

Role of Local Governing Institutions in Community-Based Management of COVID-19 Pandemic in Two States of South-India: Mixed Method Cross-Sectional Study

Seema M Gafurjiwala

Indian Institute of Public Health Hyderabad

Srinath Nagapurkar

Indian Institute of Public Health Hyderabad

Janani S Chary

Indian Institute of Public Health Hyderabad

Chandralekha Kona

AIIMS Bibinagar

Nanda Kishore Kannuri

Indian Institute of Public Health Hyderabad

Rajan Shukla

Indian Institute of Public Health Hyderabad

Samiksha Singh (✉ samiksha.singh@iiphd.org)

Public Health Foundation of India

Research Article

Keywords: Community engagement, Local governance, Volunteer, COVID-19, Vaccination, mixed methods, India

Posted Date: April 12th, 2022

DOI: <https://doi.org/10.21203/rs.3.rs-1456987/v1>

License:   This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Abstract

Background: The COVID-19 pandemic has highlighted that community engagement and health governance are critical for mitigating the impact and enhanced preparedness. This study assesses the knowledge, attitudes, and practices (KAP) among elected *Gram panchayat* representatives (*Sarpanches*) and volunteers. The study explores enablers and barriers for community-level management of COVID-19 and vaccination in two states of South India – Andhra Pradesh (AP) and Telangana (TS). In addition, the availability and utilization of COVID-19 related care and other Primary Healthcare services including Non-COVID clinical care, Maternal and Child health services was also studied.

Methods: A mixed-method cross-sectional study consisting of 183 semi-structured interviews and 15 in-depth interviews from two districts of AP and TS. In depth interviews were conducted with 10 COVID-19 recovered patients and 20 lactating mothers were conducted.

Results: Quantitative findings suggest a significant association between socioeconomic status and educational level with knowledge. 74% of participants practiced wore masks and 59% washed hands whereas 91% were vaccinated. *Sarpanches* ensured community compliance and supported the COVID-19 control activities. Most of the COVID-19 patients reported being stigmatized even after recovery. Lactating mothers were dissatisfied with services in government hospitals and high expenditures in private hospitals.

Conclusion: The study established the crucial role of *sarpanches* and volunteers in COVID-19 response. It is important to build their capacities further for better community-based preparedness. Primary health care services should be strengthened for uninterrupted access during such pandemics.

Introduction:

Corona Virus Disease (COVID-19) caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS CoV-2) was declared a pandemic on 11th March 2020 by World Health Organization (WHO) (1). India witnessed the pandemic's first wave between March 2020 and October 2020, with the second wave hitting by March 2021 and peaking around May 2021 (2) leading to significant increase in morbidity/mortality and socio-economic disruption. India in response, enforced national followed by several sub-national lockdowns, travel restrictions and pandemic containment activities while managing law and order, civil supplies, health and sanitation, and mitigating socio-economic effects of the pandemic (3). Public Health and Social Measures (PHSM) are the mainstay of controlling spread of pandemic when there is no definitive treatment or vaccine available (4, 5). The National Disaster Management Authority (NDMA) coordinated and implemented preparedness and response activities, followed by state and district disaster management authorities. The district administrative heads (District Magistrates/Collectors) were responsible for leading the coordinated multi-departmental efforts and monitoring the status at ground level. The district administration heavily depended on local governance institutions (*Gram Panchayats*) for village level control and support activities (3). With the availability of

COVID vaccines, India began its vaccination drive on January 16th 2021, initially for health-care and Front Line Workers (FLWs), followed by elderly and people above 40 years with co-morbidities. From 1st June 2021, all above 18 years were eligible for vaccination (6). As on 25th February 2022, India had the second highest number of confirmed cases accounting for approx. 42 million and 1.7 billion vaccine doses administered (6) of which 2022 about 85 & 58 million doses of vaccine were administered in AP and TS respectively. (6).

While public attention was focused on international and national policy responses, the pandemic control efforts in terms of PHSM ultimately were required to be carried out by local institutions, such as *Gram Panchayats* in India. The 73rd Amendment of the Indian Constitution (1992) provided for the establishment of *Gram Panchayat*, a system of democratic local governance at the grass-root level which led to the decentralization of power to local bodies that form the focal point of contact for all services in rural areas including rural development, delivery of social services and management of natural resources. Most Asian countries have a similar administrative set-up such as Union councils, Grama Niladhri and Gaunpalika in Bangladesh, Sri Lanka and Nepal respectively (7, 8). India, with over 2,50,000 *Gram Panchayats*, has undertaken the largest mobilization of local governments in this pandemic (9). The coordination of *Gram Panchayat* across different sectors of administration and general public becomes a key factor in community management of COVID-19 for health and social welfare. The proximity of *Panchayats* to the people ensures reach of support measures to even the most diverse and vulnerable groups like children, elderly and socially disadvantaged people (10). Additionally, the head of *Gram Panchayats* (*Sarpanches*) chair the Village health and sanitation committees and *Anganwadi*-level monitoring committees to support the grassroots level services and functionaries from Departments of Health and Family Welfare, and Department of Women Welfare and Child Development (3). States like Odisha and Kerala strengthened their existing systems by delegating powers of the District Collector to *Sarpanches* thus allowing them to convene Village Action Groups and impose village level lockdowns or by building consensus among all village organisations to engage Janamaithri volunteers, develop Palliative Care teams and strengthen referral networks (11, 12). Hence, it is crucial to understand the role of local leaders and their potential in managing emergencies such as COVID-19 pandemic.

