Original Research Article

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20205180

Role of local self-governments in control of COVID-19 in Kerala: an exploratory study

Devika Radha¹, Jayasree Anada Bhavan Kumaran², Mayamol Thekkel Raghavan Nair^{2*}

Received: 08 September 2020 Revised: 18 October 2020 Accepted: 19 October 2020

*Correspondence:

Dr. Mayamol Thekkel Raghavan Nair, E-mail: pradeepmayamol@gmial.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Kerala is one among the Indian states that has incorporated local self-government (LSG) bodies into its public health system. The focus of this research is to study the role of these bodies in the COVID-19 response strategy taken by the state.

Methods: Interviews were conducted with the heads of various local self-government bodies in the district of Kannur to collect information on the COVID-19 management role they undertook. The interviews were then transcribed and analysed by adopting the inductive approach to derive themes and conclusions.

Results: The interviews reflect that LSGs have undertaken a wide range of initiatives in their COVID-19 response strategy. Organisational capacity, networking with various agencies, community participation, resource mobilization, inter-sectoral coordination, etc. were significant factors in successfully conducting these activities.

Conclusions: Managing the pandemic by planning activities at local level has gone a long way in controlling spread of the viral infection in Kerala, during initial phase. The involvement of the local self-government, primarily constituted for legislative and executive purposes, has had a major role in public health activities and positive impact in the health status of the state. This can serve as a model for effective implementation of public health programs as illustrated in the case of COVID-19 pandemic.

Keywords: LSG, COVID-19 pandemic, Inter-sectoral coordination, Community participation, Networking

INTRODUCTION

The focus of this research is the role of LSG bodies and their response to the COVID-19 pandemic in the Indian state of Kerala. As a prerequisite, there is a need to understand the local self-government structure in the state and their connection with the public health delivery system.

As per the 73rd Constitutional Amendment Act, a third tier of government system was to be established under the state governments. Referred to as Panchayati raj, this led to the establishment of LSG bodies called panchayats in

villages and municipalities and municipal corporations in sub-urban and urban areas respectively. The establishment of this decentralized system meant that some of the powers and responsibilities of the state government in some subject areas will now devolve to the panchayats and other LSGs. 29 such subjects; most of them related to social and human development, were included in the newly introduced 11th schedule of the Constitution including health and sanitation that were to include hospitals, primary health centres (PHC) and dispensaries.

Kerala is one among the very few states that have successfully implemented the Panchayati raj system. The

¹Symbiosis Law School, Pune, Maharashtra, India

²Department of Community Medicine, Government Medical College Kannur, Kerala, India

state was the first in the country to achieve 100% literacy rate in 1991 as well as the first state to achieve the United Nation's SDG target for infant mortality rate reduction set at eight (per 1,000 live births) for 2020.1 It established a three tier Panchayati raj system by introducing the gram panchayat (village level), block panchayat (block level), and zila parishad (district level) under the Kerala Panchayat Raj 1994 and the functions of each tier has been clearly demarcated. Each panchayat is further divided into wards that have a standard number of households under them. As far as health is concerned, Kerala is frequently quoted as an example of the successful use of LSGs in health care system. With respect to public health institutions (PHIs), all primary and secondary healthcare institutions (all institutions except medical colleges and regional hospitals) are under the control of LSGs. Although the state government has control over the appointment and regulation of employees at PHIs, it is the various LSGs and PHI officials that have to take several joint responsibilities and function in tandem for a good public health system.

Several studies conducted in the state have spoken of the role and efficiency of LSGs in the development of a robust public health system. A study conducted using secondary data from 1991-2011 period and primary data from 2011-2012 period concluded that wherever there was a good relationship between elected representatives of LSGs and health personnel, the system of dual controls and responsibilities yielded good results and in most districts, the relationship was cordial and productive.² Another study revealed that LSGs have succeeded to a great extent in creating adequate infrastructure for PHIs under them as a significant amount of funding was spent in rebuilding PHCs and sub-centres. It also showed that LSGs were successful in their attempts to create a healthy environment for the local population.³ Some studies also revealed that LSGs have played a major role in making heath personnel accountable to public and in increasing community participation in public health initiatives.⁴

At the onset of COVID-19 pandemic, Kerala was the first state affected in India and was slated to be the most affected given the high NRI (non-resident Indian) population. However, the state government swung into action with the LSGs leading the charge and two months later, widespread reports were circulated celebrating Kerala's strategy to fight the viral infection.⁵ Even as of today, Kerala is considered to have the highest recovery rate and lowest death rate in the country.6 In addition to the long established panchayat-friendly fiscal system, several panchayat led public health initiatives such as the 'Ashraya programme' and 'BUDS school' provided Kerala with an upper hand in COVID-19 management.⁷ While the experience of dealing with Nipah virus epidemic helped the government formulate plans, it was truly the structural advantage of having a strong decentralized governance architecture that should be credited with success of the state in COVID-19 management.^{8,9} The quick mobilization of local committees that consisted of panchayat representatives, local officials, self-help groups, educational institutions and local NGOs was yet another significant part of these efforts.¹⁰ This study was planned to understand the role of LSGs in COVID-19 management directly from the primary actors, i.e. the head of LSG bodies.

The main objective of this study is to understand the role of LSGs in COVID-19 management during the initial phase of the pandemic in Kerala.

METHODS

This is a qualitative study conducted on the basis of direct interaction with the heads of five different panchayats and municipalities near the Government Medical College Kannur, located in the central part of the northern district of Kannur in Kerala; a south Indian state. The selection of the panchayats was done by snow ball technique. Initially we, which is familiar to us as part of the routine field activity of the Community Medicine department. Other panchayats and municipality were selected as per information obtained from the preceding panchayat. Method of data collection followed was in-depth interview. Interviews were conducted with the head of the panchayats (presidents) and municipality (chairperson). Interview guide was prepared with relevant questions. But the respondents were allowed to speak freely, which could bring more information. The interview guide broadly covered areas like responsibilities, community participation, funding of the various initiatives, intersectoral participation of PHIs and other authorities etc.

