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## ROLE OF LOCAL GOVERNING INSTITUTIONS IN COMMUNITY-BASED MANAGEMENT OF COVID-19 PANDEMIC IN TWO STATES OF SOUTH-INDIA: MIXED METHOD CROSS-SECTIONAL STUDY

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### ABSTRACT

**Background:** COVID-19 pandemic has highlighted the critical role of community engagement and local health governance in impact mitigation and for enhanced preparedness. This study assesses the role of elected Gram panchayat representatives (Sarpanches) and linked volunteers; and explores the enablers and barriers for community-level management of COVID-19 and uptake of vaccination in the two states of Southern India – Andhra Pradesh (AP) and Telangana state (TS). In addition, this study also looked into the availability and utilization of COVID-19 related care and routine clinical care and Maternal and Child health services. **Methods:** A cross-sectional study using mixed methods was conducted in two districts of AP and TS: Quantitative semi-structured telephonic interviews with 183 Sarpanches and volunteers; and Qualitative in-depth interviews with Sarpanches, volunteers, patients who recovered from COVID-19, and lactating mothers. **Results:** Participants from TS had mean knowledge score 6.4 (5.8, 6.9) whereas participants from AP reported a mean score of 5.5 (4.9, 6.1). The study findings suggest a significant association between socioeconomic status and educational level with knowledge. 74% of participants practiced wearing masks and 59% washed hands whereas 91% were vaccinated. Sarpanches ensured community compliance for COVID-19 appropriate behaviour and vaccination; and supported the COVID-19 control activities. Most of the COVID-19 patients reported feeling stigmatized even after recovery. Most beneficiaries preferred government-run facilities for any healthcare. Mothers were however, dissatisfied with services in government hospitals and reported high out-of-pocket 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 healthcare facilities need to be strengthened to provide uninterrupted services even during any disruptive events such as a pandemic like COVID-19.

#### Key Findings:

1. Local government representatives (Sarpanches) and linked volunteers from TS were found to have higher mean knowledge scores compared to AP and a significant association as found between socioeconomic status and educational level with knowledge. Sarpanches and volunteers played an important role in community-based management of the COVID-19 pandemic by creating awareness regarding CAB, motivating the community for vaccination and providing support for isolated and quarantined patients.
2. Most respondents preferred government health centres and hospitals for COVID-19 related care and primary health care services such as MCH services as they were more accessible and trustworthy.

#### Key Implications:

1. While local governing bodies and linked volunteers have been engaged in delivery of social development schemes, the COVID-19 pandemic has helped us understand their potential in promoting positive health behaviors and delivering essential health services among the community. Regular sensitization of these bodies will empower them to implement Public Health and Social Measures (PHSM) for pandemic control more effectively.
2. Government healthcare services should be strengthened for pandemic response and mitigation as they were found to be preferred universally for their accessibility and quality of care.

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## INTRODUCTION

World Health Organization (WHO) declared Corona Virus Disease (COVID-19) caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS CoV-2) as a pandemic on 11<sup>th</sup> March 2020<sup>1</sup>. The first wave of the pandemic in India was reported between March 2020 and October 2020. The second wave started by March 2021 and peaked around May 2021<sup>2</sup> which led to a significant increase in morbidity and mortality among the affected population causing severe socio-economic disruption. Government of India enforced a national lockdown of approximately 50 days followed by several sub-national lockdowns while maintaining travel restrictions and pandemic containment activities, managing law and order, civil supplies, health and sanitation, and mitigating socio-economic effects of the pandemic<sup>3</sup>. Public Health and Social Measures (PHSM) were the mainstay of pandemic control as there was no definitive treatment or vaccine available at the time<sup>4,5</sup>. The National Disaster Management Authority (NDMA) coordinated with state and district disaster management authorities to implement preparedness and response activities. 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<sup>3</sup>. With the availability of COVID vaccines, India initiated its vaccination drive on January 16<sup>th</sup> 2021, initially for health-care and Front Line Workers (FLWs), followed by people above 60 years and those with co-morbidities above 40 years<sup>6</sup>. The vaccination drive was extended to include all above 18 years from 1<sup>st</sup> June 2021<sup>6</sup>. As on 25<sup>th</sup> February 2022, 1.7 billion vaccine doses were administered in India<sup>6</sup> of which about 85 million doses of vaccine were administered in AP and 58 million in TS through private hospitals, government health centres and COVID-19 vaccination centres established in Panchayat offices<sup>6</sup>. India had the second highest number of confirmed cases accounting for approximately 42 million during this period<sup>6</sup>.

