effective monitoring of COVID-19 related activities within the Nagpur city.

8. Way forward

NMC is continuously striving to undertake innovative measures to control the spread of COVID-19 within Nagpur city. As a way forward, NMC is planning to use drones or fixed camera-based systems with round-the-clock monitoring system to discourage movement

between households and for monitoring implementation perimeter control activities. Additionally, keeping in view the post-lockdown scenarios, NMC is planning for extensive scaling up of laboratory-based testing and sero-surveillance through rapid antibody test kits to find out cases in the community.

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COVID-19 Crisis Management in District of Dadra & Nagar Haveli
A Case Study on challenges, interventions, outcomes and learning from the experience of managing COVID-19 crisis

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Abstract

In the wake of COVID-19, the major challenge for the administration was to contain the spread of virus and simultaneously treat the COVID-19 infected without interrupting the access to the basic needs for the vulnerable. The study provides the contexts, factual information, soft and hard interventions taken and key learnings.

Keywords: COVID-19, Challenge, Basic need, Intervention

1.0 Introduction

Dadra and Nagar Haveli comprise 72 villages and one town. The union territory was merged with the neighbouring union territory of Daman and Diu to form the new union territory of Dadra and Nagar Haveli and Daman and Diu on January 26, 2020. The territory of Dadra and Nagar Haveli then became one of the three districts of the new union territory, as the Dadra and Nagar Haveli District.

Fig:1 Map of Dadra Nagar Haveli

Dadra & Nagar Haveli is connected to Maharashtra and Gujarat via National Highway 48. Silvassa is one of the major cities of the District. The nearest railway stations are in Vapi, 16 kilometers away and Bhilad, 14 kilometers away. Daman is 30 km away via Bhilad on National Highway number 8.

Mumbai is 160 km away from Silvassa, via Bhilad, on National Highway number 8, whereas Surat is 130 km away from Silvassa, via Bhilad, on National Highway number 8. According

to the 2011 India census population of District of Dadra & Nagar Haveli is 343,709. District hosts floating population, coming from all parts of the country, mostly the labourers hail from Uttar Pradesh, Bihar & Orissa. Other floating communities being from the states of Madhya Pradesh, Maharashtra, Gujarat, Kerala, Karnataka, Tamil Nadu, Andhra Pradesh, and Rajasthan.

2.0 Objectives

Policies, procedures and decisions were made by the Administration of Union Territory considering the following objectives.

1. Control Spread of the virus
2. Provide uninterrupted and safe access to Essential goods
3. Provide prompt and robust healthcare, services
4. Two-way communication

3.0 Innovative strategies were adopted to address the identified challenges

The Administration of UT of DNH and DD instantly laid out a framework to control the spread of the virus while providing uninterrupted access to essential goods and prompt health care services. The Administration focused on the following components to achieve the objectives.

- Monitoring movements
- Safe access to basic needs
- Robust Health care

3.1 Monitoring Inter-State Movement

As the movements were restricted due to the lockdown, it was necessary for the Administration to keep a record of the people travelling to and from the Union territory and to restrict any unnecessary movements. Hence the Administration proposed the following solutions to monitor movements:

i. E-pass Solution: E-pass was made available for citizens travelling to and from the union territory. The E-pass was made available on various platforms such as mobile application, online portal and manual process. The Administration was able to provide approval for e-pass only if there was an emergency. Hence the Administration was able to restrict any unnecessary movements. There was a total of 4,54,981 E-pass requests made to the Administration.

ii. Check-post monitoring: All check-posts were sealed to restrict any unwanted movement to and from the union territory. The borders were deployed with police personnel, health care workers, Scouts and Guides for scanning and screening. The vehicles entering the Union Territory were sanitized and the health condition of the

travelers were recorded. "Arogya Setu" app was made mandatory to cross the checkpost.

iii. Safe and secure transit of labourers: Due to lockdown, the labourers were jobless and were left with hardly any options to travel home. A request was raised to the Incident Management team and the travel and food arrangements were made for the labourers to travel to their respective states.

3.2 Safe access to basic needs

People need access to basic needs for their survival. However the process had to be streamlined and managed to provide safe access during the pandemic. The COVID spreads easily and hence necessary precautionary measures were required to be maintained without compromising on the basic needs.

i. **Cloud-based Incident Management Solution:** A customized solution was developed with the functionality requirements from users (Operators and Responders). The solution comprises of the Register feature to make the entries based on the call information, Incident History to check the Incident history of the caller based on phone number, Responder Close functionality to filter and close the incidents and Master Database to store the information centrally. This was effective in addressing the concerns of the citizens. Initially, it was used to distribute only food by the Welfare department and later the categories in applications were extended to ration distribution, complaint registration, pass requests and for movement of migrant labourers.

ii. **Food supply to the needy:** Due to lockdown, many daily wages lost their jobs and had hard time to provide for themselves and their family with food. The Administration of UT arranged for food packets and ration kits for the needy and supplied it all over the Union Territory with the help of Scouts and Guides. 4,56,125 meals and 17,735 ration kits were distributed.

iii. **Mobile application (Corona Tracer):** The IT department of DNH developed a platform to make the two- way communication between the Administration and the citizens easier. Corona tracer app was developed for the citizens to raise concerns regarding COVID symptoms, Self-assessment, E-pass requests, report suspected persons or mass gathering and find emergency contact. The government also created awareness through videos. The Administration also communicated the no. of cases and the hotspot areas on a daily basis to make the citizens aware and to act with diligence.

3.3 Robust Health care

a) **Isolation Centers:** To avoid the spread of the virus, people who were found symptomatic were put in isolation centers. To leverage the resources available in

the Union territory, hotels and resorts were converted to isolation centers. Utmost care was taken to sanitize the isolation centers and provide healthy food to the people.

b) **Robust Home Quarantine:** People arriving from other states were required to undergo home quarantine until the initial test results were out. Necessary measures were taken to keep the people home quarantined. They were also provided with contacts to supply food and essentials at door step.

c) **Screening in Public Places:** To control the spread of the virus, screening was done in public places such as the Collector's office, Nagar Palika, ATMs etc.

The graphical representation of COVID-19 Cases in Dadra Nagar Haveli
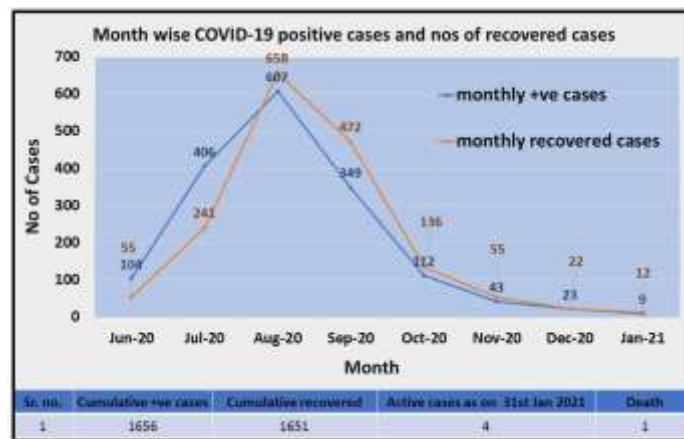

Fig:3 COVID-19 Positive and Recovered cases in DNH from June 2020 to Jan 2021

4.0 The context of the challenges faced by the administration, interventions taken to address the identified challenges and the outcomes are described using the CAR framework
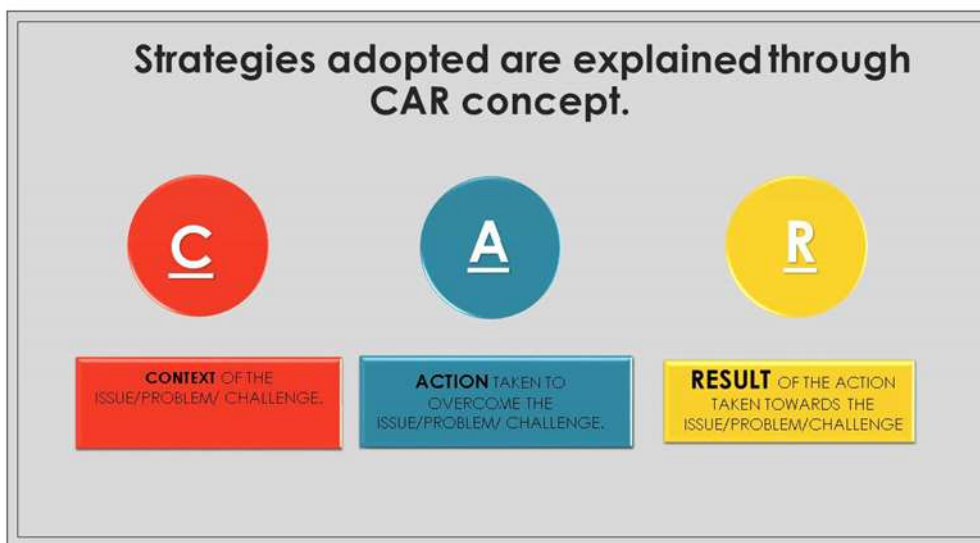

Fig: 4 CAR Framework

4.1 Monitoring the inter-state Movements

a. **E-Pass Solution**

Context: Due to the pandemic outbreak, there was a complete nationwide lockdown which restricted any kind of movement. The travel could increase the exposure to the virus thus putting the citizens at risk, but there was a need for people to travel interstate and local due to various reasons such as stranded people to go home; transport essential items like groceries, vegetables, medical equipment; transport COVID affected people to health centers etc. Hence, it was necessary to monitor the movements and have a record of people and their health who are traveling to minimize the risk of spread.

Action: E-Pass was made available for citizens through a mobile application to get permissions to travel locally or interstate depending on the purpose and duration of travel. The following are various types of passes created to monitor the movements to and from DNH:

- Daily Pass Permission- Local pass to travel within DNH
- Duty Pass Permission- For commute of people working in companies which provide essential services to the citizens
- Outside to DNH (Temporary)- For temporary movement from other states to DNH
- DNH to Outside (Temporary)- For temporary movement from DNH to other states
- Outside to DNH (Permanent)- For permanent movement from other states to DNH
- DNH to Outside (Permanent)- For permanent movement from DNH to other states
- Outside to DNH (Daily Interstate)- For daily interstate movement from other states to DNH
- DNH to Outside (Daily Interstate)- For daily interstate movement from DNH to other states
- Outside to DNH (Bulk Import)- To import goods and essentials from other states to DNH
- DNH to Outside (Bulk Import)- To export goods and essentials from DNH to other states
- Pass Renewal - To renew the passes

Result: Through the introduction of E-pass in DNH, necessary information was made available to monitor of the movements and track in the case of test was

positive. The Administration was able to record the number of people traveling, their purpose of travel and was able to restrict the unnecessary movements. There was a total pass request of 4,54,981.

Fig: 4 E-Pass Centres

4.2 Check-post monitoring and integration with Police and Health departments

Context: There was a need to monitor and track the Interstate movements, so that the Pandemic COVID -19 can be under controlled. Coordination of Police Department with Health Department was required to keep a track of the information of people, maintain social distancing the check posts, sanitize the vehicles, perform the test and implement the course of action based on the test results to restrict the spread of the virus.