The study adopted an inductive approach, where data is first collected, then documented, analysed, and developed to themes. There was no set target for the number of interviews, since it followed inductive approach and based grounded theory. Interviews were repeated until there was consistent pattern that could be observed from the information obtained. Therefore, the sample was based on redundancy.

Once the interviews were completed, they were transcribed into interview texts. The data from these were analysed and developed into condensation units, codes, and categories leading up to broader themes in order to arrive at the following findings and conclusions.

The selection criteria adopted in the study was mainly based on the LSGs that fall in the catchment area of the Government Medical College Kannur. Additionally, it was ensured that there was representation from both urban and rural areas and that there was geographical diversity in the LSGs selected.

These interviews were conducted in May-June months of 2020.

RESULTS

Findings

The major findings of this qualitative study can be divided into the following themes:

Organization of COVID-19 related activities in LSGs

Structural organization: Each and every COVID-19 response task was managed by various committees constituted at either panchayat/municipality level or ward level or at both. These include a monitoring committee that monitors all work related to COVID-19,

an observation committee for observing quarantine rules and regulations, a safety team and an evaluation committee that looks after necessary facilities and awareness required to undergo quarantine at home, an emergency response team as well as rapid response team that mainly had health officials responding to immediate needs. Various Jagrata samitis were constituted at both panchayat and ward level and had workers from all sectors involved. A COVID-19 management committee was also common in most LSGs that included political representatives from both elected and opposition parties, government officials from panchayat as well as revenue office, public health officials as well as volunteers.

Table 1: Content analysis.

Meaning unit condensations	Codes	Categories		
Theme developed: Organization of COVID-19 related activities in LSGs				
Overseeing quarantine facilities	COVID management committee	Structural organization		
Observing persons under quarantine, have been set up at the ward level as well as panchayat level.	Observation committees			
Members from all sectors involved, Ward level as well as panchayat level	Jagrata samiti			
Guidelines related to quarantining	Safety team			
Monitors all work related to COVID-19	Monitoring committee			
Ensuring necessary facilities to undergo quarantine at home	Evaluation committee			
Emergency situations	Emergency response team and rapid response team			
Theme developed: Resource mobilization				
Generous contributions by welfare organizations and persons, NGOs, orphanages	Sponsorship	Financing COVID-19 response		
Material donations by normal people, government school's contributing material from mid-day meal programs	Donation			
Used to a small extent	Own fund			
For monitoring quarantined persons	Mobile App	Facilities used		
Issuing of passes from office and online, portal designed for home delivery	Online portal			
Extensive use for sharing reports and messages	WhatsApp			
Existing broadcasting used for spreading awareness and info.	Mobile and landlines			
Theme developed: Beneficiary groups				
Shelter at lodges, facility under the social security mission for destitute	Destitute	Target groups		
Accommodation, providing essential items (Kit), providing free food, registration, arranging for their travel to their home states, medical camp, special care taken for family with pregnant woman for migrants	Migrants			
Regular health check-ups and follow ups, delivery of allopathic, ayurvedic and homeopathic medicines, distribution of immunity building medicines, free food from community kitchen, providing separate accommodation in case of households with positive cases, distribution of pension for elderly	Elderly			
Pension for widows	Widows			
Quarantine services offered to NRIs and Keralites arriving from different states	Returnees			
Free transportation and kits given to dialysis patients	Patients			
Theme developed: services	1 unomo			

Continued.