**Role of local governing bodies in COVID-19 pandemic management in India:** While public attention was focused on international and national policy responses, the pandemic control efforts, in terms of PHSM, were carried out by local governing bodies such as *Gram Panchayats* in India. The 73<sup>rd</sup> Amendment of the Indian Constitution (1992) provided for the establishment of *Gram Panchayat*, a system of democratic local governance at the grass-root level. The decentralization of power to local bodies formed the focal point of contact for all services in rural areas including rural development, delivery of social services and management of natural resources<sup>7</sup>. Most Asian countries have a similar administrative set-up such as Union councils, *Grama Niladhri* and *Gaunpalikain* Bangladesh, Sri Lanka and Nepal respectively<sup>8,9</sup>. India, with over 2,50,000 *Gram Panchayats*, has undertaken the largest mobilization of local governments in this pandemic<sup>9</sup>. *Gram Panchayats* coordinated across different sectors of administration with general public for an effective provision of health and social welfare services as a part of community level management of COVID-19. 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<sup>3</sup>. The involvement of *Panchayats* ensured the reach of support measures to vulnerable populations such as children, elderly and socially disadvantaged sections of the society<sup>10</sup>. 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 *Janamithri* volunteers, develop Palliative Care teams and strengthen referral networks<sup>11,12</sup>. Government of AP Department of Panchayat Raj and Rural Development, in an effort to empower the *Gram Panchayats* for effective community based management of COVID-19, collaborated with Indian Institute of Public Health- Hyderabad (IIPH-H) and UNICEF (United Nations

Child Fund) to conduct an intensive one-day online training on COVID-19 management and vaccination to *Panchayats* throughout the state. Government of TS conducted a similar online training in collaboration with National Institute of Rural Development and Panchayat Raj (NIRDPR) and UNICEF. The involvement of local governing bodies was therefore critical in 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, in coordination with *Panchayats*. It was observed that COVID-19 services overburdened the health staff, affecting primary health care services including Maternal and Child Health (MCH)<sup>13</sup>. Thus, this study focused on the role of local governing bodies in enabling community based COVID-19 management, while also understanding the perspectives, support received and challenges faced by COVID cases, and other non-COVID beneficiaries in accessing primary and MCH care services during the pandemic.

## METHODS

Across-sectional study using mixed methods was conducted in Krishna and Kurnool districts from AP and Khammam and Jogulamba Gadwal from TS, from September to November 2021. The study districts across the two states have similar geographic, socio-economic distribution and health infrastructure. The study involved a KAP survey of *Sarpanches*, *Upa-sarpanches* and volunteers regarding COVID appropriate behaviour (CAB) and vaccination. Qualitative methods were used to further explore their role in community level preparedness, control and mitigation of effects of COVID-19 pandemic, community engagement for CAB, vaccination, and support to vulnerable groups. In-depth interviews were conducted among persons who had tested positive for COVID-19 and pregnant women who had delivered children during the second wave of the pandemic, to explore the access of COVID-19 care and utilisation of primary health care services including MCH services in the study area.

**Sample size:** For the KAP survey, a total sample size of 240 respondents was computed (120 for each state), assuming 50% participants had adequate knowledge, considering 95% confidence interval, 10% absolute precision and adjusting for 20% non-response rate. The *Sarpanches* were selected through simple random sampling from lists obtained from District Panchayat Offices. The volunteers were selected based on lists obtained from *Sarpanches*. A semi-structured questionnaire was developed to capture socio-demographic details of the participants and to assess the KAP for community-based management of COVID-19, COVID Appropriate Behaviour (CAB) and vaccination, clinical care for COVID-19. The questionnaire was translated into Telugu (local language), pilot tested and modified accordingly. The survey was conducted telephonically. A call log was maintained and a participant was considered non-response if not responding to more than 3 calls with a gap of 4 hours in one day. Where the *Sarpanch* could not be interviewed, (Vice) *Upa-Sarpanch* was included. 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. We assessed the training and support provided to *Panchayats* and the coordination between FLWs and beneficiaries at the village level. Data collection was conducted in accordance with existing COVID-19 protocols as prescribed by Government of India. (Good Clinical Practice Guidelines, India and the Declaration of Helsinki)<sup>14</sup>.