Action:

- All check posts were sealed for all inter-state and inter-district movements except for the purposes permitted under UT guidelines of DNH & DD. Reinforcement of the borders with adequate deployment of police personnel including IRBN and Home guards were done.
- Health workers were deployed at the check posts in enough strength with thermal sensors for scanning and screening.
- Scouts and Guides were actively involved to help with the process
- The vehicles entering the Territory were disinfected at the entrance itself and the travellers were required to wear masks.

- Register was maintained on the information regarding the details of the passenger and vehicle for further course of action.
- Use of the "Aarogya Setu" Mobile App was mandatory for everybody carrying smart phone. The Bluetooth and Location Services mandatorily be switched ON for effective working of App.

Result: This initiative of the SOP streamlined the process and made it seamless for the citizens with necessary information to enter and exit the city.

Fig: 5 Monitoring Interstate moment

4.3 Check Coordination with Mamlatdar, Labour Department, Social Welfare Department and Disaster Management departments for Shramik trains and safe and secure transit of labourers

Context: Due to lockdown, all the factories and industries were closed. So, the labourers were jobless and had no money as well as there were not many options to travel hometown. Stranded labourers from other states were to be identified, gather information and plan for the travel to their required destinations in the Shramik trains arranged by the government.

Action:
- The requests from the Migrant labours were registered using the Incident Management System.
- The requests raised were used to arrange the train tickets for the migrant labours on daily basis.

- The respective migrants whose tickets were arranged were intimated about the travel details
- Arrangements were made of buses for movement of persons from Silvassa to Vapi/ Bhilad Railway Station.
- Food Packets were provided free of cost for all the persons travelling to their hometown via train.

Result: All necessary information, and facilities were made available for the migrant workers and necessary arrangements were made for the movement to their destination. Information regarding the train booking was passed to respective people ahead of the actual date of journey. Around 29,848 migrant labours were provided with necessary arrangements to reach their home town.

Fig: 6 Shramik Trains

4.4 Coordination with departments for Food supply to labours

Context: Due to the lockdown, under the ministries guidelines all the industries and factories were being shut down. The labourers from various parts of the country who were working in the small and medium scale industries lost the only source of income and were unable to avail their daily needs such as food for survival. There was a need to identify the people who are dependent on the Administration for daily food and other necessities.

Action:
- A 24X7 helpline center was setup at Collectorate, Silvassa to address the grievances during the lockdown
- Toll free number 104 and 1077 were made available as helpline numbers
- 13 Operators were deployed to attend the calls and register the requests/ complaints.
- Scouts and Guides were actively involved to help with the process
- Social Welfare department coordinated with the helpline center on daily basis to plan and supply food and ration kits to the needy through Akshaya Patra Foundation.
- Free ration was provided for 3 months to all the ration card holders.

Result: The common objective of providing the necessities to the needy brought the departments together to act upon the situation. Coordination with various stakeholders is ensured with a common application.

- 4,56,125 meals were cooked and distributed as food packets for the needy.
- 16,735 Ration Kits were distributed.

Fig 7: Food & Ration Kit distribution

4.5 Safe access to basic needs

a. Cloud based Incident Management Solution created for COVID response

Context: In the wake of this situation, Collectorate of Silvassa, UT of DD and DNH have set up an interim command and control room in the Collectorate of Silvassa itself with 13 operators to answer the calls of citizens and to register the requests and complaints. Handling thousands of calls in a day and responding to the request become a challenge for the Control room team due to lack of readily available system to manage the incidents. The operators had been using google sheets to

make entries with Caller details such as Name, Phone number, Address and Purpose.

Action: The administration had developed cloud-based software i.e.; Incident Management System. The solution comprises of the Register feature to make the entries based on the call information, Incident History to check the Incident history of caller based on phone number, Responder Close functionality to filter and close the incidents and Master Database to store the information centrally.

This helped to avoid repeated entries and check the status of requests with just entering the phone number. The same database were used for field teams to fulfill the requests such as supplying the food quantities as requested and addressing other concerns.

Result: The application was developed, deployed and trained the control room operators within 48 hours and has been immensely used by the response team at various stages. Firstly, it was used to distribute only food by welfare department and later the categories in applications were extended to ration distribution, complaint registration, pass requests and for movement of migrant labours.

Fig: 7 Online Incident Register

b. Mobile application (Corona Tracer)

Context: The Administration set up processes and systems to address the essential requirements of the citizens, but the information was dissipated into different mediums and platforms often leaving the citizens unclear on how to approach. Hence the Administration found the necessity to have a centralized platform to cater to the needs and safety of the citizens of DD & DNH and the people trying to enter the Union Territory. The Administration wanted to have a two-way

communication with the citizens of DNH of DD to exchange updated information without any delay during this pandemic.

Action: The IT department of DNH understood the urgent requirement of a centralized platform to make the two-way communication between the Administration and the citizens easier. Hence the 'Corona Tracer' mobile application was launched for the citizens of DD & DNH and for the people entering the Union Territory. The Corona Tracer app contains the following features:

- Real Time Counter- Shows the no. of cases in DNH in real time
- Quarantine Counter- Shows the no. of cases quarantined in DNH in real time
- Corona Symptoms Guide- Guides the user on the list of symptoms of corona
- Self-Corona Symptoms Test- The user can self-test based on the person's symptoms
- Corona Awareness- Updates on precautionary measures and awareness related to corona
- Daily Pass Permit- The users can apply for a daily pass to enter the territory
- Duty Pass Permit- The users can apply for a duty pass whose jobs are required to be performed to ensure essential services are available to the citizens
- Report Suspected Person- If the user comes across any person who is suspected to have COVID-19 symptoms, then the user can report the suspected person
- Complain Mass Gathering- Mass gathering without any permission can be reported by the user immediately by tagging the location
- Emergency Contact- In case of any emergencies, corona helpline numbers are available in the application
- Awareness Video- The Corona awareness video creates awareness among the citizens to follow the precautionary measures, stay safe and stay informed

Result: The corona tracer app is used by the administration as well as citizens extensively during the times of lockdown. The application is used for awareness to citizens, information dissemination by the administration, register permit requests, lodge complaints by the citizens.

Fig:8 Corona Tracer Mobile Application

4.6 Robust Healthcare

a. Isolation Centres (Institutional Quarantine) /Hospitals for COVID created via CSR

Context: As Coronavirus COVID-19 is a Pandemic disease as defined by the World Health Organization (WHO), so in order to avoid spreading the virus among family members / societies as well as for proper monitoring and close observation of the infected person, the isolation centers were set up. As prevention is better than cure, there was a need to identify and arrange isolation centers for thousands of people entering the city..

Action: The IT department of DNH understood the urgent requirement of a centralized platform to make the two-way communication between the Administration and the citizens easier. Hence the 'Corona Tracer' mobile application was launched for the citizens of DD & DNH and for the people entering the Union Territory. The Corona Tracer app contains the following features:

- People entering the Union Territory are required to undergo initial screening at the health care center.

- People found asymptomatic are required to undergo mandatory institutional quarantine either at the government provided isolation center or private isolation centers.
- People found symptomatic are required to admit themselves at the Public Health Facilities based on the severity of COVID
- Hotels and Resorts were converted to private isolation centers with the pre-approved rates based on the category

Result: The private and public institutions came together in planning and execution of the isolation and quarantine facilities to be made available for citizens. Hotels and resorts along with the hospitals are converted to isolation and quarantine facilities. This initiative restricted the movement of people and hence decreased the scope for spread of the virus.

b. Robust Home Quarantine Process created for COVID

Context: People entering the city are required to be in quarantine facility till the initial test results are out. Even if the people are asymptomatic and tested negative for corona virus, there is a need to restrict their movement to prevent the spread of the virus. Hence, a Robust Home Quarantine process is created and implemented.

Action:

- Home Quarantine Period will be for 14 days. Supervising teachers will visit the quarantined home every 3rd from date of quarantine to check there is no distress.
- Once the person enters the territory, he/she will be compulsorily taken for COVID tests to the medical team after which an undertaking form had to be filled by the person. The person is provided with waste collections bags and disinfectant sprays at nominal charge of Rs. 50/- per family.
- Details of Supervising Teachers allotted to home quarantining them are shared along with all other Help- line numbers. The supervising teacher is also informed regarding the same.
- Once they reach home, they are home quarantined by the supervising teacher by sticking the stickers half on door and half on the wall beside to ensure proper locking of doors. Each Home Quarantine sticker are specially designed in such a way that if anyone tries to open the door sticker gets torn easily due to perforations made on it.
- To prevent it from getting forged 3 different stamping at different places are done on the sticker which includes seal of Silvassa Municipal Council and Signature stamp of Chief Officer, Silvassa Municipal Council

- If the doors are opened due to any emergency or by mistake, the same has to be informed to the Supervising teacher immediately to take care of the re- quarantining procedure
- To setup this system initially team of 54 dedicated teachers were given the training to follow Standard Operating Procedure and motivated to do their duties assigned to them. All the teacher engaged in home quarantine were assigned locations for home quarantine near their local residential address in order that their time in travelling is not wasted. Teachers assigned the duties were also given proper N95 masks and Hand sanitizers for their protection. Home quarantine system was made functional on 12th May, 2020.
- The separate waste collections team was also setup for waste collections in quarantined homes. Separate vehicles were allocated for entire territory to pick up waste from each and every quarantine house hold. Before picking up waste proper disinfectant and sanitization was done. Further, to ensure that the home quarantine facilities are working with flow, surprise inspections were also carried out by the appointed officials.
- Secondly, now as the cases are rising it was decided by the competent authority to home quarantine the COVID Positive patients, high risks contact people and patients relived from hospital after COVID treatment.
- In such cases the list (data of quarantine persons) are sent by Medical team to Nodal Officers through E-Mail.
- Once the list is received the data sorted areas/village wise and accordingly assigned to nearby supervising teachers and rest process of home quarantine remains the same.

Result: The monitoring of the home quarantine is performed in an innovative and cost-effective way. The note on the paper pasted across the doors of the families in home quarantine raised awareness to the neighbors and people followed a strict home quarantine of 14 days fearing reporting by the neighbors. Till date Total No. of Home Quarantine Data.

b. **Screening in Public places**

Context: Since the virus spreads easily, there is a need to take precautionary measures to keep the spread under controlled.

Action:

- Screening was done in public places such as ATMs, Collector Office, Nagar Palika etc.
- Sanitizers were kept at entrance to sanitize hands before entering the premises
- People with normal body temperate were only allowed inside the premises

Result: This helped the Administration to maintain a clean and hygienic environment to fight against COVID. The spread of the virus was reduced as the people who were found symptomatic were not allowed to enter public places.

5.0 Key Learnings & Way Forward

The Administration of U.T have implemented many quick-witted solutions to make the Union Territory resilient against COVID. These solutions were frugal innovations and were developed in a short period of time. In order to be prepared for future exigencies and make the Union Territory more resilient, Silvassa Smart City has already envisaged a Command-and-Control Centre under Smart City Mission for which the required process has been initiated. Availability of reliable Real time information (and correlation), Collaboration between departments, Communication channels and robust health care systems are focused for future exigencies. ICCC along with the other components helps in an effective disaster-responsive management. Implementation of technologies like GIS, City Surveillance System, ANPR, Centralized data repository & Data Correlation (Analytics) helps in monitoring and getting real time information.