subsidized rate) Free accommodation, free quarantine facility Materials worth around 1,000 rupees, PPEs, sanitizer, masks, special kits distributed on Vishu Loan provided for sustenance during lockdown Essentials delivery through help desk, online/earl centers, Online portal for home delivery, home delivery through WhatsApp, delivery of medicines Quarantine facilities known as COVID care centers Through volunteers and COVID management committee, special training for sanitation workers Special waste management system established, arranging food Limited hospital visits, when someone arrives from other states or abroad Awareness classes, broadcasting system used to spread info. Limited hospital visits, when someone arrives from other states or abroad, about living with other suspected cases at quarantine facilities Especially for women above 50 years Elederity population, when someone arrives from other states or abroad, about living with other suspected cases at quarantine facilities Especially for women above 50 years Elemedicine, counselling services, awareness programs Theme developed: Networking MO, health inspector, municipal secretary, sanitation workers Work day and night, work to ensure proper functioning of quarantine centers, admitting and discharging persons at the quarantine facility, daily assessment reports, daily report Fect	Community kitchen (free meals), Janakiya hotel (meals at	Food and related		
Materials worth around 1,000 rupees, PPEs, sanitizer, masks, special kits distributed on Vishu Loan provided for sustenance during lockdown Essentials delivery through help desk, online/call centers, Online portal for home delivery, home delivery through WhatsApp, delivery of medicines Quarantine facilities known as COVID care centers Through volunteers and COVID management committee, special training for sanitation workers Special water management system established, arranging food Limited hospital visits, when someone arrives from other states or abroad Awareness classes, broadcasting system used to spread info. Elderly population, when someone arrives from other states or abroad, about living with other suspected cases at quarantine facilities or abroad, about living with other suspected cases at quarantine facilities. Fepcially for women above 50 years Sleeping problems Solutions Moth eath inspector, nunicipal secretary, sanitation workers Work day and night, work to ensure proper functioning of quarantine centers, admitting and discharging persons at the quarantine facility, daily assessment reports, daily report through WhatsApp Prevention of social gatherings, some negative reports received to ensure popole under quarantine (naminly NRIs) are following strict isolation Timely reports on surveillance activities E-pass issued, specially trained, posted at quarantine facilities, at help desk, at call centers, delivering essentials ASHA workers, doctors doing telemedicine, counselling services offered by counsellors, as junior health inspector, junior public health nurse and Anganward worker Part of COVID-9 committees, posted at check posts Delivery of medicines from other districts and states Financial support Other Participating Groups Other Participating Groups Other Participating Financial support Other Participating Groups Other Participating Groups Other Participating Groups Other Participating Groups Other Participating Financial support Onmunity transmission Comm	,	Ch -14		
special kits distributed on Vishu Loan provided for sustenance during lockdown Essentials delivery through help desk, online/call centers, Online portal for home delivery, home delivery through WhatsApp, delivery of medicines Quarantine facilities known as COVID care centers Facility types Facility than types Facil		Sheller		
Essentials delivery through help desk, online/call centers, Online portal for home delivery, home delivery through WhatsApp, delivery of medicines Quarantine facilities known as COVID care centers Through volunteers and COVID management committee, special training for sanitation workers Special waste management system established, arranging food Limited hospital visits, when someone arrives from other states or abroad Awareness classes, broadcasting system used to spread info. Elderly population, when someone arrives from other states or abroad, about living with other suspected cases at quarantine facilities Especially for women above 50 years Seleping problems Seleping problems Seleping problems Telemedicine, counselling services, awareness programs MO, health inspector, municipal secretary, sanitation workers Work day and night, work to ensure proper functioning of quarantine centers, admitting and discharging persons at the quarantine facility, daily assessment reports, daily report through WhatsApp Prevention of social gatherings, some negative reports received to ensure people under quarantine (mainly NRIs) are following strict isolation Timely reports on surveillance activities E-pass issued, specially trained, posted at quarantine facilities, at help desk, at call centers, delivering essentials ASHA workers, doctors doing telemedicine, counselling services offered by counsellors, as junior health inspector, junior public health nurse and Anganwadi worker Part of COVID-9 committees, posted at check posts Policyrof or medicines from other districts and states Fire Force Policyrof or medicines from other districts and states Fire Force Port of COVID-9 committees, posted at check posts Policyrof or medicines from other districts and states Fire Force Port of COVID-9 committees, posted at check posts Policyrof or medicines from other districts and states Fire Force Force Port of COVID-9 committees, posted at check posts Policyrof or medicines from other districts and states Fire Force Force Policy or medicin	special kits distributed on Vishu		Welfare services	
Online portal for home delivery, home delivery through WhatsApp, delivery of medicines Quarantine facilities known as COVID care centers Special vaste management system established, arranging food Limited hospital visits, when someone arrives from other states or abroad Awareness classes, broadcasting system used to spread info. Addressing Addressi		Financial support		
Through volunteers and COVID management committee, special training for sanitation workers Special waste management system established, arranging food Limited hospital visits, when someone arrives from other states or abroad Awareness classes, broadcasting system used to spread info. Elderly population, when someone arrives from other states or abroad, about living with other suspected cases at quarantine facilities Especially for women above 50 years Especially for women above 50 years Solutions Theme developed: Networking MO, health inspector, municipal secretary, sanitation workers Work day and night, work to ensure proper functioning of quarantine centers, admitting and discharging persons at the quarantine facility, daily assessment reports, daily report through WhatsApp Prevention of social gatherings, some negative reports received to ensure people under quarantine (mainly NRIs) are following strict isolation Timely reports on surveillance activities E-pass issued, specially trained, posted at quarantine facilities, at help desk, at call centers, delivering essentials services offered by counsellors, as junior health inspector, junior public health nurse and Anganwadi worker Part of COVID-9 committees, posted at check posts Delivery of medicines from other districts and states producing sanitizers, masks, assist in monitoring Voluntary organizations, welfare organization, residents' associations, banks Government educational institutions, private auditoriums, and lodges Agurvedic hospitals, educational institutions Health and other guidance Home delivery of medicines from other districts and states Financial support Community participation Community participation Impact Frogram conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, response	Online portal for home delivery, home delivery through WhatsApp, delivery of medicines			
Special waste management system established, arranging food Services provided Limited hospital visits, when someone arrives from other states or abroad, about living with other suspected cases at quarantine facilities Especially for women above 50 years Elederly population, when someone arrives from other states or abroad, about living with other suspected cases at quarantine facilities Especially for women above 50 years Elemedicine, counselling services, awareness programs Theme developed: Networking MO, health inspector, municipal secretary, sanitation workers Work day and night, work to ensure proper functioning of quarantine facility, daily assessment reports, daily report through WhatsApp Prevention of social gatherings, some negative reports received to ensure people under quarantine (mainly NRIs) are following strict isolation Timely reports on surveillance activities Part of several Committees Police function Police Police Police Other services offered by counsellors, as junior health inspector, junior public health nurse and Anganwadi worker Part of COVID-9 committees, posted at check posts Delivery of medicines from other districts and states producing sanitizers, masks, assist in monitoring Covernment educational institutions, private auditoriums, and lodges Anxiety Anxiety Anxiety Addressing psychological problems Anxiety Anxiet		Facility types	-	
Special waste management system established, arranging food Limited hospital vists, when someone arrives from other states or abroad Awareness classes, broadcasting system used to spread info. Myths and misconceptions Elderly population, when someone arrives from other states or abroad, about living with other suspected cases at quarantine facilities Especially for women above 50 years Sleeping problems Solutions		Resource mobilizing		
Limited hospital visits, when someone arrives from other states or abroad Awareness classes, broadcasting system used to spread info. Awareness classes, broadcasting system used to spread info. Elderly population, when someone arrives from other states or abroad, about living with other suspected cases at quarantine facilities Especially for women above 50 years Sepecially for women above 50 years Telemedicine, counselling services, awareness programs Theme developed: Networking MO, health inspector, municipal secretary, sanitation workers Work day and night, work to ensure proper functioning of quarantine centers, admitting and discharging persons at the quarantine facility, daily assessment reports, daily report through WhatsApp Prevention of social gatherings, some negative reports received to ensure people under quarantine (mainly NRIs) are following strict isolation Timely reports on surveillance activities E-pass issued, specially trained, posted at quarantine facilities, at help desk, at call centers, delivering essentials ASIA workers, doctors doing telemedicine, counselling services offered by counsellors, as junior health inspector, junior public health nurse and Anganwadi worker Part of COVID-9 committees, posted at check posts Policivery of medicines from other districts and states Fine Force Forducing sanitizers, masks, assist in monitoring Voluntary organizations, welfare organization, residents' associations, banks Government educational institutions, private auditoriums, and lodges Ayurvedic hospitals, educational institutions Health and other guidance Home delivery Health and other guidance Home delivery Theme developed: Impact of the LSG activities Community transmission Community participation Local shops and merchants Community participation Community participation Community participation	-	Services provided		
