

The challenges of frontline health managers during the COVID-19 pandemic in India: A framework analysis study

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ABSTRACT

Background: Coronavirus was first officially reported in Wuhan city of China in December 2019. As this novel coronavirus spread rapidly throughout the world, health care workers faced many difficulties addressing the pandemic. In the present study, we explored the challenges faced by front-line health managers on human resource management, execution of the central policies, and training and in formulating innovative approaches during the coronavirus disease 2019 (COVID-19) pandemic in India. **Methods:** A qualitative study was conducted using framework analysis among front-line health managers concerning COVID-19 management at the district level. We conducted 120 in-depth interviews among eight states with the use of an interview guide. **Results:** The results are described under five sections: 'challenges of front-line managers in policymaking and its execution', 'human resource management', 'gaps in local execution of central policies', 'challenges in training workforce and data management', and 'innovative approaches adopted during COVID 19'. **Conclusions:** We observed that a centre-down approach was not appreciated much. Many participants felt that there was a need to understand the local context and appropriate amendment. The private system is a part of the Indian health system and can never be ignored; thus, all guidelines should include the private system.

Keywords: Challenge, coronavirus, front-line health managers, health managers, health system

Introduction

Coronavirus was first officially reported in Wuhan city of China in December 2019.^[1] As of March 2021, there were 11,76,44,542 confirmed cases and more than 26,12,360 deaths globally.^[2] As this novel coronavirus spread rapidly throughout the world, health care workers faced a lot of difficulties to address the pandemic. During

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Received: 21-05-2024

Revised: 12-06-2024

Accepted: 08-07-2024

Published: 18-11-2024

Access this article online

Quick Response Code:



Website:

<http://journals.lww.com/JFMPC>

DOI:

10.4103/jfmprc.jfmprc_867_24

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How to cite this article: Kundapur R, Rashmi A, Aggarwal S, Panda M, Jena S, Epari V, et al. The challenges of frontline health managers during the COVID-19 pandemic in India: A framework analysis study. J Family Med Prim Care 2024;13:5177-85.

this pandemic, front-line managers faced significant challenges on coronavirus disease (COVID) testing due to inadequacies of test supplies, personal protective equipment (PPE), inadequate staff, logistic support, changing guidelines, financial support, and so on. However, there are some other challenges associated with COVID management for front-line workers (FLWs) such as lack of preparedness to respond to the new pandemic due to the absence of strategic policies, anxiety, and fear among healthcare professionals and enforcing guidelines.^[3-6]

The coronavirus pandemic has the biggest public health challenges in this century, and it makes a dramatic loss of human life globally as well as economically.^[7] As India is the second-largest populous country, it is a major challenge for those who are serving as front-line health managers to manage this pandemic effectively.^[8] So, in a country like India, where there are still areas of unmet need and non-uniform public health infrastructure, this pandemic and the consequent response had certainly strained for the health care administrative system.^[9] Problems in managing the pandemic in such contexts were extremely challenging for front-line managers like district health officers, district surgeons, taluk health officers, and other members of the District Task Force. There was a need to understand issues and challenges from their perspective, including their priorities and the need for support to create knowledge that can be used to improve overall health system functioning. We, therefore, explored the challenges faced by front-line health managers on policymaking and execution, human resource management, execution of the central policies, training of front-line workers, and innovative approaches during the COVID-19 pandemic at the district level.

Methods

We conducted a qualitative study using framework analysis to explore the perception of front-line health managers concerning COVID-19 management at the district level. We divided the country into four categories: North with Delhi, East with North East, West with Central India, and South India. Two states in each zone were selected, with a selection of Delhi and Rajasthan as North states, Tripura and Orissa from East, and Maharashtra and Gujarat from West. Kerala and Karnataka from the South were specifically selected states. When we looked into the vulnerability index too, these states represent all different vulnerability indexes. Three districts that fell in very high vulnerability/high vulnerability, medium/low vulnerability, and very low vulnerability were included.^[10]