This study assessed the role of *Panchayats* in leading community engagement and management of COVID-19 including COVID vaccination. The FLWs, Auxiliary Nurse Mid-wife (ANMs) and Accredited Social Health Activists (ASHAs) led the COVID-19 related health activities, sensitised villagers and coordinated with *Panchayats* for support services. As the focus of overburdened health staff shifted to COVID-19 management, services for other diseases and routine maternal and child health (MCH) care took a back seat. Thus, this study also explores beneficiaries' perspectives and challenges they faced in accessing primary and MCH care services during the COVID-19 pandemic.

Objectives:

1. To assess the knowledge, attitudes and practices (KAP) about COVID-19 pandemic management among *Sarpanches*, panchayat-linked volunteers in Andhra Pradesh (AP) and Telangana (TS)

2. To explore the enablers and barriers for community-based COVID-19 management
3. To explore the access and utilisation of COVID-19 care and primary health care services by the rural population during second wave of COVID-19 pandemic

Methodology:

This was a mixed methods cross-sectional study (quantitative and qualitative) conducted in bordering districts of two southern states, AP and TS, between September and November 2021. All methods were conducted in accordance with Good Clinical Practice Guidelines, India and the Declaration of Helsinki.

The study population included *Sarpanches* and volunteers, COVID-19 patients and lactating mothers from AP and TS. *Sarpanches* from AP were elected and started term after 17th February 2021 (just prior to second wave), while those from Telangana started around 20th February 2020 (prior to first wave) and were more experienced in COVID-19 management by the time of the study.

Two border districts each from AP (Krishna, Kurnool) and TS (Khammam, Jogulamba Gadwal) were purposely chosen as they had similar geographic and socio-economic distribution, and similar health infrastructure but different state administration. Estimated population of AP is 55 million and TS 39.6 million; and have reported 23,00,165 and 7,81,427 COVID-19 cases till 28th February 2022 respectively (6). From each district two *mandals* (sub-district administrative unit) were selected randomly.

Quantitative study: The study population included *Sarpanches* and Panchayat-linked volunteers. Sample size of 120 was computed for each state, assuming 50% participants had adequate knowledge, considering 95% confidence interval, 10% absolute precision and adjusting for 20% non-response rate. Lists of *Sarpanches* with contact details were obtained from District Panchayat Offices and simple random sampling was done. During their interviews, names and contact details of volunteers were also obtained. A 50 item semi-structured questionnaire was developed to assess the KAP for community-based management of COVID-19, COVID Appropriate Behaviour (CAB) and vaccination, clinical care for COVID-19, and to capture socio-demographic details of the participants. The questionnaire was pilot tested in local language and modified accordingly. Telephonic interviews (10–15 minutes) were conducted by trained staff with post-graduate degree in public health. A call log was maintained and any participant not responding to more than 3 calls with a gap of 4 hours in a day was considered non-response and next number in the list was taken. Where the *Sarpanch* could not be interviewed, (Vice) *Upa-Sarpanch* was included.

Qualitative study: 10 *Sarpanches* and 10 volunteers who were not part of the survey were sampled for In-depth interviews (IDIs) for obtaining a broader perspective of their role in COVID-19. IDIs were conducted telephonically by trained staff using interview guides. For any interruptions, repeat calls were made as per the participant's convenience. The interviewers explored the role of stakeholders in community level preparedness, control and mitigation of effects of COVID-19 pandemic, awareness generation, and mobilisation of community for CAB, vaccination, provision and utilisation of healthcare services, support

to needy and vulnerable and response from the community. We assessed the training and support provided to *Panchayats* and the coordination between FLWs and beneficiaries at the village level. During IDIs, contact details of ANMs were obtained who further provided contact details of 10 COVID-19 positive cases diagnosed and 20 women who delivered between April and July 2021 (wave 2 of pandemic). Specific interview guides were prepared in local language, validated by experts and pilot tested before use. A total of 35 IDIs (approximate duration 45 minutes each) were conducted telephonically while 10 lactating mothers were interviewed in person with consent and appropriate COVID-19 prevention protocols.

Data Analysis:

Quantitative data was recorded in MS Access database, cleaned and statistically analysed using STATA14. Data was described using frequencies, proportions, mean and standard deviation. KAP questions were assessed for correct responses, and mean scores were computed for each. Independent t test, Chi square test, Fisher Exact test, Mann-Whitney U test for statistical comparisons, appropriate visualisation tools were used for presentation of data.

For qualitative data, thematic deductive analysis was done based on interview guides. Pre-defined themes and sub-themes were coded and new ones identified. Qualitative and quantitative results were triangulated.

Results:

Quantitative:

42% participants in AP and 78% in TS responded to the calls, of which 73% and 70% consented and completed the interviews. A total of 183 subjects participated in the survey, 102 from AP and 81 from TS. Participants from AP had lower median age of the participants (36 years) compared to TS (46 years) and, AP had higher proportion of graduates (37%) vs 9% in TS (Table 1).