Addressing problems		Stigma		
Elderly population, when someone arrives from other states or abroad, about living with other suspected cases at quarantine facilities Especially for women above 50 years Selections Telemedicine, counselling services, awareness programs MO, health inspector, municipal secretary, sanitation workers Work day and night, work to ensure proper functioning of quarantine centers, admitting and discharging persons at the quarantine facility, daily assessment reports, daily report through WhatsApp Prevention of social gatherings, some negative reports received to ensure people under quarantine (mainly NRIs) are following strict isolation Timely reports on surveillance activities E-pass issued, specially trained, posted at quarantine facilities, at help desk, at call centers, delivering essentials ASHA workers, doctors doing telemedicine, counselling services offered by counsellors, as junior health inspector, junior public health nurse and Anganwadi worker Peart of COVID-9 committees, posted at check posts Delivery of medicines from other districts and states Fire Force Delivery of medicines from other districts and states Fire Force Producing sanitizers, masks, assist in monitoring Kudumbashree, Ayalkkoottam Voluntary organizations, welfare organization, residents' associations, banks Government educational institutions, private auditoriums, and lodges Ayurvedic hospitals, educational institutions Health and other guidance Home delivery Health and other guidance Health and other guidance Health and other guidance Health and other guidance Home delivery Theme developed: Impact of the LSG activities Negligible Community transmission Community participation Community participation Community felicitation				
or abroad, about living with other suspected cases at quarantine facilities Especially for women above 50 years Felemedicine, counselling services, awareness programs Theme developed: Networking MO, health inspector, municipal secretary, sanitation workers Work day and night, work to ensure proper functioning of quarantine centers, admitting and discharging persons at the quarantine facility, daily assessment reports, daily report through WhatsApp Prevention of social gatherings, some negative reports received to ensure people under quarantine (mainly NRIs) are following strict isolation Timely reports on surveillance activities Fass issued, specially trained, posted at quarantine facilities, at help desk, at call centers, delivering essentials ASHA workers, doctors doing telemedicine, counselling services offered by counsellors, as junior health inspector, junior public health nurse and Anganwadi worker Part of COVID-9 committees, posted at check posts Policine office Part of COVID-9 committees, posted at check posts Village Office Price force Fire Force Forducing sanitizers, masks, assist in monitoring Voluntary organizations, welfare organization, residents' associations, banks Government educational institutions, private auditoriums, and lodges Ayurvedic hospitals, educational institutions Ayurvedic hospitals, educational institutions People's action by their own, sometimes police intervention to prevent social gathering Program conducted to appreciate the efforts of public health officials and police officials Compensative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Community felicitation Community felicitation		Myths and misconceptions	Addressing	
Telemedicine, counselling services, awareness programs Theme developed: Networking MO, health inspector, municipal secretary, sanitation workers Work day and night, work to ensure proper functioning of quarantine efacility, daily assessment reports, daily report through WhatsApp Prevention of social gatherings, some negative reports received to ensure people under quarantine (mainly NRIs) are following strict isolation Timely reports on surveillance activities P-pass issued, specially trained, posted at quarantine facilities, at help desk, at call centers, delivering essentials ASHA workers, doctors doing telemedicine, counselling services offered by counsellors, as junior health inspector, junior public health nurse and Anganwadi worker Part of COVID-9 committees, posted at check posts Delivery of medicines from other districts and states Producing sanitizers, masks, assist in monitoring Voluntary organizations, welfare organization, residents' associations, banks Government educational institutions, private auditoriums, and lodges Ayurvedic hospitals, educational institutions Health and other guidance Local shops and merchants Home delevery Home developed: Impact of the LSG activities Negligible Community transmission People's action by their own, sometimes police intervention to provent social gathering Program conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Theme developed: The community felicitation The community felicitation The community felicitation The commu	or abroad, about living with other suspected cases at quarantine facilities	•	psychological	
Theme developed: Networking MO, health inspector, municipal secretary, sanitation workers Mork day and night, work to ensure proper functioning of quarantine centers, admitting and discharging persons at the quarantine facility, daily assessment reports, daily report through WhatsApp Police function Police				
MO, health inspector, municipal secretary, sanitation workers Personnel Work day and night, work to ensure proper functioning of quarantine centers, admitting and discharging persons at the quarantine facility, daily assessment reports, daily report through WhatsApp Co-operative functioning PHCs Prevention of social gatherings, some negative reports received to ensure people under quarantine (mainly NRIs) are following strict isolation Police function Police Timely reports on surveillance activities Part of several Committees Police E-pass issued, specially trained, posted at quarantine facilities, at help desk, at call centers, delivering essentials Volunteers ASHA workers, doctors doing telemedicine, counselling services offered by counsellors, as junior health inspector, junior public health nurse and Anganwadi worker Health workers Other Participating Groups Part of COVID-9 committees, posted at check posts Village Office Fire Force Police function Fire Force Participating Groups Pelivery of medicines from other districts and states Fire Force Fire Force Producing santitizers, masks, assist in monitoring Kudumbashree, Ayalkkoottam Organizations Voluntary organizations, welfare organization, resident's associations, banks Financial support Organizations Government educational instit		Solutions		
Work day and night, work to ensure proper functioning of quarantine centers, admitting and discharging persons at the quarantine facility, daily assessment reports, daily report through WhatsApp Prevention of social gatherings, some negative reports received to ensure people under quarantine (mainly NRIs) are following strict isolation Timely reports on surveillance activities E-pass issued, specially trained, posted at quarantine facilities, at help desk, at call centers, delivering essentials ASHA workers, doctors doing telemedicine, counselling services offered by counsellors, as junior health inspector, junior public health nurse and Anganwadi worker Peart of COVID-9 committees, posted at check posts Delivery of medicines from other districts and states Fire Force Producing sanitizers, masks, assist in monitoring Voluntary organizations, welfare organization, residents' associations, banks Government educational institutions, private auditoriums, and lodges Ayurvedic hospitals, educational institutions Health and other guidance Home delivery Theme developed: Impact of the LSG activities Negligible Community transmission People's action by their own, sometimes police intervention to prevent social gathering Program conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions				
quarantine centers, admitting and discharging persons at the quarantine facility, daily assessment reports, daily report through WhatsApp Prevention of social gatherings, some negative reports received to ensure people under quarantine (mainly NRIs) are following strict isolation Timely reports on surveillance activities E-pass issued, specially trained, posted at quarantine facilities, at help desk, at call centers, delivering essentials ASHA workers, doctors doing telemedicine, counselling services offered by counsellors, as junior health inspector, junior public health nurse and Anganwadi worker Part of COVID-9 committees, posted at check posts Pillage Office Pire Force Producing sanitizers, masks, assist in monitoring Voluntary organizations, welfare organization, residents' associations, banks Government educational institutions, private auditoriums, and lodges Ayurvedic hospitals, educational institutions Local shops and merchants Health and other guidance Local shops and merchants Health and other guidance Local shops and merchants Home delivery Theme developed: Impact of the LSG activities Negligible Community transmission People's action by their own, sometimes police intervention to prevent social gathering Program conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Acoperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions		Personnel		
received to ensure people under quarantine (mainly NRIs) are following strict isolation Timely reports on surveillance activities E-pass issued, specially trained, posted at quarantine facilities, at help desk, at call centers, delivering essentials ASHA workers, doctors doing telemedicine, counselling services offered by counsellors, as junior health inspector, junior public health nurse and Anganwadi worker Part of COVID-9 committees, posted at check posts Delivery of medicines from other districts and states Fire Force producing sanitizers, masks, assist in monitoring Voluntary organizations, welfare organization, residents' associations, banks Government educational institutions, private auditoriums, and lodges Ayurvedic hospitals, educational institutions Local shops and merchants Health and other guidance Home delivery Theme developed: Impact of the LSG activities Negligible Community transmission People's action by their own, sometimes police intervention to prevent social gathering Program conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Part of several Committees Volunteers Health workers Volunteers Health workers Volunteers Health workers Volunteers Health workers Village Office Fire Force Force Fire Force Force Fire Force Force Fire Force Fire Force Force Fire Force F	quarantine centers, admitting and discharging persons at the quarantine facility, daily assessment reports, daily report through WhatsApp	Co-operative functioning	PHCs	