The cross-department collaboration is an important aspect during the time of exigencies. The solution is designed to get triggered when an incident is recorded in the ICCC and alerts the respective departments to tackle the situation. SOPs are developed to alert every department related to the emergency and quickly act upon the incident. The identified SPOCs from each department whose roles and responsibilities are defined, act upon the incident as soon as the alert is received. This solution stimulates quick response to emergencies and notify the departments immediately.

Communication plays an important role during disaster management because the right information should reach people at the right time. The administration of UT has come up with various communication channels to keep the citizens informed. Mobile application for citizens and officials, web portal and 24X7 manned call center are the two-way

communication channels to convey information and hear challenges faced by the citizens. Variable Messaging Board and active presence on social media platform provides updated information and keeps the citizens informed about the status of the city.

The robust healthcare system is provided by Shri Vinoba Bhave Civil Hospital. The current upgradation and expansion work for the hospital can accommodate more patients and provides best healthcare facility to the citizens.

Unlikely Leadership – Lessons from Rural Women Self-Help Groups in COVID-19 Management in Karnataka

Dr. Mamatha B R, IAS

Abstract

COVID-19, the global health crisis, deeply impacted local communities and jeopardized the socio-economic framework. While governments and international agencies struggled to manage the pandemic, grassroots organizations and rural women from marginalized sections worked to bring in necessary change and steer their communities through the crisis. Wave after wave of leadership emerged from unanticipated places across the talukas and villages, from the most vulnerable sections of women self-help groups under Karnataka State Rural Livelihood Promotion Society (KSRLPS). These leaders took stock of the situation and came up with meaningful interventions for their communities. They created general awareness about COVID-19 and its management, tailored masks, manufactured sanitizers and surgical gowns, opened community kitchens and distributed ration and essential commodities to the needy. While the world battled with the pandemic and the ensuing economic crisis, thousands of self-help group women in Karnataka earned between Rs.300 to Rs.500 every day and kept the fires burning in their kitchens. The global COVID-19 pandemic has shown public administrators the enormity of challenges from the virus that has continued to impact the lives of millions around the world. However, the leadership shown by these poor and vulnerable women from the hinterlands of Karnataka under these most difficult times has shown us that there is a silver lining despite the dark cloud of the pandemic. These inspirational stories highlight the impact of women from various self-help groups networked seamlessly with various wings of the government as they help their communities overcome challenges posed by the pandemic.

Keywords: SHG – Self-help groups; GPLF – Gram Panchayat Level Federation; NRLM – National Rural Livelihood Mission; KSRLPS – Karnataka State Rural Livelihood Promotion Society

1.0 Introduction

The spread of COVID-19 has shown that any public health crisis requires community cohesion, strong communication and resilient local leadership to mount an effective defence. In years to come, the current crisis will be remembered for having displayed that marginalised groups such as poor, rural communities and women, rather than requiring government handouts, were critical stakeholders in a comprehensive COVID-19 response.

This case study aims to showcase several examples of women across the length and breadth of Karnataka who, under the guidance of government officers, NGO partners, and district coordinators, provided exemplary leadership while dealing with the challenges of

the COVID-19 pandemic. These stories of leadership from unexpected places and unexpected people give us hope that in the human spirit, there is capacity to handle any crisis when people and government work towards a common goal. Be it the case of self-help groups led by women in rural areas making masks and surgical gowns or working as labourers to support their families during the lockdown phase, women in Karnataka have demonstrated unhesitating leadership of the common people.

1.1 The Role of Unlikely Leadership

Faced with an unprecedented challenge, women leaders rose to the occasion and understood the need for flexible leadership, community mobilization and leveraging resources and support from the local administration and NGO partners. SHG women worked hand-in-hand with district officials to make the best out of a bad situation caused by the pandemic. Across the state, through the relentless efforts of more than 3,000 self-help groups, there were great examples of problem-solving and execution under high-stress and chaotic conditions. Despite the nation-wide lockdown, SHG leaders organized networks of teams to undertake critical tasks. These leaders demonstrated empathy, often counselling members of their communities who were placed in home quarantine or had been exposed to the COVID-19 virus.

Women tailors had their hands, and their sewing machines, full: sewing lakhs of masks that found ready markets locally and with several Government departments. SHG triple-layer masks had a double advantage: high quality but low price because of the scale. While most of the units were shut down, SHGs found a unique way to exhibit their untiring leadership. Not only have their efforts helped meet the need for masks, they have also given almost two million women a good standard of livelihood at a time when household savings were being depleted and there was high economic uncertainty.

Working closely with other wings of the government, SHG women teams fanned out across the length and breadth of the state, reaching out to the vulnerable communities and meeting their needs at every level. While there were job losses elsewhere in the country and other parts of the world, these women were able to adapt their micro-enterprises to changing markets. Members of SHGs encouraged each other to make the most of their microcredit linkages to build resilience in their households and communities. Thousands of women were able to make Rs 300 to Rs 500 per day on an average, often working from their humble abodes, and assisting government officials in the management of the pandemic.

2. Nature of Engagement

From early March 2020 COVID-19 cases began to rise, and SHGs began to take on a range of new tasks to support their communities. Initially, they were part of a strong two-way flow of information between officials at the district and taluka levels and villages across

Karnataka. They helped raise awareness of COVID-19 safety measures, fight disinformation and manage quarantine centres at the taluka and panchayat levels. At the same time, they were able to assist ASHA workers in household surveys meant to identify those exhibiting potential COVID-19 symptoms as well as primary contacts of COVID-19 patients. As cases began to rise, they supported frontline workers through the production of essential medical supplies such as masks, sanitisers and hospital gowns. While many public programmes were not able to be implemented as normal, these women played a role in combating food insecurity by facilitating door-to-door delivery for vegetable sellers, distributing ration kits, and managing community kitchens. Once the lockdown was lifted, the need of the hour was providing stable livelihoods to migrant labourers who had returned to their home villages and those who had lost their jobs. The efforts of SHG women across various districts of Karnataka are laid out within this section.

Figure 1: Nature of activities conducted by Rural Women's Self Help Groups during COVID-19
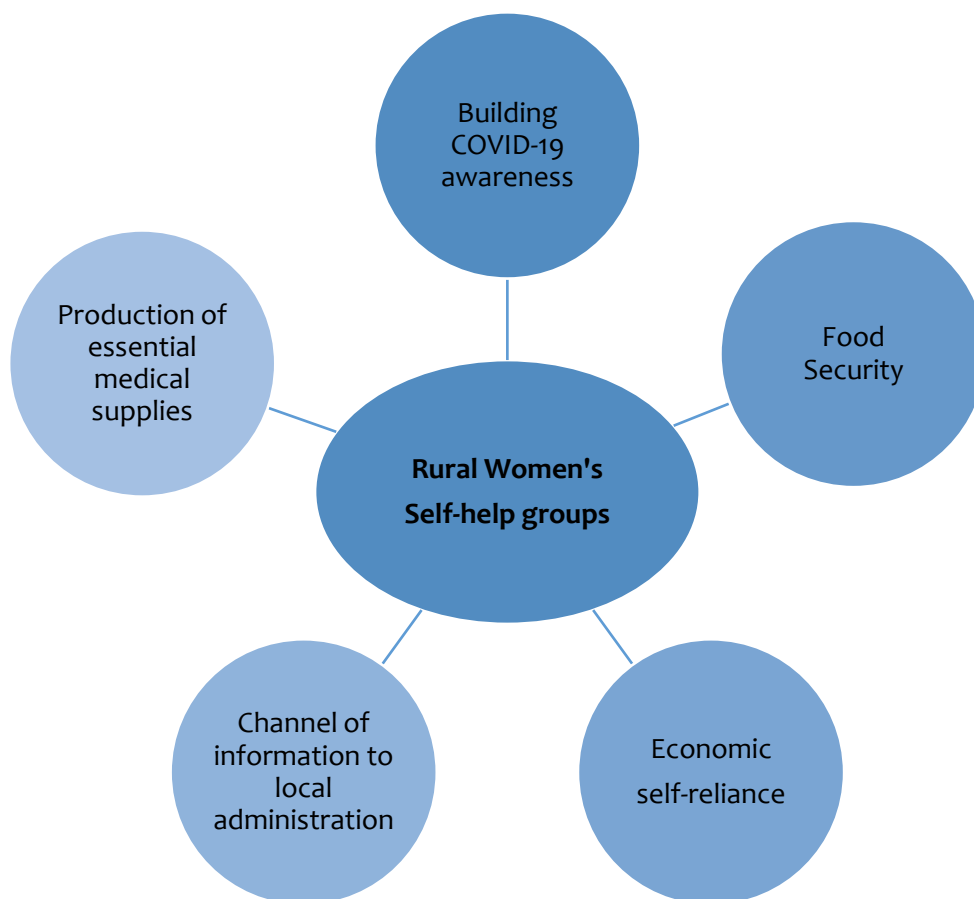
Information to Households about COVID-19 safety	Production of essential supplies	Food Security	Supporting families through localized Economic Activities	Critical channel of information to the local administration
• Build awareness, • Fight disinformation,	• Produced masks, sanitizer and medical grade PPEs and face shields	• Community Kitchens, • Distributed Ration Kits	• MNREGA, • Vegetable vending, • Direct consumer sales of SHG COVID safety supplies	• Report on migrant movement • Trace primary contacts • Assist in Household surveys

2.1 Production of Masks

At the outset of the pandemic, production of face masks was one of the first activities to be initiated at a localized level. Karnataka State Rural Livelihood Promotion Society and associated SHGs worked towards making the masks available through multiple sources, at Fair Price Shops, through e-commerce platforms and direct phone sales. Members initially acted as micro-entrepreneurs to create the new market for face masks, educating their consumers on the need as well as how to assess proper fit and quality. Once mask usage was made compulsory and enforced, this became an assured market, ensuring that SHG members were recognized within their communities as leaders and their efforts have ensured that mask usage in Karnataka has remained consistently high, many months into the pandemic.

In Bagalkot, in response to the shortage of masks, officials at Sanjeevini helped arrange training regarding mask preparation and personal hygiene by specialists as well as procurement of cotton cloth and raw materials from the Khadi Kendra, allowing local SHGs to produce around 3,000 masks every day. These were absorbed to fulfill the needs of the zilla panchayats, grama panchayats, health department, KEB department, local health institutions, medical stores and the general public. "The role of SHG members has been very vital and they have shown great social responsibility in keeping the COVID-19 pandemic under check," says Gangubai Manakar, CEO Bagalkot ZP, "and we mandated the use of masks and sanitisers in all Gram Panchayats and villagers in the district."

Figure 2: Details of SHGs involved in mask production.