Table 1
Sociodemographic details of the participants

Variable	Categories	AP	Telangana	p-value ^{\$}
		n = 102 (%)	n = 81 (%)	
Category of Interviewee	<i>Sarpanch/ Up (Vice)-Sarpanch</i>	65 (63.7)	70 (86.4)	0.001
	Panchayat-linked COVID-19 Volunteer	37 (36.3)	11 (13.6)	
Age in years Median (IQR)*	-	36 (27,44)	43 (37,50)	< 0.001
Gender	Male	64 (63.4)	34 (41.9)	0.004
	Female	37 (36.6)	47 (58.0)	
Religion**	Hindu	95 (96.9)	74 (92.5)	0.141
	Muslim	2 (2.0)	1 (1.3)	
	Others	1(1.0)	5(6.3)	
Education status***	Illiterate	18 (17.6)	24 (29.6)	< 0.001
	High school	30 (29.4)	35 (43.2)	
	Intermediate	13 (12.8)	13 (16.0)	
	Graduate & above	38 (37.3)	7 (8.6)	
Income in Rs. Median (IQR)*		10,000 (5000,12000)	10,000 (5000,15000)	0.936
Socioeconomic status [#]	Upper	8 (9.4)	6 (9.7)	0.86
	Upper middle	12 (14.1)	6 (9.7)	
	Middle	19 (22.3)	17 (27.4)	
	Lower middle	24 (28.2)	15 (24.2)	
	Lower	22 (25.9)	18 (29.0)	

Variable	Categories	AP	Telangana	p-value [§]
		n = 102 (%)	n = 81 (%)	
[§] Chi square test was used to obtain p-value [*] Mann-Whitney test p-value ^{**} n1 = 80 and n2 = 98 p-value of Fischer exact test ^{***} n1 = 79 and n2 = 99 [#] n1 = 62 and n2 = 85, Prasad classification for the Socioeconomic Status (13)				

In TS, higher proportions of participants were aware of signs and symptoms (72.8%) of COVID-19 and danger signs for hospital admission (59.8%) compared to AP (41.8% and 59.8%). Knowledge regarding CAB was high in both states (Table 2). However, knowledge was poor regarding appropriate time for testing, reverse quarantine and immediate steps to take in case of exposure to COVID-19 case, in both states (Table 2).

Table 2
Knowledge of the Participants regarding COVID-19 (N = 183)

Questions regarding knowledge	Total	AP n = 102 (%)	Telangana n = 81 (%)	p-value [§]
Disease causing organism	79 (44.1)	41 (40.2)	38 (46.9)	0.362
Signs and symptoms of COVID-19	101 (55.2)	42 (41.2)	59 (72.8)	< 0.001*
Appropriate time for testing	62 (38.1)	29 (28.4)	33 (40.7)	0.08
Asymptomatic persons testing positive	100 (54.6)	59 (57.8)	41 (50.6)	0.329
Asymptomatic persons spreading the disease	78 (42.6)	47 (46.1)	31 (38.3)	0.289
Re-infection with COVID-19	130 (71.1)	72 (70.6)	58 (71.6)	0.88
Warning signs for hospital admission	129 (70.5)	61 (59.8)	68 (83.9)	< 0.001*
High risk population for complications of COVID-19	43 (23.5)	15 (14.7)	28 (34.6)	0.001*
Understanding of COVID-19 Appropriate Behaviors (CAB)	166 (90.7)	89 (87.2)	77 (95.1)	0.07
Steps to be taken in case of exposure to COVID-19	46 (25.1)	35 (34.3)	11 (13.6)	0.001*
People with special needs in context with COVID-19 pandemic	87 (47.5)	46 (45.1)	41 (50.6)	0.457
Reverse quarantine	6 (3.3)	3 (2.9)	3 (3.7)	0.77
Vaccine hesitancy	66 (36.1)	40 (39.2)	26 (32.1)	0.32
[§] Chi square test was done to obtain p-value *Indicates statistical significance				

Majority of *Sarpanches* and volunteers had received at least one dose of COVID-19 vaccination (90.5%) and encouraged their family and friends to get vaccinated (98.3%). Most participants (93.8%) also thought it was necessary to follow CAB even after getting vaccinated. Participants from TS showed significantly better attitudes for avoiding crowded places and following CAB during travel; greater proportion from AP believed there was no relationship between consuming alcohol or non-vegetarian food and contracting COVID-19. (Table 3, Fig. 1)

Table 3
Attitude of the participants

Questions regarding Attitude	Total	AP	Telangana	p-value [§]
	n = 183 (%)	n = 102 (%)	n = 81 (%)	
In recent times, did not go to any crowded place/ marriage/ gatherings.	55 (30.5)	27 (26.7)	28 (35.4)	0.228
Did not feel safe going to crowded places.	82 (45.8)	34 (34)	48 (60.7)	< 0.001*
Did not think drinking alcohol will prevent a person from contracting COVID-19.	119 (66.5)	75 (75)	44 (55.7)	< 0.001*
Did not think avoiding non-vegetarian food will help prevent COVID-19.	124 (69.6)	84 (84)	40 (50.6)	< 0.001*
Received at least one dose of COVID-19 vaccination.	162 (90.5)	89 (89)	73 (93.6)	0.03*
Will encourage family members and friends to get vaccinated.	175 (98.3)	97 (97)	78 (100)	0.12
Did think mask and physical distancing is necessary even after COVID-19 vaccination	167 (93.8)	96 (96)	71 (91.0)	0.13
Did not think after taking COVID-19 vaccine they can travel without following COVID appropriate behavior	82 (46.1)	36 (36)	46 (58.9)	< 0.001*
§Chi square test was done to obtain p-value *indicates statistical significance				

Participants who have completed at least graduation and from upper socio-economic strata showed significantly higher knowledge scores than others (p-value = 0.006 and 0.002 respectively). But there was no statistically significant difference in attitude and practice scores. In general, most participants used government primary services for COVID-19 related healthcare. 76.5% used or referred people to PHCs for COVID-19 testing and 68.9% took or planned to take vaccine at a government hospital. *Sarpanches* reported supporting their community during the pandemic by sensitizing them for CAB (48.1%), setting up and motivating COVID patients to isolate at community isolation centres (36.1%), arranging transport for critically ill COVID and Non-COVID patients (27.9%), encouraging people for COVID testing (26.8%), setting up vaccination centres and motivating the community for vaccination (24%).