This consideration of two states in each zone comes to eight states and on an average with 30–35 districts in each state. The total number of districts of all these states was around 250. As per the thumb rule, if the total population is more than 100 and less than 500, we took 10–20% of the population. So, we intended to take 10% of the district in each state, making it three districts in each state. These districts are considered to include one very high vulnerability/high vulnerability, one medium/low vulnerability, and one from very low vulnerability. As the total front-line managers in each of the selected states will be

around 60–70, we intended to take 20% (as per thumb rule, if the population is between 50 and 100, we need to take 20–30% of the total population) of the total front-line managers, that is, 20% of the district front-line managers. It was ensured that in three districts, there will be at least 1 DHO (District Health Officer), 1 DS (District Surgeon), and 1–2 others in the district task force who represent district administration and other health care systems included. A total of five front-line managers were selected in each district. We have also included one block-level manager to investigate their challenges, assuming they may be more complicated than those at the district level. So, we consider five managers in three districts and eight states, which will make 120 samples in total with a 95% confidence interval and 50% heterogeneity; the qualitative sample will be 100.

Data Collection: We conducted 120 in-depth interviews (IDIs) among eight states through the use of an interview guide. [Table 1]. The study was conducted between August and November 2020. Interviews were conducted in both local and English languages, and the duration was an average of 30–40 min. The IDI had stakeholders mainly from the health system but also included 1–2 prominent people in district task forces who were part of decision making. After obtaining permission, IDIs in person or on zoom or telephone were conducted by senior faculty. Since it was a multi-centric study, interviews were conducted by all authors among eight states. The authors have a variety of professional backgrounds, including public health and medicine.

The framework was prepared looking into the situation by the expert committee for operational research of ICMR as follows:

1. How do stake holders (manager at local) influence the policy? The local manager needed to make the amendements based on local need and act aptly at the local level.
2. How did the local manager manage the crux of the less of manpower? The local authority had to be innovative in management of human resources.

Analysis

A framework analysis was carried out in this study. This approach is often used in applied qualitative research to influence policy. The qualitative data have been analysed deductively using a previously prepared framework, which is based on the specific objectives and specific sub-domains. The analysis includes the following five stages:^[11,12]

1. Familiarisation: In this step, all the recorded interviews were transcribed and we read the field notes, data sets, and related literature on COVID management.
2. Identifying a thematic framework: In this step, we developed a framework analysis diagram on contest policy management, human resource management, training and data management, gaps in local execution of central policies, and innovative approaches.
3. Indexing: In this person, we applied the developed framework to the entire data set.
4. Charting: In this stage, the relevant information was extracted and added to the thematic framework.