Total Number of SHGs involved

Total SHGs involved

Figure 3: Details of total number of masks produced

Number of Masks Produced
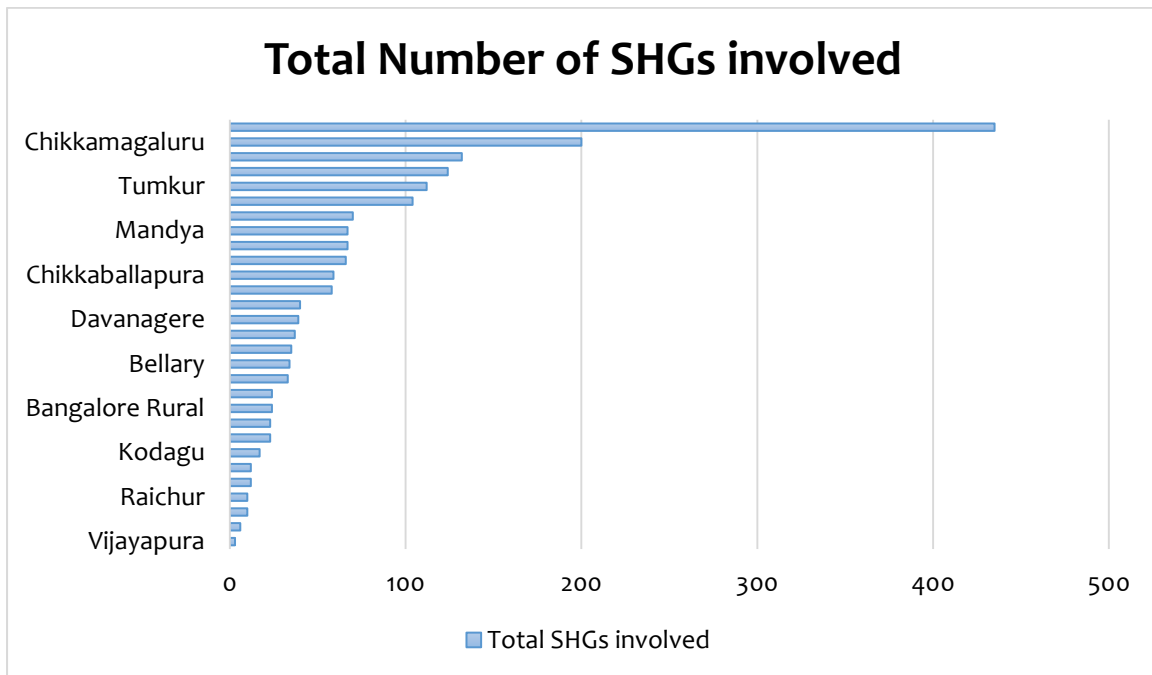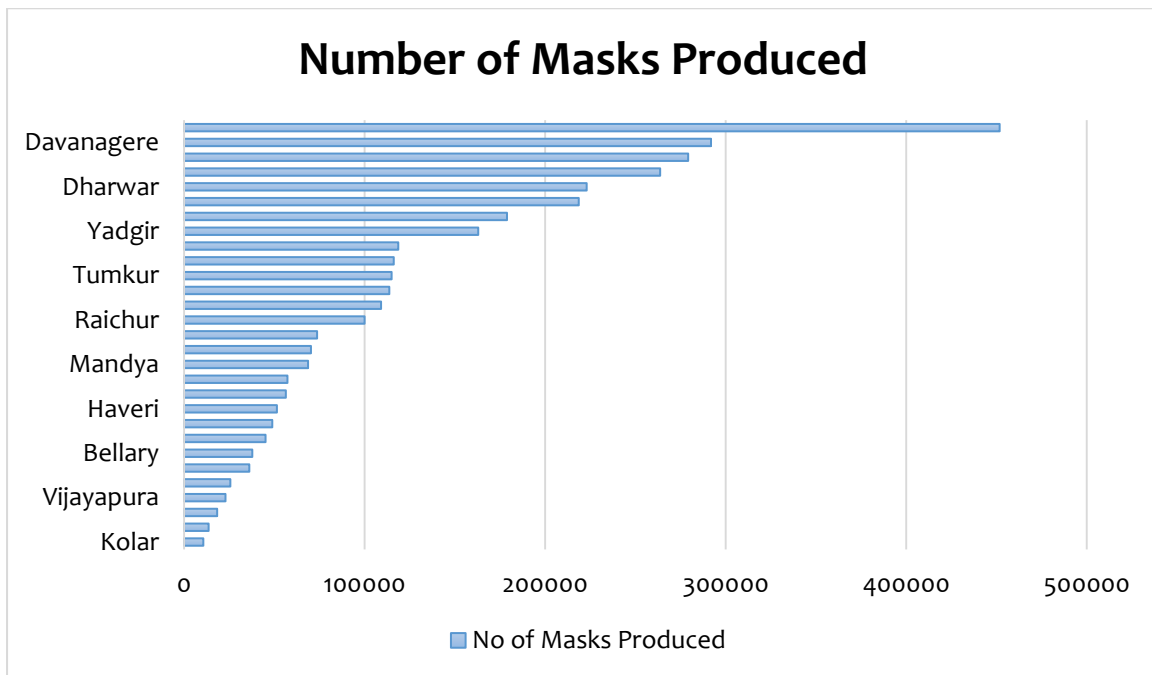

No of Masks Produced

"Sincerity and discipline which are the usual qualities of women SHGs were evident in their fight against COVID-19 in Gadag district," reported Dr. Anand K, CEO, Gadag ZP. Through this discipline and effective management, nearly 2,000 SHGs were activated across Karnataka and in total, over 3.4 million masks were produced.

2.2 Production of Hospital Gowns, Sanitiser and Face Shields

After viewing the success of cotton masks production by tailors and SHG women, the same networks were tapped to produce other equipment required by medical and frontline workers. Tumkur district was the first in which SHGs began production of head masks which were provided to police officers on COVID-19 duty.

Figure 4: Details of Medical Equipment produced by SHG Women
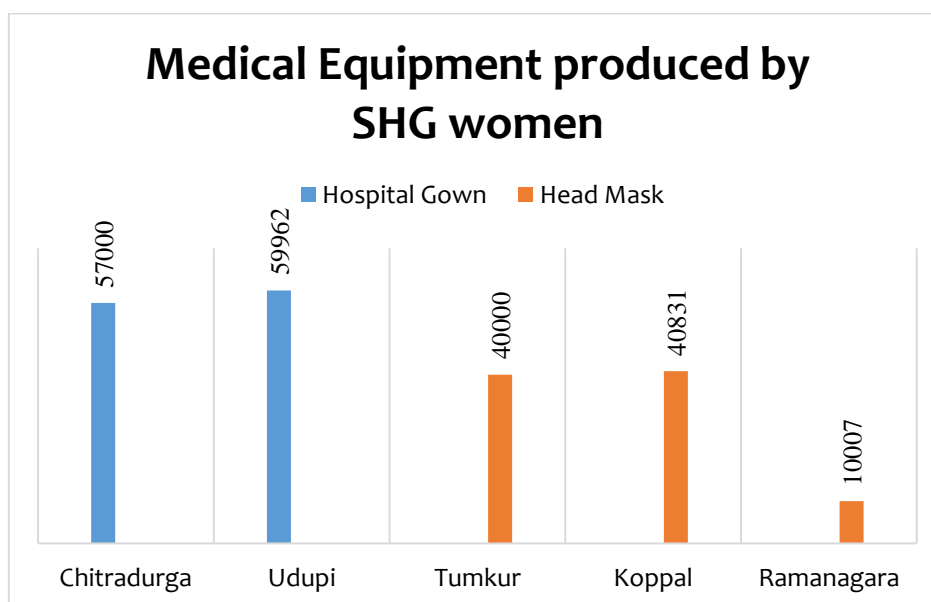
Name of District	Item produced	Quantity
Chitradurga	Hospital Gowns	57000
Udupi	Hospital Gowns	59962
Tumkur	Head Mask	40000
Koppal	Head Mask	40831
Ramanagara	Head Mask	10007

(This data has been collected until 31.05.2020)

In Udupi District, SHG women proved to be shining stars as just 82 women from 38 SHGs stitched nearly 60,000 hospital gowns for use by doctors, nurses and staff in government hospitals. In total, approximately 90,838 head masks and 1,16,962 hospital gowns were produced by SHG members. In addition, SHGs in Ramanagara district worked together to produce 50 litres of sanitizer for local consumption.

2.3 Building COVID-19 Awareness

Towards the beginning of the pandemic, as government officials brainstormed ways to ensure that COVID-19 safety protocols and a basic understanding of this disease reached the farthest villages, women leaders in panchayats insisted on carrying the message far and wide. In Bagalkot, SHG women helped form the village-level Corona Village Warriors group, comprising Asha activists and Anganwadi Workers and SHG members. They came together to form teams to ensure that everyone followed government rules. These teams prevented close public gatherings in villages, helped enforce social distancing, mask usage and teaching people to maintain personal health and hygiene. In Chamarajnagar, women were also trained to use the Arogyasethu app which was installed in every SHG member's phone.

Shivamogga district SHG women were trained to conduct a wide range of sensitization exercises, specifically for the protection of small children and the elderly against COVID-19. Under the guidance of the Panchayat Development Officer, women were inducted into a task force to visit the houses of migrants who had recently returned, to sensitize them on social distancing norms and other precautions to be followed during and after quarantine. They used various forums to build upon and reinforce safety protocols, engaging with the public at Gram Panchayat Level Federation meetings, ward level meetings and weekly SHG meetings.

Figure 5: Details of SHGs and members involved in building COVID-19 awareness
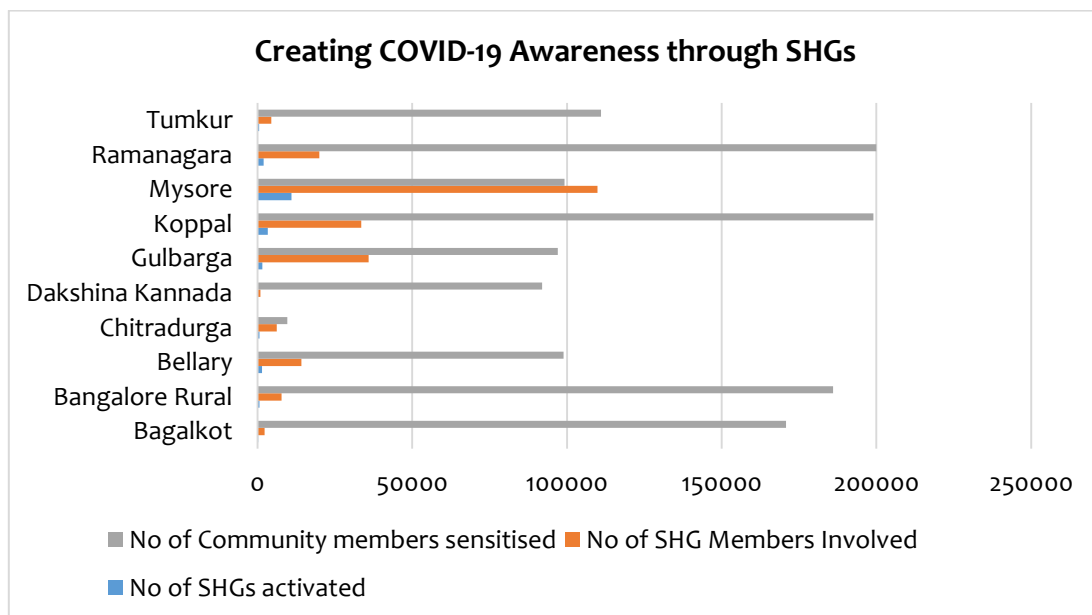
In Mysore district, women motivated their family members and others in the community to conduct household visits to challenge misinformation circulating on WhatsApp and other platforms. Before the lockdown had been announced, they were advising neighbours to maintain distance even within the house, especially from anyone who was visiting from Bangalore or a larger city. Despite facing initial skepticism, these women

remained firm and helped explain that COVID-19 was much more than a normal cough or fever and could have a life-long effect on crucial organs. Through their efforts, the community was also encouraged not to stigmatise recovered COVID-19 patients.