E-pass issued, specially trained, posted at quarantine facilities, at help desk, at call centers, delivering essentials ASHA workers, doctors doing telemedicine, counselling services offered by counsellors, as junior health inspector, junior public health nurse and Anganwadi worker Part of COVID-9 committees, posted at check posts Pelivery of medicines from other districts and states Producing sanitizers, masks, assist in monitoring Voluntary organizations, welfare organization, residents' associations, banks Government educational institutions, private auditoriums, and lodges Ayurvedic hospitals, educational institutions Local shops and merchants Health and other guidance Home delivery Theme developed: Impact of the LSG activities Negligible Community transmission People's action by their own, sometimes police intervention to prevent social gathering Program conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Voluntary organizations Village Office Fire Force Financial support Goupanizations Financial support Financial support Community facilities Organizations	received to ensure people under quarantine (mainly NRIs) are	Police function	Police	
ASHA workers, doctors doing telemedicine, counselling services offered by counsellors, as junior health inspector, junior public health nurse and Anganwadi worker Part of COVID-9 committees, posted at check posts Delivery of medicines from other districts and states Producing sanitizers, masks, assist in monitoring Voluntary organizations, welfare organization, residents' associations, banks Government educational institutions, private auditoriums, and lodges Ayurvedic hospitals, educational institutions Local shops and merchants Theme developed: Impact of the LSG activities Negligible Community transmission People's action by their own, sometimes police intervention to prevent social gathering Program conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Village Office Fealth workers Village Office Furticipating Other Participating Other Participating Groups Village Office Furd townkers Village Office Furd townkers Village Office Furd townkers Village Office Furticipating Groups Other Participating Groups Other Participating Groups Other Participating Frine Force Rudumbashree, Ayalkkoottam Valumbashree, Ayalkkoottam Financial support Purancial support Participating Organizations Org	Timely reports on surveillance activities	Part of several Committees		
ASHA workers, doctors doing telemedicine, counselling services offered by counsellors, as junior health inspector, junior public health nurse and Anganwadi worker Part of COVID-9 committees, posted at check posts Delivery of medicines from other districts and states producing sanitizers, masks, assist in monitoring Voluntary organizations, welfare organization, residents' associations, banks Government educational institutions, private auditoriums, and lodges Ayurvedic hospitals, educational institutions Local shops and merchants Theme developed: Impact of the LSG activities Negligible People's action by their own, sometimes police intervention to prevent social gathering Program conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Health workers Health and other guidance Health and other guidance Home delivery Community transmission Community transmission Community participation Timpact Financial support Community participation Community felicitation Community felicitation		Volunteers		
services offered by counsellors, as junior health inspector, junior public health nurse and Anganwadi worker Part of COVID-9 committees, posted at check posts Delivery of medicines from other districts and states Fire Force producing sanitizers, masks, assist in monitoring Voluntary organizations, welfare organization, residents' associations, banks Government educational institutions, private auditoriums, and lodges Ayurvedic hospitals, educational institutions Health and other guidance Local shops and merchants Negligible Community transmission People's action by their own, sometimes police intervention to prevent social gathering Program conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Health workers Village Office Farticipating Program Community transmission Community participation Impact Community felicitation Community response		Volunteers		
Part of COVID-9 committees, posted at check posts Delivery of medicines from other districts and states producing sanitizers, masks, assist in monitoring Voluntary organizations, welfare organization, residents' associations, banks Government educational institutions, private auditoriums, and lodges Ayurvedic hospitals, educational institutions Health and other guidance Local shops and merchants Heme delivery Theme developed: Impact of the LSG activities Negligible Community transmission People's action by their own, sometimes police intervention to prevent social gathering Program conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Village Office Fire Force Kudumbashree, Ayalkkoottam Kudumbashree, Ayalkkoottam Financial support Financial support Cuarantine facilities Pealth and other guidance Home delivery Community transmission Community participation Community participation Community felicitation Community felicitation	services offered by counsellors, as junior health inspector,	Health workers	Participating	
producing sanitizers, masks, assist in monitoringKudumbashree, AyalkkoottamVoluntary organizations, welfare organization, residents' associations, banksFinancial supportGovernment educational institutions, private auditoriums, and lodgesQuarantine facilitiesAyurvedic hospitals, educational institutionsHealth and other guidanceLocal shops and merchantsHome deliveryTheme developed: Impact of the LSG activitiesCommunity transmissionPeople's action by their own, sometimes police intervention to prevent social gatheringCommunity participationProgram conducted to appreciate the efforts of public health officials and police officialsCommunity felicitationCooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictionsCommunity	Part of COVID-9 committees, posted at check posts	Village Office		
Voluntary organizations, welfare organization, residents' associations, banksFinancial supportGovernment educational institutions, private auditoriums, and lodgesQuarantine facilitiesOrganizationsAyurvedic hospitals, educational institutionsHealth and other guidanceLocal shops and merchantsHome deliveryTheme developed: Impact of the LSG activitiesCommunity transmissionNegligibleCommunity participationPeople's action by their own, sometimes police intervention to prevent social gatheringCommunity participationProgram conducted to appreciate the efforts of public health officials and police officialsCommunity felicitationCooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictionsCommunity		Fire Force		
Government educational institutions, private auditoriums, and lodges Ayurvedic hospitals, educational institutions Local shops and merchants Theme developed: Impact of the LSG activities Negligible Community transmission People's action by their own, sometimes police intervention to prevent social gathering Program conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Quarantine facilities Organizations Organizations Organizations Organizations Organizations Organizations Organizations	producing sanitizers, masks, assist in monitoring	Kudumbashree, Ayalkkoottam		
Government educational institutions, private auditoriums, and lodges Ayurvedic hospitals, educational institutions Local shops and merchants Theme developed: Impact of the LSG activities Negligible Community transmission People's action by their own, sometimes police intervention to prevent social gathering Program conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Quarantine facilities Health and other guidance Home delivery Community transmission Community participation Community participation Community felicitation Community felicitation		Financial support		
Local shops and merchantsHome deliveryTheme developed: Impact of the LSG activitiesCommunity transmissionNegligibleCommunity transmissionPeople's action by their own, sometimes police intervention to prevent social gatheringCommunity participationProgram conducted to appreciate the efforts of public health officials and police officialsCommunity felicitationCooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictionsCommunity response	i 🗎	Quarantine facilities	Organizations	
Theme developed: Impact of the LSG activities Negligible Community transmission People's action by their own, sometimes police intervention to prevent social gathering Program conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Community felicitation Community felicitation Community felicitation		Health and other guidance		
Negligible Community transmission People's action by their own, sometimes police intervention to prevent social gathering Community participation Program conducted to appreciate the efforts of public health officials and police officials Community felicitation Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Community response				
People's action by their own, sometimes police intervention to prevent social gathering Program conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Community participation Community felicitation Community response				
Program conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Community participation Community participation Community felicitation Community felicitation Community response		Community transmission		
Program conducted to appreciate the efforts of public health officials and police officials Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Community felicitation Community response		Community participation		
Cooperative, taking part notwithstanding political affiliations, initially difficult to adjust with lockdown restrictions Community Community response		^ L	Impact	
initially difficult to adjust with lockdown restrictions response	officials and police officials	<u> </u>		
		<u>•</u>		
A 77			Community Response	
Adherence, contributions Co-operation Community	· · · · · · · · · · · · · · · · · · ·	Co-operation		
Accumption that augrenting tacility can be provided to	everybody, not adhering to social distancing rules and wearing masks, quarantined persons interacting with family	Negative response		