Volunteers described their contribution to prevention and control by encouraging CAB, hygiene and sanitation (25.7%), registration and promotion of vaccination (23.5%) and arranging for isolation facilities for COVID patients (20.2%).

Participants reported that the FLWs conducted testing (42.6%), distributed drugs to COVID patients (42.6%), provided information and administered COVID vaccines (36.6%) and provided information on isolation and quarantine facilities (26.2%).

Qualitative:

Demographics:

Ten *Sarpanches* (aged 30 to 55 years), 6 males and 4 females, were interviewed. Most had completed education up to high school or further. Five volunteers (aged 21 to 29 years), 3 males and 2 females, interviewed were only from AP as there were no *Panchayat*-linked volunteers in TS. All volunteers had completed high school or graduate degree. Ten COVID-19 recovered participants, 6 males and 4 females (aged 24 to 44 years) were interviewed. They were mostly graduates, only one participant was illiterate. Twenty lactating mothers (aged 20 to 35 years) who delivered between the months of April – July 2021 were interviewed. Of them 6 were illiterate and others had completed high school or graduation. Twelve of them were first time mothers.

Clinical scenario:

All participants were enquired about prior COVID-19 status. Those who had tested positive shared their experience regarding symptoms, complications of COVID-19 and other comorbidities of Hypertension, Diabetes. Patients reported symptoms of fever, body pain, headache, muscle pain and loss of smell; 5–10 reported difficulty in breathing on mild exertion and muscle pain even after recovering from COVID-19.

“On 26th May I got fever and took tablets from RMP doctor for 3 days. He told I had typhoid, I got doubt after 5 days because I was unable to smell so I got tested immediately. The next morning, I got the report that I was positive for COVID-19.” - Post-COVID 5

One of the mothers who delivered during April- July 2021 had symptoms but tested negative while her older child was positive for COVID-19. Another asymptomatic mother tested positive while she was pregnant.

“When I was in 9th month, I suffered with cold and I was afraid a lot, also my son suffered with fever, and he tested positive. But I got negative in COVID test.” - PNC-13

“I didn’t have symptoms and I didn’t feel anything. I was so confident that I will get negative. But I was shocked when it was positive.” - PNC-15

Some COVID-19 cases stated facing challenges of clinical care accessibility, out of pocket expenditure and social isolation.

Training of Sarpanches and volunteers

Sarpanches and volunteers responsible for community-based management and mobilization for vaccination received periodic trainings at *Panchayat* offices by Sub-district officers since December 2020 (after the first wave). Only *Sarpanches* from Kurnool (AP) reported attending additional one-day online training by Indian Institute of Public Health-Hyderabad (IIPH-H) in April 2021. Follow up training and information dissemination was done by Medical Officers and ANMs from Primary Health Care centres (PHCs). Few *Sarpanches* reported increased workload and pressure from higher authorities.

“Instructions were given by Mandal (Sub-district) level officers through WhatsApp, one-day online training was also conducted, we got to know many new things about COVID and how to take steps to control it, the training was very useful.” – Sarpanch 6

Volunteers were mostly trained by ANMs in CAB, conducting fever surveys and mobilization for vaccination.

“Given 5 days training on how to behave with people, how to provide services, how to respond if people react in a particular way. Meeting was arranged for all volunteers with MRO (Mandal Revenue Officer), MDO (Mandal Development Officer). Training was given by Special COVID doctor from Mandal. All volunteers were assigned specific duties.” - Volunteer 5

Community preparedness

All *Sarpanches* reported dissemination of information regarding CAB (PHSM) and vaccination through house-to-house campaigning using *Dandora* (Drums) and loudspeaker announcements. They ensured restricted public movements. They were responsible for regular bleaching of streets and sanitation activities where they were supported by volunteers. *Sarpanches* and volunteers helped identify and set up community isolation centres at government primary schools. They helped COVID-19 positive patients and people in quarantine and isolation with groceries, medicines and helped in follow up of COVID patients and promoting vaccination.

“Kept restrictions for people entering the village and did not allow any outsider to enter. We used to sit at the village entrance from 6am to 11pm at night and record details of those who enter the village. We also displayed posters and banners in the village. ASHA, Anganwadi teacher and myself were telling everyone about the COVID situation.” – Sarpanch 7

Few participants themselves were tested for COVID-19 as part of community screening drive in AP while such practice was not seen in TS. Amidst these, they continued to provide support and social welfare services for poor and migrants.

Health care services utilisation

Though COVID-19 and non-COVID-19 services were provided by both government and private hospitals and clinics, most *Sarpanches* felt people preferred PHCs over private hospitals for testing and treatment of COVID-19, as PHCs were more accessible and affordable.