Name of District	No. of SHGs activated	No. of SHG Members Involved	No. of Community members sensitised
Bagalkot	230	2330	170800
Bangalore Rural	600	7800	186000
Bellary	1416	14160	98930
Chitradurga	624	6240	9640
Dakshina Kannada	96	960	92000
Gulbarga	1610	35956	97000
Koppal	3350	33550	199000
Mysore	10983	109830	99229
Ramanagara	2000	20000	200000
Tumkur	492	4468	111000

(This data has been collected until 31.05.2020)

Overall, 2,35,294 SHG members from across 21,401 SHGs became COVID-19 ambassadors. Mysore was the district with the greatest number of active SHG members in this effort with 1,09,830 women from 10,980 SHGs involved. Over 1.2 million members of the community were beneficiaries of these training sessions and house-to-house visits, ensuring that accurate, scientific information about COVID-19 was available across the state.

2.4 Community Kitchens and Dry Ration Distribution

As the lockdown extended and many poor families saw their savings reduce, acute hunger became a major area of concern. Members of SHGs paved the way towards food security, first through ensuring doorstep delivery of essential grocery items and later on, by providing nutritious, cooked food and ration packets to the most vulnerable families. In other areas, women established collection points for surplus vegetables or grains that could be distributed amongst families that were struggling during the lockdown.

Figure 6: Details of SHGs and SHG members involved in distributing dry ration

Distribution of Dry Ration through SHGs

Legend: ■ Households provided with Dry Ration ■ SHG Members Involved ■ SHGs Involved
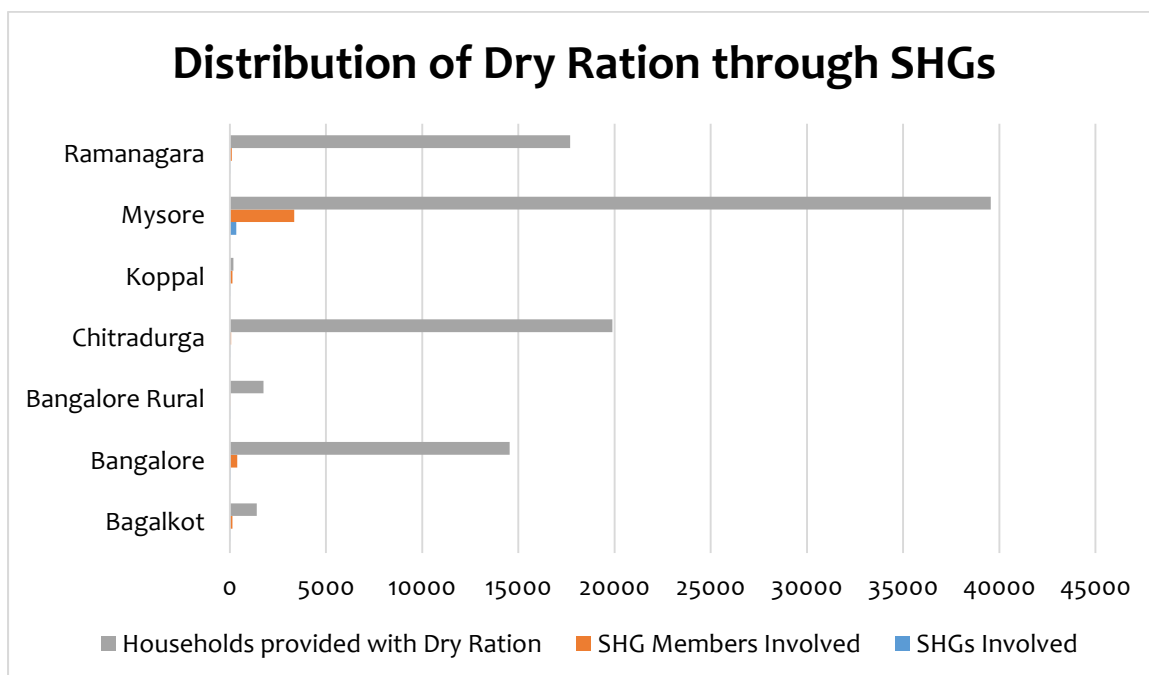
Adivala Hiriyur taluk in Chitradurga district served as the headquarters of the local Gram Panchayat Level Federation (GPLF). Due to its proximity to National Highway 4, it saw a large floating population. After the announcement of lockdown, many families that were daily wagers were struggling for food. The GPLF core committee members, along with other village SHG members from Adivala, Patrehally and Adivala Bhovi Colony extended their helping hands by giving away nearly 600 kg rice in just a few days in May 2020. Each family got anywhere between 10 kg and 20 kg rice, depending on their numbers. Officials of NRLM helped the GPLF through Grama Panchayath Adivala in procuring food item and keeping the stock for distribution. According to Honnamba, CEO, ZP, Chitradurga, "SHGs were able to stitch enough masks to meet the district administration needs and earn for themselves but they also were instrumental in giving away nearly 600 kg rice to the poor and needy during the lockdown." Using funds earned through one enterprise to support families in a time of need is just one way that SHG women prioritized people over profits during the pandemic.

Name of District	No. of SHGs Involved	No. of SHG Members Involved	No. of Households provided with Dry Ration
Bagalkot	14	140	1400
Bangalore	38	380	14548
Bangalore Rural	1	10	1750

Chitradurga	12	72	19890
Koppal	13	130	194
Mysore	335	3350	39558
Ramanagara	10	100	17690

(This data has been collected until 31.05.2020)

Through their selfless actions, over 4,182 women across Karnataka provided dry ration and vegetables to vulnerable families over and above distributions done under expanded government programmes. This provided additional security to 95,030 families that were sorely in need during a difficult time.

2.5 Economic Self-Reliance during COVID-19

The SHG structure enabled women to become breadwinners and support their families at a time when many sectors of the Indian economy were in slowdown. In Uttara Kannada district, women sold 750 quintals of vegetables door-to-door during the lockdown. These coordinated efforts involved 2,000 SHG women and earned appreciation from the district administration. Similar vegetable sales took place in other districts across Karnataka.

Figure 7: Details of Vegetables sold door-to-door by SHG members
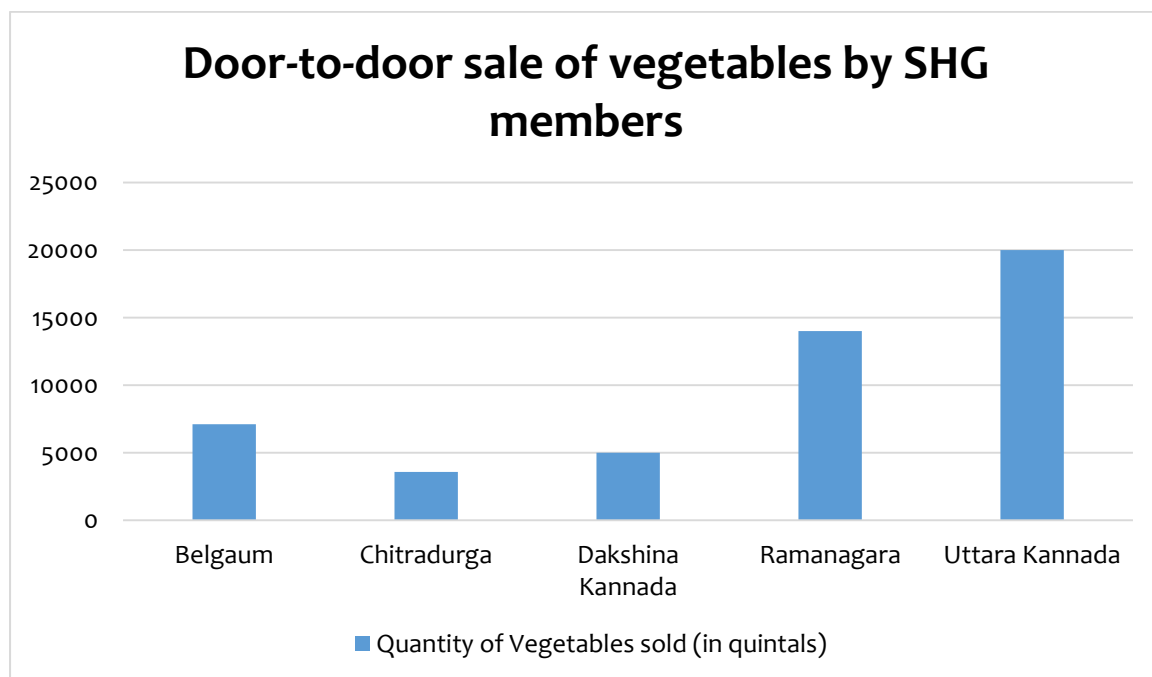
Other previously initiated activities continued during the pandemic. SHG members were involved in the production of Spirulina ground nut chikkies in Narsapura GP. These chikkies are micronutrients which help children suffering from malnutrition gain weight and build their immunity. In Kolar, groups encouraged individual members to own poultry shed at

backyards of their houses and to sell the eggs to anganwadi and schools regularly. SHGs that produced soaps and phenyl saw increased sales during the pandemic as public information campaigns encouraged the public to wash their hands frequently and maintain clean surfaces within their homes and shops. Many SHG members took up lake desilting at villages through MGNREGA to earn money; they were also involved in planting of saplings at places identified by the GPs; they took up pit digging, planting trees, etc.

Name of District	No. of SHGs Involved	No. of SHG Members Involved	Quantity Sold (in quintals)
Belgaum	6	60	7110
Chitradurga	1	10	3600
Dakshina Kannada	8	80	5000
Ramanagara	5	60	14009
Uttara Kannada	2	20	20000

(This data has been collected until 31.05.2020)

In Ramanagara, women, were identified by the Sanjeevini team and panchayat officials and trained by engineers in various aspects of tax measurement. After completing training, these women went door to door measuring properties in villages. They also collected a service fee of Rs 50 for their services from each household as fixed by the Panchayat. This exercise helped accurately increase tax assessment, bringing in more direct revenue for the panchayat and strengthened the confidence of women, encouraging them to participate in local self-government in more substantive ways. Moreover, each of these women have been able to earn Rs. 10,000 - 20,000 as income, collectively earning over Rs. 1.5 crore across the whole exercise. As a pilot programme in Kolar district, an SHG group has joined with SBM (Swacch Bharat Mission) and taken up the work under 'solid liquid waste management' for collecting wet / dry waste from each household and undertake segregation of the same. The unit is running successfully at Uttanur GP, Mulbagal Taluk. Through these activities, SHGs were able to build group cohesion as well as provide social and economic support to their members.