During IDIs with *Sarpanches*, the contact details of ANMs were obtained. ANMs provided the contact details of 10 COVID-19 positive patients and 20 women who delivered children between April and July 2021 (wave 2 of pandemic). These participants were included to provide a beneficiary level perspective regarding the access to COVID-19 and Non-COVID-19 related healthcare services.

Respondent specific interview guides were prepared in Telugu (local language), pilot tested and finalised before use. 35 IDs were conducted telephonically with the respondents for all the 4 categories (Sarpanches, Volunteers, COVID-19 recovered patients and mothers who delivered during the Second wave) of study participants. Each interview lasted about approximately 45 minutes. 10 lactating mothers were uncomfortable for prolonged telephonic interviews, thus in person interviews were conducted with them. All appropriate COVID-19 prevention protocols were strictly followed during the interviews.

**Data Analysis:** Quantitative data was recorded in MS Access database, cleaned and statistically analysed using STATA 14. 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. The thematic analysis was conducted to analyse the qualitative data. The interviews were initially transcribed verbatim and translated into English. The initial thematic framework was developed based on interview guides. Transcripts were manually coded independently by first four authors and reviewed by the fifth author. Pre-defined themes and sub-themes were coded and emerging codes were identified. The various domains were clubbed into overarching sub-themes and themes based on the deliberations by the research team. Wherever possible, the qualitative data was used to triangulate the findings from the quantitative survey.

#### Example of coding framework

Stakeholder	Theme	Subtheme	Example codes
Sarpanches and Volunteers	Preparedness	Enablers/Barriers	CAB, bleaching streets, sanitisation, enforcing restrictions, past experience, home delivery of items
	Role of Health services (COVID-19)	Testing, Community level services, Hospitalisation	Sample collection, Testing by FLW, isolation and quarantine centres, government schools, food distribution, ASHA/ANM/ Doctor visits, Govt/Pvt hospital, Nearest town or city, Preference to govt hospital, CHC's
Post COVID cases	Awareness	Regarding CAB	Isolation, Quarantine, double mask, Separate toilet, Handwashing
	Clinical Scenario	Signs and symptoms	Weakness, Fever, Cold, Cough, Loss of taste and smell, headache, Body pains
Mothers	Delivery	Birth experience	Satisfied with care provided, Precautions of COVID followed
	Impact of Covid 19 on pregnancy	Fears and apprehensions	Fear of infection to babies, precautions, not scared

Table 1. Sociodemographic details of the participants

Variable	Categories	AP	Telangana	p-value <sup>§</sup>
		n=102 (%)	n=81 (%)	
Category of Interviewee	Sarpanch/ Upa (Vice)-Sarpanch	65 (63.7)	70 (86.4)	
	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 <sup>#</sup>	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)	

<sup>§</sup>Chi square test was used to obtain p-value  
 IQR – Interquartile Range  
 \*Mann-Whitney test p-value  
 \*\* n1= 80 and n2=98 p-value of Fischer exact test  
 \*\*\* n1=79 and n2=99  
<sup>#</sup> n1=62 and n2= 85, Prasad classification for the Socioeconomic Status <sup>15</sup>

## RESULTS

**Quantitative:** The response rate for KAP survey was 73% in AP and 70% in TS. 183 subjects participated in the survey, 102 from AP and 81 from TS. Participants from AP had lower median age (36 years) compared to TS (46 years). AP had higher proportion of graduates (37%) vs 9% in TS (Table 1).

### Qualitative

**Description of participants:** 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 from AP as there were no Panchayat-linked volunteers in TS. All volunteers had completed high school or graduate degree. Ten patients who recovered from COVID-19 out of whom 6 were males and 4 females (aged 24 to 44 years) were interviewed. One amongst the ten participants was illiterate and others were graduates. Twenty lactating mothers (aged 20 to 35 years) who had their child between the months of April – July 2021 were interviewed. Twelve of them were first time mothers of them 6 were illiterate and the remaining 14 had completed high school or graduation.