“Government has given medicines and I used them. People were calling from government hospital once in 2–3 days about how I was feeling. 108 ambulance service was also available.” – Post-COVID 5

“ANM and ASHA were keeping track on telephone. I received 2 calls, in my one-week time period. ANM visited me after I tested positive. Near my house, there was one more positive case. So every time she used to visit there and make a visit to my house also.” - Post-COVID10

Non-COVID health services were uninterrupted during second wave (unlike first wave); people went to PHC, Community Health Centre (CHC) or district hospitals for treatment. Most medical shops were open. Volunteers from AP reported regularly functioning 104 health services for elderly patients through the second wave.

Most pregnant women used their own transport which was not hindered by lockdown while few used government-run ‘108’ ambulance service. Post-natal mothers stated that they were not afraid of COVID-19 during antenatal care except for 2 out of 20 who had to go to crowded scanning centres and when they were admitted for delivery, although there were separate COVID-19 and non-COVID-19 wards.

“They sent me to private scanning centre, all patients come there, even COVID” – PNC15

Most of the mothers had to undergo repeated COVID-19 tests every time they went for check-up during pregnancy. It not only increased the expenditure but also created fear and apprehensions among the mothers.

“They have tested me three times, once in 6th month, then 9th, then just before delivery” – PNC7 One of the mothers was refused support for childbirth by a private practitioner. All were satisfied with the overall care they received during pandemic although they were dissatisfied with apathy to their queries in government hospitals and huge amount of money they had to spend when they visited private hospitals.

Response from the community

Sarpanches reported good cooperation and adherence of CAB in the community, many suggested that CAB adherence was better in first wave compared to second since people had lost fear of COVID-19. Many neglected CAB post-vaccination.

“In the first wave, everyone behaved well but in the second wave many of them did not follow (CAB). However once 4–5 people in the village tested positive, then everybody started to follow it.” – Sarpanch 3

Many *Sarpanches* reported that due to increased pressure from higher authorities regarding meeting vaccine coverage targets, they had to coerce people by threatening to cancel benefits of social welfare schemes. Despite availability of community isolation centres, villagers were reluctant to use them as they had to stay among other COVID-19 positive patients and were not sure of facilities they would receive. Majority isolated at home without requiring hospitalization, and were monitored by FLWs. Many shared common spaces and washrooms with other family members. One participant was admitted in COVID-19

isolation centre despite being asymptomatic as he might be a source of infection to elderly parents at home. **Stigma**

Few volunteers reported that villagers feared getting infected by them and avoided them as the volunteers supplied groceries to COVID-19 patients and accompanied them to isolation centres.

“Villagers used to get up and go whenever I visited common meeting places as I accompanied a COVID patient for getting admission in isolation centre” – Volunteer 3

Most COVID patients felt socially isolated and stigmatized. Many villagers avoided entering their street or neighbourhood due to fear of COVID-19 transmission. A private practitioner also refused to treat one of the mothers as she was tested positive for COVID-19.

“Neighbours treated me like some insect, they were scared of situation.” - Post-COVID 4

“I was infected with COVID when I went for last scan, I don’t know how it happened. My doctor refused to do the delivery.”-PNC 15

Vaccination:

Most of the information regarding vaccines was shared by ANMs and ASHAs who were trained by the PHC Medical Officers. *Sarpanches* played a crucial role in motivating people for vaccination by taking vaccine in the Panchayat office in front of all villagers. Door-to-door campaigns were also conducted.

“At first people were afraid as it was new vaccine but slowly they themselves began to take the vaccine.”- Sarpanch 1

There was good COVID vaccine uptake with *Sarpanches* reporting approx. 70% people in their villages completed both doses. Few volunteers reported resistance from elderly people whenever they visited their homes for vaccination.

“(Elderly) People thought they will die if they take vaccine. They already had many health problems.” – Volunteer 3

Daily wage labourers were hesitant as they felt they would lose their income for 1 or 2 days due to fever and body pains post vaccination. Pregnant women were afraid as they might not be able to take care of their baby.

Preparation for funerals/last rites of people who succumbed to COVID-19

Most *Sarpanches* reported providing support for bereaved family members by organizing funerals with restricted gathering and provided PPE kits for those attending. They helped arrange for earth-moving equipment to aid in burial. However, many other participants expressed disappointment over compromised last rites.

“One old lady died due to COVID in the village her body was packed and brought directly to the graveyard and with the help of JCB, we dug and buried her.”- Sarpanch-5

Role of other stakeholders and coordination between community level workers

Sarpanches felt that district administration’s role was mostly restricted to supplying testing kits and vaccines. It was the *Panchayats*, self-help groups and FLW’s who drove the community-based activities. ANMs provided medicines to patients and crucial information regarding COVID-19, CAB to *Sarpanch* and volunteers, conducted door-to-door vaccination and were the first point of contact for clarifying doubts regarding CAB, vaccination, referral and transport of patients with complications. COVID-19 specific medical officers in Krishna district (AP) were in constant touch with the patients, providing them support, while this was not seen in any other districts. The close proximity to the state capital could have influenced this arrangement.

Sarpanches and volunteers helped in spreading information about CAB, motivating people for vaccination; identification of suspected cases and guidance for testing; and supporting those in isolation and quarantine.

“I and my grandmother tested positive, we could not go out anywhere. Sarpanch only brought the medicines and kept it at my door step” – Post-COVID 8

Sarpanches said none of them received any help from NGOs. One volunteer reported masks being distributed by NGO. During the months of April and May 2021, lockdown was imposed by state government due to which public transportation restriction pushed the people for alternate mode for MCH care services. With the help of *Sarpanches*, ASHAs arranged vehicles for antenatal check-ups.