Table 1: Description of framework with key thematic issues

Thematic issues	Sub-themes	Description	Quotes
Constraints among FLWs	Stake-holder opinion, Human Resource	Centre-down guidelines had to be followed, which was too rapid and unclear. Rajasthan had the autonomy for deliverance, acute shortage of staff, fear to perform, lack of partnership, strained existing system with staff turning positive. Quarantine of health workers never done. Exhaustive duty hours with need to manage both emergency and routine health care services.	“Our people were working day and night, we didnot give leaves for 2-3 months”
Data management issues	Reporting, Retrieval, Obligance	No single authority to follow, Too large data pile up which was un managable, tracking impossible, no separate staff could be dedicated for purpose of reporting, retrieval of data was irregular and erroneous, Lot of miscommunication and infodemics. Data duplication and inadequately manned IDSP.	“War room were created and data was collected, but that was too much of data what to do with data was never discussed with health department. So analysis of data was not apt”
Barriers/Gaps in Execution	Central-down Guidelines, lack of Autonomy	Lack of coordination between the authority and executers, no single department responsible, problem with dead body management, transportation and other patient-related issues. Lack of sleep, overworked staff, problems of wearing gowns/masks for long continous hours, vulnerable population, lack of follow-up, confusion regarding travel and shifts, migrations	“Most of the health activity was carried out by health and family welfare. But now administration, police and ICMR all were involved. It was confusion who has to do what?”
Surveillance activities	Monitoring, day-to-day support	Non-specific staff to carry out contact tracing and house visits, rapid response teams uncoordinated, lack of training in monitoring the day-to-day activities, acute need for capacity building.	“There were no specific guideline who has to do what? So many used different people for contact tracing and un trained contact tracing led to non specific things and no proper containment happened”
Situational Factors	Confusions, Wax and Wean effect	Too frequent updates and guidelines, Testing strategies unclear, difficulty in dissemination of information to grassroot levels,	“Every now and then the guidelines changed and we had to find out what is current situation of guideline whih was stressful”
Strategic Action Plan	Communication, Donations, Doorstep delivery, Past experiences, Planned division of work	Involvement of other medical colleges to aid in monitoring, intradepartmental and Interdepartmental coordination, incentive-based recruitment, Involvement of private players through IMA, involvement of NGOs, multisectoral involvement for delivery of food, home delivery of medicines for NCDs, dead body management, cleanliness, contact tracing, house visits. Camp-based approaches to clear backlogs.	“We started the dialogue with IMA and private medical colleges from the beginning and they supported whole heartedly and so could combat the disease at the earliest”
Financial Issues and management	Incentive, Payroll, Improper fund flow	Lack of proper incentive was demotivating and so additional incentives were given in many regions, clarity in work role as per their pay band was lacking which created lot of confusion, improper fund flow lead to delay in treatment, logistic issues	“Private doctors were paid really well, asking them for COVID duty was not possible but we did not have specialist in public health”
Reaction	Immediate, Local level management	The staff managed the direct and indirect health issues of the patients admitted at their own level. Too much reliance on seniors could cause delay. So it was decision at sight	Responder : “ The police vehicle had to be used for testing”
Response	Local Amendments, Innovative Management, Distribution	Teachers and police were coordinated with for contact tracing, private practitioners involved, NGOs were involved for food delivery, local organisations managed the dead bodies, district malaria team looked after the sanitation, revenue department took care of isolation and notification, whereas CDPO, AWW, ASHAs aided in home isolation	Responder: “We had posted teachers at district programme management unit”
Role of Media	Negative versus positive role	Infodemics causes panic and confusion, which further leads to hindrance in accepting treatments. This causes difficulty to staff. However, at times, they boost morale by appreciations of FLWs, showing relevant contents and healthy communications.	“media created hawack, they made it a big issue and administrative issue instead of a disease. They projected various unwanted social media forwards and fear was created in general public”

5. Mapping: We explored the developed framework and revised it thoroughly.

Ethical

Ethical clearance was taken from the nodal centre, and each centre had the liberty to submit for expedited ethical clearance.

During the interview, participant consent was recorded and permission was sorted from the local state PI. The participant consent form was signed whenever there was a physical interview. As the nodal centre investigator is involved along with the other site PIs during the interview, exemption from the local ethical body was also possible.

Results

Two states form each of the four regions of the country taken up for the study are grouped based on the emerging themes. The column depicts the key thematic areas which arose after an iterative code categorisation. Segregation and a tabular depiction show that maximum code contribution towards the key thematic areas was by the western region (33%), followed by the eastern (24%) and southern (23%) regions. Moreover, the broad thematic contribution of responses of the front-line health managers towards the pandemic scenario and the situational factors which arose as an indirect consequence of the scenario was the maximum as compared to the other themes.

Table 1 demonstrates the key thematic issues based on the constraints among FLWs, which highlights the plight of mandatory follow of centre-down instructions. This was time-taking and exhaustive. Issues of data management also saw similar problems with no knowledge of whom to follow and what to rule out. On the top of it, there were coordination issues between authority and executors. Surveillance activities and financial management suffered a major drawback. Communication mis-management led to an infodemic which caused panic and confusion in response.

The summation Table 2 above broadly categorises the broad themes into positive and negative arenas. The negative themes have been collated to include the gaps in execution, barriers, issues with finance, challenges in managing data, constraints among FLWs, and other situational factors arising out of the pandemic, although not directly related to it. Out of the total of 608 codes for negative themes, the western region was found to cater to more issues and challenges, which however was least with the southern part of the country. On the other hand, the positive thematic areas, which included the reaction (immediate), response (gradual), strategic action plan, and surveillance, have been better in the southern and western regions but least in

North India. Although there is no direct association between these, observation and percentages show that out of the total 1205 codes categorised into 10 broad themes, 608 were negative and 597 were positive.