Knowledge, attitudes and practices (KAP) about COVID-19 pandemic management among Sarpanches and Panchayat-linked volunteers

**Knowledge:** 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 AP)

“Doctors used to attend the gram panchayat meeting and told us about the precautions and measures.” – Sarpanch 9 TS  
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 AP

**Attitude:** Participants from TS showed significantly better attitudes for avoiding crowded places and following CAB during travel. Greater proportion of respondents from AP believed there was no relationship between consuming alcohol or non-vegetarian food and contracting COVID-19. More number of participants from AP said they have already received at least one dose of COVID-19 vaccine and would also recommend friends and family members to get vaccinated against COVID-19 when compared to TS. (Table 3, Figure 1)

### Practices

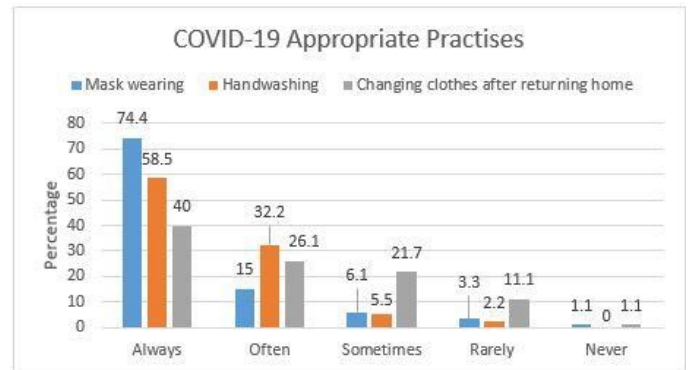


Figure 1. COVID-19 appropriate practices

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

Questions regarding knowledge	Total	AP n=102 (%)	Telangana n=81 (%)	p-value <sup>§</sup>
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

<sup>§</sup>Chi square test was done to obtain p-value  
\*Indicates statistical significance

Table 3. Attitude of the participants

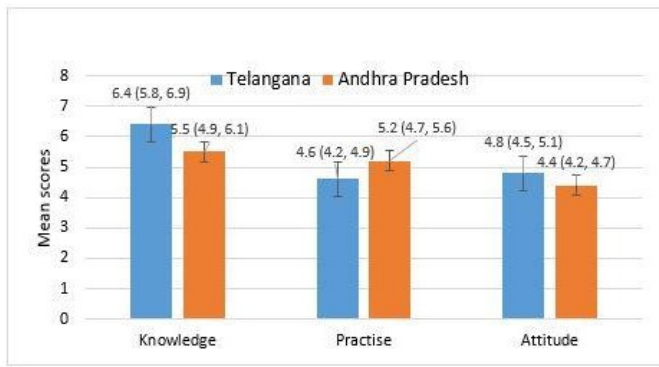
Questions regarding Attitude	Total n=183 (%)	AP n=102 (%)	Telangana n=81 (%)	p-value <sup>§</sup>
In recent times, did not go to any crowded place/ marriage/ gatherings.	55 (30.5)	27 (26.7)	28 (35.4)	0.228
Did not feel safe going to crowded places.	82 (45.8)	34 (34)	48 (60.7)	<0.001*
Did not think drinking 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*

<sup>§</sup>Chi square test was done to obtain p-value  
\*indicates statistical significance

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). Majority of Sarpanches and volunteers had received at least one dose of COVID-19 vaccination (90.5%) and almost all of them (98.3%) encouraged their family and friends to get vaccinated. Most participants (93.8%) thought it was necessary to follow CAB even after getting vaccinated.

Majority of the participants (74.4%) followed good practice of wearing mask while outdoors however, approximately (58.5%) of them practiced regular hand washing in both the states. Nearly 40% reported to have changed clothes after returning home and before interacting with family members.

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.