“ASHA arranged the vehicle for us in which all pregnant women from the village used to go for check-up.”- PNC – 17

Discussion:

Although many KAP studies were conducted among different study groups, this is the first study assessing KAP among *Sarpanches* in India/elsewhere to the best of our knowledge. It has been seen that many COVID-19 control measures (PHSM) were taken with support from volunteers and in coordination with FLW’s. *Sarpanches* directly reported to District Collector (administrative head), who monitored the grass root level situation very minutely.

KAP about CAB and vaccination was encouraging, similar to other studies among general public in India and Iran (14,15). More than 75% in our study preferred PHCs as their immediate contact for COVID-19 related services due to better accessibility, trust and affordability. The *Sarpanches* and volunteers’ work increased multi-folds during the pandemic and so did their risk of contracting COVID-19. They imparted their duties responsibly, without being provided any incentive. There were a few gaps in KAP of

Sarpanches and volunteers. Nearly one third thought that drinking alcohol can kill Coronavirus which is slightly higher when compared to online survey conducted (16) in India where 14% thought the same; thereby spreading wrong information to community. Less than half of the participants knew of appropriate time for testing which can lead to delay in isolation and accessing care. Participants from TS had better knowledge scores (6.4 vs 5.5) than those in AP, probably because the *Sarpanches* from TS had worked during both the waves while in AP most of them were newly elected (Jan 2021) and only worked during second wave; those from TS may have also undergone more informal or formal sensitisations or trainings during their longer period on the job. However, better knowledge didn't translate into better practice in TS. Vaccination coverage in these districts (17) had minor difference of 5% edging towards AP. Even though districts in TS were smaller and administration could be easier compared to larger districts in AP. Presence of volunteers' support in AP could have resulted in better practices than TS. In AP, systems to engage volunteers for every 50-75 houses existed even prior to pandemic who had already developed rapport with the villagers (18). Thus they were found crucial and were successfully utilised in pandemic control in AP. As there was no such system in TS, only a few villages engaged local youth volunteers. It was also observed in Kerala during the first wave that trained youth volunteers from the community played a crucial role in ensuring delivery of social support schemes to the people (19). Additionally, not always, knowledge translates into practices as found in a study among general population of developing countries that attitude and practices regarding COVID-19 control were not related to 24.1% of the respondents' knowledge (20).

Creating awareness and motivating villagers and daily wagers for vaccination was a challenge. Most of them were coerced by fear of losing benefits of government schemes. Few officials also took the approach of positive deviance, themselves getting vaccinated among public to entrust those vaccines are safe. Few *Sarpanches* even arranged transport (used tractors) for mobilising people for vaccination and critically ill COVID-19 patients.

Stigma related to new disease persisted where villagers were afraid to talk to COVID-19 patients even after recovery. This was similar to a study conducted in Iran (15) where the authors reported that 10% people said they would not welcome a survivor of COVID-19 into the community. Mostly the stakeholders were satisfied with the COVID-19 specific care and other primary health care provided during the second wave of pandemic. However better behaviour and attention in Government hospitals, and some regulation on cost of care in private sector under Disaster Management Act, would have been beneficial. Overall, the rural people showed more trust in Government-run PHCs for COVID-19 related care and vaccination. This is highly encouraging especially in the country where the utilisation of services has been shifting to private sector. This is an opportunity as well as responsibility of policy makers and administration to strengthen the primary health care and capitalise on local governing institutes and volunteers for engaging communities for positive health behaviour.

Even in many high income countries while central governments provided financial support and resources such as medical supplies and vaccines, it was the sub-national and local governments that ensured delivery of the services and resources to the people (10). Appropriate PHSM measures need to be

implemented locally based on the assessment of the gravity of the situation and preparedness, to mitigate disruption in socio-economic activities. During the first wave of the pandemic in India, guidelines were issued by the Central Government (21) under National Disaster Management Authority (NDMA), to ensure the cooperation and coordination among *Panchayats* representatives and Frontline health workers. States like Odisha and Kerala strengthened their existing systems by delegating the powers of the District Collector to the *Sarpanches* thus allowing them to convene Village Action Groups and impose village level lockdowns or by building consensus among all village organisations to engage Janamaithri volunteers, develop palliative care teams and strengthen referral networks(11,12). *Panchayats* have the potential to act as frontline response during any kind of disasters or pandemics. Their potential can be properly channelized by including PHSM components in their induction and periodic trainings of various panchayat functionaries and also allocating the resources required as seen after floods in Kerala (22). This pandemic can act as a force to rejuvenate the existing panchayat raj institutions and to activate them for making a difference in their communities.

Our study had a few limitations, the selection of COVID-19 cases and post-natal women was dependent on the sample of panchayat representatives. Due to COVID-19 related safety measures, we had to conduct telephonic interviews, both quantitative and qualitative, and thus may be limited in the depth of information gathered in absence of the face to face connect. Nonetheless, the study gathered very useful information that can influence future strategies for community outreach activities and disaster management.