Figure 1 shows the regions on the x-axis and the percentage of thematic representations on the y-axis with green depicting positive and blue depicting negative themes. Representation in south is maximum, followed by west, whereas it is least in the north regions. The negative thematic representation of the blue bars in the backdrop shows a contrast scenario, with the southern region having the least contribution and the western region with the maximum.

The radar diagram in Figure 2 on the left shows the negative thematic issues and maximum situational factors have contributed to these. Situational factors are those issues which have come up as an indirect consequence of the pandemic and not directly related to the health. The various codes for this are given in the table above. Besides, we find the eastern region to be having maximum gaps in execution, be it the guidelines or testing strategies or other deliverables. The western region has been shown to have maximum issues with situational factors and constraints among FLWs as regards to manpower shortage, incentives, over duties, fear, no quarantines, and so on. The

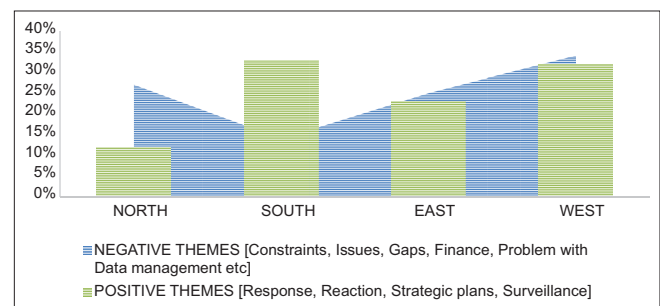


Figure 1: Depiction of positive and negative themes

Table 2: Summation of the broad thematic areas categorized as negative and positive themes

REGION	STATES/ REGION	Summation of all Themes	Percent	NEGATIVE THEMES=Issues/ Gaps/Constraints/ Situational Factors	Percent	POSITIVE THEMES=Reaction, Response, Strategic action plan, Surveillance	Percent
NORTH	DELHI	128		82		46	
	RAJASTHAN	105		80		25	
	TOTAL NORTH	233	19%	162	27%	71	12%
SOUTH	KERALA	183		35		148	
	KARNATAKA	100		49		51	
	TOTAL SOUTH	283	23%	84	14%	199	33%
EAST	ODISHA	204		85		119	
	TRIPURA	87		70		17	
	TOTAL EAST	291	24%	155	25%	136	23%
WEST	GUJRAT	112		39		73	
	MAHARASHTRA	286		168		118	
	TOTAL WEST	398	33%	207	34%	191	32%
GRAND TOTAL		1205		608		597	

southern region comparatively had higher issues with data management. We also find that there were least issues with finance and its management among all the four regions.

The radar diagram of Figure 2 on the right depicts the positive thematic areas, and we find west and southern regions contributing maximum towards the response in the form of innovative techniques, local amendments, and redistribution. On the other hand, the strategic action plan was well in the eastern region, which includes good communication strategies, donations, doorstep delivery, use of past experiences, and planned division of work. The southern region specifically was able to react well in such situations by immediate decisions, local level management, and relying less on seniors for decision-making and action.

1. Challenges in policy making and execution at the district level

As depicted in Figure 3, in the majority of the states, the centre-down guidelines were followed as provided, mostly because of the lack of autonomy for local decision-making. However, Rajasthan was one such state where delegation of decision-making was bestowed on the district officials. The many confusions due to repeated change of guidelines posed an issue almost everywhere as the same had to be communicated till the grassroot level workers time and again.

2. Challenges with human resource at the district level

Not only human resource was constrained owing to the fact that it could not meet up to the huge need that arose during the time but also it showed the dearth of health care workers as against requirement. The existing system was being strained with the workload, and the situation also got difficult when staff themselves turned positive. The non-involvement of the private sector from the start was also seen to pose a huge challenge in involving them later as many either refused or showed no interest to shoulder the burden.