mobilisation: All Resource panchayats and municipalities interviewed for the study noted with thanks that a major part of their efforts was financed by generous contributions of sponsors and donors. Sponsorships were provided by various welfare organizations, orphanages, NGOs and other persons within panchayat/municipality. Donations were in both money and kind; local farmers contributed to the community kitchen, government schools contributed the material meant from mid-day meal programs in schools, etc. The LSG's own fund had to be used to a very small extent in most institutions interviewed. However, they were prepared to overcome any financial challenges as the state government had instructed all LSGs had put a stop to programs that were not urgently required so that funds could be diverted to COVID-19 relief work.

Facilities used: As widespread lockdowns and restrictions forced officials to work from home, most of the work was done through mobile phone/telephone communication and other internet platforms such as WhatsApp. Most committees had a WhatsApp group that enabled sharing of reports and discussion on ongoing work on a daily basis. Outside these institutions, information was made available on the online website of some LSGs to enable procurement of e-passes or home delivery process. A pre-existing broadcasting system involving the mobiles/telephones of all the households was also used to disseminate information and awareness by one municipality. Telemedicine and counselling services were also provided through telephone. Some mobile apps were also used by panchayats that would track the movement of quarantined persons beyond a set limit to prevent violation of quarantine guidelines and further spread of the infection.