Conclusion:

The study found crucial, the role of local governing bodies and volunteers in mobilising communities for CAB and vaccination; and distribution of essentials to the people who were under home isolation. While knowledge, attitude and practice were good overall, there were some gaps which can be improved by repeat sensitisations, access to call centres, and regular monitoring of performance. We realise huge potential of local government and volunteers in promoting positive health behaviours. These local governing bodies being very close to the community can make a huge impact during disaster-like situations by acting promptly thus reducing severity of impact. *Panchayats* should be empowered to implement PHSM based on their local situation for effective control of epidemic while also mitigating socio-economic disruptions. At the same time, it is essential to strengthen the primary care facilities which were most trusted and utilized in times of emergency.

Declarations:

Ethical approval and consent to participate

All methods were performed in accordance with Declaration of Helsinki. Approval was obtained from Institutional Ethics Committee, Indian Institute of Public Health, Hyderabad (IIPHH/TRCIEC/23 9/2021). Informed verbal consent was obtained over telephone before conducting the survey and in-depth

interviews. In case of in-person interviews, informed written consent was obtained. In case the participant was illiterate, we read out the information sheet and those consenting provided thumb impressions, and a witness (their guardian) signed on behalf of them.

Consent for Publication

Conditional to positive outcome of peer review and editorial acceptance for publishing, the authors convey their authorship right to HRPS, BMC and give full consent for publication.

Availability of data and material

The datasets generated and/or analysed during the current study are not publicly available as the concerned government department did not approve of sharing the data sets on public forums without discretion. But they are available from the corresponding author on reasonable request.

Competing Interests

The authors declare they have no competing interests.

Funding

This study was funded by UNICEF-Hyderabad Office, India.

Author Contribution

SS, RS, SG and SN conceived the study idea; SG, SN, JC and CK developed the survey tools; SG and SN managed data collection, SG managed data cleaning and analysis. SS, RS, NKK contributed to key aspects of study design and interpretation of results. SG and SN prepared the first draft. All authors provided critical comments and contributed on drafts and read and approved the final version of the manuscript.

Acknowledgement

Authors would like to thank the local representatives of villages (Sarpanches), Volunteers and frontline workers (AWW, ASHA and ANM) in Telangana and Andhra Pradesh in helping us identify respondents for the KAP survey. We also thank the COVID-19 recovered patients and lactating mothers for giving their time for the interviews.

References:

1. World Health Organisation Timeline - COVID-19 [Internet]. 2022: <https://www.who.int/news/item/27-04-2020-who-timeline—covid-19>. Accessed 19 Jan 2020.
2. Sarkar A, Chakrabarti AK, Dutta S. Covid-19 Infection in India: A Comparative Analysis of the Second Wave with the First Wave. Pathog (Basel, Switzerland) [Internet]. 2021 Sep 1;10(9):

- <https://pubmed.ncbi.nlm.nih.gov/34578254/>. Available 19 Jan 2022.
3. National Disaster Management Authority. COVID-19 Impacts and Responses: The Indian Experience. NDMA. May 2020: <https://ndma.gov.in/sites/default/files/PDF/covid/COVID-19-Indian-Experience.pdf> Accessed 28 Feb 2022.
 4. Zweig SA, Zapf AJ, Xu H, Li Q, Agarwal S, Labrique AB, et al. Impact of public health and social measures on the COVID-19 pandemic in the United states and other countries: Descriptive analysis. *JMIR Public Heal Surveill.* 2021;7(6):1–8. doi: 10.2196/27917
 5. World Health Organization. Overview of public health and social measures in the context of COVID-19. *World Heal Organ* 2020;p1–8. WHO/2019-nCoV/PHSM_Overview/2020.1
 6. Ministry of Health & Family Welfare [Internet]. 2022: <https://www.mohfw.gov.in/>. Accessed 19 Jan 2022.
 7. Zakir Hossain ANM. Local government response to COVID-19: Revitalizing local democracy in Bangladesh. *Int J Sustain Dev Plan.* 2021;16(4):701–12.
 8. Kharel TP. Local Governments in Managing COVID-19 Pandemic in Nepal: Beyond the Constitutional and Legal Limit Local Governments in Managing COVID-19 Pandemic in Nepal : *International Journal of Natural and Human Science.* 2021;2(1):34:40.
 9. Ministry of Panchayt Raj & Rural Development [Internet]. 2020: https://gpdp.nic.in/secretaryWithDetailsReport.html?OWASP_CSRFTOKEN=GTI5-N0B5-QQGI-6141-5S5T-6J6Y-J5DW-U0Z9. Accessed 19 Jan 2022
 10. Organisation for Economic Cooperation and Development [OECD]. The territorial impact of COVID-19: Managing The Crisis Across Levels of Government. *Organ fo Econ Coop Dev.* 2020;(April):2–44.
 11. Balan PP. Kerala Institute of Local Administration. *KILA J Local Gov.* 2020;7(1&2):67–77.
 12. Nirmala Padmanabhan PA, Anna John AVR. Kerala Institute of Local Administration. *KILA J Local Gov.* 2020;7(1&2):77–86.
 13. Sharma R. Revision of Prasad’s social classification and provision of an online tool for real-time updating. *South Asian J Cancer.* 2013;2(3):157. doi: 10.4103/2278-330X.114142
 14. Saeed S, Awasthi AA, Nandi D, Kaur K, Hasan S, Janardhanan R. Knowledge, attitude and practice towards COVID-19 among individuals with associated comorbidities. *Journal of medicine and life.* 2021;14(2):225–37. doi: 10.25122/jml-2020-0184.
 15. Kakemam E, Ghoddoosi-Nejad D, Chegini Z, Momeni K, Salehiniya H, Hassanipour S, et al. Knowledge, Attitudes, and Practices Among the General Population During COVID-19 Outbreak in Iran: A National Cross-Sectional Online Survey. *Front Public Heal.* 2020 Dec 10;8. doi: 10.3389/fpubh.2020.585302
 16. Tomar BS, Singh P, Suman S, Raj P, Nathiya D, Tripathi S, et al. Indian community’s knowledge, attitude & practice towards COVID-19. *medRxiv.* doi: 2020; 10.1101/2020.05.05.20092122
 17. Coronavirus Outbreak in India [Internet]. 2022. <https://www.incovid19.org/>. Accessed 21 Jan 2022.