3. Challenges in training and data management

Training was generally not considered as a major issue at almost all sites. The concerns were mainly centred around the frequent change of guidelines. The fact that the local needs of the states were not taken into consideration especially with regard to management of the tribal population, quarantine rules in high populous areas, containment issues, and so on posed a challenge to the front-line managers. There seemed to be data duplications at many sites as there was no clear guidance on the same. The most important observation as pointed out by front-line managers of various states was the fact that the IDSP needed rejuvenating in terms of manpower and resources.

4. Gaps in local execution of central policies

As local considerations were at a minimum in the central guidelines that were disseminated, it did pose a huge task to the district to go on with COVID activities with ease. From restricting the public against panic buying to allaying their fears, the district front-line managers found it a humongous task to take into the consideration the local needs and execute the guidelines. Especially areas that were surrounded by both airport and seaport which saw doubling of workload alongside managing the migrants and community at large, it was indeed a requirement to have the necessary norms in place. At certain sites, alongside the main issues, the bureaucratic involvement posed a hinderance in flow of work.

1. Innovative mechanisms

Figure 4 shows the situational factors that contributed to putting up some strategies of management, that is, reverse quarantine of individuals like the elderly, thus preventing them from getting infected, formation of COVID armies for better surveillance and watch over activities, conduction of mock drills so as to better deliver the guidelines to the grassroot workers, involvement of local leaders, which thus helped to gain better trust of community,

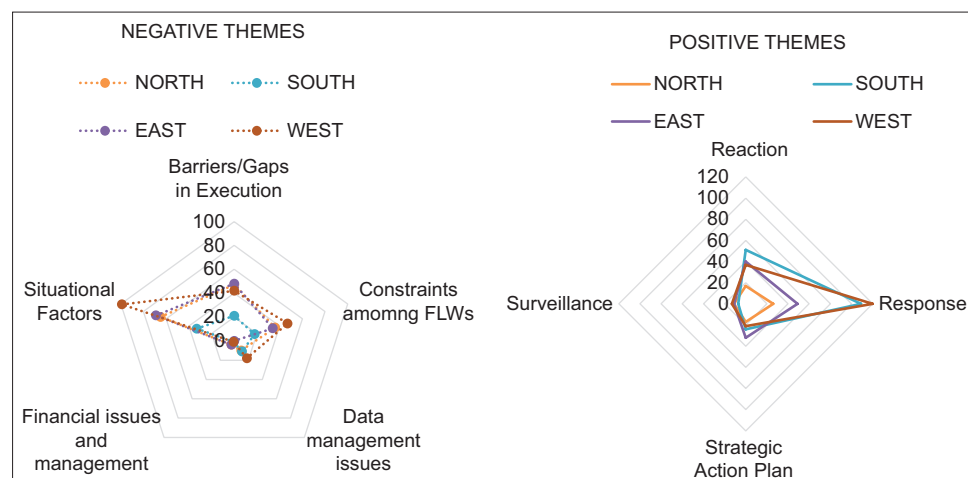


Figure 2: Diagrammatic depiction of contribution towards the categorised themes as per region