2.6 Channel of Information to Local Administration
Lastly, SHG women took on crucial tasks to support COVID-19 monitoring. The prevalent *Testing – Tracing – Isolation* strategy relied on timely and accurate information being provided by communities to government officials. Through regular interaction with friends and neighbours, these women were able to counsel those experiencing symptoms to

come forward and get themselves tested as well as assist local health officials in reaching out to primary contacts who may have been infected.

Most districts of Karnataka included SHG members in their District Level Surveillance Activity Plans, having recognized their dedicated and status as members of the community. In Shivamogga, Master Bookkeepers trained under Sanjeevini helped enforce home quarantine or institutional quarantine at the district/taluk. They assisted ASHA workers and the health department workers in conducting surveys and continuous monitoring of people who were under home quarantine.

3. Case Study: An account from Kalahalli village, Mysore District

While these activities may seem disaggregated and as though they were happening in isolation, in actuality, they were deeply intertwined. As illustration, this is the first-person account of Dakshayini from the Mahadeshwara Mahila Swasahaya SHG and one of the Kalahalli Warriors, translated from Kannada:

"My neighbour Ratnamma's daughter Rashmi came running to me crying just when I was going back from attending the on-line training programme on 'COVID 19 and its management' organized by Sanjeevini Society. Her widowed mother was having high fever and her husband had gone to work. My first thought was 'Can it be Corona?' I hoped it wasn't as I had just on that day heard about the havoc that the deadly disease could cause. I made a make-shift mask from the edge of my saripallu and went to see her. I told Rashmi to isolate her mother and take her children back to her husband's house which was a few roads away. Looking at her from a distance I realized she needed a doctor.

I hurriedly called my husband and both of us took her to the Primary Health Centre. The doctor examined her and gave her medicines and warned us to call 108 if the fever persisted. Rashmi wouldn't listen to my request to not touch or let the children close to her mother. The other neighbours also scoffed at me saying who will look after Ratnamma if her daughter were to go away. I saw how oblivious they were about what was happening in just 100 kilometres away in Bangalore.

When I went through the training, our instructors told us to share our learning about Corona with the other members of the Mahadeshwara Mahila Swasahaya self-help group and Kalahalli Sanjeevini Okkuta (Grama Panchayat Federation) of which I am a member. The videos and images I saw during the training had frightened me. I looked at all those women so unaware of what could happen if we didn't take enough

precautions. I felt it was necessary to train not just my SHG and Federation members but every family in our Kalahalli village especially since we are very close to Kerala where, according to my instructor, many Corona cases were reported.

I spoke to the other members of our SHG and they agreed that we needed to caution and educate all our GPLF members and villagers of our Grama Panchayat. I shared the presentation given during the training and the next day we divided the houses of Kalahalli and started going from door-to-door telling them about Corona and also how to prevent it. People laughed at us. Some people asked me how I got the job of a ASHA Worker. Some men tried to advise me to stay at home and take care of my family instead of going around and putting my family at risk.

Every day each of us was able to cover 15 houses. This went on for a few days and we had covered the entire Kalahalli in Hunsur taluk when 'Lockdown' was announced. We were in a dilemma about how we could cover all the villages in the Grama Panchayat when we were not even allowed to go out. We approached the Sanjeevini Cluster Supervisor Mr Suresh and Taluk Programme Manager Mrs. T Manjula Naragund who got us passes from the Panchayat Development Officer. We also invited our entire Okkuta and that meant 100 people so that we could cover the houses quickly. Over 30 people from the Okkuta joined in person and others helped in collecting commodities, making masks and sanitizers.

At the break of dawn every day after finishing our house work, we used set out to other villages. My husband used to drop me in his two-wheeler. We went door-to-door telling people about how to manage Corona. We found people running short of commodities. Some people didn't have milk to feed their children; some people were running short of rice, vegetables or essential items. We collected surplus items from people and distributed them among those who needed them.

All of us in our SHG were making phenyl and wash products for a livelihood. We started distributing soaps and telling people to wash hands as often as possible. Some women in our Okkuta were trained by Sanjeevini in making masks and sanitizer. Our Panchayat Development Officer and Grama Panchayat Adhyaksha

purchased masks and sanitizers from Meenaki Chamundeshwari Mahila SHG, Hirikyatanahalli and gave it to us to distribute them to people.

Panchayat Development Officer asked us to keep track of people from outside cities coming into our villages and to inform ASHA Workers. We also informed ASHA workers about anyone sick or having symptoms of Corona. We are proud that we have managed to keep Corona away from our Grama Panchayat area. Not to mention that none of us from our Okkuta have tested positive for Corona. We shall continue to keep vigil and help people with whatever is required.

I realized Health is most important and when it fails people want someone to hold their hand and comfort them. The community is best equipped to do this. Corona has evened out everything -rich, poor, caste, creed, class, ranks. Everyone is equal in Corona. There are people in my village who have lots of money, jewellery, lands, and cattle but they were as good as us during the lock-down. I also understood the value of freedom to move around, to be with loved ones, to live in dignity and security without fear. I feel my SHG members and Okkut members became my real family. People are interdependent and collaboration is very important."

The confidence and successes of each enterprise made women more confident and willing to branch out and take on new responsibilities even with all of the chaos of the pandemic. Women like Dakshayini across the length and breadth of Karnataka are achieving their leadership potential and the results have been extraordinary.

4. Outcomes

The unlikely leaders have a number of achievements to their credit:

- Through manufacturing cloth masks, 5,000 SHG women raised over INR 5 crores in revenues, funds which were their direct earnings and helped support vulnerable families through the lockdown.
- As they were able to raise funds, many SHGs donated masks, for example in Gadag district to SSLC students who had to appear for their board exams. SHG women who manufactured soap distributed it for free as part of their household visits, helping build a sense of community service.
- Through their efforts as COVID-19 ambassadors, these women were able to promote safe practices and limit stigma for those affected with COVID-19. Through their emphasis on following quarantine procedures, cases of COVID-19 remained low in rural areas and the spread was contained to major cities.

- The method of collection points for donated food items was done in an open and transparent manner and as community members themselves, women were able to target the distribution of surplus grains and vegetables to families in distress.
- As women demonstrated their strength and resilience, they have been recognized as crucial stakeholders in ensuring community participation in various programmes. Household surveillance visits had an element of public accountability and were more regular when SHG members were inducted into the process. As experiments such as Ramanagara's inclusion of rural women in tax assessment prove successful, there is no limit to how this revealed leadership can be further tapped.

5. Conclusion

The last year has been a challenging time for both the government and common citizens. However, as the American singer Dolly Parton once said, "Storms make trees take deeper roots." As a result of the grit and determination exhibited by women across Karnataka, adverse impacts have been severely limited. The potential for leadership resides in every person regardless of their background and in times of adversity, this comes to the forefront.

SHGs have worked closely and reliably with district officials and built their skills. These unlikely leaders have learned how to fulfil bulk orders of various products and access multiple avenues of funding. They have created crores of value and demonstrated the courage to help citizens across Karnataka remain in their homes during an unprecedented pandemic. Local Primary Health Centres, Gram Panchayats and other similar institutions have recognised the services and support provided by the SHGs and federations. As the state of Karnataka has been recognized for its innovative and effective public engagement in combating COVID-19, a share of the credit must go to the unlikely women leaders across the state who worked tirelessly to make their villages safer.

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Actions of Food and Drug Administration (Maharashtra) in COVID-19 Disaster Management – a case study

Arun B. Unhale, IAS

Abstract

An emerging outbreak of a novel corona virus, COVID-19, has posed unprecedented situations for various administrative departments. It was certainly the situation where most of the departments were confused with respect to their activities and prefer to remain in hibernation. In this case study, an effort is made to summarize the various activities of Food and Drug Administration, Maharashtra in dealing with the COVID-19 pandemic.

Keywords: Disaster Management, COVID-19, Food and Drug Administration, COVID-19 Response

1.0 Introduction

Food and Drug Administration Maharashtra State is the State prime organisation of consumer protection. Commissioner is the head of the Administration and Drug Control Laboratory. FDA is Head Quartered at Mumbai and offices at Division and District Places. The Divisional Offices are headed by the Joint Commissioner and District offices are headed by the Assistant Commissioner. It has dedicated professionals working to protect, promote and enhance the health of people. It is a trusted agency to enforce the Food, Drug, and Cosmetic Act fairly, upholds safety standards, and protects consumers.

Food and Drug Administration, Maharashtra State, the State's prime instrument for consumer protection, is a scientifically based law enforcement agency. Initially, this Administration came into being as Directorate of Drugs Control which was meant for enforcing mainly the Drugs and Cosmetics Act and Rules there under. Later in the year 1970, Government entrusted the responsibility of enforcement of the Prevention of Food Adulteration Act, 1954, to this Directorate and then it was renamed "Food and Drug Administration ".

In the year 1975, there was considerable expansion of the Administration and posts of the Joint Commissioners and Assistant Commissioners were created at divisional places and district places respectively. The Joint Commissioner (H. Q.) was declared as the Licensing Authority for grant of manufacturing licenses under Drugs and Cosmetics Rules, 1945, for the entire State and the Joint Commissioners/ Assistant Commissioners were declared as the Licensing Authorities for grant of selling licenses under the said Rules, for their respective area.

Activities of Food and Drug Administration principally involve enforcement of following acts, rules and regulations thereunder,

- Food Safety and Standards Act, 2006
- Drug and Cosmetic Act, 1940 and Rules, 1945
- Drug and Magic Remedies Act, 1954
- The Narcotic Drugs and Psychotropic Substances Act, 1985
- Drug (Price Control) Order, 2013
- Medical Devices Rules, 2017

The Mission of Food and Drug Administration, Maharashtra is "To protect, promote and enhance the health of Indian People", thereby to insure Food is safe, wholesome and prepared in good and hygienic condition and human, veterinary drugs and biological products are safe, stable and efficacious and medical devices are safe and effective. FDA ensures that these products are in compliance with the law and FDA regulations. Non-compliance will be promptly identified and corrected, and any unsafe or unlawful product will be removed from the market place and appropriate action will be taken against all concerned.

2.0 Emergence of COVID-19 outbreak

Conora virus is not new to the world. It's an RNA viruses belonging to genus Corona virus and family *Corona viridae*. It is divided majorly in four genera viz. Alpha corona virus, Beta corona virus, Gamma corona virus and Delta corona virus. Further, beta corona virus is sub divided into two groups viz. Severe acute respiratory syndrome Corona viruses (SARS-CoV) and Middle East Respiratory Syndrome Corona viruses (MERS-CoV) (Stertz *et al.*, 2007; Adhikari *et al.*, 2020; Li *et al.*, 2020).

In late 2019, a novel new virus cases were being reported in Wuhan city of China. Over the coming months, new coronavirus was spreading across the globe. It has been named as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) the International Committee on Taxonomy of Viruses on 11 February 2020 (Leiker and Wise, 2020). India reported its first positive case of the novel coronavirus (nCoV) from Kerala with a student, who was studying in Wuhan University and had travelled to India, testing positive for the virus on 28th January 2020 knocking the nation towards the pandemic (Hindu, 2020). The first case of the COVID-19 pandemic in the Indian state of Maharashtra was confirmed on 9th March, 2020 warning towards worst.