Beneficiary groups

Several COVID-19 management efforts were specific to certain groups that would be considered vulnerable to and most affected by the viral infection; like the elderly population, children, migrant labourers from other states, destitute, etc. Early efforts started with the management of migrant labourers who were suddenly unemployed when lockdown was declared causing a complete halt in economic activities.

Most LSGs had prepared a list of all migrant labourers within their area of control and identified their addresses, employers, etc. In the initial phases, a few migrant labourers who were managed by a particular contractor were taken care of by the contractor himself. With the continuation of lockdown, when the contractors could not afford taking care of the labourers, most LSGs stepped in and provided them with food from the community kitchen and supplied other essential items through Kits. Some LSGs even arranged for medical camps for the migrant labourers to ensure that there was no spread of the infection within the community. In April when the central government allowed resumption of construction activities

as long as labourers were accommodated on-site, some of these migrant labourers could return to work. In some panchayats, as migrant labourers demanded that they wanted to travel back home, LSGs made prompt attempts to complete a registration process for all such labourers and arranged trains to their home states with the help of IRCTC (Indian Railway Catering and Tourism Corporation) and state government.

LSGs also ensured that the destitute in the area were provided food under the community kitchen program and some of them even arranged facilities for their stay in lodges and centres under the Social Security Mission. It was ensured that pension funds were disbursed for widows and senior citizens and funds were allocated to offer loan facilities to members of self-help groups such as Kudumbashree (women self-help groups) and Ayalkkoottam (neighbourhood groups). Patients with severe ailments were also taken care of by some LSGs. For example, free and regular transportation was offered to some dialysis patients by a municipality. Another category that LSGs paid attention to was returnees from other countries and states, for whom quarantine facilities was arranged by their respective panchayat/municipality.

The senior citizens were given priority in efforts to prevent exposure to the virus. There were existing schemes and systems where doctors from the concerned PHC would regularly visit the elderly population for regular health check-ups and follow-ups. As the lockdown hindered this and also since they could be at risk due to exposed doctors, these schemes were stopped. However, it was ensured that there was regular delivery of required medicines at their doorstep. Senior citizens could also access doctors through telemedicine system that was set up. They even supplied them with ayurvedic and homeopathic immunity building medicines. If the need was felt, delivery of meals from the community kitchen was also ensured. In the early phases, if there were relatives returning from abroad, some of the elderly people were even provided with separate accommodation in unoccupied houses within the locality.

Services

Welfare services: These services ranged from free meals provided through the community kitchen set up in early March to kits that were distributed through the public distribution system or directly from the LSG office. All panchayats/municipalities had one or more Community Kitchen that was later converted to a Janakiya hotel that would provide meals at a subsidized cost (20 INR per meal). While kits containing essential food, item were distributed by the state government, several LSGs followed the lead to distribute more kits with additional essential items. Several LSGs even ensured the supply of sanitisers, masks, special kits on festivals such as Vishu, etc. Financial support was facilitated through loans provided by self-help groups. Other major service offered through the help desk/call centre/online

portal/WhatsApp facility set up by all LSGs that facilitated delivery of necessary items from shops and other pharmaceuticals.

Quarantine services: Arranging quarantine and isolation facilities was one of the mammoth tasks that fell upon LSGs during COVID-19 pandemic. Quarantine facilities were arranged at educational institutions' building such as engineering colleges or BUDS school or at building provided by welfare organizations such as Ignatian Retreat Centre in Pariyaram panchayat. These facilities were referred to as COVID Care Centres and the arrangement was overseen by the COVID management committee. Volunteers and sanitation workers posted at these centres were given special training for serving there. Food for the centres was arranged through the community kitchen and some municipalities even arranged for a special waste management system for these centres.

Addressing psychological problems: There was a lot of stigma and myths related to COVID-19 infection among the population causing fear and panic about returnees from other countries and states. In order to deal with such misconceptions, some panchayats/municipalities conducted awareness classes to spread the right information. It was observed through some telemedicine facilities that several middle-aged women were facing sleep problems and anxiety due to fear of COVID-19. Therefore, arrangements were also made for counselling sessions through telephonic means.

Networking

Various activities of LSGs had an inter-sectoral nature requiring coordination and cooperation with other institutions including PHIs, police authorities, etc. The theme of networking deals with several aspects of such inter-sectoral activities.

Primary health centres (PHCs): Officials from PHIs, mainly the PHC (every panchayat/municipality has one or more PHC, with one of them often functioning as a family health centre [FMC]) were involved in most activities of the LSGs. This means that several public health officials such as Medical Officer, Health Inspector, Public Health Nurse, etc were part of the various committees constituted by the LSGs, evaluating and monitoring the situation at the ground level and preparing daily assessment reports. They were a part of the teams that participated in health check-up activities as well as the telemedicine facility. They were also tasked with the duty of admitting and discharging persons at the various quarantine facilities.

Police: The police authorities coordinated with LSGs to make sure that the restrictions imposed by the state government were followed. This included preventing large social gatherings, checking up on persons under quarantine on a daily basis as well as imposing fines and taking legal actions wherever required. Higher ranking

police officers such as the circle inspector of police were a part of LSG committees and often gave reports on the various surveillance activities. In one panchayat however, the police activities were reported to be harsh and unnecessary.

Other participating groups: LSGs additionally required the cooperation of various other groups in COVID-19 management efforts. For example, they were aided by the usual group of health officers who facilitate public health activities such as the ASHA worker, Anganwadi worker, etc. These workers facilitated all initiatives throughout COVID-19 time as they went door to door collecting information about persons arriving from other countries or states, informing the community about steps being taken, etc. Since these workers have been involved in various activities before and are familiar to most community members, they act as a link between the LSG and the community. The role of volunteers was also immense in the COVID-19 response work. Volunteers were assembled early in the month of April and were mainly tasked with conducting home delivery services, posted at the help desk/call centers, posted at the quarantine facilities, etc. Volunteers were specially trained for their specific tasks and were provided with epasses to permit traveling amidst the restrictions. The officers from respective revenue offices were part of committees in charge of various activities. Members of self-help groups functioning under LSGs such as Kudumbashree (women self-help groups) Ayalkkoottam (neighbourhood groups) were involved in the production of masks and sanitizers locally and occasionally assisted in other monitoring activities. Fire Force officials were actively involved in the transport and delivery of medicines that had to be procured from other States and districts.

Organisations: Several voluntary organizations, welfare organization, resident's association and banks were actively involved and contributed by providing quarantine facilities or donating in money or in kind. COVID-19 management activities saw cooperation from various other sectors and individuals such as faculties from educational institutions who guided in production of sanitisers locally, local shops and merchants that provided home delivery in association with LSGs, Ayurveda hospitals, government educational institutions, private auditoriums and lodges that provided quarantine facilities, etc.

Impact of the LSG activities

Due to the various efforts of LSGs, the COVID-19 infection has been significantly under control in the northern district of Kannur, in the initial phase. Once the community was made aware of the restrictions, people mostly acted on their own; diligently following social distancing and wearing masks. In some places, police intervention was required to disburse large gatherings and enforce distancing at shops but mostly the impact was

positive. Some programs were also conducted by the community to appreciate public health officials and police officials for their efforts amidst the pandemic.