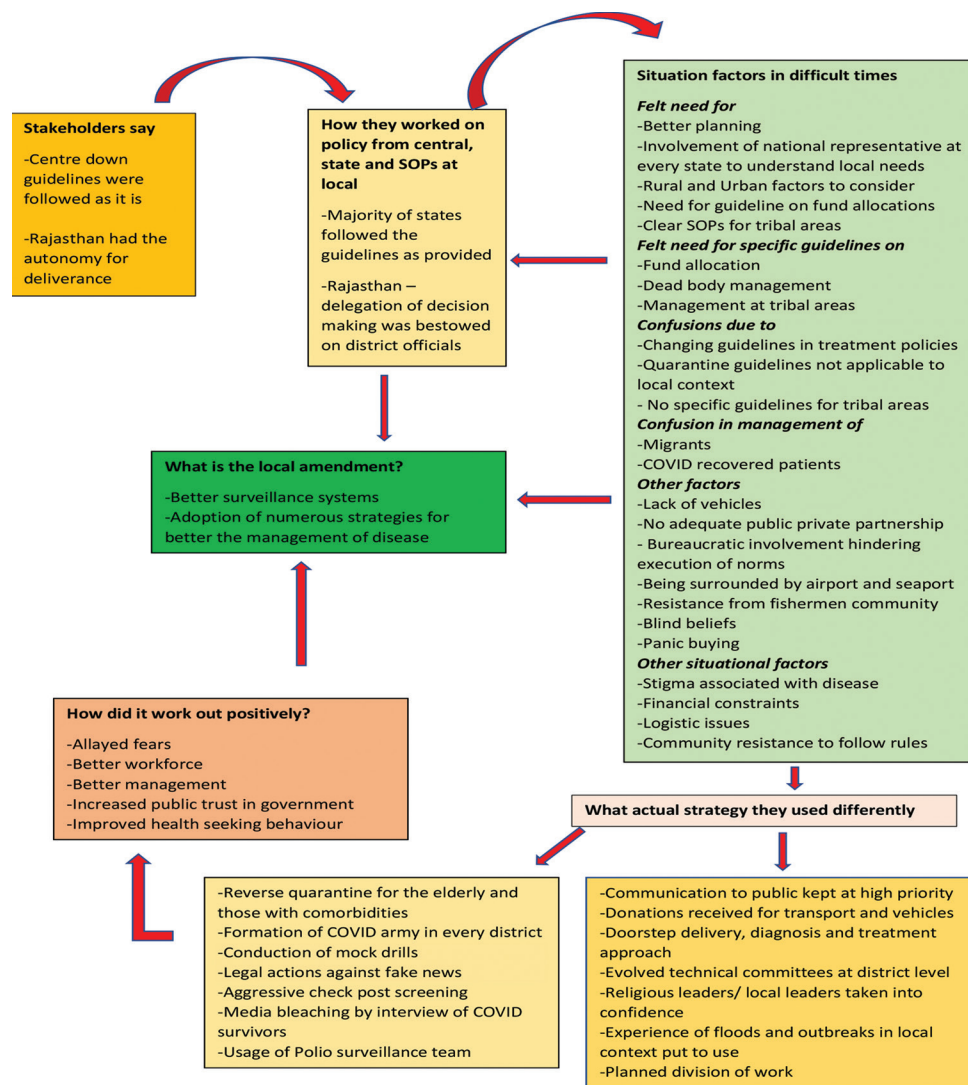


Figure 3: Framework analysis of challenges of frontline managers in policy making and execution at the district level during COVID-19

regular media usage by interviewing the COVID survivors so as to allay fears and myths that developed around the infection, and so on. Usage of polio surveillance teams and their experience at certain sites helped to manage COVID-related activities in the community in a better way. Such mechanisms put in place thus paved the way for better management of infection.

The workload during COVID however saw a distribution across various departments other than health majorly. The departments involved included the police, teachers, revenue department, NGOs, and panchayat. While the direct health-related workload was managed by the staff from the public health sector, the other COVID-related activities were managed by the rest of the involved departments; for example, food delivery was taken up by NGOs, contact tracing by teachers and police, and the revenue department for isolation and notification.

The digital platform was used to its maximum with regular online trainings for the workforce. At certain sites, training modules

for various cadres was made so that it could be simplified and delivered effectively to various levels of workforce.

Evolving many technical committees at the district level helped for better distribution and management of workload. Experiences gained from management of health during floods and outbreaks such as Nipah were taken into consideration and similarly acted upon. Price capping was immediately brought up to ensure that it does not exceed the buying capacity of individuals.

Discussion

The issue of COVID was global, and there was a management problem throughout the world. Most had issues of constraints and gaps in other countries too.^[13] Our study also talks about how the administration had issues with gaps in understanding and constraints of people and people management. But interesting is the diversity of India where we find most southern states tried to have a positive response and northern states were stating the problems more. Though as a country every aspect of the