**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).

### Enablers and barriers for community-based COVID-19 management

**Community preparedness:** All *Sarpanches* reported dissemination of information regarding CAB and vaccination through house-to-house campaigning using *Dandora* (Drums) and loudspeaker announcements. They ensured the mobility of people is restricted. *Sarpanches* were supported by volunteers in regular bleaching of streets and sanitation activities in their villages. They helped in identification of a location and setting up of community isolation centres. They helped COVID-19 patients who were in isolation and their contacts who were in quarantine with a supply of groceries and medicines. They periodically followed up with the COVID-19 patients to check their recovery. Both *sarpanches* and volunteers played a key role in 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 TS*

*Sarpanches* reported supporting their community during the pandemic by sensitizing them for CAB (48.1%), setting up of community isolation centres, motivating COVID-19 patients to avail the services community isolation centres (36.1%), arranging transport for critically ill COVID-19 and Non-COVID-19 patients (27.9%), encouraging people for COVID-19 testing (26.8%) and setting up vaccination centres to motivate the community members for vaccination (24%).

*“We told about sanitizers, masks. Bleaching was done in many areas, House to house awareness, canvassing on mike, asked shopkeeper not to give groceries to people without masks, also had a vehicle that usually comes in 10-15 minutes.”* – *Sarpanch 1 AP*

Volunteers described their contribution towards 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-19 patients (20.2%).

*“Usually maintaining social distance and washing hands regularly and sanitizing, drinking hot water, being away from crowded area, to maintain cleanliness. This way we motivated people.”* – *Volunteer 2 AP*

*“We sent the Covid positive patients to Covid care centres and hospitals. We got pamphlets and we distributed these among 50 houses, we thought at least they can understand the importance of vaccine.”* – *Volunteer 1 AP*

*Sarpanches* reported as a part of community preparedness that the FLWs conducted testing (42.6%), distributed drugs to COVID-19 patients (42.6%), provided information and administered COVID-19 vaccines (36.6%) and provided information on isolation and quarantine facilities (26.2%).

**Response from the community:** *Sarpanches* reported good cooperation and adherence to CAB in the community. However, they felt the compliance to CAB was better during the first wave compared to second as people lost fear of COVID-19. They also reported that people neglected CAB after 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 TS*

Many *Sarpanches* reported that they had to coerce people by threatening to cancel benefits obtained from social welfare schemes due to an increased pressure from higher authorities to meet vaccination targets. There was a reluctance among the villagers to use community isolation centres, as they had to stay among other COVID-19 positive patients and were also not sure of facilities available. Majority of the patients who did not require hospitalisation isolated themselves at home, and they were monitored by FLWs. This resulted in the patients sharing common spaces and washrooms with other family members putting them at risk. One participant was admitted in COVID-19 isolation centre despite being asymptomatic as he might be a source of infection to his elderly parents at home. Few volunteers reported experiencing stigma as the villagers were afraid of contracting infection from them due to their contact with COVID-19 patients.

*“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 AP*

**COVID 19 vaccine uptake and hesitancy:** ANMs and ASHAs trained by the PHC Medical Officers were at the forefront in disseminating information regarding vaccines. *Sarpanches* played a crucial role in motivating people by taking vaccine in the Panchayat office in front of all villagers. Door-to-door campaigns were also conducted by *sarpanches* and FLWs.

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

*Sarpanches* reported a high uptake of COVID-19 vaccine with approximately 70% people in their villages completing both the doses. Few volunteers reported that the elderly people were hesitant to vaccination during home visits.

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

Daily wage labourers were reluctant to get vaccinated as they felt they would lose their daily wages for 1 or 2 days post vaccination due to fever and body pains. Lactating mothers were reluctant to get vaccinated 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 by arranging earth-moving equipment to aid in burial, by supplying PPE kits to the stipulated number of people attending the funeral.

Many participants expressed disappointment over compromised last rites of their beloved ones who passed away due to COVID-19.

*“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 TS*

**Coordination between community level workers:** Sarpanches felt that district administration's role was mostly restricted to supplying testing kits and vaccines. The Panchayats, self-help groups and FLWs were the main drivers of community-based activities for COVID-19 management. ANMs provided medicines to patients and crucial information regarding COVID-19 and CAB to Sarpanches, volunteers and the community, 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. It was reported that the district administration in Krishna district (AP) had appointed medical officers specifically to deal with COVID-19. They were in constant touch with the patients, provide support to the community by training the panchayat members and FLWs. Many beneficiaries in the study area have corroborated the role played by Sarpanches and volunteers in disseminating 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 AP

Sarpanches in the study area mentioned that the local Non-Governmental Organizations (NGOs) did not play any role in COVID-19 management. During the lockdown period Sarpanches along with ASHAs helped in arranging transport facility for pregnant women to seek MCH care services.