The response of the community to the various initiatives of LSGs was largely positive although not devoid of negative aspects. The communities were cooperative, taking part notwithstanding their political affiliations and contributing the best to their capacity. Although it took time for communities to adjust to lockdown restrictions, LSG efforts were positively received.

DISCUSSION

Kerala's local self-government bodies functioned as epicentres of coronavirus control measures in the initial phase of the pandemic. They coordinated various preventive measures and developed a support system for the community. PHC, family health centres, police and various other organisations like self-help groups worked in harmony to identify the groups vulnerable to COVID-19 and support them. Migrant workers, elderly, widows, returnees from other countries were given priority in COVID-19 management work. Inter-sectoral coordination helped mobilisation of necessary and sufficient resources for proper conducting of these relief activities. Buildings suitable for acting as quarantine facilities were identified and occupied with the help of other agencies and volunteers. Community kitchens played a prominent and active role in taking care of people in need and other target groups. The basic necessities of people, including that of medical nature was handled and taken care of by the various committees formed at LSG level. There were also monitoring committees to ensure quarantine regulations to be observed by people. The committee members include members from health, self- help groups, social welfare organizations, volunteers and other agencies.

Community participation and response to the epidemic are evidenced through these LSGs and their initiatives. This helped in the control of pandemic by flattening the curve of disease incidences and reducing mortality in the state of Kerala. LSG's leadership underscores the need of addressing welfare issues in controlling a pandemic situation. The potential of local level planning can be realized through training of more volunteers and social workers coupled with people's participation in the upcoming stages of the pandemic that could potentially include a community transmission phase.

Limitations

This qualitative study does not represent or embody the functioning of LSGs throughout the state of Kerala. This is essentially because the panchayats and municipal corporations that have been studied are limited to the ones in central part of the northern district of Kannur. The existing social and political situations vary across the different districts in the state.

CONCLUSION

In the past, several studies have been conducted to understand the dynamics between LSGs and PHIs in the state of Kerala. Cooperation between these two sets of bodies have been identified to be a significant component of the well-functioning public health system in the state. With the emergence of novel coronavirus, the cooperation and interaction between these two bodies become even more crucial. By exploring the role played by LSGs in control of the pandemic, this study adds to the diverse perspectives on the existing public health system. Learnings from Kerala may be useful to other regions as well.

ACKNOWLEDGEMENTS

The authors would like to thank to Sasi Vattakkovval (Chairman, Payyanur municipality), P. K. Shyamala (Chairperson, Anthoor municipality), E. P. Balakrishnan (President, Kadannappally Panapuzha grama panchayat), A. Rajesh (President, Pariyaram grama panchayat), Santhosh V. P. (Secretary, Pariyaram grama panchayat) and Ramakrishnan K. V. (President, Kannapuram panchayat) for their time and contribution in making this research article possible.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

REFERENCES

- The Hindu, State brings down infant mortality rate, C. Maya, 2020. Available at https://www.thehindu.com/news/national/kerala/state -brings-down-infant-mortalityrate/article31537707.ece#:~:text=In%20a%20signific ant%20achievement%2C%20Kerala,Registration%2 0System%20(SRS)%20bulletin. Accessed 17 August 2020.
- 2. National Institute of Public Cooperation and Child Development. Dr. Jacob John, A Study on Effectiveness of Panchayati Raj Institutions in Health Care System in the State of Kerala, 2012. Available at https://nipccd-earchive.wcd.nic.in/sites/default/files/PDF/A%20Study%20onEffectiveness%20of%20Panchayati%20Raj%20Institutions%20in%20Health.pdf. Accessed on 17 August 2020.
- 3. Institute for Social and Economic Change. Decentralisation and Interventions in Health Sector: A Critical Inquiry into the Experience of Local Self Governments in Kerala, M Benson Thomas and K Rajesh, Working Paper 271. Available at http://www.isec.ac.in/WP%20271%20-%20Benson%20Thomas%20and%20Rajesh.pdf. Accessed on 17 August 2020.

- 4. Manju S Nair, V Nagarajan Naidu. Public Health Interventions by Local Governments in Kerala: An Effectiveness Analysis. BMJ Global Health. 2016;1(1):OP-24.
- Observer Research Foundation. Panchayats and pandemic, Niranjan Sahoo, 2020. Available at https://www.orfonline.org/expert-speak/panchayatspandemic-65185/. Accessed 17 August 2020.
- Ideas for India. Kerala's management of Covid-19: Key learnings, S.M. Vijayanand, 2020. Available at https://www.ideasforindia.in/topics/governance/keral a-s-management-of-covid-19-key-learnings.html. Accessed 17 August 2020.
- 7. The Hindu. Responding to COVID-19 at the grassroots, T.R. Raghunandan, 2020. Available at https://www.thehindu.com/opinion/oped/responding-to-covid-19-at-thegrassroots/article31552359.ece. Accessed 17 August 2020.
- 8. The Hindu. Fighting a virus, yet again: How controlling the Nipah outbreak helped Kerala to take on COVID-19, C. Maya, 2020. Available at https://www.thehindu.com/sci-tech/health/fighting-a-

- virus-yet-again-how-controlling-the-nipah-outbreak-helped-kerala-to-take-on-covid-19/article30825430.ece. Accessed 17 August 2020.
- The Wire. This National Panchayati Raj Day, Local Governance is More Important Than Ever Before, Avani Kapur and Aishwarya Panicker, 2020. Available at https://thewire.in/government/national-panchayat-day-covid-19-management-local-governance. Accessed 17 August 2020.
- 10. Trust and empower panchayats to respond to Covid-19, Dr. Rajesh Tandon, The Times of India. https://timesofindia.indiatimes.com/blogs/voices/trust-empower-panchayats-to-respond-to-covid-19/. Accessed 17 August 2020.

Cite this article as: Radha D, Jayasree AK, Mayamol TR. Role of local self-governments in control of COVID-19 in Kerala-an exploratory study. Int J Community Med Public Health 2020;7:5027-34.