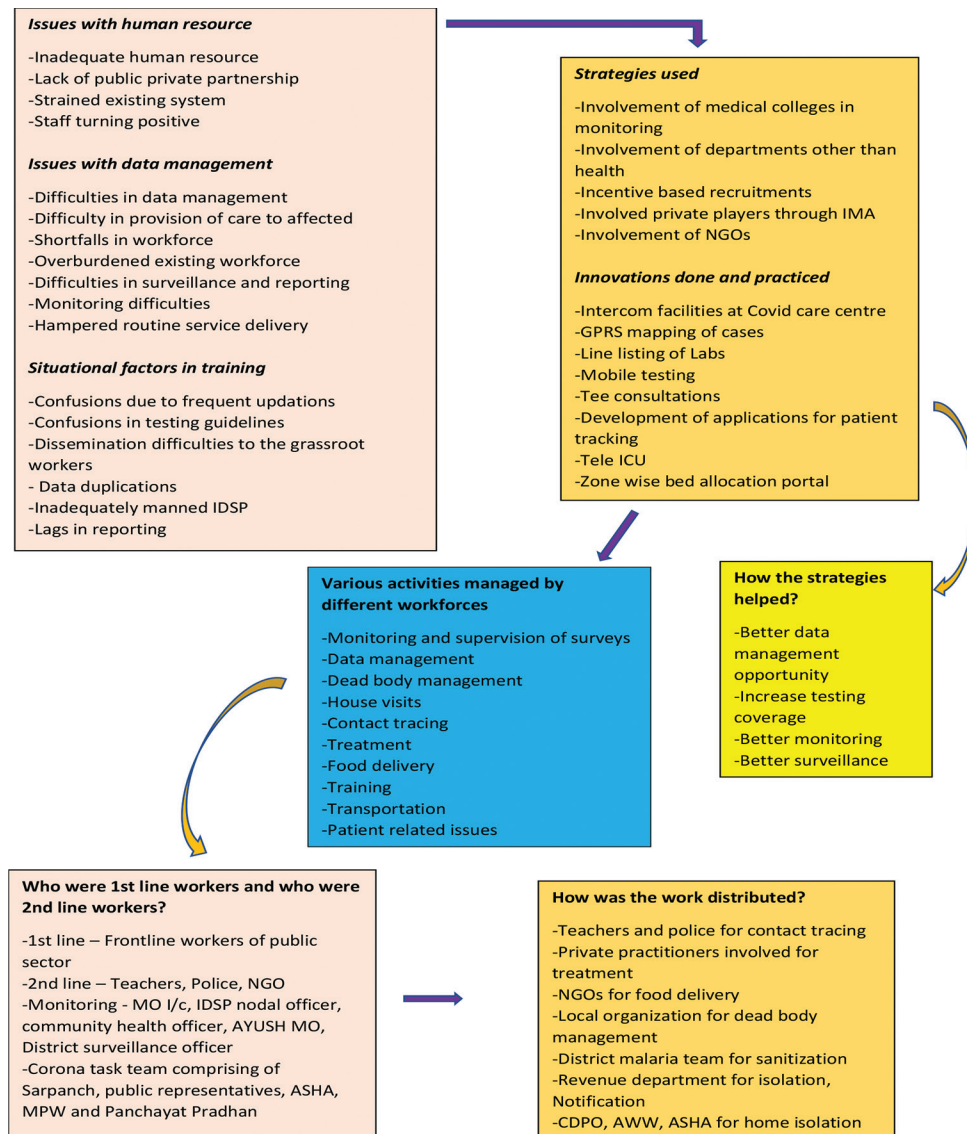


Figure 4: Framework analysis of human resource management and innovative approaches adopted during COVID-19

administration worked to fulfill the management of COVID, states with better resources earlier with health care could plan more positive approaches as compared to states with not-so-good health care that had to deal with negative forms and getting it right was a big task. The western region with a growing economy and health care being better connected could cope in a better way than the eastern states. The whole concept was the understanding of health by the administration and political people, so whenever health had better literacy, the coping strategy as positive comments increased in the state. The different regions set different methods to cope with the situations, and this was expressed in the global publications.^[14] In most states, some issues remained the same, but a few states had specific negative themes which were to be handled. So, probably they did not have time in a limited period to handle a more positive strategy. This epidemic gave most states an outlook on their health system and made them understand their weak perspective on the health system. Since most negative themes were associated with constraints,

the health system with constraints in FLWs had a lot of issues to be dealt with. Most positive themes, on the other hand, were responses; so, it is evident that with fewer constraints, more response was possible. So, it is important as a health system to clear the constraints on FLWs and front-line managers.