*"ASHA arranged the vehicle for us in which all pregnant women from the village used to go for check-up."* - Mother -17 TS

#### Access and utilisation of COVID-19 care and primary health care services

**Clinical scenario:** The respondents who recovered from COVID-19 shared their experiences regarding symptoms, complications of COVID-19 and other comorbidities such as Hypertension and Diabetes. The most common symptoms reported were fever, body pain, headache, muscle pain and loss of smell. A few of them reported difficulty in breathing even with a mild exertion and muscle pain 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 AP

Reporting of false positive cases and in some instances asymptomatic people testing positive and symptomatic patients testing negative created barriers for lactating and pregnant women to seek MCH services.

*"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."* -Mother-13 AP

*"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."* -Mother-15 AP

**Health care services utilization:** Though COVID-19 and non-COVID-19 services were provided by both government and private hospitals and clinics, most participants preferred PHCs for testing and treatment of COVID-19, as PHCs were more accessible and affordable. Most participants used government primary services for COVID-19 related healthcare. 76.5% of the total respondents either used or referred people to PHCs for COVID-19 testing. About 68.9% of them were willing to take vaccine at a government hospital.

*"ASHA and ANM used to do the testing with the help of rapid kits. If they needed anything more they used to send the samples to nearest PHC."* – Sarpanch 6 AP

*"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-AP

*"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-COVID 10-AP

Non-COVID health services were uninterrupted during second wave (unlike first wave); people went to PHCs, Community Health Centre (CHCs) or district hospitals for treatment. Most medical shops were open. Volunteers from AP reported that helpline for ambulance service (104) was functioning through the second wave. Most pregnant women used their own transport, which was not hindered by lockdown while few used government-run ambulance service. Post-natal mothers stated that they were not afraid of COVID-19 while visiting the health care facilities for antenatal care. 2 out of 20 mothers mentioned that they were uncomfortable to visit scanning centres as they were crowded due to fear of contracting the disease. They were also apprehensive of delivering the child although there were separate COVID-19 and non-COVID-19 wards.

*"They sent me to private scanning centre, all patients come there, even COVID"* – Mother15 AP

Most of the mothers had to undergo repeated COVID-19 tests every time they went for check-ups 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 6<sup>th</sup> month, then 9<sup>th</sup>, then just before delivery."* – Mother-7-AP.

All mothers expressed satisfaction with the overall care they received during pandemic although they were unhappy with the apathy in responding to their queries in government hospitals. The respondents reported an increase in out of pocket expenditure when they visited private hospitals.

*"There were severe labour pains after I went there. So, I asked my mother to take me. When we told them they asked us to wait and that there was some more time. Another woman came, she asked to make me lie down there itself, other lady refused saying that I still have time. I said that I won't go there and I will lie here only and I laid down in theatre itself. I did not understand because all of them were wearing the same dress."* – MOTHER 10 TS

Most COVID-19 patients felt socially isolated and stigmatized. They mentioned that many villagers avoided entering their street or neighbourhood due to fear of COVID-19 transmission. One of the respondents mentioned that a private practitioner refused to treat her as she had tested positive for COVID-19.

*"Neighbours treated me like some insect, they were scared of the situation."* –Post-COVID 4 TS

*"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."* - Mother 15 AP

## DISCUSSION

While several studies from India assessed KAP on COVID-19 among various groups, we did not come across any study to assess the KAP of members of local governing bodies. A few studies from other states in India have established the role of Sarpanches, volunteers and FLWs in community-based COVID-19 management. It was noted that Sarpanches were empowered to work closely with the District administrative head to monitor the ground situation effectively. KAP