18. Village volunteer system in AP from today - The Hindu BusinessLine [Internet]. 2019: <https://www.thehindubusinessline.com/news/national/village-volunteer-system-in-ap-from-independence-day/article29099314.ece>. Accessed 19 Jan 2022
19. Vimal V, KPV Chandran. Role of Local Governance During the Covid-19 Pandemic: Evidence From Kerala Experience. *Int J Res -GRANTHAALAYAH*. 2020;8(8):319–27. doi: 0.29121/granthaalayah.v8.i8.2020.1198
20. Qalati SA, Ostic D, Fan M, Dakhan SA, Vela EG, Zufar Z, et al. The General Public Knowledge, Attitude, and Practices Regarding COVID-19 During the Lockdown in Asian Developing Countries. *Int Q Community Health Educ*. 2021 April 8. doi.org/10.1177/0272684X211004945.
21. Dutta A, Fischer HW. The local governance of COVID-19: Disease prevention and social security in rural India. *World Dev* [Internet]. 2021;138:105234. doi: 10.1016/j.worlddev.2020.105234
22. Praveen SR. After floods, local bodies focus on disaster preparedness - The Hindu. 2019: <https://www.thehindu.com/news/national/kerala/after-floods-local-bodies-focus-on-disaster-preparedness/article26419233.ece>, Accessed 1 Feb 2022 1

Figures

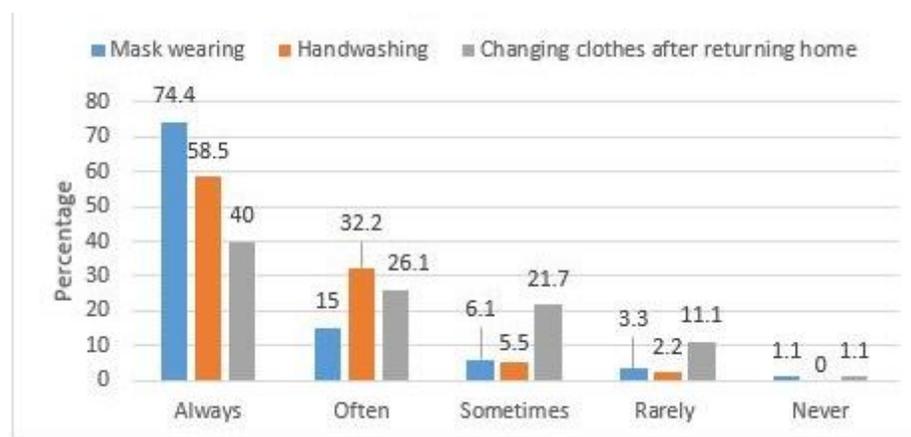


Figure 1

COVID-19 appropriate practices

Majority of participants (74.4%) followed good practice of wearing mask outdoors and only half of them (58.5%) practiced regular hand washing in both states. Nearly 40% had the habit of changing clothes after returning home before having contact with family members.

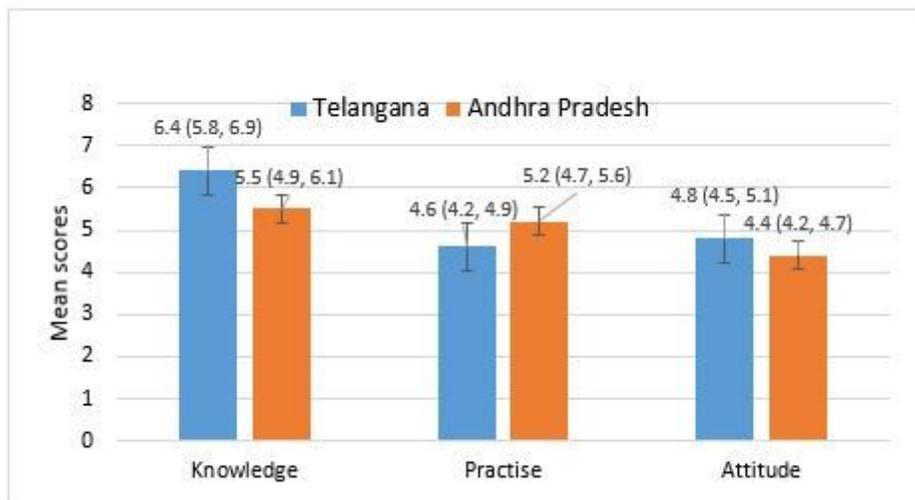


Figure 2

Mean scores of knowledge, practice and attitude

Scores: Participants from TS had higher mean knowledge score 6.4 (5.8, 6.9) compared to participants from AP 5.5 (4.9, 6.1); p-value=0.04. However, there was no statistically significant difference in mean attitude and practice scores. (Figure 2)