Studies in the past have shown the inadequacies of our existing health system. The main challenges are workforce, infrastructure, and out-of-pocket expenditure.^[15] This study gave a deep understanding of various situational factors existing in the health care system that both contributed to and deterred the execution of various activities. The complexity of challenges faced during the pandemic was vast. A convergence with other sectors including not only the private health sector but other departments as well is evidence of opinions already shared by various other studies.^[15,16] Though there were instances where the private sector did measure up to the requirement, it was evident from most sites that the government's laxity in involving them did pave the path for a

widening gap between the public and private health sectors in the country. In a developing country like ours, where the private sector is playing a significant role in the provision of healthcare, having a good public–private partnership should be a significant priority issue. Various other departments were involved to reduce the work pressure, thus also ensuring the provision of necessary care.

Financing in the health sector for health care delivery forms a major crux of adequate health care to all. For universal health coverage, adequate funding under programs is essential.^[17] With no specific guidelines on issues that should have also been placed as priority, like the fund allocation for various COVID activities and issues with logistics, delivery of services faced many backlogs. Management of migrants as they had to cross borders during the lockdown, management of COVID survivors, and non-compliance by the locals posed a challenge to the system in place as the newness of the infection and the unpreparedness of the health system became clear.

Work pressure and lack of coordination are major concerns noticed during this pandemic.^[18] Our study also highlights that there is a definite need for more workforce in the health sector. Structured planning of activities is very essential. It was also opined that a national representative should be involved in every state in order to understand the local contexts of every state and have guidelines applicable to each of them. There is a need to have clear SOPs on the management of tribal areas as these are a sect of communities distinctly different from the rest of the community in terms of culture, traditions, and practices.

With evolving challenges from the pandemic, many different innovative mechanisms were put in place, thus showcasing that such mechanisms need to be in place as a continuum too. The fact that data management was very confusing and challenging work during COVID, many states evolved digital methods to ease the process. Line listing of laboratories helped in data gathering from various laboratories. The GPRS mapping of cases helped to know about cases and thus take up subsequent measures. Mobile applications that were developed helped keep track of cases and also watch over the quarantine. Tele ICU facilities helped in the better management of critically ill patients. Mobile testing facilities helped in increasing testing coverage. Some of the states used certain mechanisms which helped ease out the patient load example: zone-wise allocation of beds preventing overcrowding at hospitals. Facilities for tele-consultations helped individuals to access health-related advice even from home. Better monitoring and better surveillance along with improved data management were seen through the various innovations brought out at the district level within states. It also became evident that the system of surveillance within IDSP also required to be re-looked into.

As studies have time and again emphasised the need for a shift of health agenda from merely a disease-specific approach to a multi-sectoral approach,^[16] this study also showed that there is a need to work in the direction of multi-sectoral collaborations in order to provide health care in a feasible manner.^[16,17]

Conclusion

The study very well showed us the unified response of an ethnically diverse country with diverse resources. Stress exposes us, and our response to it depends on those unintentional traits which we inculcate during our growth. The COVID pandemic exactly did this. However, the different regions of India responded in a different manner. Where the southern part of the country responded to it in a very positive manner with strict regulations for testing and management, the northern regions saw more of problems which needed the policy interventions. The western region had more of innovations and techniques to manage the same level of problem, whereas the eastern part of the country did well as far as the communication and information management is concerned. The learning experiences more than fault finding also teach us the unified front which was put up based on the bare minimum availability. It also gives all the options to imbibe the positivity of dealing with a pandemic with what best is available instead of just shouting out the problem.

Acknowledgement

We would like to acknowledge the COVID-19 Trailblazer Probe Team for their consistent effort and advise in completion of the project under ICMR.

Financial support and sponsorship

The project has received financial support from the ICMR, Indian Council of Medical Research, Govt. of India. No – HIV/COVID – 19/13/5/2020/ECD-II.

Conflicts of interest

There are no conflicts of interest.

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