3.0 Disaster Management by FDA, Maharashtra

Indian outbreak of coronavirus disease 2019 led to an unprecedented burden not only on health care system but also on different administrative departments. Though the Food and Drug Administration, Maharashtra is not being a front-line specialty in dealing with the disease, we still faced several specific issues.

Figure 1: Disaster Management Cycle
(Courtesy: International Federation of Red Cross and Red Crescent Societies www.ifrc.org)

Disaster Management refers to the measures taken for the safety and protection of life and property from natural or man-made disasters. This means being prepared for disasters, fighting disasters effectively, ensuring the safety of life during disasters and helping in rebuilding society after the disaster. FDA, Maharashtra has a little role to play as far as preparedness for the disaster is concern. However, the department certainly managed to reduce the risk, responding to disaster and reducing the risk of disaster.

Food and Drug Administration is categorized under emergency service department since 25th March 2020 by the Government of Maharashtra. Immediately after declaration as emergency service department, FDA came into action and urgent meeting of all the joint commissioners of food and drug have been called for the meeting. The meeting was scheduled with the aim to identify the key areas where the department can play its role. It was observed that due to lockdown there could be immediate possibility of unavailability of essential goods (food and drug) to the citizens. Therefore, Department has started 24x7 helpline to resolve the issues of manufacturers, transporters, distributors, wholesalers and retails and issued toll free No. 1800222365 and Phone No. 022-23652361 for submitting their query. All the issues of Food Business Operators are being resolved immediately by assigning the complaint to respective officers of the region.

4.0 Activities of Food Department of FDA, Maharashtra
The department is headed by Assistant Commissioners in every district of Maharashtra and were the part of core COVID Management Committee at district level. Moreover, to resolve the issues of Food Supply, Food and Drug Administration (Maharashtra) has appointed the Vigilance department with nodal officer in every district. As the Food Licensing and Registration system was made online since 2016, the department was having easy access to the contact numbers of all the food business operators (FBOs) including

manufacturers and wholesalers. The department fully utilized these databases in creating Whatsapp groups and adding the concern food business Operators into it. This facilitated the instant communication between the department and FBOs thereby providing the link to reach to the concern FBOs in problem.

All the complaint, concerns, information and Guidelines are communicated through these social media groups. E-Passes was the major concern during the first few weeks of Lockdown, Food & Drug Department Officers played an active role in collaboration of Police, Municipal Corporation and other administrative department to ensure the supply of essential goods.

Hon'ble Minister, Secretary and Commissioner of Food and Drug Administration have taken various Meetings with Food Business Operators to resolve their issues and ensure the supply for Food Commodities, baby food and drugs throughout the state. In order to check the adulteration of food and ensure availability of safe and quality food during lockdown, 626 food samples were drawn from the market and it was observed that 16 samples were found to be sub-standards and 21 samples were found to be unsafe and further action has been taken as per the law.

The Small Food Business Operators who are not following the safety guidelines were penalized and amount of Rs. 7,73,700/-has been recovered from them, sending a signal to the other FBOs to comply with the food safety and COVID-19 guidelines. During this period, Food and Drug Administration also carried out raids of various establishment and food products worth Rs. 4,43,82,350/- has been seized from 39 food establishments.

Moreover, in order to assure safe and nutritious food to the COVID-19 patients, Food Safety Officers has inspected 75 Hospital kitchens and drawn 20 food samples. Inspection of 148 community kitchens has been done and 47 samples drawn from community kitchens.

Beside these activities, the department officials were also involved in various other responsibilities assigned by the respective district magistrates. For example, Assistant Commissioner of Ratnagiri district has been assigned the responsibility of social distancing and price control of essential goods where more than 2000 inspections were carried out (in collaboration with other department staff) to ensure that guidelines of district magistrates are strictly being followed.

5.0 Activities of Drug Department of FDA, Maharashtra
In order to avoid the hoarding, the directions are issued to all the pharmacists not to sell the PPE Kit and N-95 Masks without prescriptions. Moreover, they have been informed not to sell or purchase any 2 ply, 3 ply and N-95 masks and hand sanitizer without bills. This has

significantly reduced the shortage and till December end more than 89,84,563 number of 2 ply and 3 play masks and 21,95,429 N-95 masks are available in Maharashtra in fair price without any type of shortage.

In order to provide the sufficient quantity of Hand sanitizers to the citizens, 112 new licenses for manufacturing of hand sanitizers has been issued to the Distilleries till 31/12/2020. Before COVID-19, there were 94 hand sanitizer manufacturers in the state. During COVID-19, special manufacturing licenses for hand sanitizers has been issued to 112 distilleries under Drug and Cosmetics Act, 1940 and about 144 new products permissions have been issued to the existing licensees for hand sanitizer manufacturing.

In state, total 19 Lakh liters of hand sanitizers is being manufactured and out of which 1 Lakh liters is being supplied to other states after fulfilling the requirement of Maharashtra.

Before COVID-19, there were 4 only manufacturers of PPE kit in Maharashtra State. Now, there are 15 PPE Kit manufacturers in the state and there is sufficient stock to PPE kit in the market. The administration has designated PPE Kit distributor at each district for easy availability to all medical practitioners and health care workers. At present there is adequate numbers of PPE kits are available in all the parts including remote areas of Maharashtra.

During the initial period of Pandemic the Hydroxychloroquin tablets (HCQ) found to be useful in prophylaxis and treatment of COVID-19. Hence 64 new additional product permissions have been granted to the existing licensees.

In the treatment of COVID-19 the Medical Oxygen found to be very essential, the administration proactively monitored the existing Medical Oxygen manufacture and its supply to the Hospitals. Appeal has been made to the industrial oxygen manufacturer to take licenses for Medical Oxygen manufacture and raised the production up to 1200 MT /day. During COVID-19 pandemic 44 new licenses were issued to manufacture Medical oxygen.

In the month of July to September, 2020 the cases of COVID-19 increases manifolds and the demand of medical oxygen increases up to 1000 MT/day. To cater the increased demand, the manufacturer were motivated to convert 20% Nitogen and Argon transport tankers into Oxygen transport tankers and restricted the industrial supply to 20%, rest of the 80 % production should be supplied for Medical use.

To monitor the manufacture and supply from source to end at nodal officers have been appointed at all the manufacturing and refilling units to manage the demand and supply. In co-ordination with the Health Dept., the day to day statistic of COVID patients in the

hospitals and need of medical oxygen were monitored and accordingly the supply plans were decided.

With the help of 29 manufacturer, 83 refiller/distributors and around 153 tankers, the medical oxygen were transported and supplied to every part of Maharashtra from Thane/Raigad /Pune /Nagpur district located plant by 24x7. Thus the need of Medical Oxygen was fulfilled effectively without any shortage and pilferages.

During COVID-19, for easy availability of COVID drug in the market, effective coordination made between Government Hospital, drug manufacturer, Central Government and the State Government. Daily information of drug stock has been updated by the drug inspectors to check the status of individual districts.

During COVID-19 and lockdown period, blood donation camps were stopped. In order to avoid the shortage of blood in the state blood banks were encourage arranging the blood donations camps as per State Blood Transfusion Council (SBTC) directives due to which blood collection has been increased. For example, on 18th May 2020 the blood bank stock was limited to 20,192 blood bags, while on 31/12/2020, the total stock reached to 44,969 blood bags.

For convalescent Plasma therapy Plasmapheresis licenses has been granted to 73 blood banks for treatment of COVID-19 patients throughout the State on top priority basis. The Ramdesivir and Tocilizumab injections were found to be effective in the treatment of moderate to critical COVID patients, the demand rose abruptly. The administration appealed to the manufacturers of these drugs to pour maximum supply to Maharashtra as the cases were too high. The daily supply and stock were monitored at every district at Govt., Hospitals, and distributor level to streamline the supply.

Due to high demand of these drugs the complaints of black marketing and hoarding were reported. The administration with the help of police detected 5 cases of in which 20 accused were arrested and around Rs 28 lakh worth stock were seized.

In coordination with the Health Dept., the scheme of cheaper rate Remdesivir Injection were started. The administration coordinated with the Manufacturer M/w Cadila Healthcare to make available the Remdesivir Injection @ Rs 2360/ (the general market MRP of other companies were 4800 and more) to the needy patients through the designated pharmacy store. The daily monitoring of availability and supply of the Remdesivir Injection through this scheme were carried out through Drugs Inspectors of each district.

In COVID -19 lockdown situation the Pharmaceutical Industry were operational but facing the issues of manpower crunch, travel restrictions and logistic issues. This in turn obstructs the transportation of Medicine and also impact on the export of medicine. The Administration co-ordinated with police dept. for allowing the Pharma sector staff for ease of travel to their work places. Also communicated with the port authorities for clearance of export consignment. This in turn facilitate the interstate transportation and export from the State.

After reports of Remdesivir and Tocilizumab being sold at inflated prices

FDA begins crackdown on black-marketing of scarce Covid-19 drugs

FDA commissioner Arun Unhale says his vigilance team has begun conducting searches in Mumbai; Home Minister Deshmukh promises every possible help

| Yogesh Naik, Lata Mishra, Labonita Ghosh
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TWEETS @MumbaiMirror

FDA commissioner Arun Unhale told Mirror on Friday that his vigilance team had started searches in Mumbai, following reports about vital Covid-19 drugs such as Remdesivir and Tocilizamab being sold on the black market. Home Minister Anil Deshmukh and FDA Minister Rajendra Shingne also held a meeting in Mantralaya on the issue. Deshmukh said afterwards that the home department and FDA will work together to fight black marketing.

Mirror had reported yesterday that crowds of people queued up for hours outside a store in Ghatkopar for a single vial of Tocilizamab, which costs Rs 40,000, and that the drug is being sold on the black market for Rs 75,000 a vial. On Friday, the Mira Road police arrested two people for allegedly selling vials of Remdesivir - which cost Rs 5,400 each - for Rs 20,000 a piece on the

TWO HELD FOR ILLEGAL SALE OF REMDESIVIR

A medical shop owner in Mira Road, Sonu Darshi, 25, and his aide, Rodriques Raul, 31, were arrested yesterday evening for allegedly selling Covid drug Remdesivir at almost four times its market price. The police said that the two were selling the drug at Rs 20,000 a vial, whereas the market price is Rs 5,400 for a vial. One of the police officers investigating the case said that Darshi and Raul claimed to have

People queue up in front of a Ghatkopar store for Tocilizumab. Mirror reported on Tocilizumab shortage on Friday

INSIDE » IN MMR TODAY   NEW CASES **2950**   DEATHS **106**

Image 1: News Clipping 1

Image 2: News Clipping 2

6.0 Activities of Vigilance/IB Department of FDA, Maharashtra

Activates of Vigilance department could be summarized as follows:

- During COVID-19, medical stores were inspected by drug inspectors and food safety officers till 30/09/2020 total 28,599 inspections were done.
- Total 83 raids were conducted in the matter of manufacturing of hand sanitizers without license and by illegal way.
- 53 cases of overpricing of face mask and Hand sanitizers were detected and referred to the Competent Authority for appropriate action.
- Total goods worth Rs. 2.83 Crore have been seized including hand sanitizers, face mask and PPE Kit.
- In regards to the Mask, worth Rs. 640124/- are seized in 11 actions
- In 18 Actions of hand sanitizers, hand washes goods of cost Rs. 2.32 Cr/- seized.
- In 5 actions of PPE kits, good of worth Rs. 2,30,000/- is prohibited.
- In the action of drug and other goods of cost rupees 7,33,850/- seized.
- In the action of black marketing of Ramdesivir injection, 5 FIR filed against 20 persons.