about CAB and vaccination among the respondents was found to be at par with general population, similar to other studies among general public in India and Iran<sup>16,17</sup>. This suggests that they played a key role in disseminating information to the community level efficiently, along with other mass media campaigns to educate the communities. Government healthcare services were preferred for COVID-19 treatment and vaccination by a majority of the respondents (75%) due to better accessibility, trust and affordability. The *Sarpanches* and volunteers were found to be a key community based resource during the pandemic who imparted their duties responsibly, without any additional incentive though they were at a high risk of contracting COVID-19. However, a few gaps were noted in the KAP of *Sarpanches* and volunteers. Nearly one third of them thought that drinking alcohol can kill Coronavirus which is slightly higher in comparison to 14% among the general population<sup>18</sup>. They represent communities thinking and believes from where they are elected, thus it is important to hear them too in future trainings and provide appropriate rationale or counter myths and harmful practices. Only less than half of the *Sarpanches* and volunteers were aware of the appropriate time interval to test for COVID-19. Participants from TS had better knowledge scores (6.4 vs 5.5) than those in AP, as the *Sarpanches* from TS had worked during both the waves while in AP most of them were newly elected (January 2021) and had only worked during the second wave. However, it was found that better knowledge among the *Sarpanches* and volunteers did not translate into better practices in TS as also seen in a study among general population of developing countries that attitude and practices regarding COVID-19 control were not related to knowledge of the respondents<sup>19</sup>. Despite smaller districts in TS where administration could be easier, vaccination coverage was higher in AP by around 5% during the study period<sup>20</sup>. But certainly, mass media campaigns and individual trainings improved the overall attitudes and practices too, with further scope of improvement with re-enforcement and support.

Presence of volunteers in AP resulted in better community-based management of COVID-19 than TS. Panchayat-linked volunteers were assigned for every 50-75 houses even before the pandemic facilitating a better rapport with the villagers<sup>21</sup>. The critical role of trained youth volunteers from the community in ensuring delivery of social support schemes to the people was recognised in Kerala during the first wave<sup>22</sup>. Creating awareness and motivating villagers and daily wagers for vaccination was a challenge. Most of them were coerced to take the vaccine because they were afraid of losing benefits of government schemes. Few *Sarpanches* got themselves vaccinated in public to create confidence among the villagers about the safety of vaccines. They even arranged transport for mobilising people for vaccination and critically ill COVID-19 patients<sup>23</sup>. Stigma persisted as villagers were afraid to talk to COVID-19 patients even after their recovery as it was a new disease and people lacked information regarding it. This was similar to a study conducted in Iran<sup>17</sup> 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 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 of 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 institutions 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<sup>10</sup>. Appropriate PHSM measures need to be implemented locally based on the assessment of the gravity of the situation and preparedness, to mitigate any disruption in livelihood and social activities. During the first wave of the pandemic, Government of India issued guidelines<sup>7</sup> under National

Disaster Management Authority (NDMA), to ensure the cooperation and coordination among *Panchayat* representatives and Frontline health workers. States like Odisha and Kerala strengthened their existing systems to build consensus among all village organisations to engage *Janamaitthri* volunteers, develop palliative care teams and to strengthen referral networks<sup>11,12</sup>. Therefore, it is evident that *Panchayats* have the potential to strengthen the frontline response during any kind of disasters or pandemics. Their potential can be suitably channelized by including PHSM components in their induction and periodic trainings of various panchayat functionaries and also allocating the required resources as seen in Kerala<sup>24</sup>. Our study had a few limitations. The selection of COVID-19 cases and post-natal women was dependent on the sample provided by panchayat representatives. Telephonic interviews had to be conducted due to COVID-19 related safety measures, limiting the depth of information gathered.

## CONCLUSION

The study reiterated the crucial role of local governing bodies and volunteers in mobilising communities for community based management of COVID-19, especially CAB and vaccination. While knowledge, attitude and practice were good overall, there were some gaps which can be addressed by periodic sensitisation sessions, providing access to call centres, and regular monitoring of their performance. The pandemic has established the potential of local government and volunteers in promoting positive health behaviours among the community. *Panchayats* should be empowered to implement PHSM based on their local context for effective control of epidemic and also to mitigate socio-economic disruptions. At the same time, the study also has established a need to strengthen the primary care facilities which were found to be trusted by the community.

## Declaration

**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 their behalf.

**Consent for Publication:** Conditional to positive outcome of peer review and editorial acceptance for publishing, the authors convey their authorship right to Global Health: Science and Practice 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.

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