7.0 Conclusion

In response to the on-going outbreak, activities of Food and Drug Administration, Maharashtra demonstrated that systematic planning; management and proper allocation of responsibilities to administrative staff could greatly help to make available the essential commodities like medicines and food to the consumers in adequate quantity without any hoarding, black marketing and in a fair price.

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<center>**Aapulki**</center>
<center>**Shelter Management, Livelihoods Mapping Initiative for equity, entitlement and justice in Buldhana, Maharashtra**</center>

<center>**Suman Rawat Chandra, IAS**</center>

1.0 Introduction

The COVID-19 pandemic not only brought in front of us unprecedented challenges but has also thrown to us an opportunity to look at the social issues in a new light. One thing that COVID-19 brought in front of all of us is the plight of migrants which has been addressed in a myriad ways all across the country. However, COVID-19 has forced all of us to re-consider how we have been handling this issue for a long time.

Buldhana district is a district in the Amravati region of Maharashtra. The district is known for the world famous Crater Lake called the Lonar Lake. The Pandemic of COVID19 had not only touched the urban areas of Maharashtra but has spread its tentacles even in the rural area. Buldhana has a population of about 2.5 million according to the 2011 census and is primarily an agri-district.

During the period of the countrywide lockdown in the month of April and May 2020, Buldhana housed around 4500 migrants stranded in the district owing to various reasons. We implemented operation dignity to ensure that these stranded labour feel at home during this particularly difficult period. This was done under a unique initiative called Operation Dignity. The salient features of the effort were:

1. Providing safe shelter to the stranded labour
2. Everyday medical check-up my Medical Officers.
3. Providing safety and health kits, grooming kits in these labour camps
4. Providing dignity kits to women in the camp
5. Providing health and nutritional services to all. Milk and fruits to children in the camps.
6. Counselling session by counsellors to help mitigate the depression and other psychological issues arising out of isolation and being stranded away from home/work-place
7. Smooth arrangement of their movement back home through buses and trains in a hassle free manner

However during the unlocking phase we also noticed a sea of reverse migration of people who lost their jobs in big cities or returned simply owing to the financial and health distress emerging directly out of unprecedented circumstances created by COVID19. There was a

sudden felt need that a better integration of these reverse migrants is essential and district administration has to be ready with innovative solution for service delivery.

In this backdrop of the mass reverse migration that followed post lock-down all across India, we collaborated with UNICEF to devise a way forward in migrant management. The result of it was the Shelter Management App that is now being rolled out in the whole of Maharashtra. The primary purpose of the App was to monitor the migrant shelters. However, since the roll out of the app was delayed a bit and most of migrant camps were emptied, in the district, we decided to add additional features to include the returnees of the district who have undertaken reverse migration in the wake of the pandemic. Following the clarion call of Atmanirbhar Bharat Abhiyan this is an effort to construct self-reliant village community and empowered citizenry.

2.0 Operation Dignity

Buldhana made a conscious effort to ensure that the migrant labour stranded in the district during this tough lockdown period are treated with great dignity. During the lockdown period the district housed and catered for around 4089 labourers in Migrant Labour Camps. Following steps were taken to ensure a dignified stay for them during the lockdown period:
1. Everyday medical check-ups by Medical Officers
2. Distribution of Sanitation and Grooming Kits to the including soap, toothpaste and brush, shampoo and masks
3. Providing hot and cooked meals three times a day
4. Constant visit of senior officers to ensure that they are well taken care of
5. Counselling session through Art of Living and WCD Counsellors to maintain their moral and
6. mental health during this tough time
7. Milk and fruits to women and children in the camps every day.
8. Entertainment activities like physical exercise session & music and dance sessions.
9. Smooth arrangement of their movement through buses and special trains in a seamless and hassle free manner.

This was a particularly challenging task as most of these labourers were apprehended escaping in very inhumane condition in containers and milk vans. They were brought to labour camps and were counselled to stay in the camps till the lockdown is lifted and a legitimate movement can begin.

In the beginning they perceived administration with a great suspicion and everyday raised a chorus to go back to their respective places. Some even went on a hunger strike for a day or two. However with great persuasion and negotiation administration could convince

then and retain them till the time the regular special train movement started and their movement was effectively planned by the district administration.

Apart from the labour movement the in-bound movement of the stranded people in Buldhana was facilitated in an efficient manner. So far more than 10,000 passes have been issued for individual and group movements from other districts and state to Buldhana. For this Dedicated 24X7 Cell of three Nodal officers has been appointed to ensure smooth in-bound and out-bound movement to and from Buldhana district.

Bilal, a migrant labour from Moradabad, who stayed in one of the migrant camps, after, reaching his hometown by special trained, called the District Administration to thank them for an excellent care provided to him during his stay. His gratitude is the greatest reward for the efforts of the district administration.

Figure 1: Glimpses of Operation Dignity

3.0 Aapulki

Aapulki in Marathi means a feeling of closeness. This initiative is an inclusive effort to integrate the reverse migrants in the district as per their needs with a feeling of integration and assimilation of people who are our own. It is to ensure a sense of belonging in the people who returned back to the district owing to the financial or health distress and loss of employment in big cities due to COVID19.

4.0 Shelter Management App

Shelter Management Application is an android based app developed by a joint collaboration of District administration, Buldhana and UNICEF, Maharashtra. The primary purpose of the app is to gather data about the various migrant's camps and the details of the reverse migrants in the village level. The app helps to create clear data regarding these migrants with details of gender, skill set, livelihood needs, etc. this data then helps plan the district administration details for further action on a equitable justice for these adversely affected people owing to the pandemic ensuring delivery.

The application enables the district and village administration to record the skill-sets, qualifications, AADHAR, bank details, basic facilities at quarantine centers (like water supply, sanitation, safety, and security), health screening report for14 days, etc. Additionally it helps to capture various demographic data such as- age, disability, gender, migrant people who have become unemployed, etc. In the face of the COVID-19 Pandemic, as the government is in the process of following the norms set up by the health experts to minimize the risk of spread of the pandemic, it is very critical to ensure the rights of the citizens of India; especially the ones who are most affected by the lockdown. This application ensures the accessibility of the entitlements to the worst affected citizens and thus a potent tool of equitable justice in the hands of district administration. This app is now being used by the entire state of Maharashtra.

In the first phase of the App roll out, the priority of the district was to populate the data of such reverse migrants who have come back to the district. This gave the district administration a skill wise break-up of the migrants who have entered the district. We understand that need of each district would be different but the issue revolves around a few basic points as follows:
1. Scale of In-migration & Out-migration
2. Skill set available and the need of skilling, re-skilling and up-skilling
3. Shelter Management
4. COVID19 management status.
5. Monitoring metrics development.

Buldhana is near completion of the first phase of data populating on the App and had collected details of over 97000 reverse migrants.

In the second phase of a mission mode activity we are alongside following the strategy of:
1. Skilling, re-skilling, up-skilling the unskilled with the help of Skills department
2. Absorption in MGNREGS, for the time being, of all the unskilled with a special drive to paint school buildings and developing nutrition gardens in schools
3. Use D.I.C to help mobilize candidates and tie up the various companies in need of young people for their industries to ensure their integration in the formal sector especially in the captive employment industries.
4. Through L D M ensure the availability of Mudra loans and small vendor's loans under newly announced Atma Nirbhar scheme to help some of them establish local entrepreneurial ventures.
5. Complete health profiling of these people to help prevent infection of COVID19 / timely detected and treatment of those infected.

4.1 Who can use the application?
- **Admin Manager** (District level District Collectors): The Master Admin / Shelter Admin is the person who has the access to create the shelter manager and the basic details of the quarantine centers/shelter.
- **Shelter Manager** (Nodal officer for the quarantine centers/shelters): Shelter Manager is
- The In-charge of the one shelter who updated the quarantine centers / shelter details Migrants/Citizens (Different app for citizen interface): Migrants or citizens are the
- People who will stay in shelters can log in from the citizen application.
- **NGOs** (based access given by on Government): NGOs are the Non-Government Organizations who work independently may visit the quarantine centers / shelter
- **Inventory Manager:** Inventory Manager is the person who takes care of the inventory. In the shelter and maintains a record of stock in the quarantine centers / shelter.
- **Grievance Manager:** Grievance Manager is the person who facilitates the shelter. Residents or migrants to raise a grievance which shall be addressed by the higher Authorities
- **Caretaker:** caretaker is the person employed to look after the migrants in the shelter

The application has a detailed list of inventories of the medical examination, entitlements at the quarantine centers, number of inhabitants (with demographics), general information about the centre, available of food for the centre (Considering special needs of mothers, children, aged people etc.), WASH facilities available at the centre (toilets, water, soap, etc.)

5. Implementation Experience

The citizens who returned were surveyed with the help of an android based mobile application named SHELTER MANAGEMENT. The application module includes village profile and individual profile. In the Village Profile, the basic data of the particular village, the existing infrastructure and human resource, the demographics, the preparedness of the village panchayat to effectively manage COVID, the awareness and alertness of the citizenry were covered. In the Individual profile, basic details of the citizen, the health status monitoring till 21 days, the education qualification, job experience, skill sets of the citizen (skilled, un-skilled, semi-skilled), need assessment were covered.

A district level master login was created and 13 block logins were created in the portal which is both web-based and app driven. For the field survey staffs, the village secretary and village health functionary (ASHA worker, ANGANWADI SEVIKA, ANM) were each given with a login. The village Secretary and health worker visited each household, surveyed and entered the data of all the citizen who returned to the village. As many as 97000 individual data was collected in 870 Village Panchayats with the help of 2000 plus survey staffs.

Once the data was collected, data analytics was done to further map the skill set of the citizens. In order to achieve this, the district level functionaries of various departments like, MSRLM, Skill development department, R-SETI, Lead bank, Women and child development, ATMA- Agriculture, Animal husbandry, Labour department, MAVIM, Fisheries , etc. were given an administrator login to filter and fetch the data village-wise. The concerned department will do their need assessment and use those citizens list as per the skill set to train, enterprise and place them as per demand –supply in the local market, companies and institutions.

It is to be mentioned here that the Zilla Parishad under the leadership of CEO, Mr. Shanmugarajan S has played a pivotal role in populating the data on the app. Under his leadership the BDOs have helped district achieve the timelines in a disciplined fashion. District Administration is very optimistic that this collaborative effort is going to fulfill the tenets of the ambitious Atmanirbhar Yojana. With a focused approach on inclusion this effort has brought to fore the need of equity and inclusion of women vulnerable social groups, people with special needs in terms of skilling, up-skilling and re-skilling and livelihoods generation.

Figure 2: Launch of Aapulki initiative

Figure 3: Shelter Management App showing the status of the district

Figure 4: Shelter Management App showing the status of the district